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# Irish Single-Family Residence Wetland Delineation and RUE Analysis Report Olympia, WA

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Prepared for  
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June 15, 2023



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## Executive Summary

**Site Name:** Irish Single-family RUE

**Site Location:** 7125 LIBBY RD NE, Olympia, WA 98506

**Parcel Number:** 12913140200

**Acreage:** 4.56 acres

**Partial Legal description:** Section 13 Township 19 Range 2W SE-SE-NE LESS S 315F LESS N 30F LESS CO RD

**Project Staff:** Alex Callender, M.S., PWS

**Field Survey Conducted:** December 16 and December 18, 2022

**Project Description:** Project to allow a partial restoration of an unpermitted area of vegetation removal and grading within a wetland buffer

An RUE to utilize the remaining area to build a 3,000 sq ft single family residence, a 900 sq ft garage, a drinking water well, an onsite septic with a septic drainfield (2,620 sq ft), and 2,955 sq ft driveway for ingress and egress for a total of 9,715 sq ft of new development.

**Findings:** Three wetlands were found on and offsite. Wetland A is less than 1,000 square feet and will not carry a regulatory buffer.

Wetland B was rated as Category III wetland with a habitat score of eight (MHH).

Wetland C is a Category III wetland with a habitat score of eight (MHH).

Wetlands with a habitat score of eight (MHH) typically carry a 280-ft buffer. These buffers can be reduced to 210-feet; however, further reductions will be necessary, and a Reasonable Use Exception will be required for relief from the standards in Thurston County Code. An analysis is provided to show that the project will meet the reasonable use criteria found in code.

An Un-named stream was found to be less than 5 feet wide and fish bearing and will carry a 150-foot buffer.

**Mitigation:** A mitigation plan to maintain no net loss of wetland functions and values has been created for unavoidable impacts that will occur in order to develop the property. This is outlined in the "No-Net Loss Mitigation Report for the Irish Single-Family Residence" by Land Services Northwest.

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## 1.0 INTRODUCTION

This report is the result of a critical areas study of the 4.56 - acre Parcel #12913140200 at 7125 LIBBY RD NE, Olympia, WA 98506 with the legal description of Section 13 Township 19 Range 2W SE-SE-NE LESS S 315F LESS N 30F LESS CO RD in Thurston County, Washington (**Figure 1**)

The purpose of this report is to 1) identify and describe the wetlands or other critical areas on-site and within 315 ft off-site of the property 2) identify impacts to wetlands or critical areas and their buffers, and 3) apply mitigation and conservation measures to off-set any critical areas or buffer impacts.

This report was prepared to satisfy the critical areas review process required by the Thurston County Development Regulations Title 24 Critical Areas and specifically the reasonable use exception process found in TCC 24.45.

Thurston County and possibly other agencies that may evaluate impacts to critical areas from the proposed project will be able to utilize information in this report.

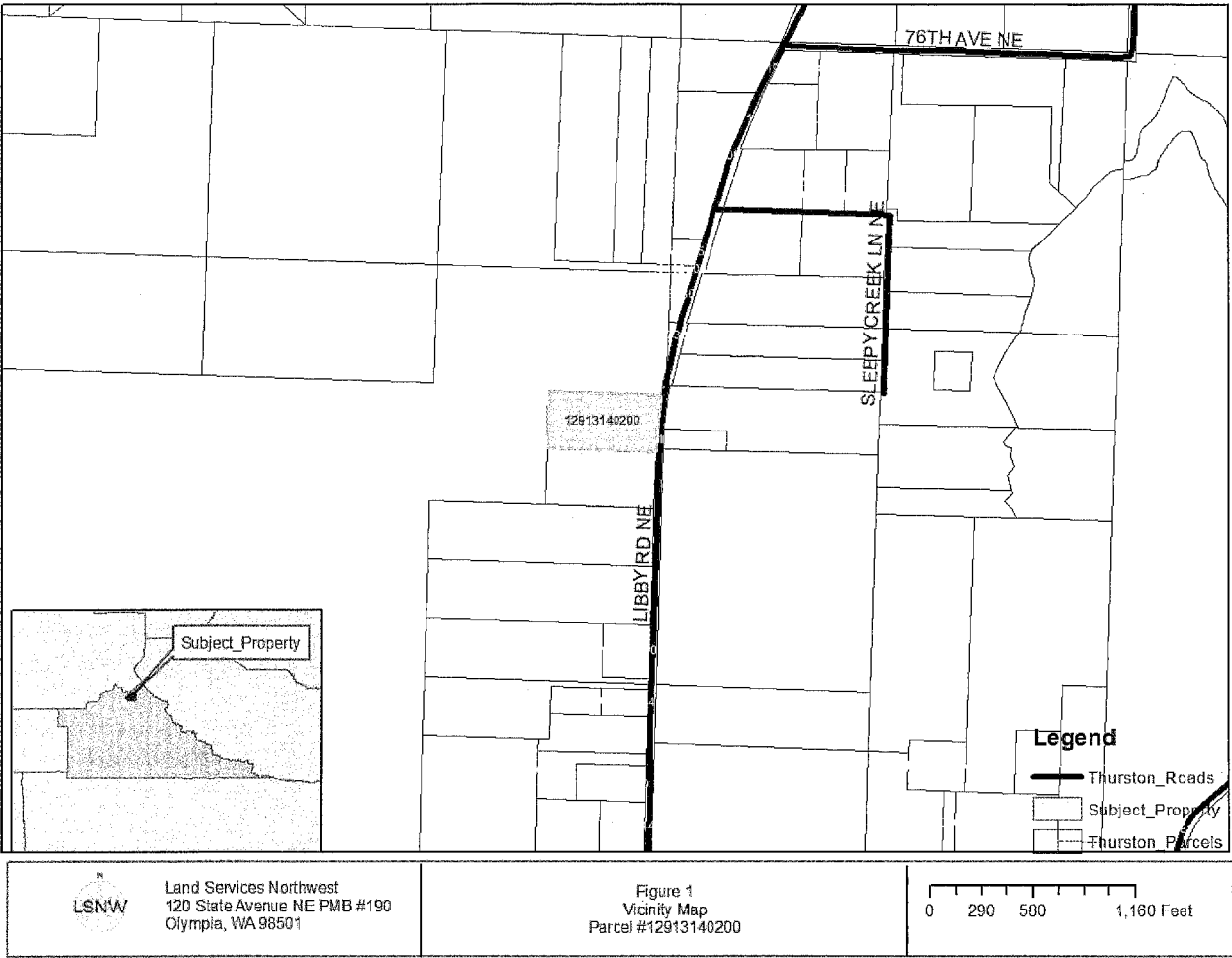


Figure 1-Vicinity Map

## 2.0 GENERAL DESCRIPTION AND LAND USE

### 2.1 Historical and Current Land Use

Historically, this property has been vacant forestland with an existing forest practices road on the eastern portion that allows access to the larger parcel to the south. The properties to the north have just been cut under a forest practices regime. The parcel to the south has a single-family residence with an outbuilding driveway and other common appurtenances (**Figure 2**).

