

Exhibit P

Fish and Wildlife Habitats and Species

Mist Resiliency Project
August 2024

Prepared for



Northwest Natural Gas

Prepared by



This page intentionally left blank

Table of Contents

1.0	Introduction	1
2.0	Description of Biological and Botanical Surveys Performed – OAR 345-021-0010(1)(p)(A) ..	1
2.1	Desktop Review	2
2.2	Field Surveys.....	2
2.2.1	General Biological and Habitat Categorization Surveys.....	2
2.2.2	Habitat Categorization.....	2
3.0	Identification and Description of Habitat – OAR 345-021-0010(1)(p)(B)(C)	4
3.1	Description of Habitat Types and Categories within the Analysis Area.....	4
3.2	Quantity of Habitat Types and Habitat Categories within the Analysis Area and Site Boundary.....	7
4.0	Identification of State Sensitive Species and Site-Specific ODFW Issues – OAR 345-021-0010(1)(p)(D).....	8
4.1	Identification of State Sensitive Species	8
4.2	Site-Specific Issues Identified by ODFW.....	13
5.0	Baseline Survey of Habitat Use by State Sensitive Species – OAR 345-021-0010(1)(p)(E).....	13
6.0	Description of Potential Adverse Impacts – OAR 345-021-0010(1)(p)(F).....	13
6.1	Potential Impacts to Fish and Wildlife Habitat.....	14
6.1.1	Potential Impacts by Habitat Type and Category.....	14
6.2	Potential Impacts to State Sensitive Species.....	16
6.2.1	Construction	17
6.2.2	Operation	21
7.0	Measures to Avoid, Reduce, or Mitigate Impacts – OAR 345-021-0010(1)(p)(G).....	28
7.1	Avoidance and Minimization Measures.....	28
7.1.1	Pre-construction	28
7.1.2	During Construction.....	28
7.1.3	Post-Construction.....	30
7.2	Mitigation	31
7.3	Compliance with ODFW Mitigation Goals – OAR 635-415-0025	31
7.3.1	Habitat Category 3.....	31
7.3.2	Habitat Category 4.....	32
7.3.3	Habitat Category 6.....	32

8.0	Monitoring Program – OAR 345-021-0010(1)(p)(H).....	32
9.0	Conclusion.....	32
10.0	References.....	33

List of Tables

Table P-1. ODFW Habitat Categorization categories	3
Table P-2. Habitat Categorization.....	5
Table P-3. Acres of Habitat Types and ODFW Habitat Categories Occurring within the Analysis Area and Site Boundary	7
Table P-4. State Sensitive Species with the Potential to Occur within the Analysis Area	9
Table P-5. Proposed Impacts by Habitat Category and Type	15
Table P-6. Potential Adverse Impacts to State Sensitive Species	24

List of Figures

Figure P-1. Fish and Wildlife Survey Area and Analysis Area
Figure P-2. Preliminary Habitat Categories within the Analysis Area
Figure P-3. Habitat Subtypes within the Analysis Area
Figure P-4. ODFW West Side Big Game Overlay within the Analysis Area
Figure P-5. Special Status Species within the Analysis Area (Confidential)

List of Attachments

Attachment P-1. Biological Survey Reports (Confidential)
Attachment P-2. Habitat Mitigation Plan
Attachment P-3. Restoration of Temporary Impacts Plan
Attachment P-4. NWN Vegetation Control and Management Plan

Acronyms and Abbreviations

ATV	all-terrain vehicle
BCC	Bird of Conservation Concern
BMP	best management practice
Certificate Holder	Northwest Natural
ESU	Evolutionarily Significant Unit
HDD	Horizontal Directional Drilling
OAR	Oregon Administrative Rule
ODFW	Oregon Department of Fish and Wildlife
ORBIC	Oregon Biodiversity Information Center
Project	Mist Resiliency Project
RFA	Request for Amendment
USFWS	U.S. Fish and Wildlife Service

This page intentionally left blank

1.0 Introduction

Northwest Natural Gas (NWN), the Certificate Holder, proposes to amend the Site Certificate for its underground natural gas storage facility at the Mist Resiliency Project (Project) in Columbia County, Oregon. Exhibit P provides information pertaining to fish and wildlife habitats and species, other than the species addressed in Exhibit Q that may be affected by the Project, as required to meet the submittal requirements in Oregon Administrative Rule (OAR) 345-021-0010(1)(p) paragraphs (A) through (H). This exhibit demonstrates that the Project can comply with the approval standard found in OAR 345-022-0060:

To issue a site certificate, the Council must find that the design, construction, and operation of the facility, taking into account mitigation, are consistent with:

(1) The general fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025(1) through (6) in effect as of February 24, 2017, and

(2) For energy facilities that impact sage-grouse habitat, the sage-grouse specific habitat mitigation requirements of the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-415-0025(7) and OAR 635-140-0000 through -0025 in effect as of February 24, 2017.

The Analysis Area is the area for which NWN must describe the impacts of the proposed Project changes in this Request for Amendment (RFA) 13. The Analysis Area is the same as the fish and wildlife habitat study area, defined in OAR 345-001-0010(35)(c) as the area within and extending one-half mile from the Site Boundary. The Site Boundary is defined in the Project Description section of this RFA 13 that reflects the information pursuant to OAR 345-021-0010(1)(a) and (b). The Fish and Wildlife Habitat Analysis Area is shown on Figure P-1.

Ground surveys were performed within the Site Boundary, and desktop analysis was used to understand the area within the one-half mile Analysis Area (Attachment P-1).

2.0 Description of Biological and Botanical Surveys Performed – OAR 345-021-0010(1)(p)(A)

OAR 345-021-0010(1)(p) Information about the fish and wildlife habitat and the fish and wildlife species, other than the species addressed in subsection (q) that could be affected by the proposed facility, providing evidence to support a finding by the Council as required by OAR 345-022-0060. The applicant must include:

(A) A description of biological and botanical surveys performed that support the information in this exhibit, including a discussion of the timing and scope of each survey;

This section describes the biological and botanical surveys conducted in support of this exhibit as required under OAR 345-021-0010(1)(p)(A), including the timing and scope of each survey. Biological and botanical surveys included an initial desktop review followed by field surveys.

Within the Site Boundary, habitats were categorized based on field survey results. Within the greater Analysis Area, habitats were categorized based on desktop analysis.

2.1 Desktop Review

Preparation for the general biological and botanical surveys included a review of available information on special status species (e.g., federal or state listed, state sensitive, U.S. Fish and Wildlife Service [USFWS] species of concern) occurrence and habitat requirements and special habitats (e.g., west side big game range spatial data, ODFW 2017) that could occur within the Analysis Area. The Oregon Biodiversity Information Center (ORBIC) was consulted to identify special status species that may occur within the Analysis Area. ORBIC maintains a geospatial database of occurrence records for rare, listed, and sensitive species in Oregon; but it should be noted that this database represents voluntarily documented and submitted records. It does not represent a systematic survey effort, and the absence of a record does not necessarily indicate that the species is not present. Therefore, other data resources were also consulted (Csuti et al. 2001, Marshall et al. 2003, NatureServe 2023, NOAA 2023, ODFW 2021, ORBIC 2023, StreamNet 2023). Aerial imagery was used to inform desktop assessment of potential habitats within the proposed Site Boundary and Analysis Area.

2.2 Field Surveys

NWN has conducted biological and botanical surveys in the vicinity of the Project for many years. The most recent surveys were conducted within the proposed Site Boundary in 2022 and 2023 to support the currently proposed amendment to the Site Certificate. The small portion of the Project not surveyed during 2022 or 2023 survey efforts will be surveyed in 2024, or prior to construction, and any rare plants will be avoided (Figure P-1). A detailed description of the field surveys conducted for this amendment is presented in Attachment P-1, and the survey area is shown on Figure P-1.

2.2.1 General Biological and Habitat Categorization Surveys

General biological, habitat categorization, and botanical (General) surveys were conducted for the proposed amendment in 2022 and 2023 and are detailed in Attachment P-1. Surveys consisted of intuitive controlled transects while mapping and categorizing habitat, along with a generalized, simultaneous search for all special status plant and animal species within the Site Boundary.

In addition to recording observations of special status plant species, biologists also mapped the presence of Oregon Department of Agriculture-listed noxious weed species. The presence and relative abundance of noxious weeds in habitat polygons were incorporated into the assessment of habitat condition during the habitat categorization assessment.

2.2.2 Habitat Categorization

The Oregon Department of Fish and Wildlife (ODFW) Fish and Wildlife Habitat Mitigation Policy (OAR 635-415-0025) provides a framework for assigning one of six category types to habitats

based on the relative importance (i.e., characteristics and condition) of these habitats to fish and wildlife species (Table P-1). Prior to field surveys, habitat types expected to occur were adapted from *Wildlife-Habitat Relationships in Oregon and Washington* (Johnson and O'Neil 2001) and modified based on aerial photography to reflect Project site conditions.

Table P-1. ODFW Habitat Categorization categories

ODFW Habitat Category	Definition ¹
1	Irreplaceable, essential habitat for a fish or wildlife species, population, or a unique assemblage of species and is limited on either a physiographic province or site-specific basis, depending on the individual species, population or unique assemblage.
2	Essential habitat for a fish or wildlife species, population, or unique assemblage of species and is limited either on a physiographic province or site-specific basis depending on the individual species, population or unique assemblage.
3	Essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.
4	Important habitat for fish and wildlife species.
5	Habitat for fish and wildlife having high potential to become either essential or important habitat.
6	Habitat that has low potential to become essential or important habitat for fish and wildlife.
<p>1. Source: OAR 635-415-0025.</p> <p>2. A Category 2 wetland is dominated by native vegetation. PacifiCorp assumes that all wetland land cover types are Category 2 until additional information becomes available to justify categorizing them otherwise.</p> <p>3. A conservative assumption is that all waterbodies support native fish species.</p>	

In the field, biologists delineated polygons of relatively homogenous vegetation using Global Positioning System-enabled tablets with aerial basemaps. Each delineated vegetation polygon was assigned a habitat type, sub-type, and ODFW habitat category. The composition and structure of each vegetation polygon was recorded on field datasheets (Attachment P-1). A minimum mapping unit of one acre was implemented, except for specialized habitat types such as wetlands. Wetlands and Waters of the U.S. were not characterized during the General survey as they were identified during a separate wetland delineation survey effort described in Exhibit J. Following field surveys, the data were processed to incorporate wetlands and waters data as well as land use information.

Where habitat was categorized based on desktop analysis, this analysis included: 1) the preliminary classification of habitats through the use of *Wildlife-Habitat Relationships in Oregon and Washington* (Johnson and O'Neil 2001) and, 2) final classification and categorization through aerial photograph interpretation and the use of other available data layers, such as National Wetland Inventory (USFWS 2023) and National Hydrography Dataset (EPA 2023).

3.0 Identification and Description of Habitat – OAR 345-021-0010(1)(p)(B)(C)

(B) Identification of all fish and wildlife habitat in the analysis area, classified by the general fish and wildlife habitat categories as set forth in OAR 635-415-0025 and the sage-grouse specific habitats described in the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-140-0000 through 635-140-0025 (core, low density, and general habitats), and a description of the characteristics and condition of that habitat in the analysis area, including a table of the areas of permanent disturbance and temporary disturbance (in acres) in each habitat category and subtype;

(C) A map showing the locations of the habitat identified in (B);

3.1 Description of Habitat Types and Categories within the Analysis Area

Table P-2 describes habitat types potentially found within the Analysis Area, along with Northwest Natural's (Certificate Holder) proposed categorization of these habitats according to the ODFW habitat categories.

Table P-2. Habitat Categorization

Habitat type	Habitat Subtype	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6
West Side Big Game Year-Round Major Habitat Overlay		N/A	N/A	West Side Big Game Year-Round Major Habitat	N/A	N/A	N/A
West Side Big Game Year-Round Peripheral Habitat Overlay		N/A	N/A	N/A	West Side Big Game Year-Round Peripheral Habitat	N/A	N/A
Open Water – Lakes, Rivers, Streams	Ponds/Lakes Open water areas, including natural lakes, reservoirs, stock ponds, beaver ponds	N/A	Natural lakes or beaver ponds with high-quality habitat.	Most other open water areas with lower-quality habitat (for example, some habitat requisites missing or bullfrogs abundant).	Highly degraded open water area, dominated by non-native vegetation or no vegetation around margins.	N/A	N/A
	Perennial Streams mapped by USGS having permanent (year-round) flow	N/A	Fish-bearing natural stream channels that support native, migratory fish based on StreamNet data; and provides good spawning (gravel beds present, non-embedded) and/or rearing habitat, with native emergent, shrub, or forested riparian margins.	Fish-bearing natural stream channels that do not support native, migratory fish based on StreamNet data; and provide marginal spawning (gravel present in pockets/30% embedded) and/or rearing habitat; or non-fish-bearing natural stream channels which drain into fish-bearing streams based on StreamNet data.	Non-fish-bearing natural stream channels that do not directly drain into fish-bearing streams.	N/A	N/A
	Intermittent or Ephemeral Streams mapped by USGS as intermittent	N/A	Fish-bearing natural stream channels that support native, migratory fish based on StreamNet data; and provides good spawning (gravel beds present, non-embedded) and/or rearing habitat, with native emergent, shrub, or forested riparian margins.	Fish-bearing natural stream channels that do not support native, migratory fish based on StreamNet data; and provide marginal spawning (gravel present in pockets/30% embedded) and/or rearing habitat; or non-fish-bearing natural stream channels which drain into fish-bearing streams based on StreamNet data.	Non-fish-bearing natural stream channels that do not directly drain into fish-bearing streams.	Non-fish-bearing ephemeral streams or excavated channels with high restoration potential; not important habitat.	N/A
Wetlands	Emergent Wetlands Emergent wetlands with herbaceous vegetation	Any bog, fen, or functional vernal pool	High quality habitat, dominated by native species	Mixture of native and non-native plant species and low to moderate disturbance	N/A	Farmed or previously filled wetlands; highly disturbed, dominated by non-native plant species.	N/A
	Forested Wetlands Forests (defined as areas with a minimum of 40% canopy closure > 20 feet tall), dominated by wetland indicator species	Any bog or fen	Exceptional habitat; well-buffered, with few or no non-native plant species, relatively undisturbed surroundings, or part of a large wetland complex, old-growth, or large sawtimber stage. Habitat for special status species.	Mixture of native and non-native plant species at sapling, pole, sawtimber stage (for example, habitat for native amphibians)	N/A	N/A	N/A
	Scrub-shrub Wetlands	Any bog or fen	Exceptional habitat; well-buffered, with few or no non-native plant species, relatively undisturbed surroundings, or part of a large wetland complex. Habitat for special status species.	Mixture of native and non-native plant species (for example, habitat for native amphibians)	N/A	N/A	N/A
Riparian Forest and Shrubland Complexes	Westside Riparian	N/A	High quality, diverse riparian areas that are not degraded.	Typical mid-seral riparian, provides wildlife habitat.	Provides marginal habitat; somewhat degraded.	Highly degraded; dominated by non-native species.	N/A

Habitat type	Habitat Subtype	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6
Upland Forests and Woodlands	Westside Lowlands Conifer-Hardwood Forest Lower elevation forests dominated by mixed conifer and hardwood species	N/A	Large sawtimber or old growth forest stands (as defined in Brown ed. 1985) including complex vertical structure, closed canopy, downed wood.	Closed sawtimber forest (as defined in Brown ed. 1985).	Closed and open sapling, pole forest (as defined in Brown ed. 1985) or active commercial timber lands.	Shrub and clearcut stage areas that were recently logged.	N/A
Agriculture, Pasture, and Mixed Environs	Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations	N/A	N/A	N/A	N/A	N/A	Active agricultural areas with low potential for restoration.
	Irrigated Pastures and Hay Meadows	N/A	N/A	N/A	Potential habitat for wildlife.	N/A	N/A
Urban and Mixed Environs		N/A	N/A	N/A	N/A	N/A	All developed areas.

3.2 Quantity of Habitat Types and Habitat Categories within the Analysis Area and Site Boundary

Table P-3 shows the acreages within the Analysis Area and the Site Boundary of each habitat type and assigned habitat category. The location of each habitat type and category within the Analysis Area are shown on the maps in Figure P-2 and P-3, as directed by OAR 345-021-0010(1)(p)(C). Presence of a particular habitat category within the Analysis Area does not indicate that this habitat will necessarily be impacted by the Project. Potential impacts are discussed in Section 6. No habitat was classified as Category 1 or Category 5.

Table P-3. Acres of Habitat Types and ODFW Habitat Categories Occurring within the Analysis Area and Site Boundary

Final Habitat Category	Habitat Type-Subtype	Acres within Site Boundary	Acres within Analysis Area
2	Open Water - Lakes, Rivers, Streams-Perennial Streams	-	35.62
	Upland Forests and Woodlands-Westside Lowlands Conifer-Hardwood Forest	-	0.43
Total Category 2		-	36.05
3	Open Water - Lakes, Rivers, Streams-Ephemeral Streams	0.05	-
	Open Water - Lakes, Rivers, Streams-Intermittent Streams	0.22	26.64
	Open Water - Lakes, Rivers, Streams-Perennial Streams	0.27	18.78
	Open Water - Lakes, Rivers, Streams-Ponds/Lakes	0.15	1.51
	Riparian Forest and Shrubland Complexes-Westside Riparian	-	0.30
	Upland Forests and Woodlands-Westside Lowlands Conifer-Hardwood Forest	0.29	356.72
	Wetlands-Emergent Wetlands	1.50	9.78
	Wetlands-Forested Wetlands	3.76	0.00
	Wetlands-Scrub-Shrub Wetlands	0.88	0.00
	Agriculture, Pasture, and Mixed Environs-Irrigated Pastures and Hay Meadows	9.44	-
	Open Water - Lakes, Rivers, Streams-Ephemeral Streams	0.01	0.09
	Riparian Forest and Shrubland Complexes-Westside Riparian	2.06	-
	Upland Forests and Woodlands-Westside Lowlands Conifer-Hardwood Forest	153.61	3,311.02
Total Category 3		172.24	3,724.84
4	Agriculture, Pasture, and Mixed Environs-Irrigated Pastures and Hay Meadows	1.29	0.24
	Open Water - Lakes, Rivers, Streams-Ephemeral Streams	0.02	0.04
	Open Water - Lakes, Rivers, Streams-Intermittent Streams	-	0.01
	Open Water - Lakes, Rivers, Streams-Ponds/Lakes	-	-

Final Habitat Category	Habitat Type-Subtype	Acres within Site Boundary	Acres within Analysis Area
	Riparian Forest and Shrubland Complexes-Westside Riparian	10.14	30.58
	Upland Forests and Woodlands-Westside Lowlands Conifer-Hardwood Forest	23.68	969.32
	Wetlands-Emergent Wetlands	–	54.42
	Agriculture, Pasture, and Mixed Environs-Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations	6.16	184.64
Total Category 4		41.28	1,239.24
6	Urban and Mixed Environs- Urban and Mixed Environs	27.05	288.48
Total Category 6		27.05	288.48
Grand Total		240.56	5,288.60
Note: Totals in this table may not be precise due to rounding.			

4.0 Identification of State Sensitive Species and Site-Specific ODFW Issues – OAR 345-021-0010(1)(p)(D)

(D) Based on consultation with the Oregon Department of Fish and Wildlife (ODFW) and appropriate field study and literature review, identification of all State Sensitive Species that might be present in the analysis area and a discussion of any site-specific issues of concern to ODFW;

4.1 Identification of State Sensitive Species

A total of 24 state sensitive species have the potential to occur within the Analysis Area (Table P-4), based on a review of the information described in Section 2.1 and refined based on the results of Project biological surveys described in Section 2.2. Table P-4 includes a description of the anticipated occurrence of the species within the Analysis Area, the type of habitat used, and the role of the habitat in the species' life history. State sensitive species that are also listed as threatened or endangered under the federal Endangered Species Act are addressed in Exhibit Q. One state sensitive species, the green sturgeon (*Acipenser medirostris*), was identified by ORBIC but was determined to be unlikely to occur within the Analysis Area as its range is largely confined to the Columbia River and it is not mapped to occur in any streams within the Analysis Area. Due to the lack of potential impact, this species is not discussed further.

Of the 24 state sensitive species identified as having the potential to occur within the Analysis Area, but not addressed in Exhibit Q; one species—the olive-sided flycatcher (*Contopus cooperi*)—was documented during the field surveys within the Analysis Area (Table P-4, Figure P-5; ORBIC 2023).

Table P-4. State Sensitive Species with the Potential to Occur within the Analysis Area

Common Name	Federal Status ¹	State Status ²	Expected Habitats ³	Sensitive Period ³	Observed or Expected Occurrence within Analysis Area ³	Potential Use of Habitat Within the Analysis Area ³
Mammals						
Red tree vole <i>Arborimus longicaudus</i>	C	S	Associated with large, mature Douglas-fir trees in late-seral forests. Nests in large branches typically at least 50 feet above the ground. May use younger trees where large mature trees are not available.	Breeding season is typically February – September	Not observed during surveys for the Project, although they would be difficult to detect without targeted surveys. There is low potential for this species to occur due to presence of Douglas-fir trees, but late successional forest habitat that would contain large mature trees is limited to absent in the Analysis Area and absent in the Site Boundary.	Nesting, foraging
Silver-haired bat <i>Lasionycteris noctivagans</i>	None	S	Associated with older Douglas-fir/western hemlock and ponderosa pine forests as well as juniper woodland habitat near streams, ponds and lakes. Roosts in tree cavities, under loose bark, caves, mines and in abandoned buildings.	During roosting periods, especially spring and early summer maternal roosting and winter hibernation roosting periods	No bat species were observed during surveys for the Project, although no acoustic surveys targeting bats were performed. There is potential for these species to occur based on presence of suitable habitat, including foraging habitat and potential roost sites, within the Analysis Area.	Roosting, foraging
Fringed myotis <i>Myotis thysanodes</i>	None	S	Primarily occurs at middle elevations of 3,937–7,054 feet (1,200–2,150 meters) in desert, grassland, and woodland habitats; has been recorded at 9,350 feet (2,850 meters) in spruce-fir habitat in New Mexico, and at low elevations along Pacific Coast. Roosts in caves, mines, rock crevices, buildings, and other protected sites. Nursery colonies occur in caves, mines, and sometimes buildings.	During roosting periods, especially spring and early summer maternal roosting and winter hibernation roosting periods		
Long-legged myotis <i>Myotis Volans</i>	None	S	Associated with montane coniferous forests and canyons, especially late successional old growth forests with snags. May also occur in riparian areas in arid desert regions and oak woodlands. Roosting sites include caves, mines, hollow trees, rock crevices and abandoned buildings.	During roosting periods, especially spring and early summer maternal roosting and winter hibernation roosting periods		
Birds						
Olive-sided flycatcher <i>Contopus cooperi</i>	BCC	S	Associated with uneven canopy coniferous forests. Typically nests where dead standing trees are found near water bodies, in burned forest habitat with snags and tall living trees, and in open or semi-open canopy forest stands.	During the reproductive and nesting periods which occur in the spring and summer	Observed within the Analysis Area during 2022 surveys.	Breeding, foraging
American peregrine falcon <i>Falco peregrinus anatum</i>	None	S	Associated with open areas for foraging including grassland, shrub-steppe, wide valley bottoms, and open forested areas often near water where prey gather, especially waterfowl. Typically nests on rocky cliff ledges generally greater than 75 feet high and within one mile of a water body.	During the reproductive and nesting periods which occur in the spring and summer	Not observed during Project surveys. No potential nest sites occur within the Analysis Area, but there is potential for the species to occur based on presence of suitable foraging habitat within the Analysis Area.	Foraging
bald eagle <i>Haliaeetus leucocephalus</i>	BCC, BGEPA	-	Nests in forested areas adjacent to large bodies of water. Nests in trees, rarely on cliff faces and ground nests in treeless areas. Known to scavenge opportunistically on carcasses in otherwise unsuitable habitat particularly during migration.	During the reproductive and nesting periods which occur in the spring and summer	ORBIC record along Nehalem River within the Analysis Area. Potential to use forested habitats within the Analysis Area for nesting, and stream/river habitats for hunting.	Nesting, Hunting