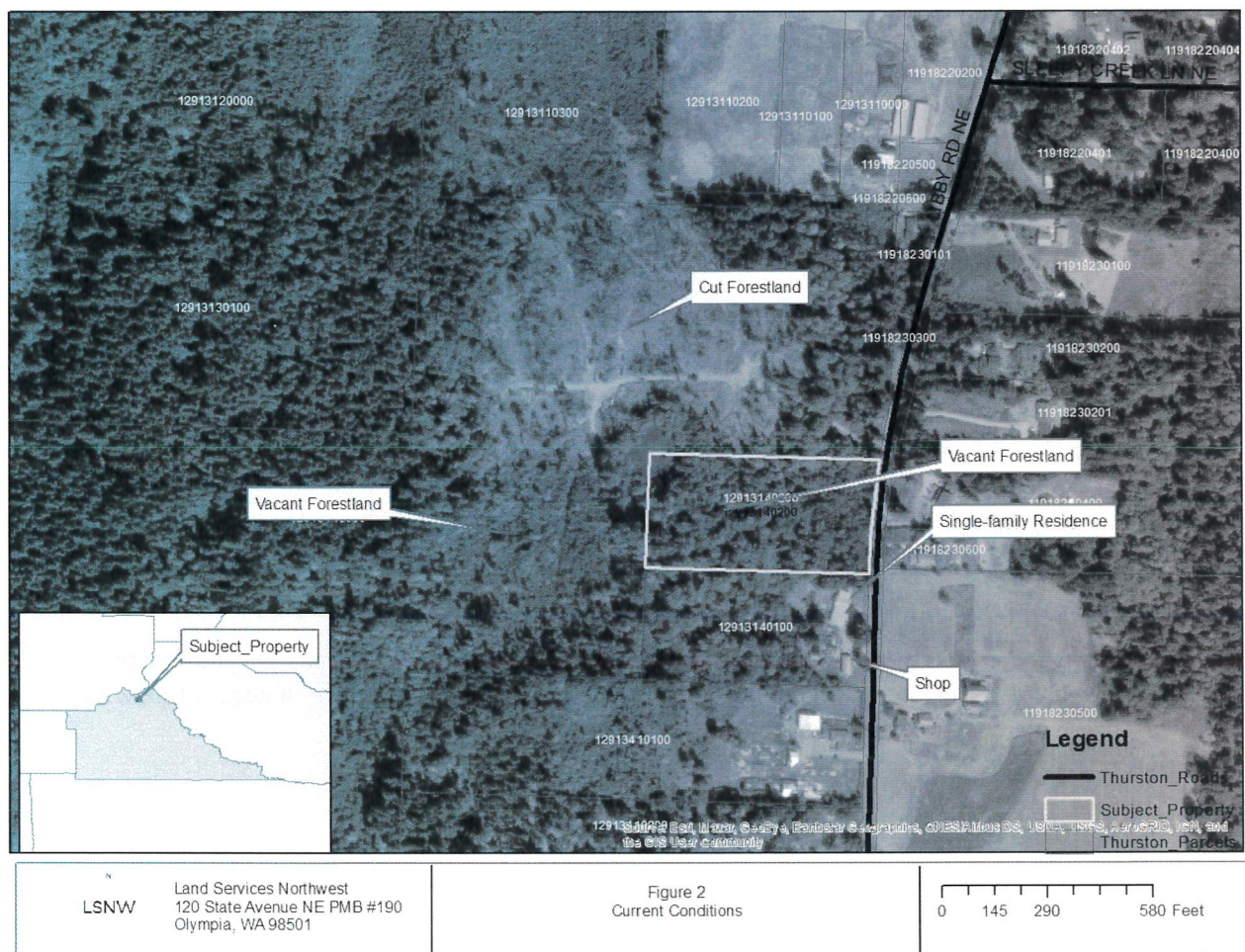


Figure 2 - Current Conditions

### 3.0 METHODOLOGY

#### 3.1 Existing Information Review

Background information on possible wetlands was reviewed prior to field investigations and included the following:

National Wetlands Inventory (NWI) Map, USFWS Shapefile Data (**Appendix B**)

Thurston County Area Soil Survey, Soil Conservation Service (U.S. Department of Agriculture, 1973) National Resource Conservation Service Shapefiles (NRCS Soils Data Mart, 2006) (**Appendix C**)

Thurston County Geodata Wetland Inventory (**Appendix D**) USGS 7.5

Minute Quadrangle Topographic Maps (**Appendix E**) WDNR Forest

Practices Application Map (**Appendix F**)

Washington Department of Fish and Wildlife Priority Habitats and Species and Salmonscape Databases (**Appendix G**)

NOAA NOW Precipitation Data (**Appendix H**)

Washington Department of Natural Resources Natural Heritage Database United

States Hydric Soils List (U.S. Department of Agriculture 1991) Thurston County

Code Chapter 24

#### 3.2 Analysis of Existing Information

The following existing information was reviewed to gain a better understanding of on-site conditions and its position in the landscape. In general, the scope of the desktop reconnaissance is limited to 315 feet.

National Wetland Inventory (NWI) Map

The National Wetland Inventory (NWI) map (**Appendix B**), developed by the U.S. Fish and Wildlife Service (USFWS), shows a PSSC Palustrine Scrub Shrub Seasonally Flooded wetland to the west. It does not show any other wetlands in the vicinity of wetlands found on and offsite during the site visit.

NRCS Soils Map

The Natural Resources Conservation Service (NRCS) has mapped the site (**Appendix C**) as containing:

- Bellingham silty clay loam (Hydric)
- Kapowsin silt loam, 0 to 3 percent slopes

Bellingham Series

The Bellingham soils are lower on the slope and associated with the wetland areas and match what was found onsite. The Kapowsin seems to meet the same extent that was found onsite and is mostly in the upland areas.

The Thurston County Geodata website has a mapping tool that depicts various critical areas such as streams and wetlands. This map shows Palustrine forested, and shrub scrub wetland on and offsite to the west and north of the parcel in the general vicinity of Wetland B. **(Appendix D)**.

#### USGS 7.5 Minute Topo Map

The USGS has topographical maps that depict natural and artificial features on the landscape including wetlands. This map shows a wetland far offsite to the west **(Appendix E)**.

#### WDNR Forest Practices Application Map

WADNR maintains a GIS of stream and waterbody types classified in accordance with WAC 222-16-32 Forest Practices This database shows a wetland on the parcel to the west. **(Appendix F)**

#### WDFW Priority Habitats and Species Inventory and Salmonscape

The Department of Fish and Wildlife maintains an inventory of priority habitats and species information This database does not show records of any federal or state listed endangered species. It does show polygons for the Big brown bat (*Eptesicus fuscus*) (Little brown bat (*Myotis lucifugus*), and Yuma myotis (*Myotis yumanensis*). These bats are probably centered in Woodard Bay and may visit the site to feed on macroinvertebrates and may be offsite, but there are no snags with hollows in the vicinity of the subject property, so it is not likely that there is habitat here specifically. Salmonscape does not show any salmonid usage or a usable hydrologic connection to the wetland on the site **(Appendix G)**

#### NOAA NOW Precipitation Data

NOAA maintains a database that graphs the current precipitation against the wettest, driest, and normal accumulations of record. This data shows that we have been just slightly above normal **(Appendix H)**.

### 3.3 Field Investigation

#### Determination Guidelines

Land Services Northwest based its wetland identification and delineation upon the 1987 Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the regional specificity found in Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE, 2010). Generally, as outlined in the manuals, wetlands are distinguished from other landforms by three criteria: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology.

#### General Field Guidelines

Plant species were identified according to the taxonomy in *Flora of the Pacific Northwest* (Hitchcock and Cronquist, 1973), and the wetland status of plant species was assigned according to: *The National Wetland Plant List: 2016* (Lichvar, 2016). Wetland classes were determined by the U.S. Fish and Wildlife Service's system of wetland classification (FGDC, 2013). The wetland determination was based mainly on soils, vegetation, and hydrology characteristics indicative of wetland conditions.

The Corps Manual and Supplement describes soil, vegetation, and hydrological indicators of wetlands. A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (National Technical Committee for Hydric Soils, 1994). Anaerobic conditions cause redoximorphic features to develop, which can be evidenced through the observation of mottling or gleying in the soil. Soils are hydric if they match the indicators in the supplement or meet the technical definition.