Common Name	Federal Status ¹	State Status ²	Expected Habitats ³	Sensitive Period ³	Observed or Expected Occurrence within Analysis Area ³	Potential Use of Habitat Within the Analysis Area ³
Caspian tern <i>Hydroprogne caspia</i>	None	S	Nests on flat open areas near water bodies, such as islands, beaches, or margins of lakes, rivers, and marshes. Breeding colonies have been on islands in the Columbia River.	During the reproductive and nesting periods which occur in the spring and summer	Not observed during Project surveys. Potential for the species to occur based on overlap with known migration range and proximity to breeding range.	Migrating
Purple martin <i>Progne subis</i>	None	SC	Associated with open foraging habitat and often observed foraging over rivers, lakes, marshes, fields or above tree canopies. Nesting sites are highly associated with burned forest and clear cut logged areas that contain dead standing snags. Opportunistic nester that uses abandoned pileated woodpecker and northern flicker nest cavities, artificial nest boxes, and other human made structures in urban environments.	During the reproductive and nesting periods which occur in the spring and summer	Not observed during Project surveys. Potential for the species to occur based on presence of suitable nesting sites and foraging habitat within the Analysis Area.	Breeding, foraging
Western bluebird <i>Sialia mexicana</i>	None	S	Habitat includes open woodlands, farmlands, orchards, savanna, riparian woodlands, and burned woodlands, also deserts in winter. Nests are in natural tree cavities, abandoned woodpecker holes, or bird nest boxes.	During the reproductive and nesting periods which occur in the spring	Not observed during Project surveys. Potential for the species to occur based on presence of suitable nesting sites and foraging habitat within the Analysis Area.	Breeding, foraging
White-breasted nuthatch, slender billed nuthatch <i>Sitta carolinensis aculeata</i>	BCC	S	Most frequent in open woodlands of mature trees primarily oak and pine but also, black cottonwood, Oregon ash, and pinyon-juniper. Found in clearings, forest edges, parks, and partly open situations with scattered trees. Nests in natural tree cavities, old woodpecker holes, and bird houses. Foraging typically occurs on the trunk and larger limbs of trees. Shows a preference for larger trees because fissured bark, which occurs more on larger trees, supports a greater abundance and diversity of arthropods than smooth bark.	During the reproductive and nesting periods which occur in the spring.	Not observed during Project surveys. Potential for the species to occur based on presence of suitable nesting sites and foraging habitat within the Analysis Area.	Breeding, foraging
Reptiles						
Western pond turtle <i>Actinemys marmorata</i>	SOC	SC	Habitat includes permanent and intermittent waters of rivers, creeks, small lakes and ponds (including human-made stock ponds and sewage-treatment ponds), marshes, unlined irrigation canals, and reservoirs. Sometimes this turtle is found in brackish water. It often basks on logs, vegetation mats, or rocks. In the northern and central part of the range, most overwinter in upland habitats. Individuals commonly bask on land, near or way from water. Nesting sites are on sandy banks and bars or in fields or sunny spots up to a few hundred meters from water.	During hibernation (November–January) and nesting periods which occur April–August.	Not observed during Project surveys. Potential for the species to occur based on presence of suitable terrestrial and aquatic habitat within the Analysis Area.	Breeding, foraging, overwintering
Amphibians						
Western toad <i>Anaxyrus boreas</i>	None	S	During hibernation and non-breeding months, this species is associated with a wide variety of terrestrial habitats including deserts, grasslands, woodlands, forests, and chaparral provided breeding aquatic habitats are within migration distance. Breeding is a synchronous and communal event in pools of slow moving streams, desert springs, ponds, wetlands, marshes, reservoirs, stock ponds or shallow lakes areas. Use rodent burrows or subsurface refuge sites for hibernacula in the winter.	During winter hibernation months if hibernacula is disturbed. During terrestrial migration and aquatic breeding periods which occur January – October.	Not observed during Project surveys. Potential for the species to occur based on presence of suitable terrestrial and aquatic habitat within the Analysis Area.	Breeding, foraging, hibernacula

Common Name	Federal Status ¹	State Status ²	Expected Habitats ³	Sensitive Period ³	Observed or Expected Occurrence within Analysis Area ³	Potential Use of Habitat Within the Analysis Area ³
Coastal tailed frog <i>Ascaphus truei</i>	None	S	Associated with clean and clear, fast-flowing, cold permanent streams with coarse substrate or cobble often found in mature Douglas-fir forest habitats. Highly aquatic species. Reliant on undisturbed and sediment free stream habitats year round. Eggs are attached to the underside of a large rock in the stream.	During the extended reproductive and development periods which occur the first five to twelve years of life prior to reaching reproductive age.	Due to very limited suitable habitat within the Analysis Area, there is a low likelihood of occurrence. Nevertheless, these frogs may venture into adjacent terrestrial habitat in wet weather. Therefore, there is the potential for this species to occur within the Analysis Area.	Foraging, transient movement
Clouded salamander <i>Aneides ferreus</i>	None	S	Habitat includes moist coniferous forests (redwood, Douglas-fir, western hemlock, Port Orford cedar forests); in forest edge, forest clearings, talus, and burned over areas. Usually found under bark, in rotten logs, or in rock crevices. They may aggregate in moist decayed logs in summer when forest conditions become generally dry. Large (greater than 20 inches in diameter) down logs of mid-decay classes with sloughing bark provide the best microhabitats. Sometimes clouded salamanders climb high into trees. Egg deposition occurs in cavities in rotten logs, in rock crevices, under bark, among vegetation, or in trees.	During reproductive periods, which occur spring – early summer.	Not observed during Project surveys. Potential for the species to occur based on presence of suitable habitat within the Analysis Area.	Breeding, foraging
Cope's giant salamander <i>Dicamptodon copei</i>	None	S	Streams and rivers in moist coniferous forests (water temperatures usually range from 46 to 57 degrees Fahrenheit [8 to 14 degrees Celsius]). Sometimes found in clear, cold mountain lakes and ponds. Sometimes occurs on land along water courses. Lays eggs in streams on the underside of rocks or in chambers under stones, cutbanks, or logs.	During reproductive periods, which occur spring – fall	Due to very limited suitable habitat within the Analysis Area, there is a low likelihood of occurrence. Nevertheless, these aquatic salamanders may venture into adjacent terrestrial habitat in wet weather. Therefore, there is the potential for this species to occur within the Analysis Area.	Foraging, transient movements
Del norte salamander <i>Plethodon elongatus</i>	SOC	S	Occurs in riparian, conifer, and redwood habitat types. Found at near sea level to approximately 1100 feet in elevation. Found on the forest floor under bark, rocks, and rotting logs. Prefers moist but not wet microhabitats.	During reproductive periods, which probably occurs in fall and spring, although their breeding behavior is unknown.	Due to very limited suitable habitat within the Analysis Area, there is a low likelihood of occurrence. Nevertheless, these aquatic salamanders may venture into adjacent terrestrial habitat in wet weather. Therefore, there is the potential for this species to occur within the Analysis Area.	Foraging, transient movements
Northern red-legged frog <i>Rana aurora</i>	None	S	Occurs in ponds and wetlands with emergent vegetation. Typically occurs in shallow water habitats that dry seasonally to limit the presence of predators (such as bullfrogs). For breeding, they occur in forest sites with sunny still water habitat. Estivation and migration occur in adjacent riparian and moist upland habitats.	During reproductive periods, which occur spring – early summer	ORBIC record with low accuracy overlaps the southern portion of the Site Boundary, including Lindgren Creek. May venture into adjacent terrestrial habitat in wet weather, which is present in the Analysis Area.	Foraging, transient movements
Foothill yellow-legged frog <i>Rana boylei</i>	SOC	SC	Occurs in a variety of rocky, perennial streams in a variety of woodland and forest habitats, scrub, chaparral, and wet meadows. Typically found from sea level to 6,370 feet in elevation.	During reproductive periods, which occur spring – early summer	Due to limited suitable habitat within the Analysis Area, there is a low likelihood of occurrence. May venture into adjacent terrestrial habitat in wet weather. Therefore, there is the potential for this species to occur within the Analysis Area.	Foraging, transient movements

Common Name	Federal Status ¹	State Status ²	Expected Habitats ³	Sensitive Period ³	Observed or Expected Occurrence within Analysis Area ³	Potential Use of Habitat Within the Analysis Area ³
Columbia torrent salamander <i>Rhyacotriton kezeri</i>	None	S	Coastal coniferous forests in small, cold mountain streams and spring seepages. Larvae often occur under stones in shaded streams. Adults also inhabit these streams or streamsides in saturated moss-covered talus, or under rocks in splash zone. Primarily in older forest sites; requires microclimatic and microhabitat conditions that generally exist only in older forests.	During reproductive periods, which occur spring – early summer	Due to very limited suitable habitat within the Analysis Area, there is a low likelihood of occurrence. Nevertheless, these aquatic salamanders may venture into adjacent terrestrial habitat in wet weather. Therefore, there is the potential for this species to occur within the Analysis Area.	Foraging, transient movements
Southern torrent salamander <i>Rhyacotriton variegatus</i>	None	S	Shallow, cold-water stream, seeps and springs found in mature, closed-canopy forests. Typically occur in water sources with loose, coarse bottom and shelter between cobble-sized rocks. They can occur from sea level to 4,900 feet in elevation	During reproductive periods, which occur August – early spring.	Due to very limited suitable habitat within the Analysis Area, there is a low likelihood of occurrence. Nevertheless, these aquatic salamanders may venture into adjacent terrestrial habitat in wet weather. Therefore, there is the potential for this species to occur within the Analysis Area.	Foraging, transient movements
Fish						
Pacific lamprey <i>Lampetra tridentate</i> (<i>Entosphenus tridentatus</i>)	SOC	S	Anadromous species that migrates from the Pacific Ocean to spawning habitat. Associated spawning habitat includes stream riffles with sand, gravel or rock bottom depressions. Ammocetes (larval lamprey) associated with clear stream eddies with settled mud, silt, and sand.	During spawning, which may occur spring – summer	Mapped to occur in Lindgren Creek and Nehalem River.	Rearing, migrating, and spawning
Western brook lamprey <i>Lampetra richardsoni</i>	SOC	S	Nonparasitic freshwater species that does not migrate to the ocean to feed. After transforming into a 5–6 inch adult, it spawns and dies in its freshwater stream without feeding. Ammocoetes reside in silt and fine sediment in slow water habitats of creeks and small rivers for up to 6 years.	During spawning which occurs March – June	Assumed to occur in coastal streams throughout the Analysis Area.	Rearing, spawning
Steelhead (Southwest Washington ESU, winter run) <i>Oncorhynchus mykiss</i>	None	SC	Migrates between freshwater breeding and marine nonbreeding habitats (as defined by NMFS 1996, this population does not include nonanadromous forms).	During spawning, which usually occurs in spring	Mapped to occur in Lindgren Creek and Nehalem River.	Rearing, migrating
Steelhead (Oregon Coast ESU, summer run) <i>Oncorhynchus mykiss</i>	SOC	S	Migrates between freshwater breeding and marine nonbreeding habitats (as defined by NMFS 1996 this population does not include nonanadromous forms)	During spawning which usually occurs in spring	Mapped to occur in Lindgren Creek and Nehalem River.	Rearing, spawning
<div>1. Federal Status: SOC = Species of Concern; BCC = Bird of Conservation Concern; T = Threatened; E = Endangered</div> <div>2. Oregon Status: SV = State Sensitive—Vulnerable; SC = State Sensitive—Critical</div> <div>3. Primary sources include: AmphibiaWeb 2023, Birds of the World 2023, CaliforniaHerps 2023, Csuti et al. 2001, Kostow 2002, Jones et al. 2005, Leonard et al. 1993, Marshall et al. 2003, NatureServe 2023, ORBIC 2019, ORBIC 2023, Pletcher 1963, PSMFC 2012, USFWS 2021, Wildlife Explorer 2023. The occurrence locations provided by ORBIC are from a variety of sources that vary in accuracy and precision. Because some ORBIC records, particularly older records, have a high level of uncertainty and poor accuracy, some occurrence locations are represented by large polygons in order to reflect this lack of precision. These polygons are sometimes more than one mile in diameter around a single occurrence location, and do not necessarily reflect the actual location of the sensitive species. As a result, the ORBIC occurrence information was used as a rough approximation of occurrence that was informed by other resources as well as the results of habitat surveys and incidental observations.</div>						

4.2 Site-Specific Issues Identified by ODFW

No site-specific issues have yet been identified by ODFW to be addressed in Exhibit P.

5.0 Baseline Survey of Habitat Use by State Sensitive Species – OAR 345-021-0010(1)(p)€

(E) A baseline survey of the use of habitat in the analysis area by species identified in (D) performed according to a protocol approved by the Department and ODFW;

Project surveys documented one state sensitive species, olive-sided flycatcher, in the Analysis Area. The olive-sided flycatcher is a state sensitive species (ODFW 2021) as well as a Bird of Conservation Concern (BCC; USFWS 2021) and a Conservation Strategy Species (OCS 2016). Details on the survey methodology are summarized in Section 2. Additional details on the methods, as well as the results, are provided in Attachment P-1.

6.0 Description of Potential Adverse Impacts – OAR 345-021-0010(1)(p)(F)

(F) A description of the nature, extent and duration of potential adverse impacts on the habitat identified in (B) and species identified in (D) that could result from construction, operation and retirement of the proposed facility;

Project construction would result in both permanent and temporary impacts to wildlife and their habitats. A detailed description of the actions associated with construction of the Project can be found in the Project Description section of this application. Vegetation management and other activities associated with Project maintenance are described below.

Permanent impact areas are those that will be occupied by a permanent structure or otherwise used for the life of the Project; these areas will not be restored to pre-Project conditions. Permanent impacts will result in some Category 3 (Category 4 westside lowland conifer-hardwood forest that falls within West Side Big Game Year-Round Major Habitat) habitat being converted to Category 6 habitat.

Temporary impact areas are those areas that would be disturbed during construction activities but would be restored and revegetated as appropriate. On forested timber lands, trees will not be allowed to regrow within 5 feet on either side of the pipeline, although grasses, forbs, and shrubs would be encouraged in this area. Although this condition would be maintained for the life of the Project, this is not considered a permanent impact because natural tree-spacing in old-growth Douglas-fir (*Pseudotsuga menziesii*) stands, as well as target spacing in commercial Douglas-fir timberlands is typically 10 to 12 feet (Huff et al. 2020, Smith and Reukema 1986, Winter et al. 2002).

6.1 Potential Impacts to Fish and Wildlife Habitat

This section describes potential Project impacts to fish and wildlife habitat from construction and operation of the Project. Many of these impacts will be avoided and/or minimized as described in Section 7. Impacts that cannot be avoided or minimized will be mitigated for as described in Section 7.

Potential direct construction impacts include temporary habitat loss, and habitat fragmentation. Potential indirect impacts of construction to fish and wildlife habitat include increased potential for invasion of noxious weeds into the right-of-way and adjacent habitats. Disturbance associated with Project construction and operation is not expected to permanently impact fish and wildlife habitat. Disturbance is discussed in Section 6.2 under potential impacts to state sensitive species. Impacts by habitat category, and specifically to ODFW-designated West Side Big Game Year-Round Peripheral Habitat and Year-Round Major Habitat, are described below.

6.1.1 Potential Impacts by Habitat Type and Category

Table P-5 provides the number of acres proposed to be temporarily or permanently impacted by the Project by habitat type, sub-type, and category.

The acres of impacts listed in Table P-5 correspond to the description of the impact areas above. Final habitat categories listed in Table P-5 reflect overlap with ODFW-mapped big game habitats, and preliminary habitat categories reflect field-mapped habitats categorized based on current vegetative condition. NWN will minimize and mitigate for impacts that cannot be avoided, as described in Section 7 and the Habitat Mitigation Plan (Attachment P-2). NWN will use Horizontal Directional Drilling (HDD) or micrositing of the pipeline to limit Project impacts to the maximum extent practicable.

6.1.1.1 Category 3 Habitat

No permanent impacts will occur in field-mapped Category 3 habitats. A small amount (0.02 acre) of temporary impacts to Category 3 habitats will occur in westside lowland conifer-hardwood forests, emergent wetlands, and shrub-scrub wetlands. Additionally, the Project is located within ODFW West Side Big Game Year-Round Major Habitat, which is considered Category 3 habitat wherever it is mapped (Figure P-4).

6.1.1.2 Category 4 Habitat

Potential impacts to Category 4 habitat include permanent and temporary impacts. Permanent impacts are confined to westside lowland conifer-hardwood forest. The largest potential temporary impact to Category 4 habitat would also be to westside lowlands conifer-hardwood forest. Impacts to Category 4 westside lowland conifer-hardwood forest are generally Category 4 working timber lands. The majority of these areas are currently in a cleared state, having been harvested within the last five years. The estimated 0.5 acres of impacts to riparian habitat is mapped along the mainline road where the powerline replacement would occur. There are two locations where ephemeral streams fall within the impact area; and they will be matted if they cannot be avoided. Other

Category 4 habitats with temporary impacts are: irrigated pastures and hay meadows; ephemeral streams; and westside riparian forest. Additionally, the Project is located within ODFW West Side Big Game Year-Round Peripheral Habitat, which is considered Category 4 habitat wherever it is mapped.

6.1.1.3 Category 6 Habitat

Potential impacts to Category 6 habitat include permanent and temporary impacts. Permanent Category 6 impacts are confined to urban and mixed environs. The largest potential temporary impact to Category 6 habitat would also be to urban mixed environs. Other Category 6 habitats with potential temporary impacts are: agricultural, pasture, and mixed environs including irrigated pastures and hay meadows as well as orchards, vineyards, wheat fields, other row crops, or irrigated poplar plantations.

Table P-5. Proposed Impacts by Habitat Category and Type

Final Habitat Category	Preliminary Habitat Category	Habitat Type-Subtype ¹	Permanent Impact	Temporary Impact
3	3	Upland Forests and Woodlands- Westside Lowlands Conifer-Hardwood Forest	–	0.004
		Wetlands- Emergent Wetlands	–	0.01
		Wetlands- Scrub-Shrub Wetlands	–	0.005
	4	Agriculture, Pasture, and Mixed Environs- Irrigated Pastures and Hay Meadows	–	5.55
		Open Water - Lakes, Rivers, Streams- Ephemeral Streams	–	0.01
		Upland Forests and Woodlands- Westside Lowlands Conifer-Hardwood Forest	26.90	27.55
Category 3 Final Total			26.90	33.13
4	4	Agriculture, Pasture, and Mixed Environs- Irrigated Pastures and Hay Meadows	–	0.24
		Open Water - Lakes, Rivers, Streams- Ephemeral Streams	–	–
		Riparian Forest and Shrubland Complexes- Westside Riparian	–	0.50
		Upland Forests and Woodlands- Westside Lowlands Conifer-Hardwood Forest	–	12.59
	6	Agriculture, Pasture, and Mixed Environs- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations	–	5.26
Category 4 Final Total			–	18.58
6		Urban and Mixed Environs- Urban and Mixed Environs	0.83	11.98

Final Habitat Category	Preliminary Habitat Category	Habitat Type-Subtype ¹	Permanent Impact	Temporary Impact
Category 6 Final Total			0.83	11.98
Grand Total			27.73	63.69
Note: Totals in this table may not be precise due to rounding.				
1. Only impacted Habitat Types-Subtypes present within the proposed micrositeing corridor are represented.				

6.2 Potential Impacts to State Sensitive Species

This section discusses potential impacts to state sensitive species not addressed in Exhibit Q. While adverse impacts to bald eagles (*Haliaeetus leucocephalus*) are not expected due to construction and operation of the Project, bald eagles are addressed briefly in this document as a species of concern protected under the Bald and Golden Eagle Protection Act (BGEPA), even though they are not state sensitive species. Potential impacts common to all species are discussed first, followed by a discussion of potential species-specific impacts by taxonomic group (i.e., mammals, birds, amphibians and reptiles, and fish). Within each discussion of potential impacts, direct, indirect, temporary, and permanent potential impacts are addressed, as appropriate.

Table P-6 identifies potential impacts specific to each state sensitive species resulting from Project construction and operation, and the overall extent of these impacts. The Project, with implementation of avoidance and minimization measures described in Section 7.1, is not likely to cause a significant impact to any state sensitive species. As the intent of the ODFW Sensitive Species List is to prevent species from declining to the point of qualifying as threatened or endangered, significant impacts are impacts that would result in a species qualifying for listing under the Oregon Endangered Species Act. To better describe Project impacts, NWN has used the terms negligible, minor, moderate, and significant to describe the extent of impacts to state sensitive species. Negligible impacts would not be detectable and would have no discernible effect; minor impacts would be slightly detectable but would not be expected to have an overall effect; moderate impacts would be clearly detectable and could have an appreciable effect; and significant impacts would have a substantial, highly noticeable effect. The extent of impact discussions below considers avoidance, minimization, and mitigation.

The Project would result in up to 27.7 acres of permanent disturbance and 63.7 acres of temporary disturbance. From a landscape perspective, this area constitutes a relatively small amount of upland forest and woodland habitat that are actively managed for timber or agricultural production and are exposed to periodic cycles of clearing and mechanized activity. As described in the Division 27 document, the existing right-of-way will be utilized to the extent possible, no new roads are proposed, and all temporary impact areas will be restored following construction. The only restrictions on the pipeline corridors are a 10-foot-wide zone over the pipeline within which trees will not be allowed to become established. This is not considered a permanent impact because natural tree-spacing in old-growth Douglas-fir (*Pseudotsuga menziesii*) stands, as well as target spacing in commercial Douglas-fir timberlands is typically 10 to 12 feet (Huff et al. 2020, Smith and

Reukema 1986, Winter et al. 2002). HDD will be used to avoid impacts to sensitive resources, namely crossing of Lindgren and Lyons creeks. The linear configuration of the Project means that the impacted habitat is adjacent to similar habitat capable of providing refuge for species displaced by the Project. Individuals may be either temporarily displaced by the Project because of avoiding construction disturbance, or permanently displaced because of habitat conversion in the 27.7 acres of permanent impact. Because the amount of habitat affected by the Project is small on a landscape scale and the width of the linear corridor is narrow and only has associated temporary impacts, most displacement and habitat-related impacts are expected to be minor.

6.2.1 Construction

6.2.1.1 Potential Impacts Common to all Species

Direct Mortality

Operation of construction equipment and Project vehicles could result in some fatalities of individual animals that are unable to move out of the way. Traffic volume would be temporarily increased above normal levels during construction, increasing the potential for direct mortality. However, this impact is expected to be minor, as most wildlife will be able to move away when disturbance begins. Exceptions to this assumption are discussed below by taxa and species where applicable. The increased risk of mortality resulting from collisions associated with construction equipment and traffic would be a temporary impact, as it would last only for the period of construction.

Disturbance

The presence of humans and machinery and the resulting construction-related noise have the potential to impact wildlife species. Direct disturbance could result from clearing of construction sites for Project components, including compressors and well pads, as well as clearing of the rights-of-way for the pipelines and temporary work areas such as boring pads, laydown areas, and pipe storage areas. In addition, construction, excavation, and boring activities associated with the installation of the pipeline and other Project facilities could cause disturbance. These clearing and construction activities could result in temporary avoidance by state sensitive species during construction and impact state sensitive species by affecting energy conservation and breeding behavior (including the care of young).

Noise disturbance could cause changes in the behavior of breeding adults, which could reduce breeding activity and/or juvenile survival. Noise disturbance could prompt wildlife to be more alert and spend less time feeding or courting. Such impacts on behavior could result in decreased fitness, loss of young, and a reduced chance of successful reproduction. The severity of the impact would depend on the timing, duration, and intensity of the disturbance as well as the distance from the activity to the affected species and the sensitivity of the individual to disturbance. However, noise disturbance is unlikely to impact any species outside when it occurs outside the species' sensitive period (i.e., during nesting, roosting, breeding, etc.). Avoidance and minimization measures designed to reduce the risk of disturbance to the extent practicable are described in Section 7.1. The

sensitive period for each state sensitive species with the potential to occur in the Analysis Area is listed in Table P-4. Project construction schedule is detailed in the Division 27 document.

Habitat Removal and Modification

Habitat removal and modification would occur from vegetation clearing during construction. Potential impacts to state sensitive species from the removal or modification of habitat can include decreases in survival, fitness, and reproductive success. However, habitat that would be removed or modified by the Project is dominated by commercial timber lands, which experience periodic habitat modification (harvest). Although the Project may hasten the clearing of the habitat, the habitat loss would occur at some point and the Project's impact is only temporary; non-forested habitats will be allowed to regrow over the buried pipeline, and in forested areas the area where trees will not be allowed to grow is narrower than the target spacing in commercial Douglas-fir timberlands (Huff et al. 2020, Smith and Reukema 1986). Therefore, the Project would be contributing minimal impacts to state sensitive species in the area, and those impacts are temporary except with respect to the removal of forest and conversion of habitat in the permanent impact areas.