A soils evaluation was performed to determine if the area contained hydric soils. Additional test plots were sampled to gage possible wetland indicators and characteristics. Soils are normally excavated to 18 inches or more below the surface within a test pit to evaluate soil characteristics and hydrological conditions in both wetland and upland areas. Soil chroma (color) is evaluated using the *Munsell Color Chart* (Munsell Color, 1988).

The COE describe a wetland rating system for plants. Each plant species is assigned a probability of occurrence within wetlands, which is referred to as its wetland status. The wetland plant indicator system is as follows:

Table 1 Indicator Status Ratings

Indicator Status	Abrv.	Definitions - Short Version ( ERDC/CRREL TN-12-1 )
Obligate	OBL	Almost always occur in wetlands.
Facultative Wetland	FACW	Usually occur in wetlands but may occur in non-wetlands.
Facultative	FAC	Occur in wetlands and nonwetlands.
Facultative Upland	FACU	Usually occur in non-wetlands but may occur in wetlands.
Upland	UPL	Almost never occur in wetlands.
		(USACE, 2016)

In general, under the Federal methodology, more than 50 percent of the predominant plant species within a test plot must be rated FAC or wetter (i.e., FACW, OBL) to satisfy the wetland criteria for hydrophytic vegetation. Dominant species are those when ranked comprise 50% of the total or those that have a percent cover greater or equal to 20 percent within the test plot. Only dominant plant species were considered in the data analysis.

If wetland hydrology, including pooling, ponding, and soil saturation, is not clearly evident, hydrological conditions may be observed through surface or soil indicators. Indicators of hydrological conditions include drainage patterns, drift lines, sediment deposition, watermarks, historic records, visual observation of saturated soils, and visual observation of inundation

### 3.4 Wetland Study

A wetland delineation was performed on December 18, 2022, to identify wetlands present on the subject property. Observations were made of the general plant communities, wildlife habitats, and the locations of potential streams and wetland areas. Present and past land-use practices were also noted, as were significant geological and hydrological features.

Once likely wetland areas were located, the Routine Onsite Determination Method was used to identify the presence of wetland parameters and to delineate the outer edge of the wetlands using the procedures outlined in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987). The Routine Onsite Determination Method was used in areas that maintained normal circumstances, were not significantly disturbed, and were not potential problem areas. A formal wetland delineation was performed on December 18, 2022, to flag and document on-site wetlands and to identify and map off-site wetlands within 315 feet of the subject property as we are legally able.

Test pits were dug on December 16 and 18, 2022 (**Figure 3**) to develop a better understanding of soil profiles and hydrology onsite. Soils were excavated to 18 inches or more below the surface within a test pit to evaluate soil characteristics and hydrological conditions throughout the site. Soil chroma (color) is evaluated using the *Munsell Color Chart* (Munsell Color, 1988). These results were entered in wetland data sheets (**Appendix I**).

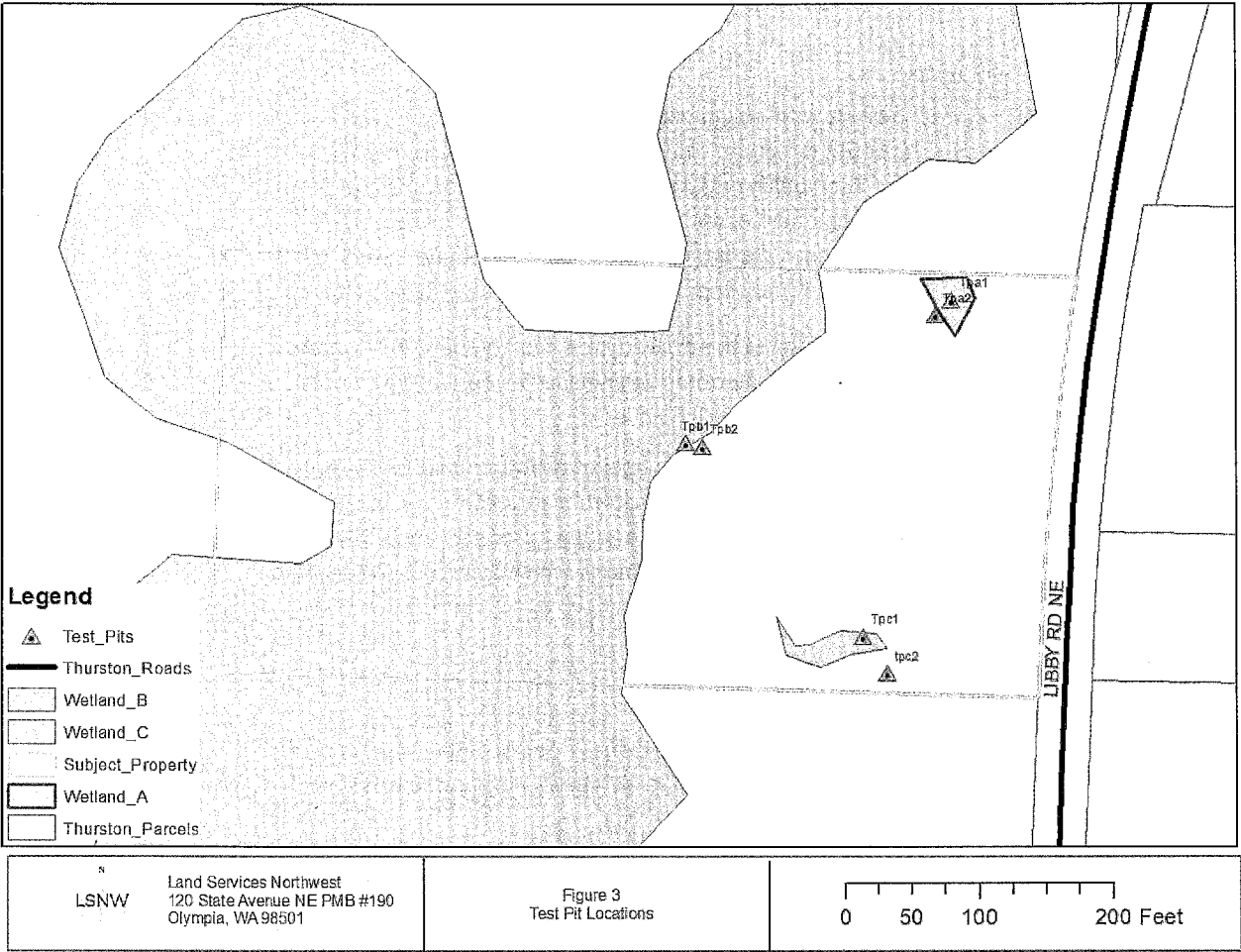


Figure 3 – Test Pit Locations

## 4.0 RESULTS

### 4.1 Existing Conditions

The subject property is flat in the east with a slight slope to the west toward a swale which is Wetland B which transects the lot and in north to south direction. The property was inadvertently cleared in the center for a recreation area for the applicant. The applicant did not realize that he was in a critical area buffer, and he is working to rectify the situation through this permit process. This cleared area seems to be stable and the area is not saturated, and it does not appear that any direct impacts to the wetland occurs just off of the cleared area. Since it is a tight clay loam, the area does not seem to be discharging any turbid water to the Wetland B.

An inspection of the vegetation at the edge of the cleared area near Wetland B's wetland edge had dull Oregon grape, Salal, Douglas fir, trailing blackberry and other upland species dominating, so it appears that the wetland area was not disturbed directly, and the buffer will recover.

The rest of the property is undisturbed forest with a couple of trails that lead to the adjacent parcels. There is a spall road leftover from earlier forest practices at the eastern front center portion of the lot for ingress and egress. The property to the north is draining via a wetland to the subject property and it is thought that the forest practices has led to an increase in runoff as the forest canopy which attenuates the runoff and allows water to percolate into the soil is now gone.