Habitat Fragmentation and Edge Effects

Habitat fragmentation impacts result from the reduction in size of contiguous blocks of suitable habitat and are the indirect reduction in the effectiveness of the resulting habitat to support individual species following the removal of habitat. State sensitive species that require larger contiguous blocks of habitat to support life history requirements could be adversely impacted by habitat fragmentation by reducing habitat quality resulting in reduced survival, fitness, or reproduction.

Edge effects are an ancillary but important impact resulting from habitat fragmentation. These effects can change soil characteristics, alter nutrient cycling, and affect plant and animal communities (including increasing invasive species), as well as change wind, humidity, and light patterns (Murcia 1995). Compared to the interior of a forest, areas near edges receive more sunlight, have lower humidity, and in general are less buffered from daily fluctuations in temperature and humidity, favoring the establishment of a different vegetative community. The intensity of edge effects is correlated with differences in the adjacent habitat types. Edge effects from habitat fragmentation could adversely affect state sensitive species by lowering the quality of habitat beyond the cleared right-of-way edge, resulting in reduced survival, fitness, or reproduction for impacted individuals.

The extent to which edge effects are anticipated to impact specific species or taxa is discussed below, where applicable. However, habitat that would be removed or modified by the Project is dominated by commercial timber lands and agricultural lands which experience periodic habitat modification (harvest). While the Project may impact the timing of harvest, the habitat loss through harvest would occur at some point and the Project's impact is minor. Therefore, the Project would contribute minimal additional impacts to state sensitive species in the area, and those impacts are

temporary except with respect to the habitat fragmentation and edge effects associated with the removal of forest in the permanent impact areas.

Increased Predation and Competition

Many state sensitive species with the potential to occur in the Analysis Area are potential prey species. By creating a temporary new linear corridor through forested areas, species may traverse an open space that did not exist before, and this could result in an increased risk of predation by visual predators such as raptors.

Vegetation clearing in forested areas would render the habitat unsuitable for interior dwelling species, and resident species would be displaced to adjacent suitable habitat while the habitat recovers. Thus, clearing could potentially result in temporary increased competition for state sensitive species less adapted to edge or open habitats. These individuals would be placed in direct competition with individuals of the same species inhabiting the adjacent suitable habitat. This could indirectly result in decreased likelihood of survival, fitness, and reproductive success, as this would result in more individuals competing for the same limited resources. However, this scenario is only likely to occur to species with small home ranges or breeding territories (e.g., small mammals and herpetofauna), and, as noted above, this impact would be temporary. Species with larger home ranges are unlikely to be affected, as changes in habitat associated with any such individual would be small in comparison to its home range. Furthermore, as noted above, habitat modification would occur at some point due to the land use of the impacted areas, so Project contribution to these impacts would be minimal.

6.2.1.2 Mammals

State sensitive mammal species that may occur in the Analysis Area and that are addressed in this exhibit are limited to three species of bats and the red tree vole (*Arborimus longicaudus*; Table P-6). Although unlikely, bats and red tree voles could experience temporarily increased direct mortality risk during construction from the clearing of trees. Although they may be able to escape mortality caused by the felling of trees, disturbing bats and red tree voles during sensitive periods could affect energy conservation and temperature regulation as well as increase their risk of predation. In addition, if the altricial young of bats and red tree voles are present, they would not be able to move away from the construction area.

The largely temporary habitat modification and the resulting edge effect from Project construction is unlikely to impact species use of the Analysis Area. The existing habitat condition in the vicinity of the Analysis Area is a patchwork of habitat types and seral stages that will continue to evolve because of land management practices and natural processes, and the condition of this landscape mosaic will not be substantively changed because of Project construction.

Best Management Practices (BMP) will be used to minimize the potential impacts on state sensitive bat species (see Section 7).

6.2.1.3 *Birds*

Potential mortality of birds from collisions with construction equipment and vegetation clearing is expected to be low, as birds are expected to fly away from the area under construction. However, if construction is conducted during the breeding season, some direct mortality of eggs or chicks could occur through vegetation clearing and nest abandonment could occur due to construction disturbance. Thus, removal of nest trees or nesting habitat (e.g., snags with cavities that can support western bluebirds or purple martins) and nest disturbance are the Project impacts most likely to impact state sensitive bird species. BMPs will be used to minimize the potential impacts on nesting state sensitive bird species (see Section 7).

6.2.1.4 *Amphibians and Reptiles*

Amphibians and reptiles move into upland habitats adjacent to aquatic sites at certain times of the year, and particularly during rain events. Because amphibians and reptiles are relatively slow moving, they may be unable to avoid construction equipment or vehicles and thus could be directly impacted by the Project. Burrows, nests, or eggs within impact areas could be destroyed by equipment. The use of HDD at stream crossings will largely avoid the need for clearing of the riparian areas, reducing the potential for upland impacts to amphibians such as the northern-red legged frog. The removal of downed woody debris that some state sensitive amphibians require for survival could directly or indirectly impact some species. Project impacts to state sensitive amphibians and reptiles associated with the removal of woody debris are expected to be minor, as affected areas are managed as commercial timberland, which do not typically accumulate substantial amounts of woody debris due to management practices. Direct impacts of woody debris removal would include removal of decaying logs that provide cover for individuals; indirect impacts would include the removal of decaying logs that have the potential to provide habitat for individuals, but that are not being utilized at the time of construction.

All but one of the state sensitive amphibian and reptile species are aquatic or semi-aquatic, and stream ecosystem stresses such as sedimentation can significantly reduce stream dwelling amphibian densities (Welsch and Ollivier 1998). Therefore, impacts that increase sedimentation may temporarily or permanently reduce the number of individuals of a species that an aquatic habitat can support. However, permanent impacts to streams, wetlands, and riparian vegetation will be avoided, as described in Section 7, to ensure that impacts on state sensitive amphibian and reptile species will be minimized to the maximum extent practicable.

6.2.1.5 *Fish*

Sensitive fish that may occur in the Analysis Area and that are addressed in this exhibit occur in the Nehalem River and Lindgren Creek and are assumed to occur at scattered other locations within the Analysis Area (Figure P-5; Table P-4; ODFW 2024, StreamNet 2024). Two perennial streams, Lindgren Creek and Lyons Creek, will be crossed by the proposed subsurface powerline corridor. Stream impacts will be avoided through the use of HDD. The HDD procedure uses bentonite slurry, a non-toxic fine clay material, as a drilling lubricant. Bentonite is often used in farming practices, but fish and their eggs and other aquatic organisms can be smothered by the fine particles if

bentonite is discharged into waterways. Inadvertent release of bentonite is a potential concern when HDD is used under fish-bearing streams. Procedures to identify and respond to inadvertent release, thereby minimizing any potential impacts are described in the Inadvertent Return Response Plan (Attachment 2 to Division 27 document). The use of HDD at this crossing will largely avoid the need for clearing of riparian vegetation. Taking these factors and the BMPs described in Section 7 into consideration, direct impacts to fish-bearing streams will be avoided. Furthermore, most fish-bearing streams within the Analysis Area occur well outside of the Site Boundary. Therefore, indirect impacts with the potential to impact fish outside of the Site Boundary such as increased sedimentation due to erosion are expected to be negligible. BMPs used to minimize the risk of erosion while vegetation recovers are described in the 1200-C Erosion Control Permit obtained from the Oregon Department of Environmental Quality.

6.2.2 Operation

Project operation activities that could temporarily impact state sensitive species include pipeline inspection and maintenance activities, including periodic vegetation maintenance and environmental monitoring. Potential impacts are generally described below by taxa and summarized for state sensitive species in Table P-4.

6.2.2.1 Common to all Species

Direct Mortality

Some risk of direct mortality through collision with maintenance vehicles could exist during operation. However, pipeline inspections and maintenance activities will occur on foot, or an all-terrain vehicle (ATV) operated at low speed, minimizing the chance of collision. If pipeline repairs are required, large equipment such as an excavator may be necessary to perform work, which could increase the chance of collision. Vegetation clearing associated with Project maintenance will be limited to forested areas, as normal land use practices performed by landowners will control vegetation in agricultural areas. In addition, exposure to herbicides potentially used to control the growth of woody vegetation in the pipeline corridor, could injure state sensitive species. However, if herbicides must be used during maintenance activities (mechanical control would be preferred), they would be applied in accordance with all state and federal regulations, minimizing any impacts to species.

Disturbance

During the periodic maintenance and inspection, state sensitive species have the potential to be impacted by the presence of humans and vehicles or other equipment. The impacts resulting from the associated visual and auditory disturbance are expected to be minor, as the disturbance would occur infrequently and locally.

Vegetation Clearing

During Project operation, periodic vegetation maintenance will take place in a 10-foot corridor over the new pipeline within the forested portion of the pipeline corridor. As noted above, within agricultural areas, vegetation will be maintained through normal land use practices performed by landowners. Potential direct mortality associated with vegetation maintenance is discussed above. Because the 10-foot corridor is narrower than the tree spacing used in Douglas-fir commercial timberlands, the vegetation clearing activity within the forested areas will have no effect on the habitat.

Increased Predation

Because vegetation maintenance associated with the Project would only occur in the forested portion of the pipeline corridor and the tree spacing used in Douglas-fir commercial timberlands is wider than the 10-foot pipeline corridor, there would be no change in the habitat that would alter the predation risk for state sensitive species. As described above, the act of performing the vegetation maintenance or required repairs could result in the disturbance of state sensitive species, which could result in a short-term increased risk of predation. However, as activities likely to cause such effects would be infrequent and localized, the potential for increased predation associated with the Project is considered negligible.

6.2.2.2 Mammals

State sensitive mammal species that may occur in the Analysis Area and that are addressed in this exhibit are limited to three species of bats and the red tree vole. The risk of bats colliding with Project infrastructure is anticipated to be minimal as Project infrastructure consists of facilities that are below ground or small above-ground structures that should be detectable and easily avoided by bats. Potential mortality of bats and red tree voles from maintenance equipment and periodic vegetation maintenance is expected to be low, as adult bats can flee potentially disturbing activities. Although they may be able to escape mortality caused by the felling of trees, disturbing bats and red tree voles during sensitive periods could affect energy conservation and temperature regulation as well as increase their risk of predation. In addition, if altricial young are present, they would not be able to move away from the construction area; however, such an occurrence is expected to be a rare event.

6.2.2.3 Birds

The risk of birds colliding with Project infrastructure is anticipated to be minimal as Project infrastructure consists of facilities that are below ground or small above-ground structures that should be detectable and easily avoided by birds. Potential mortality of birds from maintenance equipment and periodic vegetation maintenance within the forested portion of the pipeline corridor is expected to be low, as adult birds can flee from potentially disturbing activities and all state sensitive bird species that breed within the Analysis Area use nesting habitat that would not occur within the pipeline corridor (e.g., snags, mature trees), and an avoidance buffer would be applied to all active nests.

6.2.2.4 Amphibians and Reptiles

No potential impacts specific to amphibians and reptiles resulting from Project operation were identified. See Section 6.2.2.1 for potential impacts to all species during Project operation, including amphibians and reptiles.

6.2.2.5 Fish

No potential impacts specific to fish resulting from Project operation were identified.

Table P-6. Potential Adverse Impacts to State Sensitive Species

Species	Potential Impacts	Extent of Impacts (Negligible, Minor, Moderate, or Significant)
<u>Bats</u> <i>Silver-haired bat, fringed myotis long-legged myotis</i>	<p>Mortality or injury resulting from collisions with construction equipment, although, bat species would likely move out of the right-of-way during construction and use adjacent available habitats, unless altricial young are present. Loss of potential roosting habitat.</p> <p>Disturbance during construction and periodic maintenance activities that could result in decreased fitness and reproductive success and/or increased mortality.</p>	<p>Minor</p> <p>Impacts to state sensitive bat species resulting from Project construction and operation are expected to be minor as the risk of disturbance at roost sites is low due to the relatively small impact area within potential roosting habitat.</p> <p>The risks of collision with Project equipment and Project infrastructure are minor and negligible, respectively.</p>
<i>Red tree vole</i>	<p>Mortality or injury resulting from interactions with construction equipment and loss of potential nesting habitat. However, the potential for red tree voles to occupy the timber lands within the impact area is low.</p> <p>Disturbance during construction and periodic maintenance activities that could result in decreased fitness and reproductive success and/or increased mortality.</p>	<p>Minor</p> <p>Impacts to red tree voles resulting from Project construction and operation are expected to be minor as the risk of disturbance at nesting sites is low due to the low probability of occurrence in active timber lands and relatively small impact area within potential nesting habitat.</p> <p>The risks of injury and mortality with Project equipment and Project infrastructure are minor and negligible, respectively.</p>

Species	Potential Impacts	Extent of Impacts (Negligible, Minor, Moderate, or Significant)
<u>Non-raptors</u> <i>Olive-sided flycatcher, caspian tern, purple martin, western bluebird, white-breasted nuthatch (slender billed nuthatch)</i>	<p>Habitat loss and modification, including temporary loss of foraging and breeding habitat in temporary impact areas.</p> <p>Displacement and/or disturbance as a result of construction activities.</p> <p>Collision with construction equipment and vehicles is unlikely as birds are expected to fly out of the way of construction equipment, and speed limits would be followed by construction vehicles.</p> <p>Potential loss of nests as a result of habitat removal during construction if vegetation clearing occurs during the bird breeding season.</p>	<p>Minor</p> <p>Impacts to non-raptor bird species are expected to be minor as direct mortality is expected to be rare and impacts to habitat will be minimized through the use of BMPs.</p> <p>As the Project impact areas along the pipeline corridor constitute a narrow gap within a landscape of similar habitats that will recover to the condition of the surrounding habitat, adjacent areas should be capable of providing refuge for bird species displaced by the Project temporarily, due to construction disturbance and clearing.</p>
<u>Raptors</u> <i>American peregrine falcon, arctic peregrine falcon, bald eagle</i>	<p>Foraging or roosting birds could experience visual or auditory disturbance as a result of Project construction.</p> <p>Direct mortality during construction is not expected as birds are expected to fly out of the way of construction equipment.</p> <p>The Project would not impact cliff nesting habitat for the American peregrine falcon and the arctic peregrine falcon is only present as a non-breeding migrant. Therefore, the Project will have no impacts on falcon breeding.</p> <p>The Project will impact tree nesting habitat for bald eagles, but impacts are expected to be minor due to prevalence of forest habitat in the surrounding area. Disturbance impacts would be avoided through the application of construction avoidance buffers for any active bald eagle nests during the sensitive period.</p>	<p>Minor</p> <p>Impacts to raptor species are expected to be minor. Direct mortality risk is expected to be low for all raptors, falcons are unlikely to nest within the Site Boundary due to lack of cliff nesting habitat, and an avoidance buffer would be applied to any active bald eagle nests during the sensitive period.</p>

Species	Potential Impacts	Extent of Impacts (Negligible, Minor, Moderate, or Significant)
<i>Western pond turtle</i>	<p>Impacts to aquatic habitats would be avoided by Project design when feasible, but construction adjacent to wetlands and waterways could cause direct mortality to adults migrating between nesting areas and overwintering areas, locally aestivating adults, and eggs and young overwintering in terrestrial nests.</p> <p>Construction could cause direct mortality to eggs and/or young. Periodic very low risk of vehicle collisions with adults or damage to nests during periodic ground inspections, required pipeline maintenance, and vegetation management.</p>	<p>Minor</p> <p>Impacts to the western pond turtle are expected to be minor as a result of the use of boring to avoid impacts to aquatic habitats to the extent practicable. The risk of collision with Project equipment is also expected to be low due to the short-term use of construction equipment within potentially suitable terrestrial habitats.</p>
<p><u>Frogs</u></p> <p><i>Coastal tailed frog, northern red-legged frog, foothill yellow-legged frog</i></p>	<p>It is assumed that most adult frogs will move out of the way of construction equipment and vehicles if encountered, but some mortality of frogs could occur. Impacts to riparian vegetation will be avoided, thereby minimizing the risk to areas most likely to harbor frogs, which use a variety of riparian and terrestrial habitat types near streams.</p> <p>Periodic ground access to monitor, inspect the pipelines, or perform maintenance could disturb frogs if present, but frogs are expected to avoid collision with Project vehicles.</p>	<p>Minor</p> <p>Due to BMPs which will avoid most impacts to aquatic habitats used by frogs, impacts are expected to be minor. There is a risk of unavoidable impacts to habitat or direct mortality during construction. However, construction impacts are not expected to have more than temporary, minor adverse effects on frogs, and impacts to frogs during Project operation are expected to be negligible.</p>
<i>Western toad</i>	<p>Toads move more slowly than frogs and thus may not be able to move out of the way of equipment during construction, and some mortality could occur. Temporary habitat loss due to clearing may occur during construction.</p> <p>Impacts to breeding ponds are expected to be avoided during construction.</p>	<p>Minor</p> <p>Construction impacts are not expected to have more than a minor effect on the western toad due to the low risk of collisions with vehicles and machinery. Operation impacts are expected to be negligible, given the species' use of a wide variety of habitats, and Project avoidance of impacts to potential breeding ponds. BMPs and the infrequent need for pipeline maintenance, will minimize the risk of collision with Project vehicles during operations.</p>

Species	Potential Impacts	Extent of Impacts (Negligible, Minor, Moderate, or Significant)
<u>Salamanders</u> <i>Clouded salamander, Cope's giant salamander, Del norte salamander, Columbia torrent salamander, Southern torrent salamander</i>	<p>Salamanders move slowly and thus may not be able to move out of the way of equipment during construction, and some mortality could occur. Temporary habitat loss due to clearing may occur during construction.</p> <p>Impacts to aquatic breeding environments are expected to be avoided during construction and operation.</p>	<p>Minor</p> <p>Clearing of vegetation is not expected to have more than a minor effect on these species. Breeding and suitable aquatic habitat for the Columbia torrent salamander are expected to be avoided by avoiding impacts to aquatic habitats. There is a small risk of collision with Project equipment or vehicles during construction and a negligible risk of such mortality during Project operation.</p>
<u>Fish</u> <i>Pacific lamprey, western brook lamprey, coastal cutthroat trout (Southwestern Washington/Columbia River ESU), steelhead (Southwest Washington ESU, winter run; Oregon Coast ESU, winter run)</i>	<p>Boring technology will be used to avoid impacts to Lindgren and Lyons creeks where state sensitive fish could be present. If an inadvertent release were to occur, the resulting increased sedimentation could temporarily cause physiological stress, reduced food availability, and mortality. BMPs will be used to minimize the risk of indirect impacts due to sedimentation associated with construction activities within the Site Boundary extending to nearby fish-bearing streams.</p>	<p>Minor</p> <p>Impacts to fish habitat at the stream crossings are expected to be avoided. However, there is a minor risk of impacts in the case of an inadvertent release. Taking this risk into account, construction activities are expected to have minor impacts to state sensitive fish and their habitats. BMPs to be used during construction should make the risk of impacts associated with sediment released from construction activities within the Site Boundary affecting nearby fish-bearing streams negligible.</p>

7.0 Measures to Avoid, Reduce, or Mitigate Impacts – OAR 345-021-0010(1)(p)(G)

(G) A description of any measures proposed by the applicant to avoid, reduce, or mitigate the potential adverse impacts described in (F) in accordance with the general fish and wildlife habitat mitigation goals and standards described in OAR 635-415-0025 and a description of any measures proposed by the applicant to avoid, minimize, and provide compensatory mitigation for the potential adverse impacts described in (F) in accordance with the sage-grouse specific habitat mitigation requirements described in the Greater Sage-Grouse Conservation Strategy for Oregon at OAR 635-140-0000 through 635-140-0025, and a discussion of how the proposed measures would achieve those goals and requirements; and

This section identifies the avoidance, minimization, and mitigation measures that have been and will be implemented to avoid, minimize, and mitigate potential adverse impacts to fish and wildlife habitat and state sensitive species, and it describes how these measures will meet the ODFW habitat mitigation goals.

7.1 Avoidance and Minimization Measures

7.1.1 Pre-construction

Measures employed during Project design to avoid impacts to fish and wildlife habitat and state sensitive species included:

- During initial siting, a route was chosen that impacted primarily commercial timber lands.
- NWN iteratively adjusted the proposed infrastructure to minimize impacts to resources identified during Project surveys, including high quality habitats, wetlands and waters, and listed plants.
- NWN proposes to further avoid impacts to high quality habitats by using a boring technology to go below sensitive habitats.

7.1.2 During Construction

Measures employed during Project construction to avoid or minimize impacts to fish and wildlife habitat and state sensitive species include:

7.1.2.1 Construction Methods

HDD would be used to avoid impacts to Category 4 habitats. Inadvertent release of bentonite is a potential concern when HDD is used under fish-bearing streams. BMPs associated with avoiding inadvertent release of lubricant during HDD work are described in Exhibit H, Procedures to avoid and identify any potential impacts from inadvertent return, thereby minimizing any potential impacts are described in the Inadvertent Return Response Plan (in Exhibit H)

7.1.2.2 Speed Limits

To minimize the risk of collision with wildlife by Project vehicles, a speed limit of 25 mph will be enforced during all Project activities. NWN's construction contractors will be instructed to observe caution when driving and to maintain a driving speed of 25 mph or less within the Site Boundary to minimize harassment or collisions with wildlife. Speed limits will be posted throughout the Project construction area.

7.1.2.3 Mapping and Flagging Sensitive Resources

Prior to construction, NWN will develop a map set showing sensitive resources such as wetlands and threatened, endangered and/or candidate species occurrences. These maps will be kept on site during construction, and updated if additional information on sensitive resources is obtained during construction monitoring. These maps will show buffer zones and temporal restrictions of sensitive resources. Additionally, these sensitive resources will be marked with brightly colored pin flags or wooden lathes to ensure avoidance during construction. As described below under Environmental Training, construction personnel will be instructed to work outside the flagged and mapped sensitive resources.

Wetlands and streams within the construction area that are not proposed to be impacted during construction will be marked with brightly colored pin flags or wooden lathes prior to construction. Qualified biologists will work with the onsite manager and environmental inspectors to ensure that exclusion flagging is in place prior to construction in that area.

7.1.2.4 Construction Monitoring

NWN will require the construction contractors to comply with protective measures in accordance with NWN's requirements. Biologists will visit known state sensitive species occurrence sites before construction to map and flag sensitive resource areas. Environmental inspectors will be onsite daily to monitor permit compliance and oversee construction. In addition to onsite inspectors, NWN environmental personnel will also monitor permit compliance and construction.

7.1.2.5 Environmental Training and Sensitive Resource Awareness

NWN will provide an environmental training course for the construction contractors in order to ensure that the avoidance measures outlined in this section are employed. The environmental training course will include information on the sensitive species present onsite, exclusion flagging, permit requirements, BMPs, buffer distances, seasonal restrictions on the applicable resources, and other environmental issues. The environmental training course will also include familiarization with sensitive resource maps.

Construction personnel will be required to report any injured or dead wildlife detected while on the site to the qualified biologists during construction or during operations. Environmental training will cover proper protocol for responding to dead or injured wildlife.

All construction site personnel will be required to attend the environmental training in conjunction with hazard and safety training prior to working onsite. NWN's construction contractor will maintain a list of onsite construction personnel who have received the training.

7.1.2.6 Avian Protection

Raptors and other nesting birds have the potential to nest at the Project site. Therefore, NWN will avoid vegetation removal activities during the nesting bird season (February 1 to September 15). If these activities must occur during the nesting season, a preconstruction nesting bird survey will be conducted by a qualified biologist on and within 500 feet of the construction area. The survey will be conducted no more than 14 days prior to initiation of these activities and repeated between delays of greater than 14 days during the nesting season.

If an active nest is found, a minimum no-disturbance buffer of 50 feet around active nests of non-listed bird species and a minimum 200-foot no-disturbance buffer around active nests of non-listed raptors species will be flagged around the nest (this distance may be modified based on the bird species found). Ground-disturbing or vegetation removal activities may only occur within the buffer at the discretion of NWN, after the nesting season has ended, or after the nest is vacated and juveniles have fledged, as determined by the qualified biologist.

7.1.2.7 Weed Management

Prior to construction, all construction personnel will be instructed on the importance of controlling noxious weeds. As part of start-up activities, and to help facilitate the avoidance of existing infestations and identification of new infestations, NWN or their construction contractor will provide information and training to all construction personnel regarding noxious weed identification and management. During construction, best management practices will be implemented, including but not limited to flagging areas of noxious weed infestations, limiting vehicle access to designated routes, cleaning vehicles and equipment after performing work in noxious weed-infested areas and prior to performing work in non-infested areas, and using weed-free straw mulch. During and after construction, the area will continue to be managed in accordance with the Restoration of Temporary Impacts Plan (Attachment P-3) and NWN's Vegetation Control and Management Operating Requirements (Attachment P-4).