### 4.2 Wetland Attributes

#### Wetland A

Wetland A is a small 962 sq ft depressional wetland that does not discharge to anywhere. It is relatively disturbed as there is an old forest practices road to the west of it. relatively large slope HGM wetland with Palustrine Forested Seasonally Flooded Cowardin Classification.

#### Vegetation

Red Alder (*Alnus rubra*; FAC), Sitka willow (*Salix sitchensis*; FAC) Pacific ninebark (*Physocarpus capitatus*; FACW), Slough sedge (*Carex obnupta*; OBL), in the emergent area and Oregon ash (*Fraxinus latifolia*; FACW), Red alder (*Alnus rubra*; FAC), dominate the forested areas and Salmonberry (*Rubus spectabilis*; FAC) dominates the shrubs.

#### Soils

Soils in Wetland A are a silt loam, 10YR 3/2 in the upper layer with a 10YR 3/6 oxidized rhizosphere and a 10YR 5/2 and a 10YR 5/8 redoximorphic layer underneath that.

#### Hydrology

It was wet during both surveys. Water was found within 4 inches in the wetland, and it was the early wet season.

#### Wetland B

Wetland B is the largest wetland of the three found on and offsite. It is a Category III slope HGM wetland that flows to the south.

#### Vegetation

Vegetation in wetland B is dominated with red alder (*Alnus rubra*; FAC), Cascara (*Rhamnus purshiana*; FAC), Pacific ninebark (*Physocarpus capitatus*; FACW) and Slough sedge; *Carex obnupta*; OBL)

#### Soils

Soils were a 10YR 2-3/1 clay loam underlain with a 10YR 5/2 and 5/2 with 5/6 redoximorphic features

#### Hydrology

Hydrology was found at the surface or within 4 inches on the east side of the swale that comprises Wetland B.



### Wetland C

Wetland C is a small depression that is associated with bulldozer road scrape. It flows to the Wetland B during periods of high precipitation, however, there it is not continuous flow with the wetland and the water typically flows to the ground.

### Vegetation

Vegetation is comprised mostly of red alder (*Alnus rubra*; FAC), Pacific ninebark (*Physocarpa capitatus*; FACW), Slough sedge (*Carex obnupta*; OBL).

### Soils

Soils are typical of the other wetlands with a 10 YR 2-3/1 underlain with a 10YR 5/2 and transitioning to a 10YR 5/2 with a 10YR 5/6 redoximorphic features.

### Hydrology

Hydrology was found within 4 inches of the surface and is largely the result of precipitation and surface flows. The water flows downhill until it percolates back to the groundwater just outside of the depression.

## 5.0 WETLAND FUNCTIONAL VALUES

### 5.1 Wetland Functional Analysis Methodology

Wetlands, in general, provide many valuable ecological and social functions, including 1) stormwater storage, 2) groundwater recharge, 3) erosion control, 4) water quality improvement, 5) natural biological support, 6) overall habitat functions, 7) specific habitat functions, and 8) cultural and socioeconomic value.

Several procedures have been developed for assessing the importance and magnitude of functions and include the Washington Functional Assessment Method (WAFAM) Wetland Evaluation Technique, the Hydrogeomorphic Assessment Method the Habitat Evaluation Procedure (HEP), and numerous regional and/or local procedures. However, none of these methods were consistent with the needs of this project.

Wetland functions were also semi-quantitatively assessed using information gathered while performing the ECY Wetland Rating System for Western Washington (Hruby, 2014). The scores from the analysis of the wetland are found in Appendix H. This method is a comprehensive approach requiring substantial data input and assessment of onsite and landscape functions. The descriptions of wetland functions and the factors and parameters considered by that method are very helpful in interpreting the functioning of the subject wetlands and buffer areas. In fact, the Credit Debit method has been developed using the parameters developed in the Wetland Rating. The methodology is scientifically based, in that its application requires a prior understanding of how wetlands function. Advanced experience, training and scientific objectivity of a wetland scientist applying the method is essential for an accurate assessment. Alex Callender has attended and received credit for the training in this method.

### 5.2 Wetland Functions

#### Wetland B

Wetland B is a Category III slope HGM wetland in a shallow swale. It is approximately 12 acres according to the Thurston County Wetland Layer which approximates the extent of the feature.

#### Water Quality

Wetland B is a seasonally flooded slope with a slight 1-2 % slope. It is primarily mineral soils. The wetland has ungrazed dense vegetation for > ¼ of its area.

10% of the buffer within 150 ft is in pollution generating activities. There are no other pollution generating activities nearby.

The wetland does not discharge to the wetland or stream on the 303d list, it discharges to Henderson Inlet, so which is in the basin and under a TMDL, so it rates high for this function.

#### Hydrologic

Wetland B has very little of its area in dense vegetation. More than 25% of the basin is in land use that generates excess runoff.

The wetland does not have appear to flood so it does not have any damage to reds, and it has a short stream course, so it does not have any flooding down stream and it is not noted in any plans as important for this function.

#### Habitat

Wetland B is relatively large and has forest and forested with three layers Cowardin classes. It has two hydrologic regimes seasonally flooded and seasonally saturated. The wetland has a moderate amount of diversity and interspersed of habitats, so it rates moderate for this function.

The wetland has a high amount of accessible habitat, the land use in the 1 KM polygon rates high because of low amount of high intensity land use and high amount of low to moderate land use. Less than 50% of the land use in 1km is High intensity.

Wetland B has snags and logs, and a ditched stream in the wetland unit so it rates high for this function.

#### Wetland C

Wetland C is a Category III depressional forested wetland that is in close proximity to wetland B and carries many of the same functions due to position in the landscape.

#### Water Quality

Wetland C is a seasonally flooded depressional wetland. It is primarily mineral soils. The wetland has ungrazed dense vegetation for > ¼ of its area.

10% of the buffer within 150 ft is in pollution generating activities like clearing and road. There are no other pollution generating activities nearby.

The wetland does not discharge to the wetland or stream on the 303d list, it discharges to Henderson Inlet, so which is in the basin and under a TMDL, so it rates high for this function.

#### Hydrologic

Wetland C has an intermittently flowing outlet.. More than 25% of the basin is in land use that generates excess runoff due to clearcutting in the area.

The wetland does not have appear to flood so it does not have any damage to redds, and it has a short stream course, so it does not have any flooding downstream and it is not noted in any plans as important for this function.

#### Habitat

Wetland C is relatively large and has forest and forested with three layers Cowardin classes. It has two hydrologic regimes seasonally flooded and seasonally saturated. The wetland has a moderate amount of diversity and interspersed of habitats, so it rates moderate for this function.

The wetland has a high amount of accessible habitat, the land use in the 1 KM polygon rates high because of low amount of high intensity land use and high amount of low to moderate land use. Less than 50% of the land use in 1km is High intensity.

Wetland B has snags and logs and there are riparian and instream functions within 330 feet of this wetland, so it rates high for this function.

## 6.0 REGULATORY CONSIDERATIONS

### 6.1 Thurston County Regulations

24.30.045 - Wetland buffers—Standard width.

Table 24.30-1 identifies the standard buffer widths. Buffer widths are specified for both water quality and habitat protection. The widest of the applicable buffers under habitat and water quality applies.

**Table 24.30-1. Standard Wetland Buffer Widths**

The Larger of the Buffers for Habitat and Water Quality Applies											
BUFFER TO PROTECT HABITAT											
Rating for habitat from the wetland rating form under the Washington State Wetland Rating System for Western Washington, 2014.	3 L,L, L	3* L,L, L	4 M,L, L	5 M,M, L	5 H,L, L	6 M,M, M	6 H,M, L	7 H,M, M	7 H,H, L	8 H,H, , M	9 H,H, H
Buffer width for habitat for all wetlands except estuarine wetlands and coastal lagoons	100'	120'	140'	160'	180'	200'	220'	240'	260'	280'	300'

Buffer width with mitigation under <u>24.30.050 T</u> CC	100'	100'	105'	120'	135'	150'	165'	180'	195'	210'	225'
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### Wetland B

Wetland B is rated a Category III wetland with an overall score of 16 and a habitat score of eight (MHH). According to the table, the wetland would carry a 280-foot standard buffer which could be reduced to 210 using the land use intensity reducing measures found in Table 24.3-2.