7.1.3 Post-Construction

Following construction, several BMPs will minimize potential impacts to fish and wildlife habitat and sensitive species. NWN will minimize the effects of erosion and sediment on fish and wildlife habitat through use of BMPs described in the 1200-C Erosion Control Permit that will be obtained from Oregon Department of Environmental Quality.

- After construction is complete, NWN will restore, revegetate, and return all impact areas to original contours and vegetation type.
- Within agricultural areas, vegetation management will be performed by the landowners and will be consistent with current land use practices.
- Within forested lands, the 10-foot pipeline corridor will be encouraged to re-vegetate with shrubs, forbs, and grasses. Briars and woody trees will be discouraged and controlled primarily through mechanical removal. Where required, herbicides may be used to control

vegetation. As described in Section 6.2, the 10-foot pipeline corridor is narrower than the spacing at which trees are maintained in Douglas-fir commercial timberlands, therefore, fish and wildlife habitat within temporary impact areas on forested lands will remain consistent with current condition.

- Annual inspections of the pipeline corridor will be conducted on foot or on ATV. NWN personnel conducting inspections or maintenance visits along the pipeline will observe caution to minimize impacts to fish and wildlife habitats and state sensitive species. If inspections are conducted on an ATV, inspectors will maintain a driving speed of 25 mph or less within the Site Boundary to minimize harassment or collisions with wildlife.
- Every 7 years NWN will conduct a pipeline integrity test. Should this test or annual inspections identify a repair need, NWN would use the pipeline corridor to access the site of the damaged pipe, then expose and repair the damaged pipe, with larger equipment such as an excavator. Appropriate BMPs to control erosion and potential impacts associated with the excavation would be used.
- NWN will minimize the use of herbicides to the extent practicable including avoiding their use in the vicinity of sensitive environments or species. If use of herbicides are required to control the growth of vegetation in the pipeline corridor, NWN will comply with all applicable federal and state regulations.

7.2 Mitigation

NWN will restore, revegetate, and return all temporary impact areas to original contours and vegetation type (Attachment P-3). Because all impacted areas are composed of agricultural lands, commercial timber lands, or other developed lands, restoration of these lands to original condition will meet the ODFW Habitat Mitigation Policy goals and will not decrease availability of these lands to wildlife species; thus, no further mitigation is needed. For the areas where permanent impacts would occur, the mitigation approach is further discussed in the Habitat Mitigation Plan (Attachment P-2).

7.3 Compliance with ODFW Mitigation Goals – OAR 635-415-0025

This section lists the ODFW mitigation goals in OAR 635-415-0025 and discusses how NWN's actions comply with these goals. Avoidance is the first goal for all habitat categories except Category 6.

7.3.1 Habitat Category 3

The mitigation goal is no net loss in either existing habitat quantity or quality.

NWN will avoid and minimize Category 3 habitat where feasible and mitigate unavoidable impacts. NWN will achieve the ODFW mitigation goal of no net loss of habitat quantity by restoring impacted Category 3 habitat to a condition similar to its pre-construction condition. NWN will achieve the

ODFW mitigation goal of no net loss of habitat through strategies developed in consultation with ODFW and Oregon Department of Energy.

7.3.2 Habitat Category 4

The mitigation goal is no net loss in either existing habitat quantity or quality.

NWN will avoid and minimize Category 4 habitat where feasible and mitigate unavoidable impacts. NWN will achieve the ODFW mitigation goal of no net loss of habitat quantity by restoring impacted Category 4 habitat to a condition similar to its pre-construction condition. NWN will achieve the ODFW mitigation goal of no net loss of habitat through strategies developed in consultation with ODFW and Oregon Department of Energy.

7.3.3 Habitat Category 6

The mitigation goal is to minimize impacts.

NWN will minimize impacts to Category 6 habitat by restoring impacted areas to pre-construction condition.

8.0 Monitoring Program – OAR 345-021-0010(1)(p)(H)

(H) A description of the applicant's proposed monitoring plans to evaluate the success of the measures described in (G).

NWN will conduct monitoring during construction. Biologists will visit known state sensitive species occurrence sites before construction to map and flag sensitive resource areas. Environmental inspectors will be onsite daily to monitor permit compliance and oversee construction. In addition to onsite inspectors, NWN environmental personnel will also monitor permit compliance and construction.

9.0 Conclusion

As part of the Project siting process, the fish and wildlife habitats within the Analysis Area were identified and categorized pursuant to OAR 635-415-0025. Based on survey results, no Category 1 habitat was identified in the Site Boundary and no impacts to Category 2 habitats are anticipated. For other habitat categories, habitat impacts will be mitigated consistent with OAR 635-415-0025.

Therefore, based on the information provided in this exhibit, there is sufficient evidence upon which the Council may find that the design, construction, and operation of the Project, taking into account the proposed mitigation measures, are consistent with the fish and wildlife mitigation goals and standards of OAR 635-415-0025. Accordingly, NWN demonstrates compliance with OAR 345-022-0060.

10.0 References

- AmphibiaWeb. 2023. Information on amphibian biology and conservation (web application). Berkley, California. AmphibiaWeb. Accessed August 22, 2023. <http://amphibiaweb.org>.
- Birds of the World. 2023. Edited by S. M. Billerman, B. K. Keeney, P. G. Rodewald, and T. S. Schulenberg. Cornell Laboratory of Ornithology, Ithaca, NY, USA. <https://birdsoftheworld.org/bow/home>.
- Brown, E. 1985. Management of Wildlife and Fish Habitats in Forests of Western Oregon and Washington. U.S. Department of Agriculture, Forest Service, Pacific Northwest Region, Portland, Oregon. 302 p.
- CaliforniaHerps. 2023. A guide to the amphibians and reptiles of California. <http://www.californiaherps.com/>.
- Csuti, B., T.A. O'Neil, M.M. Shaughnessy, E.P. Gaines, and J.C. Hak. 2001. Atlas of Oregon wildlife, 2nd ed. Oregon State University Press, Corvallis. 525 pp.
- EPA (Environmental Protection Agency). 2023. NHDPlus (National Hydrography Dataset Plus). <https://www.epa.gov/waterdata/nhdplus-national-hydrography-dataset-plus>.
- Huff, T., J. Holmberg, C. Landgren, and R. Fletcher. 2020. Establishing and managing forest trees in western Oregon. Oregon Forest Resources Institute. https://oregonforests.org/sites/default/files/2021-01/OFRI_WestsideForests_DIGITAL.pdf.
- Johnson, D.H. and T.A. O'Neil. 2001. Wildlife-Habitat Relationships in Oregon and Washington. Oregon State University Press, Corvallis. 736 pp.
- Jones, L.C., W.P. Leonard, and D.H. Olson. 2005. Amphibians of the Pacific Northwest. Seattle Audubon Society, Seattle. 227 pp.
- Kostow, K. 2002. Oregon Lampreys: Natural history, status, and analysis of management issues. Oregon Department of Fish and Wildlife, Portland, OR.
- Leonard, W.P., H.A. Brown, Jones, C. Lawrence, K.R. McAllister, and R.M. Storm. 1993. Amphibians of Washington and Oregon. Seattle Audubon Society, Seattle. 168 pp.
- Marshall, D.B., M.G. Hunter, and A.L. Contreras, eds. 2003. Birds of Oregon: a general reference. Oregon State University Press, Corvallis, OR. 768 pp.
- Murcia, C. 1995. Edge effects in fragmented forests: implications for conservation. Trends in Ecology and Evolution. 10:58–62.
- NatureServe. 2023. NatureServe Network Biodiversity Location Data accessed through NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. <https://explorer.natureserve.org/>.

- NOAA (National Oceanic and Atmospheric Administration.). 2023. National ESA Critical Habitat Mapper. Accessed August 22, 2023.
<https://www.fisheries.noaa.gov/resource/map/national-esa-critical-habitat-mapper>.
- OCS (Oregon Conversation Strategy). 2016. Strategy Species. Accessed August 22, 2023.
<https://oregonconservationstrategy.org/ocs-strategy-species/>.
- ODFW (Oregon Department of Fish and Wildlife). 2021. ODFW Sensitive Species list.
https://www.dfw.state.or.us/wildlife/diversity/species/docs/Sensitive_Species_List.pdf.
- ODFW. 2023a. Oregon guidelines for timing of in-water work to protect fish and wildlife resources (April 2023). <https://www.dfw.state.or.us/lands/inwater/2023%20Oregon%20In-Water%20Work%20Guidelines.pdf>.
- ODFW. 2023b. Natural Resources Information Management Program: Oregon fish life history timing tables.
<https://nrimp.dfw.state.or.us/DataClearinghouse/default.aspx?p=202&XMLname=42654.xml> Accessed January 2024.
- ODFW. 2024. Oregon Fish Habitat and Distribution Barriers.
https://nrimp.dfw.state.or.us/FHD_FPB_Viewer/index.html Accessed January 2024.
- ORBIC (Oregon Biodiversity Information Center). 2019. ORBIC Rare, Threatened and Endangered species of Oregon. Oregon Biodiversity Information Center.
<https://inr.oregonstate.edu/sites/inr.oregonstate.edu/files/2019-rte-book.pdf>.
- ORBIC. 2023. GIS data provided in response to data request for GIS data pertaining to listed, endangered, threatened, or special concern species occurring within Clatsop, Columbia, Tillamook, and Washington counties in Oregon. Oregon Biodiversity Information Center, Portland, Oregon.
- Pletcher, F.T. 1963. The life history and distribution of lampreys in the Salmon and certain other rivers in British Columbia, Canada. Master's thesis. University of British Columbia, Vancouver, B.C.
- PSMFC (Pacific States Marine Fisheries Commission). 2012. Salmon, rockfish, flatfish, and other fish of the Pacific Northwest. <https://www.psmfc.org/>.
- Smith, J.H.G. and D.L. Reukema. 1986. Effects of plantation and juvenile spacing on tree and stand development. In: Oliver, C.D., D.P. Hanley, and J.A. Johnson, eds. Douglas-fir: stand management for the future: Proceedings of a symposium; 1985 June 18–20; Seattle, WA. Contribution no. 55. Seattle: College of Forest Resources, University of Washington. 239–245. https://www.fs.usda.gov/pnw/pubs/journals/pnw_1986_smith001.pdf.
- StreamNet. 2024. StreamNet Mapper [web application]. StreamNet Program.
<https://www.streamnet.org/home/data-maps/sn-mapper/>.
- USFWS (US Fish and Wildlife Service). 2021. Birds of Conservation Concern 2021. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Migratory Birds, Falls Church, Virginia.

<https://www.fws.gov/sites/default/files/documents/birds-of-conservation-concern-2021.pdf>.

USFWS. 2023. National Wetlands Inventory Wetland Data. Accessed August 22, 2023.

<https://www.fws.gov/program/national-wetlands-inventory/google-earth>.

Welsch, H.H., Jr. and L.M. Ollivier. 1998. Stream amphibians as indicators of ecosystem stress: a case study from California's redwoods. *Ecological Applications*. 8(4):1118–1132.

Wildlife Explorer. 2023. Wildlife Viewer. Accessed August 22, 2023.

<https://oe.oregonexplorer.info/wildlife/wildlifeviewer/>.

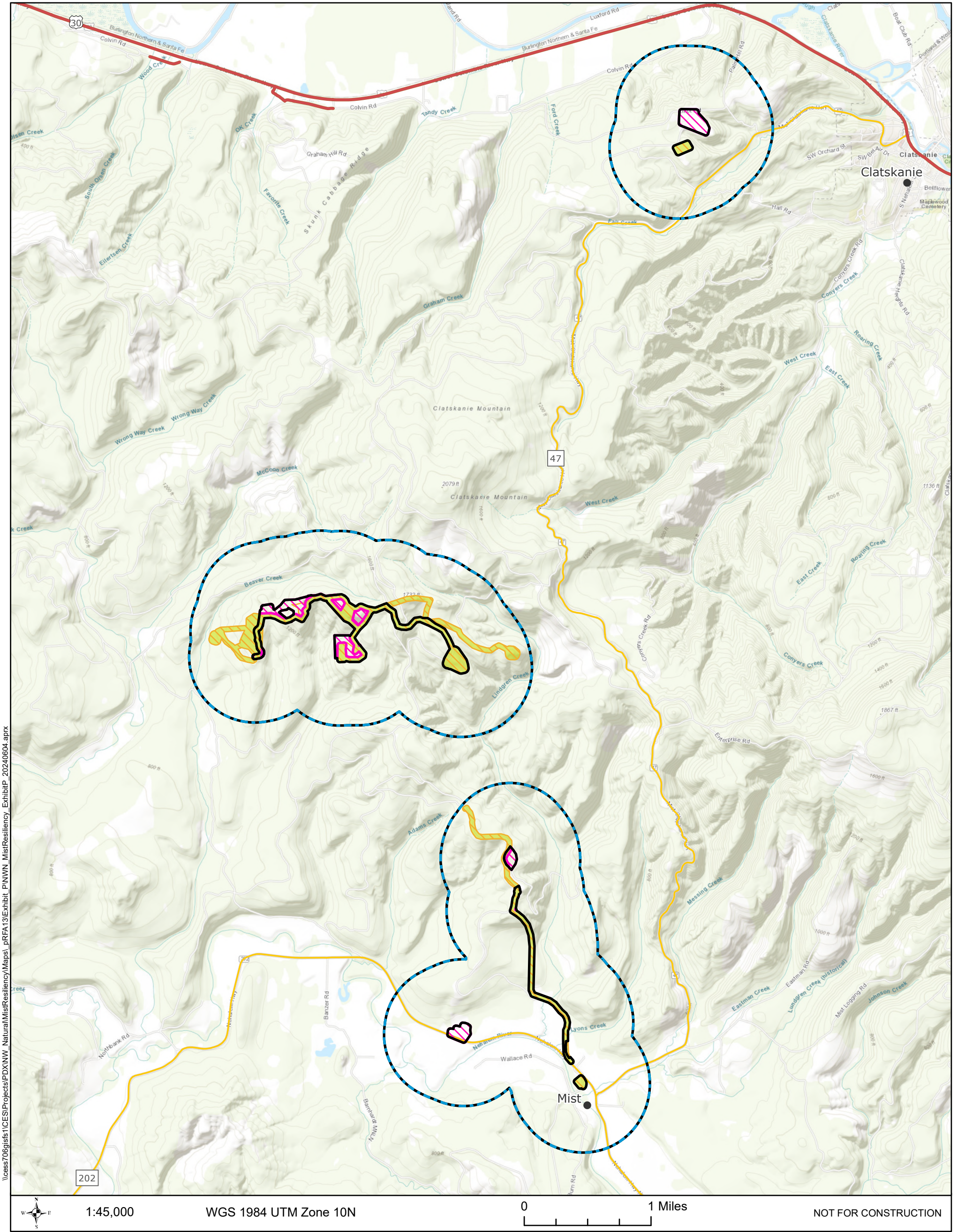
Winter, L.E., L.B. Brubaker, J.F. Franklin, E.A. Miller, and D.Q. DeWitt. 2002. Initiation of an old-growth Douglas-fir stand in the Pacific Northwest: a reconstruction from tree-ring records. *Canadian Journal of Forest Resources* 32: 1039-1056.

This page intentionally left blank

Figures

(Figure P-5 is confidential and submitted under a separate cover.)

This page intentionally left blank













I:\cscs\706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA\13\Exhibit_P1\NW_Natural\MistResiliency_ExhibitP_20240604.aprx

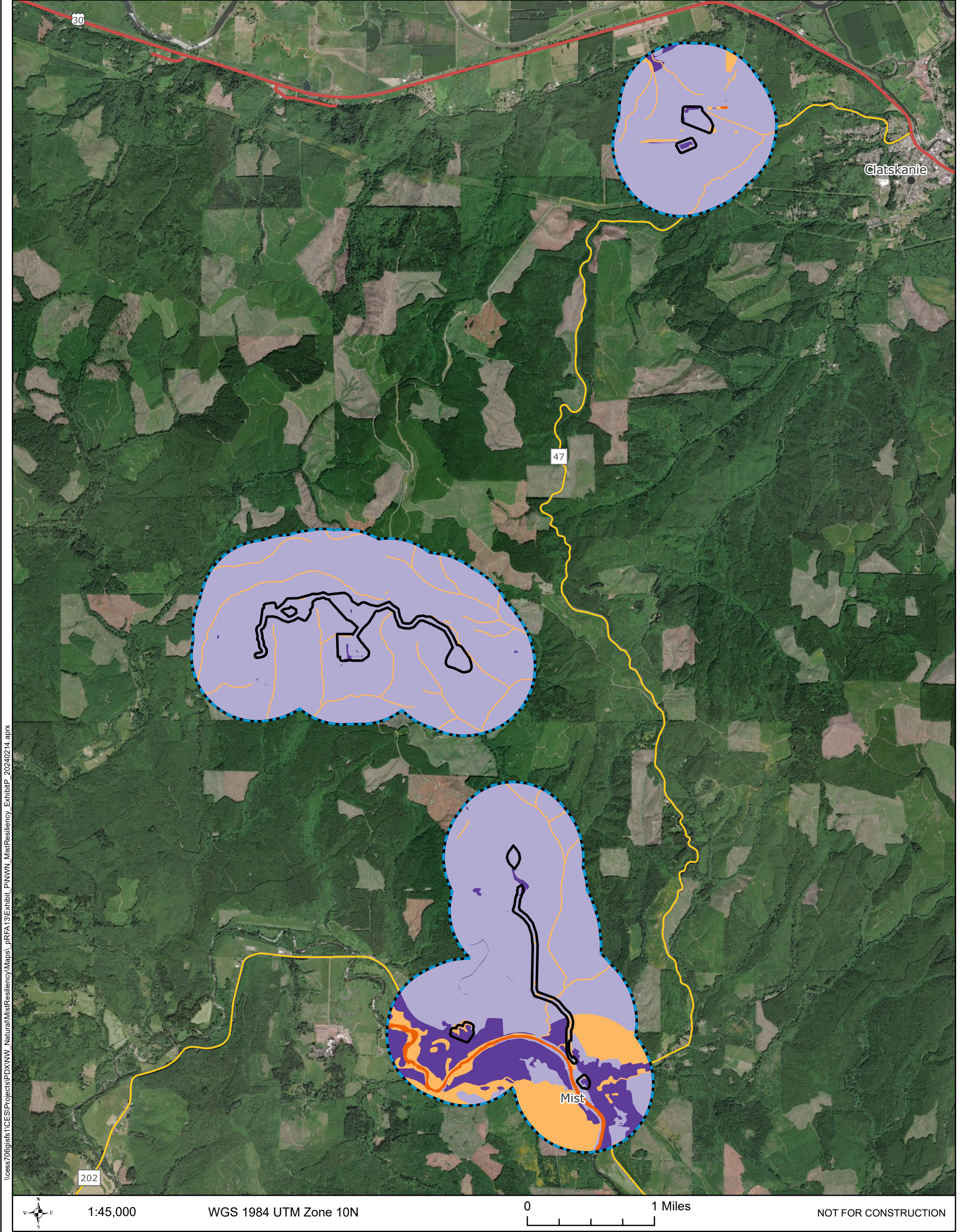
1:45,000

WGS 1984 UTM Zone 10N

01 Miles

NOT FOR CONSTRUCTION

<div>Mist Resiliency Project</div>	<div><div> Site Boundary</div><div> Analysis Area (0.5 mile Buffer)</div><div> 2022 Habitat Survey Area</div><div> 2023 Rare Plants Survey Area</div><div> 2024 Rare Plants Survey Area</div><div> City/Town</div><div> US Highway</div></div>	<div>State Highway</div>
<div>Figure P-1 Fish and Wildlife Survey Area and Analysis Area</div>		
<div>COLUMBIA COUNTY, OREGON</div>	<div><div> TETRA TECH</div><div> NW Natural</div></div>	
<div>Reference Map</div> <div></div>		



Mist Resiliency Project

Figure P-2
Preliminary
Habitat Categories
within the Analysis Area

COLUMBIA COUNTY, OREGON

Site Boundary

Analysis Area (0.5 mile Buffer)

City/Town

US Highway

State Highway

Preliminary Habitat Category

2

3

4

6

Reference Map

CANADA

WA

OR

CA

NV

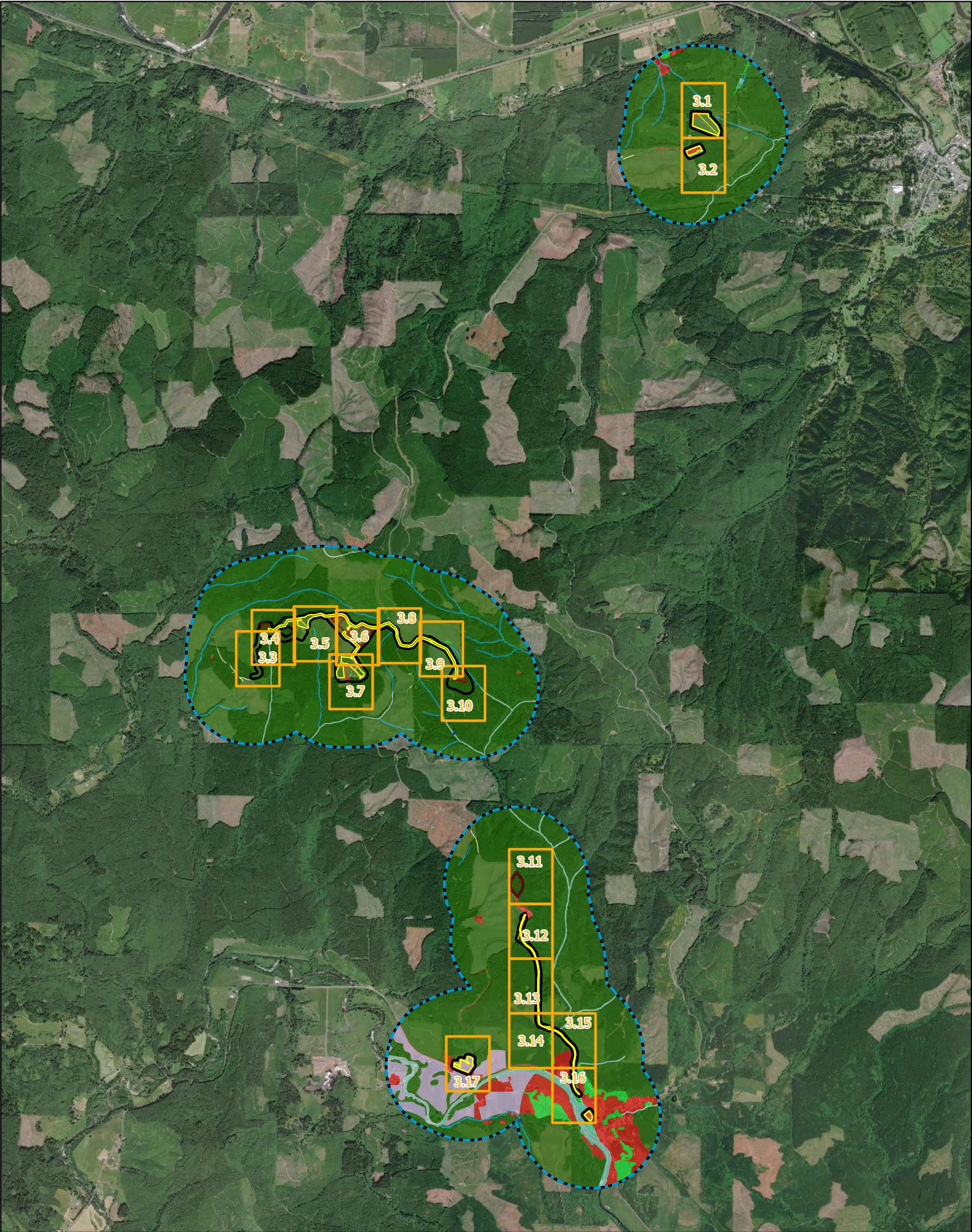
ID

MT

TETRA TECH

NW Natural

\\css706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA\13\Exhibit_P\NW_N_MistResiliency_ExhibitP_20240611.aprx



1:45,000

WGS 1984 UTM Zone 10N

0

1 Miles

NOT FOR CONSTRUCTION

Mist Resiliency Project

Figure P-3 Habitat Subtypes within the Analysis Area

COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Grid Index Feature
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands

- Forested Wetlands
- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs



Reference Map



\\cscs706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA13\Exhibit_P\NW_N_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

Figure P-3.1 Habitat Subtypes within the Analysis Area

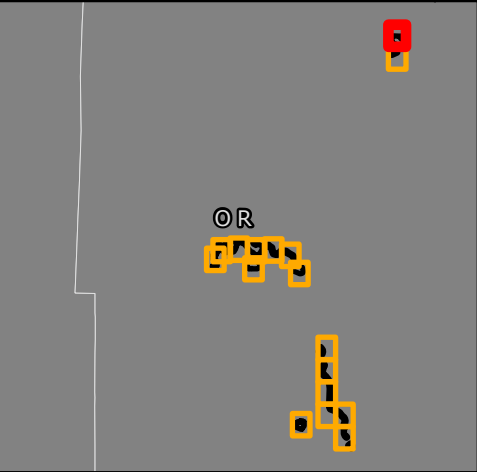
COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands
 - Forested Wetlands

- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs



Reference Map



\\cscs706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA13\Exhibit_P\WWN_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

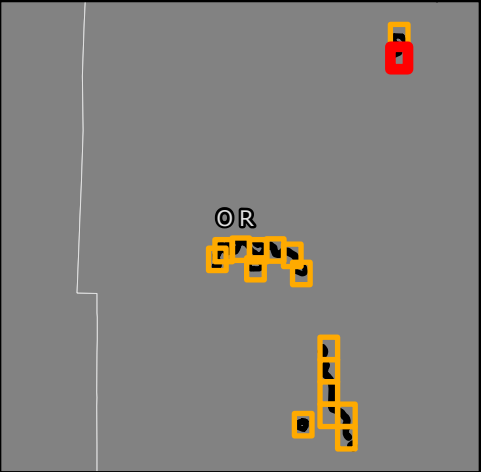
Figure P-3.2 Habitat Subtypes within the Analysis Area

COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands
 - Forested Wetlands

- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs

Reference Map



\\cscs706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA\13\Exhibit_P\NW_N_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

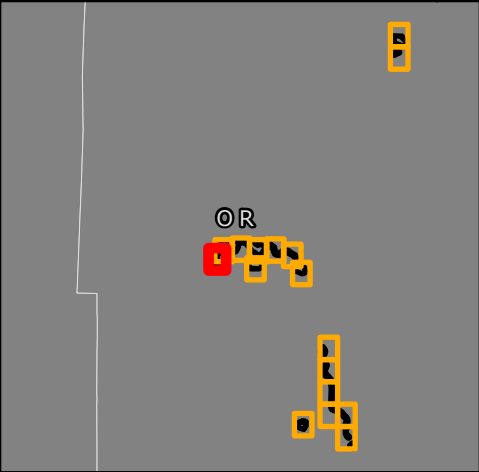
Mist Resiliency Project

**Figure P-3.3
Habitat Subtypes
within the Analysis Area**

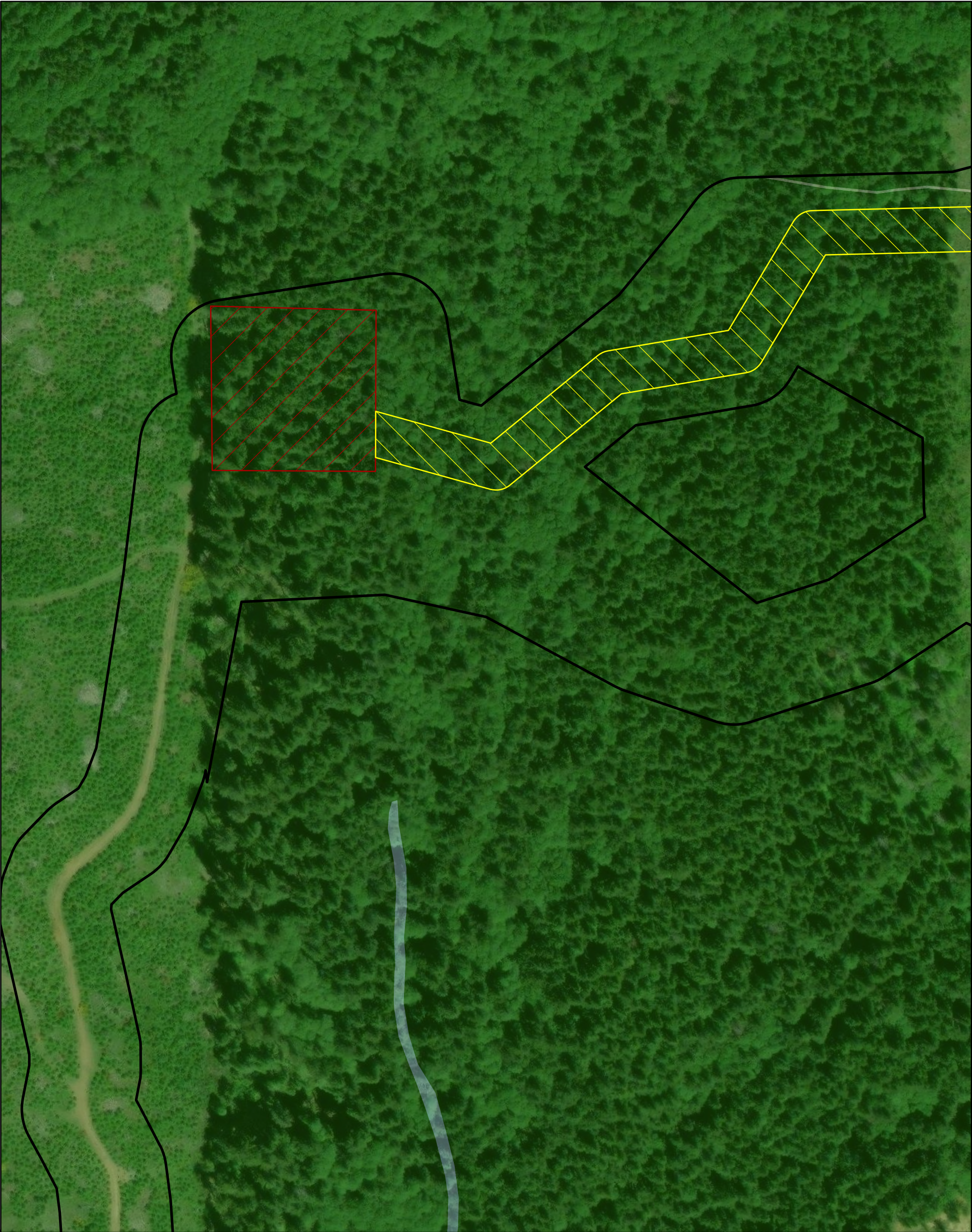
COLUMBIA COUNTY, OREGON

- | | |
|---------------------------------|--|
| Site Boundary | Scrub-Shrub Wetlands |
| Analysis Area (0.5 mile Buffer) | Ponds/Lakes |
| Permanent Impact | Westside Lowlands Conifer-Hardwood Forest |
| Temporary Impact | Westside Riparian |
| EFSC Habitat Subtype | |
| Ephemeral Streams | Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations |
| Perennial Streams | Irrigated Pastures and Hay Meadows |
| Intermittent Streams | Urban and Mixed Environs |
| Emergent Wetlands | |
| Forested Wetlands | |

Reference Map



\\cass706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA13\Exhibit_PWWN_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

Figure P-3.4 Habitat Subtypes within the Analysis Area

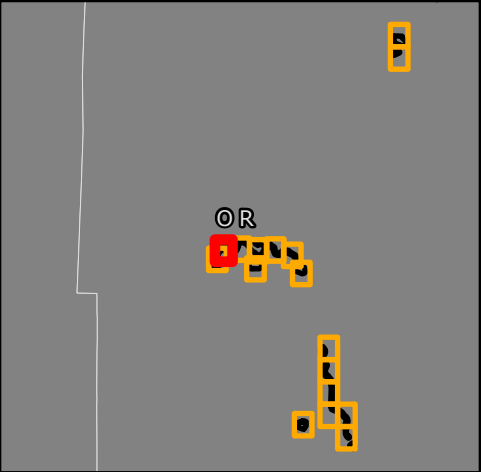
COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands
 - Forested Wetlands

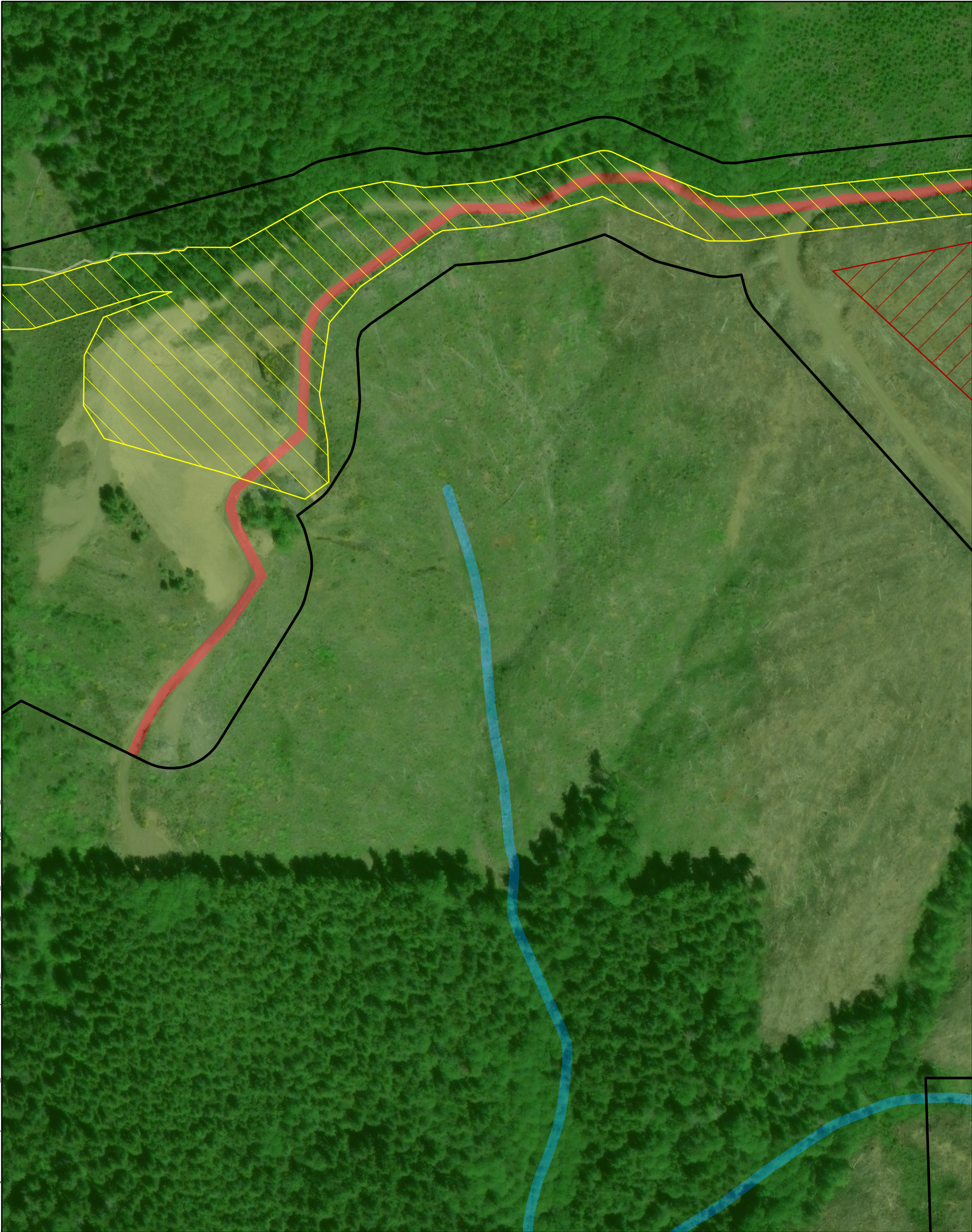
- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs



Reference Map



\\cscs706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA\13\Exhibit_P\WPNW_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

Figure P-3.5 Habitat Subtypes within the Analysis Area

COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands
 - Forested Wetlands

- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs

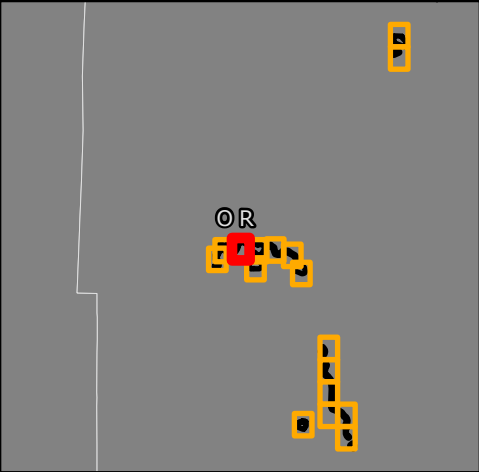


TETRA TECH

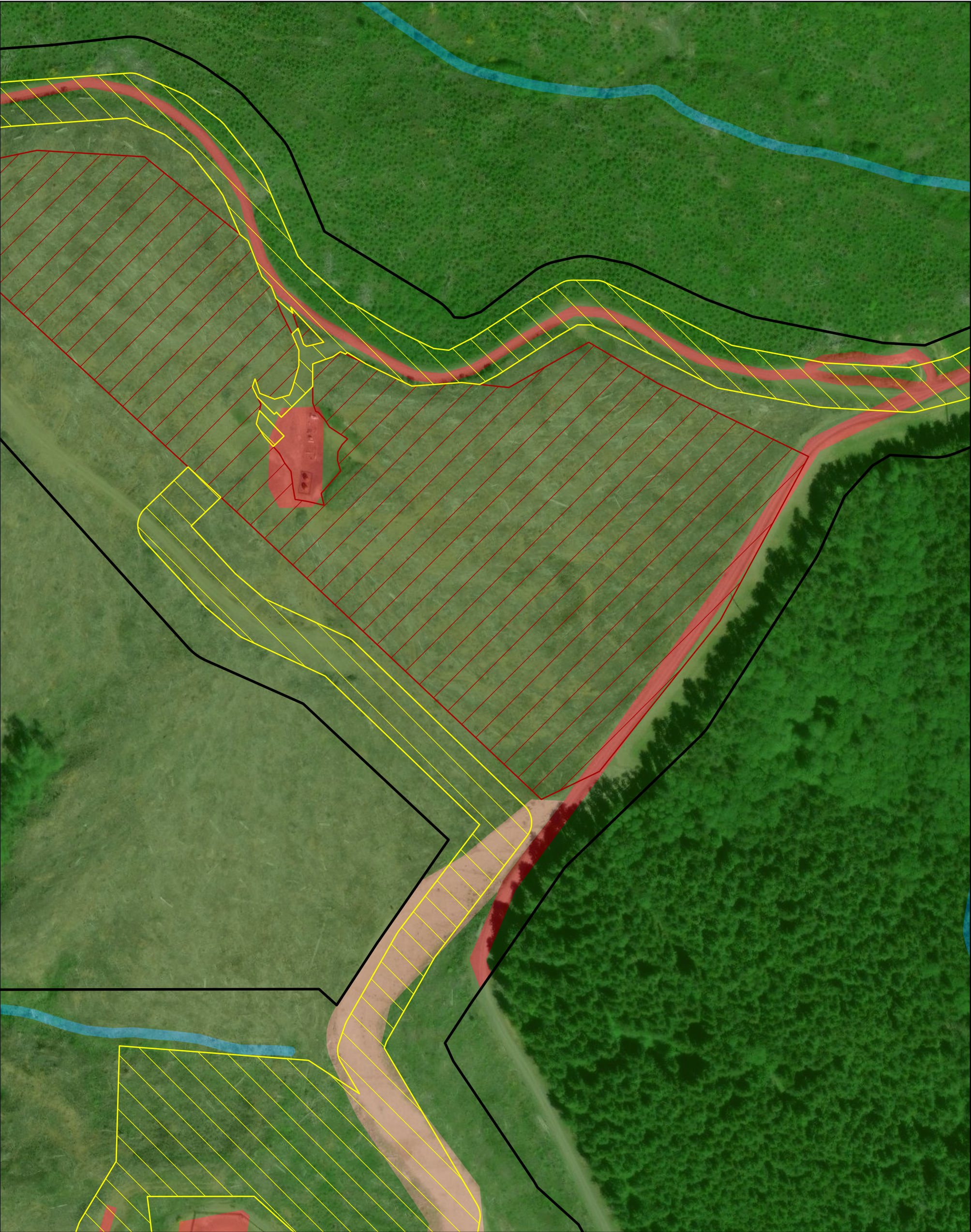



NW Natural

Reference Map



\\cscs706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_p\RA13\Exhibit_P\WWN_MistResiliency_ExhibitP_20240611.aprx

















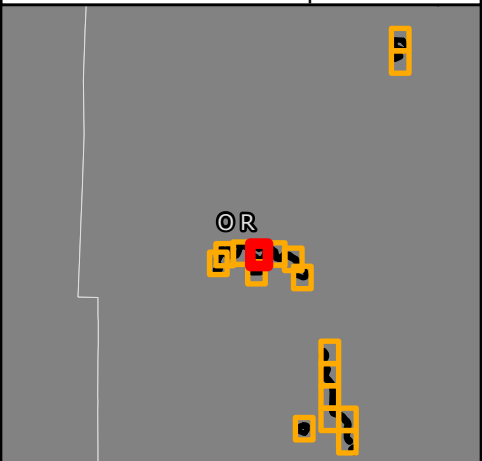




1:2,000

WGS 1984 UTM Zone 10N

0400 Feet

NOT FOR CONSTRUCTION

<div>Mist Resiliency Project</div>	<div><div> Site Boundary</div><div> Analysis Area (0.5 mile Buffer)</div><div> Permanent Impact</div><div> Temporary Impact</div><div>EFSC Habitat Subtype</div><div> Ephemeral Streams</div><div> Perennial Streams</div><div> Intermittent Streams</div><div> Emergent Wetlands</div><div> Forested Wetlands</div></div> <div><div> Scrub-Shrub Wetlands</div><div> Ponds/Lakes</div><div> Westside Lowlands Conifer-Hardwood Forest</div><div> Westside Riparian</div><div> Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations</div><div> Irrigated Pastures and Hay Meadows</div><div> Urban and Mixed Environs</div></div>	<div>Reference Map</div> <div></div>
<div>Figure P-3.6 Habitat Subtypes within the Analysis Area</div> <div>COLUMBIA COUNTY, OREGON</div>	<div><div> TETRA TECH</div><div> NW Natural</div></div>	

\\cscs706\gis\1\CES\Projects\PD\XNW_Natural\MistResiliency\Maps_pRFA13\Exhibit_P\WWN_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

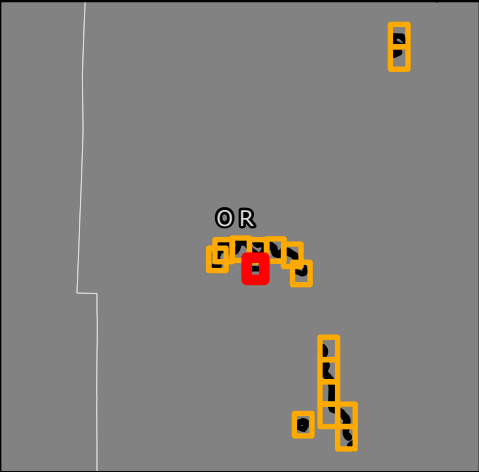
**Figure P-3.7
Habitat Subtypes
within the Analysis Area**

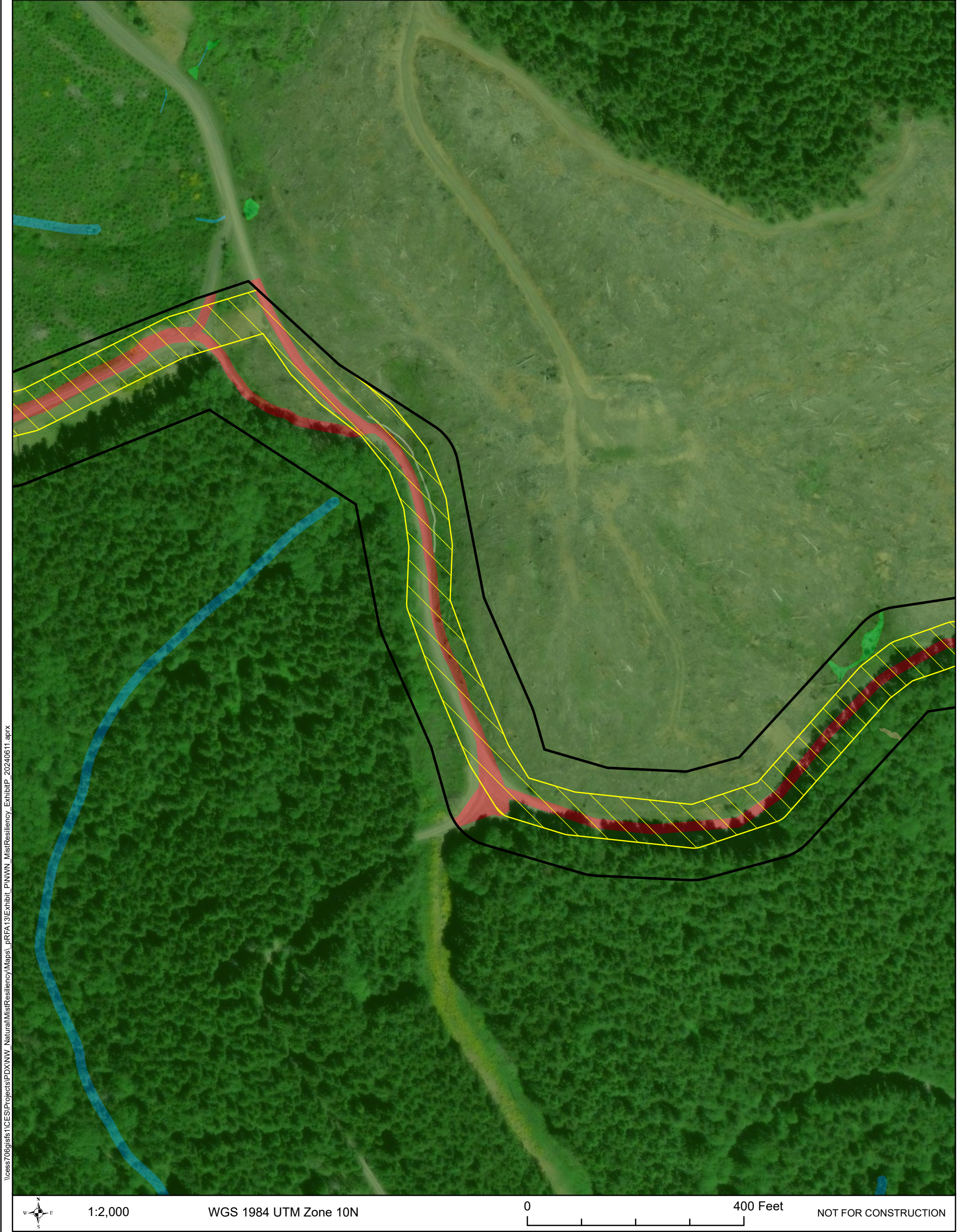
COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands
 - Forested Wetlands

- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs

Reference Map
















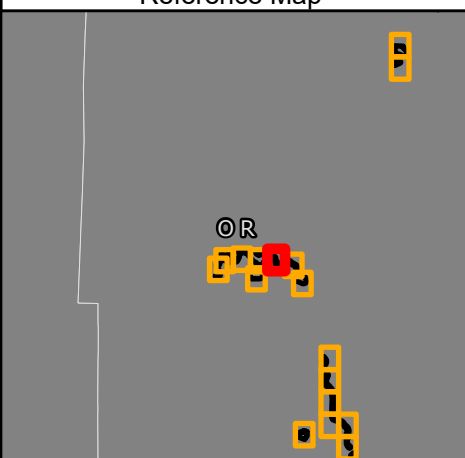












I:\cass706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA13\Exhibit_P\WWN_MistResiliency_ExhibitP_20240611.aprx