### Wetland C

Wetland C is rated a Category III wetland with an overall score of 19 and a habitat score of eight (MHH).

According to the table, the wetland would carry a 280-foot standard buffer which could be reduced to 210 using the land use intensity reducing measures found in Table 24.3-2.

### Reduction Measures

Thurston County Code has relief from the standard buffer if the applicant uses the mitigating measures found in Table 24.30-2. and it meets the qualifications found in TCC 24.30.050 - Wetland buffers— Reduced width which states:

Reduced Impacts. If a wetland or buffer mitigation plan is submitted that meets the criteria in Table 24.30-2, the approval authority may reduce the standard buffer width required by Habitat Scores, not including estuarine or coastal lagoons, by twenty-five percent, or to the extent that it equals the buffer width required in Table 24.30-1 to maintain water quality, whichever produces the wider buffer, if

1. The approval authority determines that the proposed reduction in buffer width, coupled with the proposed mitigation plan, would result in better protection of the wetland or better wetland or buffer.

functions than the standard buffer without such enhancement. The approval authority shall make this determination based on the applicant's proposed mitigation plan and a comparative analysis of all wetland and buffer functions under existing and enhanced conditions (e.g., filtration of sediments, excess nutrients, and pollutants; flood storage; erosion control; moderation of stormwater impacts; and shading for water temperature moderation) prepared by the applicant's qualified wetland scientist.

Factors to be considered include, but are not limited to, meeting the criteria of Table 24.30-2, the surface roughness of the buffer (e.g., the presence of fallen trees and other material that slow the flow of water and increase the buffer's ability to retain

sediment and infiltrate stormwater); the composition and density of vegetation; the wetland's position in the landscape; slope; and soils. The approval authority may consult with Ecology or others with expertise as necessary to evaluate the applicant's proposal.

2. The degradation of the wetland and buffer was not caused while the property was in the applicant's ownership or within the previous seven years, whichever is greater. This does not apply to damage from lawful land uses prior to the effective date of the ordinance codified in this title; and

3. The applicant submits maintenance and monitoring plan and performance surety consistent with Chapter 24.70

**Table 24.30-2. Required Measures to Mitigate Impacts to Wetlands**

Measures are required, where applicable to a specific proposal. EXPAND

Disturbance	Required Measures to Minimize Impacts
Lights	<ul style="list-style-type: none"> <li>• Direct lights away from wetland and buffers.</li> </ul>
Noise	<ul style="list-style-type: none"> <li>• Locate activity that generates noise away from wetland.</li> </ul>
	<ul style="list-style-type: none"> <li>• If warranted, enhance existing buffer with native vegetation plantings adjacent to noise source.</li> </ul>
	<ul style="list-style-type: none"> <li>• For activities that generate relatively continuous, potentially disruptive noise, such as certain heavy industry or mining, establish an additional 10 feet heavily vegetated buffer strip immediately adjacent to the outer wetland buffer.</li> </ul>
Toxic runoff	<ul style="list-style-type: none"> <li>• Treat and contain any toxic runoff.</li> </ul>
	<ul style="list-style-type: none"> <li>• Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered.</li> </ul>
	<ul style="list-style-type: none"> <li>• Establish covenants limiting use of pesticides within 150 feet of wetland.</li> </ul>
	<ul style="list-style-type: none"> <li>• Apply integrated pest management standards.</li> </ul>
Stormwater runoff	<ul style="list-style-type: none"> <li>• To improve existing water quality runoff that may be impacting wetland functions. Retrofit existing stormwater detention and treatment for roads and existing adjacent development</li> </ul>

Disturbance	Required Measures to Minimize Impacts
	<ul style="list-style-type: none"> <li>• Prevent channelized flow from lawns that directly enters the buffer.</li> </ul>
	<ul style="list-style-type: none"> <li>• Use Low Intensity Development techniques (per PSAT publication on LID techniques).</li> </ul>
Change in water regime	<ul style="list-style-type: none"> <li>• In order to maintain wetland hydrology and discharge only clean stormwater toward the wetland. Stormwater should be treated; then infiltrated, detained, and/or dispersed outside the wetland buffer for any new runoff from impervious surfaces and new lawns. Permanent improvements to the site hydrology that would improve wetland functions and not create off-site flooding. This may include, but is not limited to, removal of a lawfully established agricultural ditch draining a wetland or delivering sediment, pollutants or excess nutrients to a wetland.</li> </ul>
Pets and human disturbance	<ul style="list-style-type: none"> <li>• Use privacy fencing at buffer edge OR plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion.</li> </ul>
	<ul style="list-style-type: none"> <li>• Place wetland and its buffer in a separate tract or protect with a conservation easement.</li> </ul>
Dust	<ul style="list-style-type: none"> <li>• During construction or for commercial or industrial activities, use best management practices to control dust.</li> </ul>
Disruption of corridors or connections/habitat enhancement	<ul style="list-style-type: none"> <li>• In order to improve habitat quality and connectivity, a vegetation enhancement plan that improves areas with minimal trees and vegetation and proposes removal of invasive vegetation and replacing it with ground cover and shrubs that will provide dense vegetative cover at maturity. Planting noninvasive plants that provide improved filtration of sediment, excess nutrients, and pollutants that may be present.</li> </ul>
	<ul style="list-style-type: none"> <li>• Maintain habitat connections to off-site areas that are undisturbed.</li> </ul>

	<ul style="list-style-type: none"><li>• Restore corridors or connections to off-site habitats by replanting.</li></ul>
--	------------------------------------------------------------------------------------------------------------------------

Irish Single-Family Residence RUE`  
The buffer reduction is consistent with all other applicable requirements of this chapter. The applicant only owns a portion of the wetland and buffer so they will apply the land use intensity reducing mitigation in the table as appropriate.

In order to achieve the objectives of providing a single-family residence on site, the buffers must be reduced beyond what is allowed in code through these provisions.

Therefore, it appears that the project will require a reasonable use exception to meet the objectives of providing a

Streams

Streams area regulated under TCC24.25 Fish and Wildlife Habitat Conservation Areas. The onsite stream was evaluated using the table below.

24.25.020 - Standard freshwater riparian habitat area width.  
[SHARE LINK TO SECTION](#)[PRINT SECTION](#)[DOWNLOAD \(DOCX\) OF SECTION](#)[EMAIL SECTION](#)[COMPARE VERSIONS](#)

Table 24.25-1 identifies the standard riparian habitat area widths.

A

Measurement. Riparian habitat area widths are measured on a horizontal plane, outward from the ordinary high water mark (OHWM) on each side of the stream (see Figure 24.25-1).

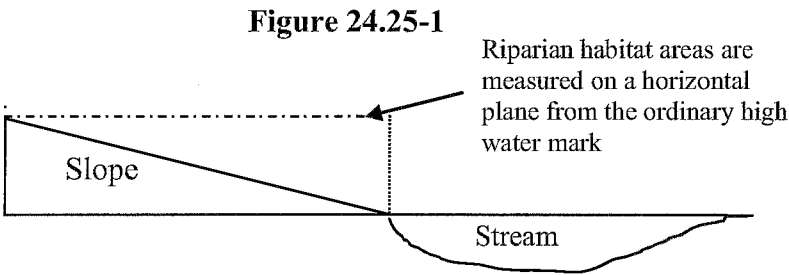


Table 24.25-1. Standard Freshwater Riparian Habitat Area Widths

EXPAND STREAM TYPE	STANDARD RIPARIAN HABITAT AREA WIDTH
Type S streams	250'
Type F streams greater than 20 feet in width (for all stream types, width is defined as bankfull width)	250'
Type F streams from 5—20 feet wide	200'
<b>Type F streams less than 5 feet wide</b>	<b>150'</b>
Type Np and Ns streams draining to Type S or F streams or directly to Puget Sound	150'

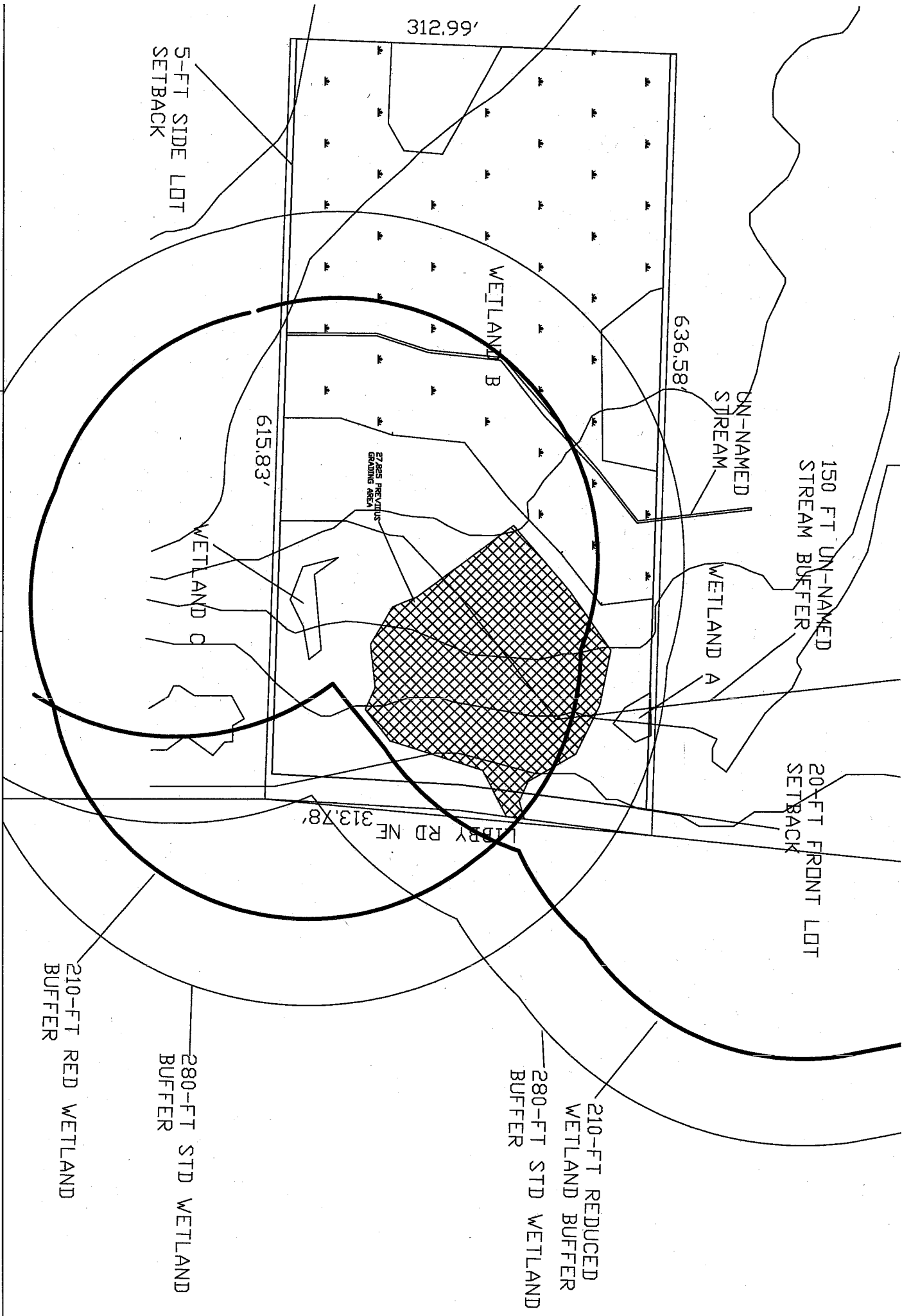


STREAM TYPE	STANDARD RIPARIAN HABITAT AREA WIDTH
Type Np and Ns streams with high mass wasting potential	225'
Other streams not listed above, including streams without a surface connection to other waters	100'

The onsite stream was determined to be a fish bearing stream less than 5 feet wide and would carry a 150-foot buffer with a fifteen foot construction setback. No impacts to the stream or buffer are expected.

Figure 4 – Standard and Reduced Wetland Buffers





LAND SERVICES NORTHWEST  
120 STATE AVE NE #190  
OLYMPIA, WA 98501  
360-481-4208



FIGURE 4  
WETLAND AND STREAMS  
STANDARD AND REDUCED  
BUFFERS  
(NOT A SURVEY)

- 150-FT STREAM BUFFER
  - PROPERTY BOUNDARY
  - 210- FT REDUCED BUFFER
  - 280- FT STANDARD BUFFER
  - STREAM
  - WETLAND EDGE CLEARING LIMITS
- Scale: 1" = 100'



Table 2 - Summary of Wetlands and Streams on or in the Vicinity of the Subject Property

Wetland	Size		Category		Base Buffer Width (feet)	Allowed Reduction/Necessary Reduction	Mitigation Ratio		Cowardin Class	Comments
	On-site	Off-site (estimated)	Thurston	Const Setback			Create	Buffer Enhance		
Vetland A <sup>1</sup>	~967 Sq ft			15-feet	N/A	N/A	None needed		PFOC <sup>1</sup> PEMC <sup>2</sup>	Unregulated with regard to buffers
Vetland B	2.2. acres	10 acres	III	15 feet reduced to 4-ft	280 ft	210 feet/ 58% reduction to 117 feet for home	None Needed No Impacts	Restore Cleared area	PFOC	Buffer Restored except for approved development
Vetland C	1,177 sq ft		III	15 ft Reduced to 4 ft	280 ft	210 ft/ 82% to 51 ft for home and 82.5% to 49 ft for septic	No direct impacts	Restore Cleared Area enhance remainder	PFOC	Buffer restored excep for approved development
In-named tream	~340 ft	3 miles	Ns< 5ft		150	150	No direct or buffer impacts			No buffer impacts

## 6.2 Corps Regulations

Wetland A has a hydrologic connection to the Puget Sound and therefore would be considered a "Water of the US"

## 6.3 Department of Ecology Regulations

Under RCW 90.48, the Washington Department of Ecology (DOE) reserves regulatory authority to regulate "waters of the state" under Section 401 of the Clean Water Act. No direct wetland impacts are proposed.

## 7.0 WILDLIFE

Wildlife observed during the field investigations are typical of urban/suburban adapted species (Table 2). Columbian black tailed deer and coyote scat were found on site.

No Federally listed, or priority species was observed on the subject property or near the site based on the WDFW Priority Habitats and Species (PHS) and field observations during the reconnaissance and delineation. During the limited duration of the site reconnaissance and delineation, no evidence of the Federally listed Bald Eagle, Marbled Murrelet, or Spotted Owl was observed on-site.

No Federally listed salmonid species are known to occur on-site, based on the WDFW SalmonScape database, the WDFW PHS database, and site reconnaissance.

No wildlife was observed on site during site visit.

## 8.0 PROPOSED PROJECT

### 8.1 Description

The project consists of a 3,000 sq ft single-family residence, a 900 sq ft garage, a drinking water well, an onsite septic(2,620 sq ft) which is in the process of being designed with a drainfield, and a 2,955 sq ft driveway for ingress and egress. (Figure 5).