 1:2,000

WGS 1984 UTM Zone 10N

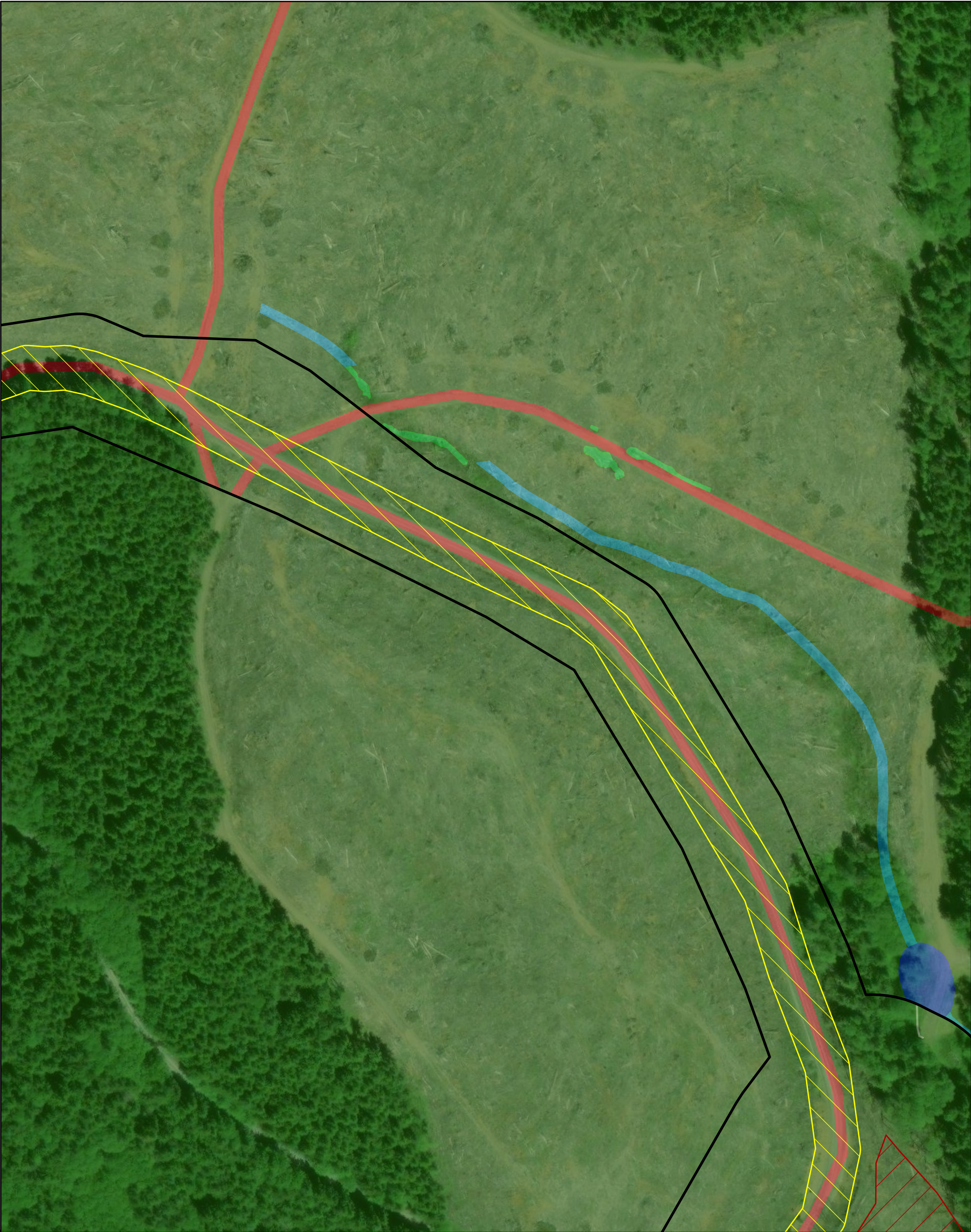
0 400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project	<div> Site Boundary</div> <div> Analysis Area (0.5 mile Buffer)</div> <div> Permanent Impact</div> <div> Temporary Impact</div>	<div> Scrub-Shrub Wetlands</div> <div> Ponds/Lakes</div> <div> Westside Lowlands Conifer-Hardwood Forest</div> <div> Westside Riparian</div> <div> Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations</div> <div> Irrigated Pastures and Hay Meadows</div> <div> Urban and Mixed Environs</div>	Reference Map 
Figure P-3.8 Habitat Subtypes within the Analysis Area COLUMBIA COUNTY, OREGON	EFSC Habitat Subtype <div> Ephemeral Streams</div> <div> Perennial Streams</div> <div> Intermittent Streams</div> <div> Emergent Wetlands</div> <div> Forested Wetlands</div>	<div> Scrub-Shrub Wetlands</div> <div> Ponds/Lakes</div> <div> Westside Lowlands Conifer-Hardwood Forest</div> <div> Westside Riparian</div> <div> Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations</div> <div> Irrigated Pastures and Hay Meadows</div> <div> Urban and Mixed Environs</div>	

\\cscs706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA\13\Exhibit_P\NW_N_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

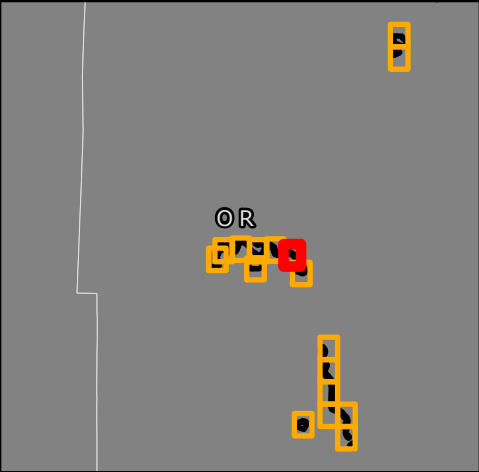
**Figure P-3.9
Habitat Subtypes
within the Analysis Area**

COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands
 - Forested Wetlands

- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs

Reference Map
















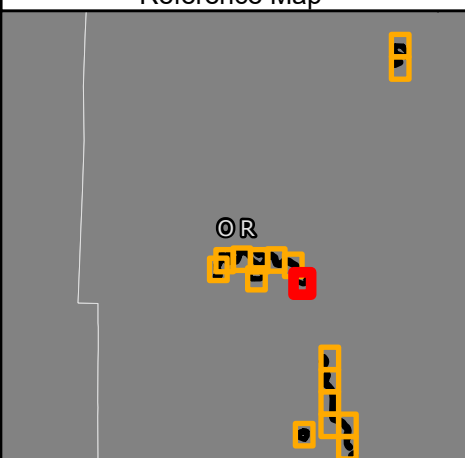







\\cscs706jgis1\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA13\Exhibit_P\NW_N_MistResiliency_ExhibitP_20240611.aprx

1:2,000

WGS 1984 UTM Zone 10N

0400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project	<div> Site Boundary</div> <div> Analysis Area (0.5 mile Buffer)</div> <div> Permanent Impact</div> <div> Temporary Impact</div>	<div> Scrub-Shrub Wetlands</div> <div> Ponds/Lakes</div> <div> Westside Lowlands Conifer-Hardwood Forest</div> <div> Westside Riparian</div> <div> Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations</div> <div> Irrigated Pastures and Hay Meadows</div> <div> Urban and Mixed Environs</div>	Reference Map 
Figure P-3.10 Habitat Subtypes within the Analysis Area	EFSC Habitat Subtype <div> Ephemeral Streams</div> <div> Perennial Streams</div> <div> Intermittent Streams</div> <div> Emergent Wetlands</div> <div> Forested Wetlands</div>		
COLUMBIA COUNTY, OREGON		 TETRA TECH  NW Natural	

\\cscs706\gis\1\CES\Projects\PD\XNW_Natural\MistResiliency\Maps_pRFA13\Exhibit_P\WWN_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

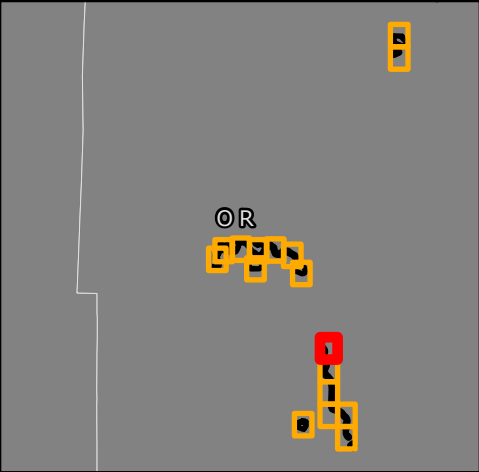
**Figure P-3.11
Habitat Subtypes
within the Analysis Area**

COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands
 - Forested Wetlands

- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs

Reference Map



TETRA TECH



NW Natural

\\cscs706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA13\Exhibit_PWWN_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

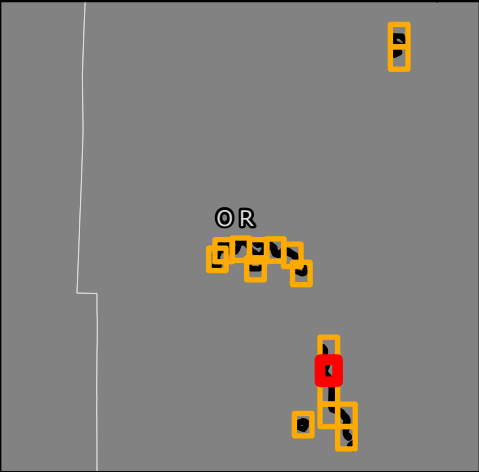
Mist Resiliency Project

**Figure P-3.12
Habitat Subtypes
within the Analysis Area**

COLUMBIA COUNTY, OREGON

- | | |
|---------------------------------|--|
| Site Boundary | Scrub-Shrub Wetlands |
| Analysis Area (0.5 mile Buffer) | Ponds/Lakes |
| Permanent Impact | Westside Lowlands Conifer-Hardwood Forest |
| Temporary Impact | Westside Riparian |
| EFSC Habitat Subtype | |
| Ephemeral Streams | Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations |
| Perennial Streams | Irrigated Pastures and Hay Meadows |
| Intermittent Streams | Urban and Mixed Environs |
| Emergent Wetlands | |
| Forested Wetlands | |

Reference Map



TETRA TECH



NW Natural

\\cscs706\gis\1\CES\Projects\PD\XNW_Natural\MistResiliency\Maps_pRFA13\Exhibit_P\WWN_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

**Figure P-3.13
Habitat Subtypes
within the Analysis Area**

COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype**
- Ephemeral Streams
- Perennial Streams
- Intermittent Streams
- Emergent Wetlands
- Forested Wetlands

- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs

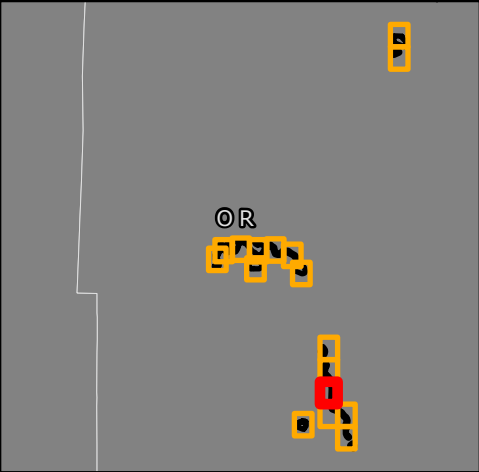


TETRA TECH

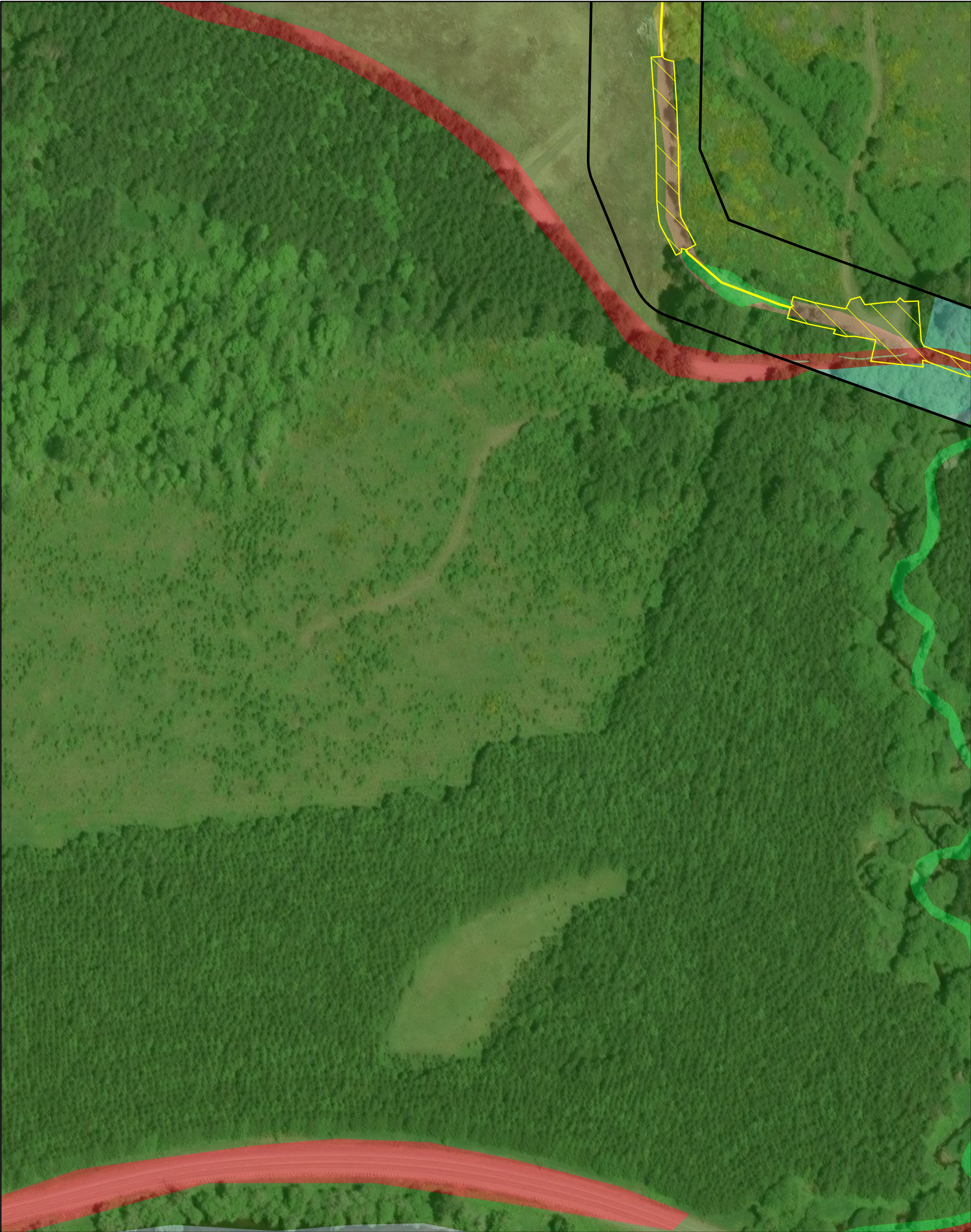


NW Natural

Reference Map



\\cscs706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA13\Exhibit_P\WWN_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

**Figure P-3.14
Habitat Subtypes
within the Analysis Area**

COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands
 - Forested Wetlands

- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs

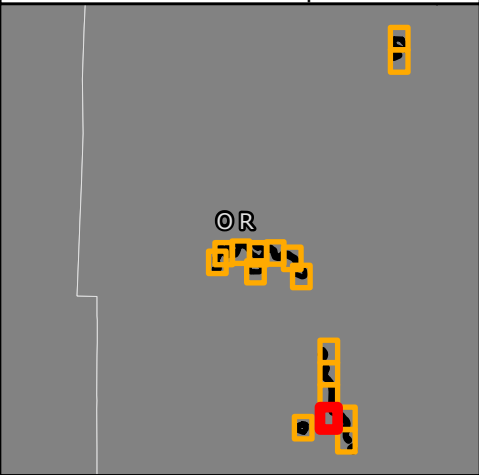


TETRA TECH



NW Natural

Reference Map



\\cscs706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA13\Exhibit_P\NW_N_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

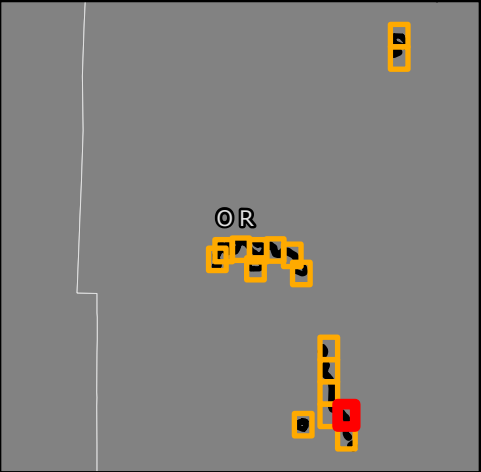
**Figure P-3.15
Habitat Subtypes
within the Analysis Area**

COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands
 - Forested Wetlands

- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs

Reference Map

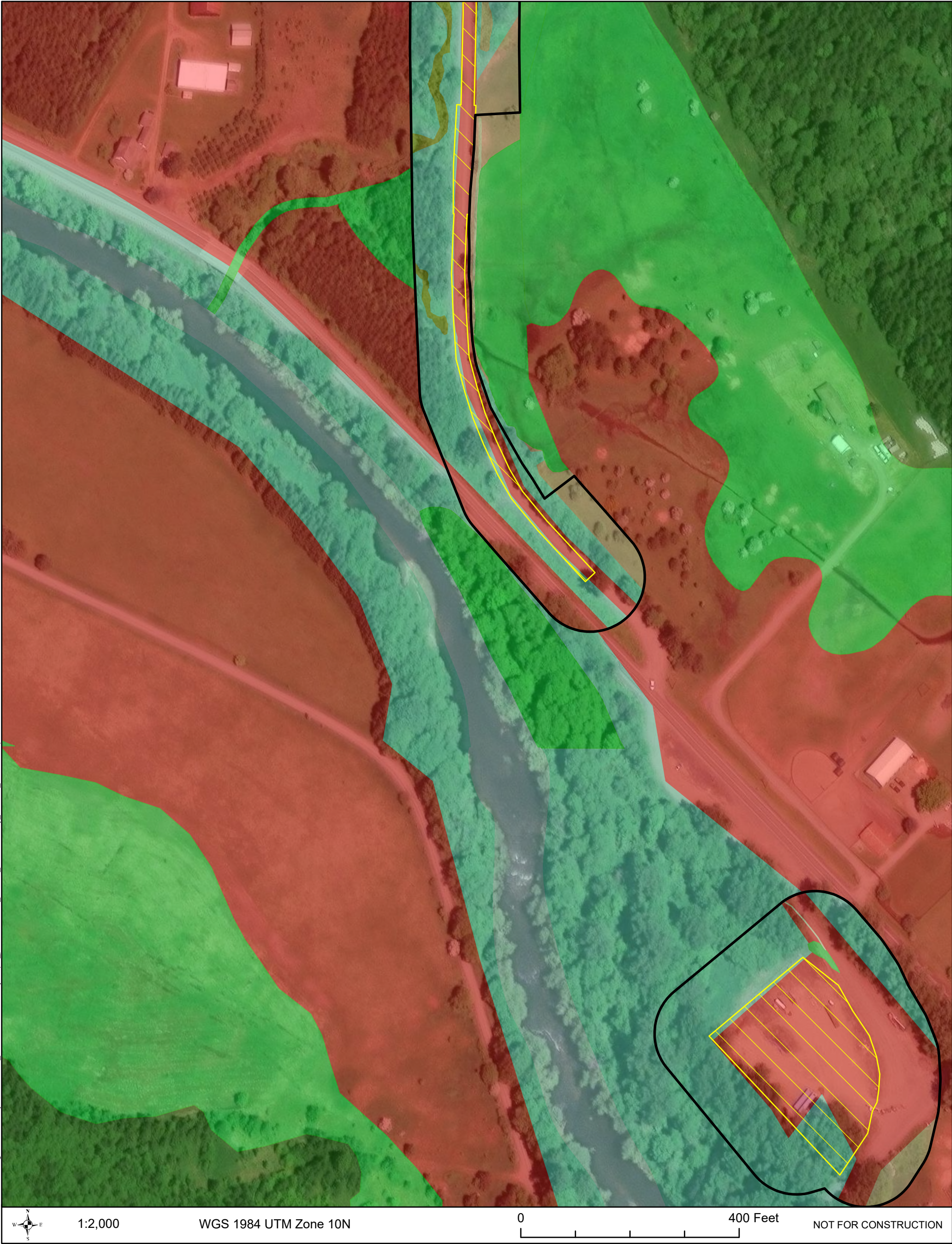


TETRA TECH



NW Natural

\\cscs706\gis\1\CES\Projects\PDX\NW_Natural\MistResiliency\Maps_pRFA\13\Exhibit_P\WWN_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

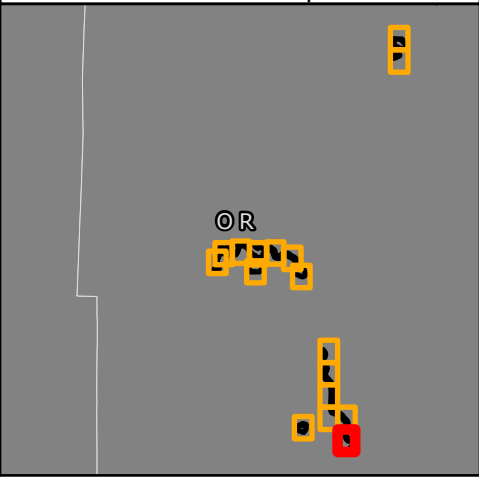
Figure P-3.16
Habitat Subtypes
within the Analysis Area

COLUMBIA COUNTY, OREGON

- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands
 - Forested Wetlands

- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs

Reference Map



\\cscs706\gis\1\CES\Projects\PD\XNW_Natural\MistResiliency\Maps_p\RA13\Exhibit_P\WWN_MistResiliency_ExhibitP_20240611.aprx



1:2,000

WGS 1984 UTM Zone 10N

0

400 Feet

NOT FOR CONSTRUCTION

Mist Resiliency Project

Figure P-3.17 Habitat Subtypes within the Analysis Area

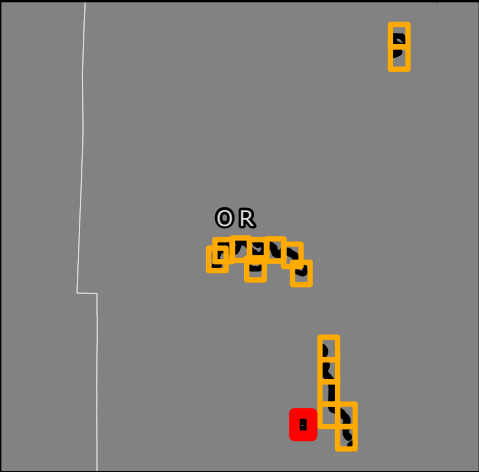
COLUMBIA COUNTY, OREGON

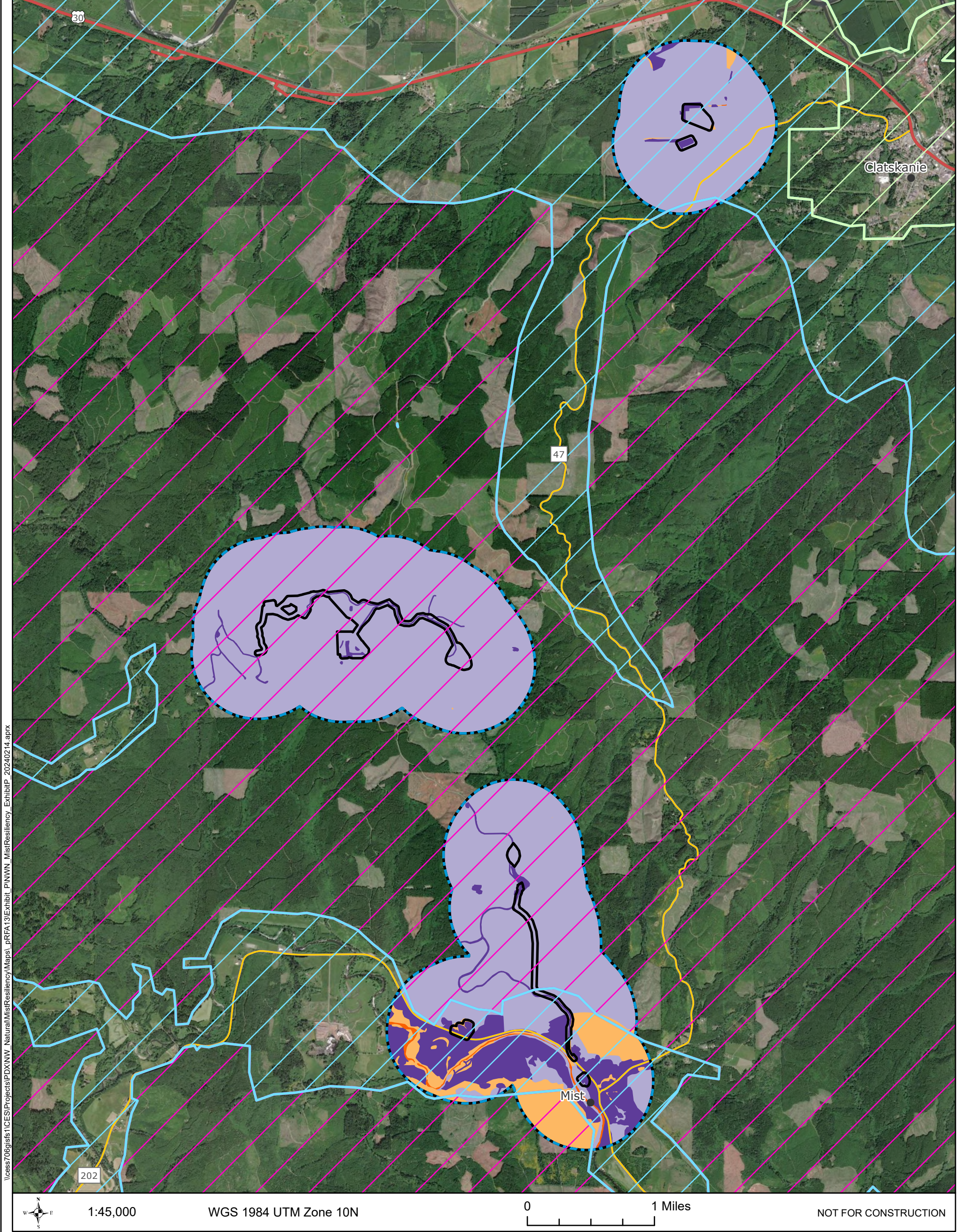
- Site Boundary
- Analysis Area (0.5 mile Buffer)
- Permanent Impact
- Temporary Impact
- EFSC Habitat Subtype
 - Ephemeral Streams
 - Perennial Streams
 - Intermittent Streams
 - Emergent Wetlands
 - Forested Wetlands