### 8.2 Development Impacts and Violation

Illegal clearing was inadvertently conducted without permits by the applicant. LSNW measured the clearing limits using a Garmin GPS Map 66SR with multiband GNSS to be.62 acres (27,825 sq ft). The applicant was not aware of the critical area issues as the work was conducted during the dry season and was not apparent to the untrained eye. Once the rain hit and he could see how the rain impacted the site he was able to understand the issues better. He understands that the area that was cleared must be restored and is interested in providing a plan that will fix the situation.

Fortunately, all impacts were to the buffer, and it does not appear that there are any direct impacts to the wetland. The county has issued a stop work order and the client has been responsive in rectifying the violation ones he became more educated on wetlands. He is interested in providing a resolution to the wetland violation and since he was planning on providing a single – family residence for his family, he would like to take the opportunity to use the area that is already cleared to site the residence and appurtenances as it appears that the configuration of the wetlands on site would make the avoidance of impacts impossible as they encumber the whole property.

Our objective is to have the violation resolved first, but that would require multiple disturbances when we could efficiently restore the disturbed and graded area while using a portion of that area to

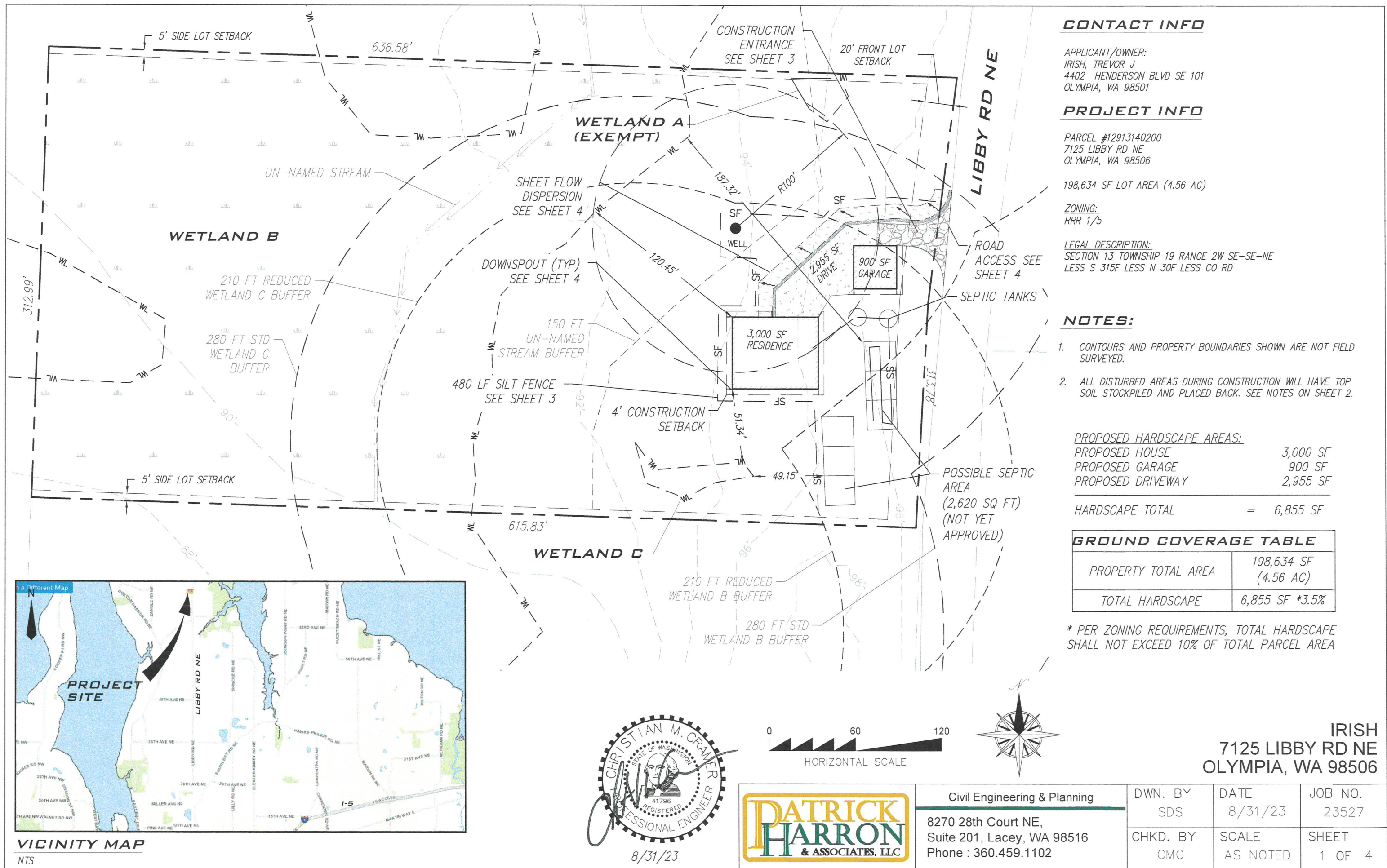


FIGURE 5 - SITE PLAN





provide the applicant with the home which he would need to provide economic value from his property. We will give Thurston County reasonable assurance the functions and values of the waters of the state will be maintained and no net loss of wetland functions will result. This will also diminish the temporal loss due to the length of time to provide a resolution and redevelopment of the property.

The proposed residence will require buffer impacts beyond a 25 percent reduction which is not allowed in code. The applicant will utilize the already cleared area according to the aerials and affidavits from the forester(**Appendix J**), there was no marketable timber in this area and the mitigation plan will maintain the functions and values of the onsite portion of this relatively large wetland.

## 8.4 Impact Avoidance and Minimization

Since the entire property is encumbered with wetlands and their buffers, the applicant proposes to locate the home, septic, driveway and garage inside the cleared area to prevent any new impacts. The applicant will also situate the home in the portion of the property that is furthest from the wetland while allowing for ingress and egress and the septic and garage. The single-family unit will be within the 25% reduced buffers and will have a smaller construction setback to minimize the impacts. The home, driveway septic and garage are located as far to the east as possible to minimize the impact to the largest wetland, Wetland A.

## 8.5 Minimization of Water Quality Impacts

Implementing water quality and sedimentation best management practices (BMPs) will act to minimize sedimentation and protect water quality on-site and any bare areas will be planted with a cover crop. Silt fences and straw wattles will be used where necessary. Splash blocks and infiltration galleries will be used to reduce stormwater impacts from the residence. The increase in vegetation from the proposed buffer enhancement plan will provide for increased surface roughness and nutrient uptake among other benefits.

## 9.0 REASONABLE USE

### 9.1 RUE Review Criteria

The Reasonable Use Exception has Criteria found in TCC 24.45.030 which states:

The hearing examiner shall approve, or approve with conditions, the reasonable use exception if:

A. No other reasonable use of the property as a whole is permitted by this title; and

The applicant wishes to derive some kind of economic value from the property. The property is zoned RRR 1/5 Rural Residential Resource. The primary allowed land use is residential which is what we are proposing while maintaining a large portion (>95%) of the property in open space which is in accordance with the preferred use in this zone.

B. No reasonable use with less impact on the critical area or buffer is possible. At a minimum, the alternatives reviewed shall include a change in use, reduction in the size of the use, a change in the timing of the activity, a revision in the project design. This may include a variance for yard and setback standards required pursuant to Titles 20, 21, 22, and 23 TCC; and

The applicant cleared the area he wanted to use before he realized that it was not available due to the buffers and now is resigned to replanting much of it to reduce the overall impact. The applicant has used the property as a recreation property, however, now it is no longer acceptable to promote this use without proper facilities. The applicant would like to build in the area to the east nearest the road to reduce the impacts as much as possible. The wetlands would be impacted no matter where he builds on the property, but he is maintaining the largest buffer between the home and Wetland B which is the largest wetland with the highest value in the vicinity of the project area. The buffer will be maintained by having a short drive that will not impact the wetland very much.