- Scrub-Shrub Wetlands
- Ponds/Lakes
- Westside Lowlands Conifer-Hardwood Forest
- Westside Riparian
- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations
- Irrigated Pastures and Hay Meadows
- Urban and Mixed Environs



Reference Map




















I:\cass706\gis\1\CES\Projects\PD\XNW_Natural\MistResiliency\Maps_pRFA\13\Exhibit_P\W\W_MistResiliency_ExhibitP_20240214.aprx

1:45,000

WGS 1984 UTM Zone 10N

01 Miles

NOT FOR CONSTRUCTION

<div>Mist Resiliency Project</div>	<div><div> Site Boundary</div><div> Analysis Area (0.5 mile Buffer)</div><div> City/Town</div><div> US Highway</div><div> State Highway</div><div>ODFW West Side Big Game Overlay</div><div> Year-round Major Habitat</div><div> Year-round Peripheral Habitat</div><div> Impacted Habitat</div></div>	<div>Preliminary Habitat Category</div> <div> 2</div> <div> 3</div> <div> 4</div> <div> 6</div>	<div>Reference Map</div> 
	<div>Figure P-4 ODFW West Side Big Game Overlay within the Analysis Area</div> <div>COLUMBIA COUNTY, OREGON</div>	<div> TETRA TECH</div> <div> NW Natural</div>	

This page intentionally left blank

Attachment P-1. Biological Survey Reports (Confidential)

This page intentionally left blank

Attachment P-1 is confidential and submitted under a separate cover.


This page intentionally left blank

Attachment P-2. Habitat Mitigation Plan

This page intentionally left blank

Habitat Mitigation Plan

**Mist Resiliency Project
August 2024**

Prepared for
 **NW Natural**
Northwest Natural Gas

Prepared by


TETRA TECH

This page intentionally left blank

Table of Contents

1.0	Introduction	1
2.0	Description of the Impacts Addressed by the HMP	1
3.0	Mitigation Approach	3
3.1	Temporary Impacts	3
3.2	Permanent Impacts	3
3.2.1	Option 1. Habitat Mitigation Area Adjacent to the North Mist Compressor Station.....	3
3.2.2	Option 2. Habitat Mitigation Area Adjacent to Miller Station	4
3.2.3	Option 3. Habitat Mitigation Area Near the Project	4
3.2.4	Option 4. ODFW Payment to Provide	5
4.0	Implementation Schedule.....	5
5.0	Monitoring and Reporting.....	5
6.0	Amendment of the Plan.....	6

List of Tables

Table 1. Acres of Impact to Habitat Categories and Types	2
--	---

List of Figures

Figure 1. Potential Habitat Mitigation Areas
--

This page intentionally left blank

1.0 Introduction

This Habitat Mitigation Plan (HMP or Plan) describes how Northwest Natural Gas (NWN), the Certificate Holder, proposes to mitigate for the unavoidable impacts of the Mist Resiliency Project (Project) on habitats based on the Oregon Department of Fish and Wildlife (ODFW) Habitat Mitigation Policy. This Plan addresses mitigation for both the temporary and permanent impacts of Project construction associated with Request for Amendment 13. NWN proposes to protect and enhance a nearby mitigation area.

2.0 Description of the Impacts Addressed by the HMP

Project impacts will include primarily temporary impacts to wildlife habitat. Temporary impact areas are those areas that will be disturbed during construction activities but will be restored and revegetated following construction. Permanent impacts will occur at the Miller Station storage yard, Newton wellpad, Stegosaur wellpad, and Medicine wellpad. Temporary impacts will occur at the powerline replacement corridor, transmission pipeline corridors, construction storage and laydown yards, and North Mist Compressor Station improvement areas.

The Project would create impacts to habitat field-mapped as ODFW Habitat Categories 3, 4, and 6. These categories and the accompanying mitigation goals are set forth in OAR 635-415-0025, as follows:

- **Habitat Category 3:** Essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.

Mitigation Goal: No net loss in either existing habitat quantity or quality. Mitigation must be in-kind and in-proximity.

- **Habitat Category 4:** Important habitat for fish and wildlife species.

Mitigation Goal: No net loss in either existing habitat quantity or quality. Mitigation may be in-kind or out-of-kind, and in-proximity or off-proximity.

- **Habitat Category 6:** Habitat that has low potential to become essential or important habitat for fish and wildlife.

Mitigation Goal: Minimize impacts. Mitigation may include actions that minimize direct habitat loss and avoid impacts to off-site habitat.

NWN mapped the habitat type and category of each area potentially impacted by the Project, as required in OAR 345-021-0010(1)(p)(B) and (C). Details and methods for habitat categorization and mapping effort can be found in Exhibit P and Attachment P-1. Based on the habitat categorization mapping, NWN calculated the expected Project impacts by habitat type and category

(Table 1). Preliminary habitat categories were assigned based on vegetative characteristics observed in the field (Exhibit P, Attachment P-1), while final habitat categories provided in Table 1 below were determined based on overlap with Year-Round Peripheral (Category 4) and Year-Round Major (Category 3) habitats defined in the ODFW West Side Big Game Habitat overlay. The area of impact to each habitat type and category will depend on final Project design. The impact areas presented in this Plan are preliminary and are based on NWN's estimate of reasonable maximum potential impacts. Impact areas are expected to decrease overall through continued avoidance measures.

Table 1. Acres of Impact to Habitat Categories and Types

Final Habitat Category	Preliminary Habitat Category	Habitat Type-Subtype ¹	Permanent Impact	Temporary Impact
3 Year-Round Major Big Game Habitat	3	Upland Forests and Woodlands- Westside Lowlands Conifer-Hardwood Forest	–	0.004
		Wetlands- Emergent Wetlands	–	0.01
		Wetlands- Scrub-Shrub Wetlands	–	0.005
	4	Agriculture, Pasture, and Mixed Environs- Irrigated Pastures and Hay Meadows	–	5.55
		Open Water- Lakes, Rivers, Streams- Ephemeral Streams	–	0.01
		Upland Forests and Woodlands- Westside Lowlands Conifer-Hardwood Forest	26.90	27.55
Category 3 Final Total			26.90	33.13
4 Year-Round Peripheral Big Game Habitat	4	Agriculture, Pasture, and Mixed Environs- Irrigated Pastures and Hay Meadows	–	0.24
		Open Water- Lakes, Rivers, Streams- Ephemeral Streams	–	–
		Riparian Forest and Shrubland Complexes- Westside Riparian	–	0.50
		Upland Forests and Woodlands- Westside Lowlands Conifer-Hardwood Forest	–	12.59
	6	Agriculture, Pasture, and Mixed Environs- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations	–	5.26
Category 4 Final Total			–	18.58
6		Urban and Mixed Environs- Urban and Mixed Environs	0.83	11.98
Category 6 Final Total			0.83	11.98
Grand Total			27.73	63.69
Note: Totals in this table may not be precise due to rounding.				
1. Only impacted Habitat Types-Subtypes present within the proposed micro-siting corridor are represented.				

3.0 Mitigation Approach

3.1 Temporary Impacts

Temporary impact areas are addressed in the Restoration of Temporary Impacts Plan (Attachment P-3).

3.2 Permanent Impacts

For the up to approximately 28 acres permanently impacted by the Project, NWN has identified two options for addressing the mitigation obligation where habitat protection or commensurate funding are feasible and consistent with this HMP. NWN may use one or both options to mitigate for habitat impacts and will determine the mitigation option that best correlates to the impacted areas in consultation with ODFW and the affected landowners, subject to approval by the Oregon Department of Energy (ODOE). The final mitigation approach will offer enough suitable habitat to achieve the ODFW goal of no net loss of habitat quantity or quality. NWN met with ODFW and ODOE at the Project site on June 6, 2024 to view the general area, as well as the proposed habitat mitigation area. At this meeting, ODFW and ODOE provided recommendations on the range of enhancement actions that could occur at the habitat mitigation area.

3.2.1 Option 1. Habitat Mitigation Area Adjacent to the North Mist Compressor Station

Under this option, NWN has identified a parcel available for establishing a habitat mitigation area adjacent to the Project (Figure 1). The parcel is proximate to the Project, provides ample acreage, and is composed of similar habitat types suitable for in-kind mitigation.

NWN has performed a desktop analysis of the mitigation parcels (Figure 1). The desktop review confirmed the identified parcels are currently managed for timber harvest, which would provide in-kind forest habitat beneficial to big game and other forest-associated species. As the potential mitigation location is within ODFW-mapped West Side Big Game Year-Round Major Habitat, acquisition of this area constitutes acquisition of Category 3 habitat regardless of the habitat condition and thus meets the ODFW goal of no net loss of habitat quantity or quality.

This area would be taken out of timber harvest rotation, thus allowing the habitat to improve over time. NWN would reshape the existing rock quarry by adding soil to fill in the quarry, restoring contours and installing erosion control structures as needed, and replanting with an ODFW-approved seed mix. NWN will manage the mitigation area over the long-term for overall forest health and habitat in consultation with a forestry and habitat consultant. NWN would conduct an assessment of the HMA every 5 years to understand and document current status of the HMA and identify actions that may continue to increase habitat quality. These actions may include but would not be limited to: removing individual trees by hand to increase spacing between trees, placement of downed wood, creation of snags by girdling, or planting of native forage species. NWN will

review proposed actions with ODFW and ODOE prior to implementation. The HMA would be incorporated into NWN's standard vegetation management program to minimize and treat noxious weeds.

Prior to operation of the Project, NWN will acquire the legal right to create, maintain, and protect the habitat mitigation area for the life of the Project¹ by means of an outright purchase and will provide a copy of the documentation to ODOE.

3.2.2 Option 2. Habitat Mitigation Area Adjacent to Miller Station

NWN identifies Option 2 as a parcel that is located just west of Miller Station. This parcel has been cleared and replanted within the last 5 years and falls within ODFW West Side Big Game Year-Round Major Habitat. In addition, NWN will reclaim a rock quarry on another parcel near the Project.

Similar to Option 1, this area would be taken out of timber harvest rotation, thus allowing the habitat to improve over time. NWN would manage the mitigation area over the long-term for overall forest health and habitat in consultation with a forestry and habitat consultant. NWN would work with ODFW and ODOE to identify a set of appropriate enhancement actions to meet the ODFW Habitat Mitigation Policy goal of no net loss. NWN would conduct an assessment of the HMA every 5 years to understand and document current status of the HMA and identify actions that may continue to increase habitat quality. These actions may include but would not be limited to: removing individual trees by hand to increase spacing between trees, placement of downed wood, creation of snags by girdling, or planting of native forage species. NWN would review proposed actions with ODFW and ODOE prior to implementation. The HMA would be incorporated into NWN's standard vegetation management program to minimize and treat noxious weeds. NWN would reshape the existing rock quarry by adding soil to fill in the quarry, restoring contours and installing erosion control structures as needed, and replanting with an ODFW-approved seed mix.

Prior to operation of the Project, NWN will acquire the legal right to create, maintain, and protect the habitat mitigation area for the life of the Project², the details of that control are currently being negotiated with the property owner(s). NWN will provide an agreement letter between the parties to ODOE for their records. NWN cannot provide contractual documentation to ODOE as the property owners have asked that the terms of any signed lease or purchase agreements remain confidential.

3.2.3 Option 3. Habitat Mitigation Area Near the Project

To address any uncertainty associated with Options 1 and 2, NWN identifies Option 3 as an as yet unidentified parcel within the vicinity of the Project. The region southwest of Clatskanie, Oregon

¹ As used in this Plan, "life of the Project" means continuously until the Project site is restored and the site certificate is terminated in accordance with Oregon Administrative Rules 345-027-0110.

² As used in this Plan, "life of the Project" means continuously until the Project site is restored and the site certificate is terminated in accordance with Oregon Administrative Rules 345-027-0110.

where the Project occurs, is marked by large areas of privately owned timber lands. If NWN is unable to secure the parcel identified in Options 1 or 2, they will identify a similar parcel as close to the Project as possible. This parcel would ideally also fall within ODFW West Side Big Game Year-Round Major Habitat to be categorized as Category 3 habitat.

Similar to Option 1, this area would be taken out of timber harvest rotation, thus allowing the habitat to improve over time. NWN would manage the mitigation area over the long-term for overall forest health and habitat in consultation with a forestry and habitat consultant. NWN would work with ODFW and ODOE to identify a set of appropriate enhancement actions to meet the ODFW Habitat Mitigation Policy goal of no net loss. NWN would conduct an assessment of the HMA every 5 years to understand and document current status of the HMA and identify actions that may continue to increase habitat quality. These actions may include but would not be limited to: removing individual trees by hand to increase spacing between trees, placement of downed wood, creation of snags by girdling, or planting of native forage species. NWN would review proposed actions with ODFW and ODOE prior to implementation. The HMA would be incorporated into NWN's standard vegetation management program to minimize and treat noxious weeds.

Prior to operation of the Project, NWN will acquire the legal right to create, maintain, and protect the habitat mitigation area for the life of the Project³. NWN will provide a copy of the documentation to ODOE.

3.2.4 Option 4. ODFW Payment to Provide

NWN understands that ODFW is considering a payment-to-provide program that could be used to mitigate habitat impacts related to energy facilities. However, at this time, this program is not yet available. Should such a program become available in the future, NWN could use a payment-to-provide mitigation option with the approval of ODOE and ODFW.

4.0 Implementation Schedule

Within temporary impact areas affected by construction of the Project, mitigation in the form of restoration will occur no later than fall of the year of construction in order to stabilize the area for winter weather. The legal mechanism to secure the mitigation areas for permanent impacts would be secured prior to construction.

5.0 Monitoring and Reporting

NWN will provide a copy of the documentation to ODOE showing purchase or other protective conveyance of the Habitat Mitigation Area. NWN will provide a memo report summarizing actions

³ As used in this Plan, "life of the Project" means continuously until the Project site is restored and the site certificate is terminated in accordance with Oregon Administrative Rules 345-027-0110.

taken at the Habitat Mitigation Area the year following completed construction, and every five years after that year. This memo report will provide general site photos and a summary of any actions taken on the property. As mentioned above, NWN would conduct an assessment of the HMA every 5 years to understand and document current status of the HMA and identify actions that may continue to increase habitat quality. NWN will review proposed actions with ODFW and ODOE prior to implementation.

6.0 Amendment of the Plan

This Habitat Mitigation Plan may be amended from time to time by agreement between NWN and the Energy Facility Siting Council (EFSC). Such amendments may be made without amendment of the Site Certificate. EFSC authorizes ODOE to agree to amendments to this Plan and to mitigation actions that may be required under this Plan. ODOE-approved amendments to this Plan will be in consultation with ODFW. ODOE shall notify EFSC of all amendments and mitigation actions, and EFSC retains the authority to approve, reject, or modify any amendment of this Plan or mitigation action agreed to by ODOE.

Figure

This page intentionally left blank

\\cscs706\gis\1\CES\Projects\PD\X\NW_Natural\MistResiliency\Maps_pRFA\13\HabitatMitigationArea_20240610.aprx



1:1,700

WGS 1984 UTM Zone 10N

0

NOT FOR CONSTRUCTION

Mist Resiliency Project

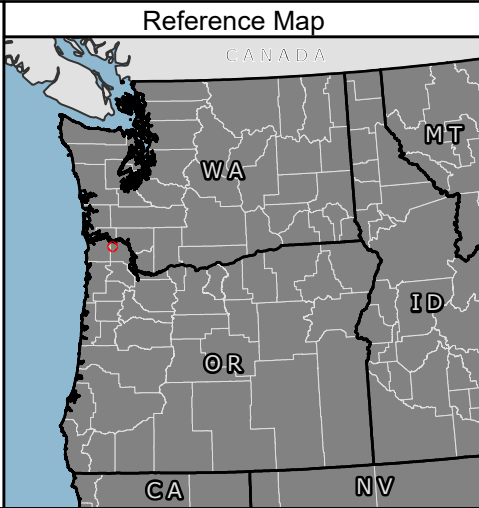
Figure 1 Potential Habitat Mitigation Areas

COLUMBIA COUNTY, OREGON

- Site Boundary
- Potential Habitat Mitigation Areas
- Olive-sided Flycatcher
- Field Delineated Stream
- Wetlands and Waters
- Riverine (NWI) Stream
- Intermittent Stream (NHD)

ODFW West Side Big Game
Overlay

Year-round Major Habitat



This page intentionally left blank

Attachment P-3. Restoration of Temporary Impacts Plan

This page intentionally left blank

Restoration of Temporary Impacts Plan

**Mist Resiliency Project
June 2024**

Prepared for



NW Natural

Northwest Natural Gas

Prepared by



TETRA TECH

This page intentionally left blank

Table of Contents

1.0 Introduction 1

2.0 Description of the Impacts Addressed by this Plan 1

3.0 Restoration Approach 2

 3.1 Restoration and Revegetation of Agricultural Area..... 3

4.0 Implementation Schedule..... 3

5.0 Monitoring and Reporting..... 3

List of Tables

Table 1. Acres of Temporary Impact to Habitat Categories and Types..... 2

This page intentionally left blank

1.0 Introduction

This Restoration of Temporary Impacts Plan (Plan) describes how Northwest Natural Gas (NWN), the Certificate Holder, proposes to restore habitats after construction of the Mist Resiliency Project (Project). The Plan focuses on areas that will be temporarily impacted during construction, which will then be restored and revegetated.

2.0 Description of the Impacts Addressed by this Plan

Project impacts will primarily include temporary impacts to wildlife habitat. Temporary impact areas are those areas that will be disturbed during construction activities but will be restored and revegetated following construction. Temporary impacts will occur at the powerline replacement corridor, transmission pipeline corridors, construction storage and laydown yards, and North Mist Compressor Station improvement areas.

The Project would create impacts to habitat field-mapped as Oregon Department of Fish and Wildlife (ODFW) Habitat Categories 3, 4, and 6. These categories and the accompanying mitigation goals are set forth in Oregon Administrative Rules (OAR) 635-415-0025, as follows:

- **Habitat Category 3:** Essential habitat for fish and wildlife, or important habitat for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species or population.

Mitigation Goal: No net loss in either existing habitat quantity or quality. Mitigation must be in-kind and in-proximity.

- **Habitat Category 4:** Important habitat for fish and wildlife species.

Mitigation Goal: No net loss in either existing habitat quantity or quality. Mitigation may be in-kind or out-of-kind, and in-proximity or off-proximity.

- **Habitat Category 6:** Habitat that has low potential to become essential or important habitat for fish and wildlife.

Mitigation Goal: Minimize impacts. Mitigation may include actions that minimize direct habitat loss and avoid impacts to off-site habitat.

NWN mapped the habitat type and category of each area potentially impacted by the Project, as required in OAR 345-021-0010(1)(p)(B) and (C). Details and methods for habitat categorization and mapping effort can be found in Exhibit P and Attachment P-1. Based on the habitat categorization mapping, NWN calculated the expected Project impacts by habitat type and category (Table 1). Preliminary habitat categories were assigned based on vegetative characteristics observed in the field (Exhibit P, Attachment P-1), while final habitat categories provided in Table 1 below were determined based on overlap with Year-Round Peripheral (Category 4) and Year-Round Major (Category 3) habitats defined in the ODFW West Side Big Game Habitat overlay.

The area of impact to each habitat type and category will depend on final Project design. The impact areas presented in this Plan are preliminary and are based on NWN's estimate of reasonable maximum potential impacts. Impact areas are expected to decrease overall through continued avoidance measures.

Table 1. Acres of Temporary Impact to Habitat Categories and Types

Final Habitat Category	Preliminary Habitat Category	Habitat Type-Subtype ¹	Temporary Impact
3 Year- Round Major Big Game Habitat	3	Upland Forests and Woodlands- Westside Lowlands Conifer- Hardwood Forest	0.004
		Wetlands- Emergent Wetlands	0.01
		Wetlands- Scrub-Shrub Wetlands	0.005
	4	Agriculture, Pasture, and Mixed Environs- Irrigated Pastures and Hay Meadows	5.55
		Open Water- Lakes, Rivers, Streams- Ephemeral Streams	0.01
		Upland Forests and Woodlands- Westside Lowlands Conifer- Hardwood Forest	27.55
Category 3 Final Total			33.13
4 Year- Round Peripheral Big Game Habitat	4	Agriculture, Pasture, and Mixed Environs- Irrigated Pastures and Hay Meadows	0.24
		Open Water- Lakes, Rivers, Streams- Ephemeral Streams	--
		Riparian Forest and Shrubland Complexes- Westside Riparian	0.50
		Upland Forests and Woodlands- Westside Lowlands Conifer- Hardwood Forest	12.59
	6	Agriculture, Pasture, and Mixed Environs- Orchards, Vineyards, Wheat Fields, Other Row Crops, Irrigated Poplar Plantations	5.26
Category 4 Final Total			18.58
6		Urban and Mixed Environs- Urban and Mixed Environs	11.98
Category 6 Final Total			11.98
Grand Total			63.69

3.0 Restoration Approach

NWN will restore and revegetate all temporary impact areas following construction. Detail on methods are discussed in Exhibit I, with details by location shown in maps associated with the Erosion and Sediment Control Plan (Attachment I-1). All areas will be managed in accordance with NWN's Vegetation Control and Management Operating Requirements (Attachment P-3A) to treat noxious weeds. Additionally the areas will be reseeded with an ODFW-approved seed mix beneficial to wildlife species, as approved by the underlying landowner.

3.1 Restoration and Revegetation of Agricultural Area

NWN may use an approximate 4.5-acre area along Highway 202 for laydown during construction. This parcel is currently agriculture. As is typical for privately-owned agriculture, at the completion of construction, NWN would restore the area and replant according to the landowner's wishes. Vegetation management would then be performed by the landowner consistent with current land use practice.

Detail on how the parcel would be used is provided in Attachment I-1, Sheet 40 and summarized here. NWN would install geofabric and gravel to protect soils during construction. The adjacent wetlands would be bordered by silt fence, and the full parcel would be delimited by orange construction fence. At the completion of construction, the fencing, gravel, and geofabric would be removed. The parcel would be replanted as needed. During the following growing season, NWN would view the site to identify any newly established noxious weeds and would treat them in accordance with their Vegetation Control and Management Operating Requirements (Attachment P-4).

4.0 Implementation Schedule

Within temporary impact areas affected by construction of the Project, restoration will occur no later than fall of the year of construction in order to stabilize the area for winter weather consistent with the 1200-c permit requirements, as discussed in Exhibit I. .

5.0 Monitoring and Reporting

The following information provides the strategy for restoration and monitoring in temporary impact areas. No monitoring will occur in temporary impact areas where the land use is active agriculture (Hwy 202 laydown area). At temporary impact areas that will be restored, monitoring will occur during the growing season the year following reseeded. Investigators will randomly select 15 5-foot by 5-foot plots and provide photo documentation and ocular estimates of revegetation cover. Investigators will document percent cover in reseeded areas: documenting percent seed mix species, percent noxious weeds and species, and percent bare ground. Success criteria at each plot would include 70 percent of native seed mix/forb species, 10 percent bare ground, and not to exceed 20 percent non-native species. If success criteria are not met, NWN will begin maintenance activities in the summer and replant in the fall of the same year. Within temporarily impacted private working timber lands, NWN will not have control over what occurs on the lands beyond Project implementation (use of heavy machinery, spraying, etc.). Therefore, NWN does not believe that further monitoring or replanting beyond one year following construction would be valuable. A report will be provided to the Oregon Department of Energy with percent cover information and photo documentation within one month of monitoring visits.

This page intentionally left blank

Attachment P-4. NWN Vegetation Control and Management Plan

This page intentionally left blank

Vegetation Control and Management



NW Natural
Environmental Department

June 2018
Revision 3

Contact Information

Environmental Management: 503-226-4211 x3587; x4327; x4342; x4312

Contents**Page**

TOP 10 THINGS TO KNOW ABOUT VEGETATION CONTROL	II
1.0 INTRODUCTION	1
2.0 CONTROLLING NOXIOUS WEEDS	1
3.0 NWN VEGETATION MANAGEMENT APPLICATION GUIDELINES	2
4.0 NW NATURAL NO SPRAY ZONE GUIDELINES	2
5.0 CERTIFICATION AND LICENSING	2
6.0 COMMON PERMITS & BEST MANAGEMENT PRACTICES	3
7.0 NATURAL AREAS, CRITICAL HABITAT AREAS, AND RIPARIAN ZONES	3
8.0 RECORD KEEPING	4
9.0 WASTE MANAGEMENT	5
9.1 PESTICIDE SELECTION	5
9.2 WASTE GENERATION	5
9.3 SPILLS	6
10.0 REFERENCE MATERIALS	6

Tables

1	Pesticide License Requirements
2	Required Pesticide Application Records

Figures

1	Examples of Invasive Root Growth
2	Typical Gas Pipeline Easement Cross Section

Appendixes

1	Typical Invasive Species
2	Fire Season Requirements

Top 10 Things to Know about Vegetation Control

1. Herbicides are regulated as a category of pesticide.
2. A Commercial Pesticide Applicator License is required to apply or supervise the application of restricted-use pesticides in NW Natural right-of-ways and around buildings at facilities.
3. A trainee license is required for staff who apply pesticides under the supervision of a commercial applicator.
4. If NW Natural is responsible for supervising a contractor in the application of pesticides, the person performing the supervision must be licensed as a commercial applicator.
5. A record of each pesticide application must be maintained. Records are required to be kept for 3 years.
6. The NW Natural Chemical Safety Evaluation Committee must approve each pesticide before it can be purchased.
7. NW Natural has a NO SPRAY ZONE policy for specific locations within right-of-ways.
8. NW Natural manages waste pesticides under Universal Waste Regulations.
9. Pesticide spills of more than one pound must be reported to the State of Oregon
10. All areas must be evaluated prior to clearing or spraying

Vegetation Control and Management Environmental Operating Requirements

1.0 Introduction

NW Natural uses mechanical and chemical (e.g., herbicides) techniques to control noxious weeds and unwanted vegetation in Rights-of-Way (ROW) and around buildings and structures at our facilities. In the right-of-way, selective herbicides¹ are used to control targeted types of vegetation. Around buildings, non-selective² herbicides are used. Information about the requirements for application and waste management of herbicides used in vegetation control is presented in this document.

NW Natural Vegetation Management Objectives and Policies are:

- 1 Provide a clear accessible path on utility right-of-ways.
- 2 Identify the highest priority vegetation management needs.
- 3 Control vegetative obstructions, noxious weed control, and nuisance weed control.
- 4 Perform work in compliance with the Endangered Species Act (ESA), Clean Water Act, and NPDES Requirements and use Best Management Practices (BMP) to meet the evolving requirements
- 5 Re-evaluate maintenance consistently for cost effective measures.
- 6 Identify, mark, and report Environmentally Critical Areas, culverts, and other right-of-way concerns.
- 7 Follow all state and local regulations for herbicide use.
- 8 Provide a safe and esthetically pleasing right of way.
- 9 Adhere to NW Natural's No Spray Zone and Natural Areas Policies.

2.0 Controlling Noxious Weeds

"Noxious Weed" is the traditional, legal term for an invasive, non-native plant that threatens agricultural crops, local ecosystems or fish and wildlife habitat. The term "noxious weeds" includes non-native grasses, flowering plants, shrubs and trees. It also includes aquatic plants that invade wetlands, lakes, rivers and shorelines. Noxious weeds cause damage that has considerable environmental and economic costs.

Noxious weeds are spread in a variety of ways. While some of these are natural (wind, water, and wildlife), weeds are often spread by human activity, especially in disturbed area. Seeds get caught in tires or the undercarriage of vehicles, and heavy equipment, and in the tread of shoes and boots, get stuck on clothing and accidentally transported. Noxious weeds often times germinate before and out compete native species.

All reasonable attempts should be made on ROWs and around buildings to control or eradicate noxious weeds. This can be accomplished through mechanical means or use of approved herbicides. Most typical noxious weeds encountered in Oregon include: Canada Thistle, Scotch Broom, Himalayan Blackberry, Gorse, and Kudzu. Images of these species are provided in Attachment A to assist with identification.

Controlling and eradicating noxious weeds is important to the operability and longevity of NW Natural assets. Root growth can be aggressive and penetrate pipelines or damage pipe coatings which will eventually lead to pipe corrosion and possibly failure. Figure 1 shows examples of damage to pipelines or pipeline coatings caused by invasive species root growth.

¹ Selective herbicides are applied to control specific types of vegetation such as woody plants but not non-target species (such

² Non-selective herbicides are applied to control all vegetation in the application area without preference to type of species.

3.0 NWN Vegetation Management Application Guidelines

NW Natural staff and contractors must adhere to these vegetation management application guidelines.

- 1 Coordinate with NW Natural Staff to field locate gas lines prior to any vegetation removal. Once the gas line is located the utility easement can be measured and the brush clearing width will be determined. An image of a typical gas pipeline easement is provided in Figure 2.

Note: Have the gas line located and the utility easement measured. Not in all instances do gas line markers posts share the same alignment as the natural gas pipeline.

- 2 Identify and temporarily mark critical areas, natural areas, riparian areas, wetlands, and setbacks.
- 3 Conduct a site evaluation prior to maintenance using onsite inspections and maps.
- 4 Pre-Walk the proposed area to be cleared to avoid any unintended damage to life or property.
- 5 Use bio-degradable oil in a chain saw whenever necessary.
- 6 Crew will be familiar with a spill prevention plan and carry spill kits on-site.
- 7 Fueling of equipment will be done using a spill prevention pump and spill guard.
- 8 Repair any disturbed soils using approved methods.
- 9 Implement Tree Clearance and Tree felling protection measures for trees larger than 6" in diameter in and around pipelines. Work with transmission maintenance to determine necessary protection; examples include, plywood, steel plating, and avoidance measures.
- 10 Maintain tree free zone 10' from centerline of pipe.

4.0 NW Natural No Spray Zone Guidelines

NW Natural employees and contractors must adhere to the NW Natural No Spray Zones. No Spray Zones are areas along NW Natural's facility corridors where no pesticide spray may be applied. Typical no spray zones are located in and around streams and wetlands. Customers, property owners, and/ or governmental entities may also request no Spray Zones.

No Spray Zone General Guidelines

- No Spray in Water
- No Spray with 100' from annual waterway
- No Spray on Lane County, Oregon public right-of-ways.

NW Natural's Corporate Environmental Department should be contacted if you have questions about No Spray Zones or need assistance in identifying No Spray Zones in your work area. Environmental Management maintains a list of No Spray Zones.

5.0 Certification and Licensing

Herbicides are included in the definition of a 'pesticide'. Insecticides, fungicides, rodenticides, and other pest control products also are pesticides. From a regulatory perspective, there are two types of pesticides: *restricted-use pesticides* (RUP) and *general use pesticides*. A RUP statement on the product label identifies restricted-use pesticides. General use pesticide products do not have the RUP statement on the label.

There are licensing requirements for individuals who apply or supervise the application of pesticides in Oregon. The specific name of the license needed by NW Natural staff is a “Commercial Pesticide Applicator License” and it applies to persons who use or supervise the use of RUP to non-agricultural land or property that belongs to them or an employer. In order to obtain a license, the person must pass an examination in pesticide Laws & Safety and added examinations in the specific categories of pesticide application to be performed. One of the licensing categories covers use of pesticides in right-of-way areas. Two other applicable categories are Industrial, Institutional, Health and Structural: General Pest Control and Moss Control. The license expires at the end of the calendar year it is issued and is renewable annually. Periodic re-certification is required.

Persons who work under the supervision of a licensed commercial applicator must have one of two trainee licenses. A summary of requirements for these pesticide licenses is presented in Table 1.

NOTE: NW Natural policy requires that all pesticides be applied by a licensed applicator for both RUP and general use pesticides. The NW Natural Right-of-way supervisor is a licensed pesticide applicator. Also, if NW Natural is responsible for supervising a contractor in the application of pesticides, the person performing the supervision must be licensed as a Commercial Pesticide Applicator; which means the Right-of-way supervisor will be responsible for overseeing all contractor pesticide applications.

6.0 Common Permits & Best Management Practices

Clearing brush on cross county ROW requires permits. Common permits include:

- Department of Forestry (ODOF) – Notification of Operations Permit
- Must Adhere to ODOF Fire Guidelines during fire season, fire watch may be required (Fire Guidelines are provided in Appendix B.
- Public Property Notifications, i.e. Parks Permit, etc....
- Spraying Notifications Requirements in Oregon and Washington
- Take permits to work in or around Critical Habitat Area that have identified Threatened or Endangered Species

The NW Natural Corporate Environmental Department can assist with obtaining needed permits.

7.0 Natural Areas, Critical Habitat Areas, and Riparian Zones

Where NW Natural gas pipelines were installed using Horizontally Directional Drilling (HDD) technology no aboveground disturbance or clearing took place at time of construction. HDD installation was utilized to preserve the natural areas and limit the environment impact at time of construction. Typically, HDD technology was used to limit impacts to wetlands, water crossings, parklands, and other natural features.

General Guidelines

- A field evaluation must be performed prior to clearing/spraying work
- Natural Area brush clearing should be limited only to achieve a clear and accessible path for a pedestrian survey of the pipeline.
- Riparian zones should be left intact with only a man-trail cleared for access.
- Maintain a 30' riparian buffer to preserve vegetation and to protect surface water
- Critical Habitat Areas may contain Threatened and Endangered Species. Work in these areas will be restricted and require a permit. Damage to the habitat (e.g., a tree used for nesting or a wetland) or directly to the species without a “Take” permit could be a Federal offense.

8.0 Record Keeping

Pesticide application records must be prepared and maintained. The records are required to be kept by a Commercial Pesticide Applicator (not employed by an operator) and are the same as required of commercial pesticide operators [OAR 603-57-130]. **The records must be maintained for at least three years from the date of application.**

The required pesticide application record information is summarized in Table 2.

Table 1 Pesticide License Requirements		
License	Requirements	Renewal
Commercial Pesticide Applicator	<ul style="list-style-type: none"> Must be certified in appropriate categories Can supervise trainee applicators Can consult on the use of RUP Must be re-certified periodically (about every four years) 	<ul style="list-style-type: none"> License valid for remainder of year of issuance Renewable annually throughout certification period
Directly Supervised Commercial Pesticide Trainee	<ul style="list-style-type: none"> Work under direction of licensed commercial applicator Onsite supervision not required Must pass trainee certification exam Must obtain license 	<ul style="list-style-type: none"> License valid for remainder of year of issuance Limited to one-time renewal for following year
Immediately Supervised Commercial Pesticide Trainee	<ul style="list-style-type: none"> Work under immediate supervision of licensed commercial applicator Onsite supervision required at all times and no further than 5 minutes away from supervisor No exam is required Must obtain license 	<ul style="list-style-type: none"> License valid for remainder of year of issuance Can be renewed annually without limitation

Table 2 Required Pesticide Application Records	
1. Full name, address and phone number of the business or individual who owns or controls the property. 2. Address of the site or geographic description of the site and the size of the area treated. 3. Date and approximate beginning and ending time of application. 4. Full name of individual or business that supplied the pesticide. 5. EPA registration number of each pesticide product applied or the manufacturer, product name, and formulation type.	6. Amounts and types of products used, amount of each pesticide applied, amount and type of carrier used, amount and type of other material applied (i.e., wetting agent or drift retardant). 7. For each pesticide product applied, the specific crop or site of application. 8. Identification of the specific application equipment used (i.e., aerosol can, speed sprayer, fogger, etc.). 9. Full name of the applicator(s) and/or trainee(s) who applied the pesticides.

The Right-of-Way team leaders for NW Natural maintain these records in the Rights-of-Way Supervisor's office located at the Sherwood Operations and Training Center.

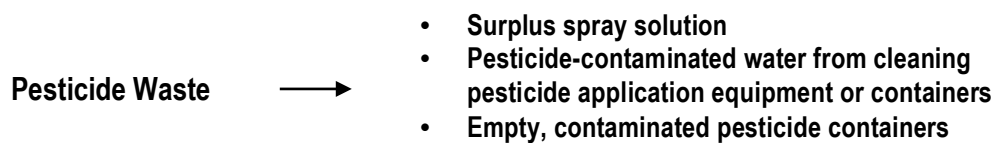
9.0 Waste Management

9.1 Pesticide Selection

Part of the training and certification for pesticide applicators involves the selection of the appropriate pesticide that will achieve a desired result. Selection of the appropriate pesticide for the job helps reduce the need to re-spray or discard unused pesticide and is a first step in reducing the amount of waste generated.

After selecting the herbicide for a specific application, the NW Natural Chemical Safety Evaluation Committee must approve the herbicide before it can be purchased or used. This is part of NW Natural's chemical management program. Because of the time needed in the approval process and the goal of reducing the number of chemicals in use, it is helpful if the herbicide could be used for as many right-of-way sites as appropriate.

9.2 Waste Generation



Pesticide waste should be managed under the Universal Waste Rule (See Module 6 – Universal Waste Management). The universal waste regulations require six (6) simple management steps:

- Do NOT throw pesticide wastes into the trash;
- At Service Centers, Mist, and other fixed locations, collect and store pesticide wastes in appropriate, non-leaking containers;
- Label or mark the container with "Waste Pesticide" and put the date the waste was created;
- Do NOT store accumulated pesticide waste onsite for more than 1 year;
- Provide basic training to NW Natural employees that produce, handle, or manage pesticide wastes; and
- Assure that pesticide wastes are shipped to and received by an authorized universal waste collection site or destination facility.

In addition, NW Natural's internal requirement for empty pesticide containers (after they have been triple rinsed or in accordance with the label instructions) is to puncture or drill holes in the bottom of the container so that it cannot be used again.

Despite the fact that the Universal Waste rules impose certain requirements, these rules are significantly more relaxed when compared to DEQ's 'regular' hazardous waste regulations. Therefore it is imperative that we properly identify, accumulate, store, and transfer our pesticide wastes as universal wastes to companies that will properly manage these materials.

The best method for waste management is to reduce the amount of waste generated. Here are some suggestions on reducing the amount of pesticide waste generated:

- Whenever possible, use-up all pesticide and application residuals (e.g., sprayer heel, equipment rinsate, etc.) on the target vegetation to avoid creating any waste.
- Buy only what you will use in one season.
- Measure, mix and load only enough to do the job.

9.3 Spills

Spills of pesticides (and pesticide residues) in an amount equal to or greater than one pound (about 2 cups) are required to be reported to the State of Oregon Emergency Management Division³. In accordance with Module 15, however, the NW Natural Environmental Department is responsible for notifying the State.

All spills must be immediately reported (within 15 minutes of discovery) to the Corporate Environmental Specialist. Depending on the size of the spill and the internal resources available, outside contractors may be retained to perform the spill cleanup and decontamination, as necessary. All reasonable attempts should be made to recover spilled material for reuse if at all possible.

A written report that describes all aspects of the spill and steps taken to prevent a recurrence may be required within 15 days of the spill [OAR 340-108-0010]. DEQ will notify us if a report is needed. The NW Natural Environmental Department will be the lead for preparing any reports, but will require assistance from the field personnel knowledgeable on the incident.

10.0 Reference Materials

There are many references available to assist in preparing for the pesticide certification examinations. Following is a list of some of the primary resources:

Study Material	Location/Source
1. Oregon Pesticide Applicator Manual (EM8532)	Publication Orders & OSU Bookstore
2. Pesticide Control Regulations	Oregon Dept. of Agriculture (OAR 603-057) https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=2734
3. Management of Pesticide Waste	Oregon DEQ (OAR 340-109) https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=1503
4. Right-of-Way Vegetation Management (EM 8863)	Publications Orders & OSU Bookstore
5. Pacific Northwest Weed Control Handbook	Publications Orders & OSU Bookstore https://pnwhandbooks.org/weed
6. Weeds of the West	Publications Orders & OSU Bookstore
7. Oregon Department of Agriculture (ODOA) Noxious Weed List	ODOA website https://www.oregon.gov/oda/programs/weeds/pages/aboutweeds.aspx#A_List

A summary of the pesticide testing requirements and additional reference materials are presented in the Oregon Department of Agriculture website:

<https://www.oregon.gov/ODA/programs/Pesticides/Pages/AboutPesticides.aspx>

³ OAR 340-108-0010(1)(f)



Figure 1
Examples Invasive Root Growth

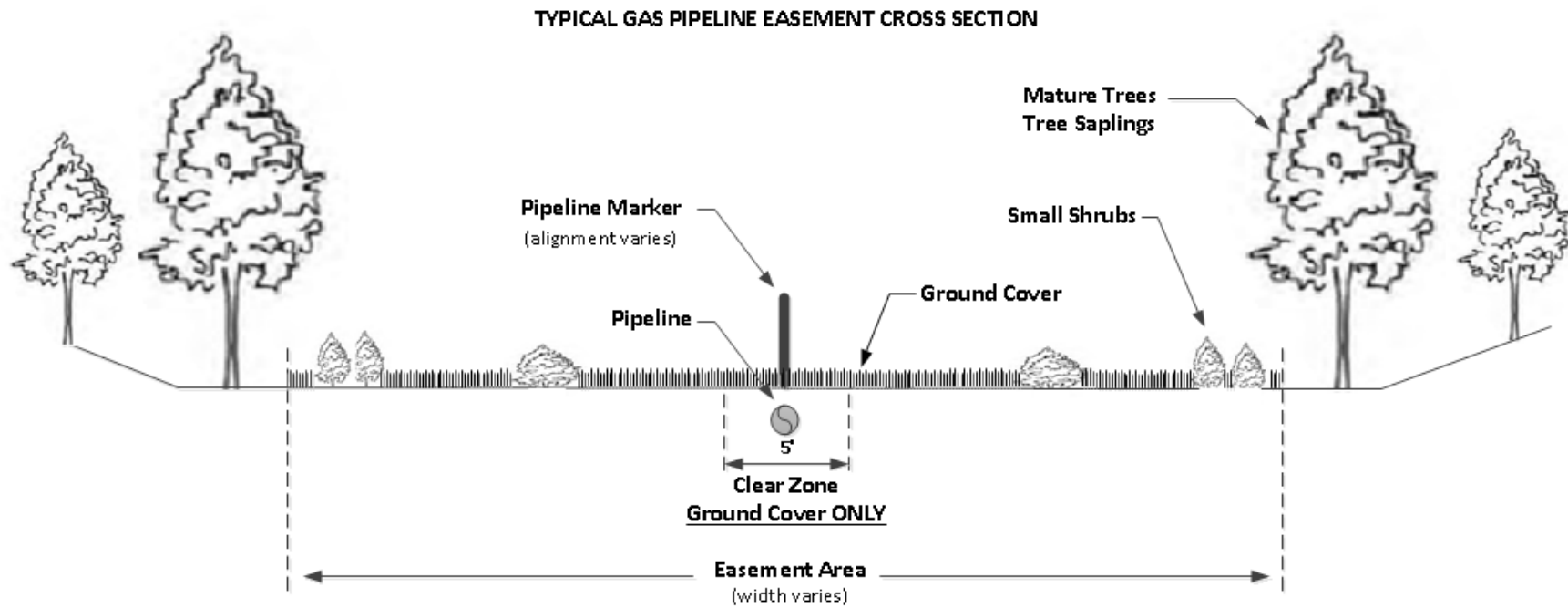


Figure 2
Typical Gas Pipeline Easement Cross Section

Appendix A:

Common Noxious Weeds found on Utility Right of Ways

[<https://www.oregon.gov/ODA/programs/Weeds/OregonNoxiousWeeds/Pages/AboutOregonWeeds.aspx>]



Canada Thistle



Scotch Broom



Himalayan Blackberry



Gorse



Kudzu

Appendix B



FIRE SEASON REQUIREMENTS

The following fire season requirements become effective when fire season is declared in each Oregon Department of Forestry Fire Protection District, including those protected by associations (DFPA, CFPA, WRPA).

NO SMOKING (477.510)

No smoking while working or traveling in an operation area.



HAND TOOLS (ORS 477.655, OAR 629-43-0025)

NEW IN 2017. Supply hand tools for each operation site - 1 tool per person with a mix of pulaskis, axes, shovels, hazel hoes.

This language replaces the fire tool table based on the number of workers.

Store all hand tools for fire in a sturdy box clearly identified as containing firefighting tools. Supply at least one box for each operation area. Crews of 4 or less are not required to have a fire tools box as long as each person has a shovel, suitable for fire-fighting and available for immediate use while working on the operation.



FIRE EXTINGUISHERS (ORS 477.655, OAR 629-43-0025)

NEW IN 2017. Each internal combustion engine used in an operation, except power saws, shall be equipped with a chemical fire extinguisher rated as not less than 2A:10BC (5 pound).



POWER SAWS (ORS 477.640, OAR 629-043-0036)

Power saws must meet [Spark Arrester Guide](#) specifications - a stock exhaust system and screen with $\leq .023$ inch holes.

The following shall be immediately available for prevention and suppression of fire:

- ◆ One gallon of water or pressurized container of fire suppressant of at least eight ounce capacity
- ◆ 1 round pointed shovel at least 8 inches wide with a handle at least 26 inches long
- ◆ The power saw must be moved at least 20' from the place of fueling before it is started.



FIRE TOOLS, EXTINGUISHERS FOR TRUCKS (ORS 477.655, OAR 629-043-0025)

Equip each truck driven in forest areas for industrial purposes with:

- ◆ 1 round pointed shovel at least 8 inches wide, with a handle at least 26 inches long
- ◆ 1 axe or Pulaski with 26 inch handle or longer
- ◆ 1 fire extinguisher rated not less than 2A:10BC (5 pound).



SPARK ARRESTERS AND MUFFLERS (ORS 477.645, OAR 629-043-0015)

All non-turbo charged engines must meet [Spark Arrester Guide](#) specifications except:

- ◆ Fully turbo charged engines.
- ◆ Engines in motor vehicles operating on improved roads equipped with an adequate muffler and exhaust system.
- ◆ Engines in light trucks (26,000 GVW or less) that are equipped with an adequate muffler and an exhaust system.
- ◆ Engines in heavy trucks (greater than 26,000 GVW) that are equipped with an adequate muffler and exhaust system.
- ◆ If a truck engine is not fully turbo-charged, then the exhaust must extend above the cab and discharge upward or to the rear, or to the end of the truck frame.
- ◆ Water pumping equipment used exclusively for fighting fire.
- ◆ Engines of 50 cubic inch displacement or less, except ATV's and motorcycles, shall be equipped with an adequate muffler and an exhaust system.
- ◆ Engines in ATV's and motorcycles must be equipped with an adequate muffler and exhaust system or an approved screen, which completely encloses exhaust system.
- ◆ Power saws. (See power saw requirements)



This page intentionally left blank