C. The requested use or activity will not result in any damage to other property and will not threaten the public health, safety or welfare on or off the development proposal site, or increase public safety risks on or off the subject property; and

*The design of the septic will be to the safety standards of the environmental health department. There are no geological hazard areas and runoff will be maintained onsite and will not degrade waters of the state. The applicant's construction site will use construction bmps to maintain water and air quality.*

*The home itself will be built with generally safe materials commonly used for the construction of residential homesites. The project will not threaten the public health, safety or welfare on or off the development proposal site.*

D. The proposed reasonable use is limited to the minimum encroachment into the critical area and/or buffer necessary to prevent the denial of all reasonable use of the property; and

*The configuration of the wetland and the buffer completely transects the site. The wetland was studied for nearly two years to make sure that only buffer impacts will occur and the wetland itself will be more protected than it is now.*

E. The proposed reasonable use shall result in minimal alteration of the critical area including but not limited to impacts on vegetation, fish and wildlife resources, hydrological conditions, and geologic conditions; and

*Even though there are impacts to the wetland buffer proposed, the development represents the minimal alteration of the buffer. Impacts to the buffer vegetation will be offset at a 1:1 impact to enhancement mitigation ratio and monitored for a period of five years where it will be self-sustaining. The hydrological condition will be maintained by stormwater bmp's which will not dewater the wetland but return water to infiltration trenches as to maintain this water onsite. The grading requirements for the site are minimal and the geologic condition should be maintained as well.*

F. A proposal for a reasonable use exception shall ensure no net loss of critical area functions and values. The proposal shall include a mitigation plan consistent with this title and best available science. Mitigation measures shall address unavoidable impacts and shall occur on-site first, or if necessary, off- site; and the mitigation plan will incorporate the applicable impact reduction measures found in TCC table 24-32-2 - Required Measures to Mitigate Impacts to Wetlands.

This table has measures considered the best available science to mitigate buffer impacts. The mitigation will occur on site and an analysis of the planting enhancement lift over baseline conditions is provided in the Wetland Buffer Mitigation plan. The project will maintain all wetland functions and values.

G. The reasonable use shall not result in the unmitigated adverse impacts to species of concerned

*There will be no unmitigated impacts to any species of concern. The WDFW PHS and the multiple site visits did not indicate the presence of any species of concern.*

H. The location and scale of existing development on surrounding properties shall not be the sole basis for granting or determining a reasonable use exception.

Although there are other structures and residences in the area that may have been afforded less consideration of the impacts to wetlands or other critical areas, it was not the basis for consideration of our development or expected mitigation for impacts. The applicant has reduced the footprint and impacts to the greatest extent possible, and the size and scale of the project was made with the knowledge that the nature of the property

Irish Single-Family Residence RUE` Wetland Delineation Report  
requires the reasonable consideration of impacts, so a reduced footprint has been offered to maintain a  
reasonable development that will allow them to derive economic use of the property.

Insert Figure 5 – Proposed Site Plan

## 10.0 SUMMARY AND CONCLUSIONS

Three wetlands were identified within 315 feet of the subject property.

Wetland A which is a small wetland and unregulated with regard to buffers

Wetland B and C are Category III wetlands with a 280-foot standard buffer. In order to provide a a single-family home with a well, garage, and onsite septic system the applicant proposes to reduce the 280-foot buffer beyond what is allowed in code. which will not impact any wetlands and only impacts on the buffers.

The applicant will provide a mitigation plan for the buffer impacts to result in no net loss in wetland functions and values and it meets the reasonable use criteria set forth in TCC 24.45.030.

This project will use best management practices in order to limit storm water impacts and other impacts will be mitigated by the buffer enhancement plan and should result in a proper single-family residence which will exist with the amenities provided by the natural resources of Thurston County.

## 11.0 LIMITATIONS

This report was created with care and best professional judgment using the currently accepted best available science. The report is subject to interpretation by local, state, and federal regulators, who have the final regulatory authority on wetlands and other critical area boundary determinations. No outcomes are warranted by this report.

## 12.0 REFERENCE

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APPENDIX A - PHOTOGRAPHS













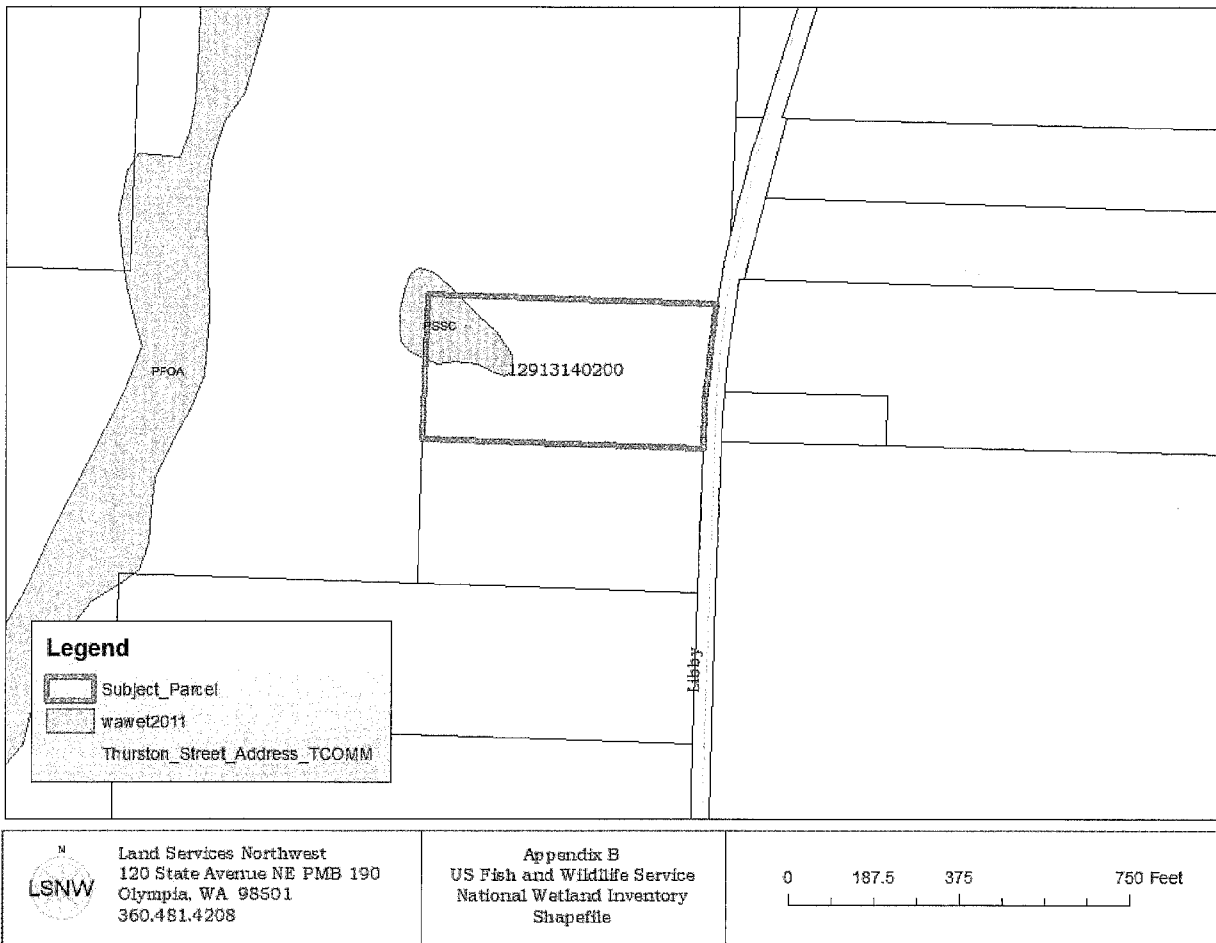




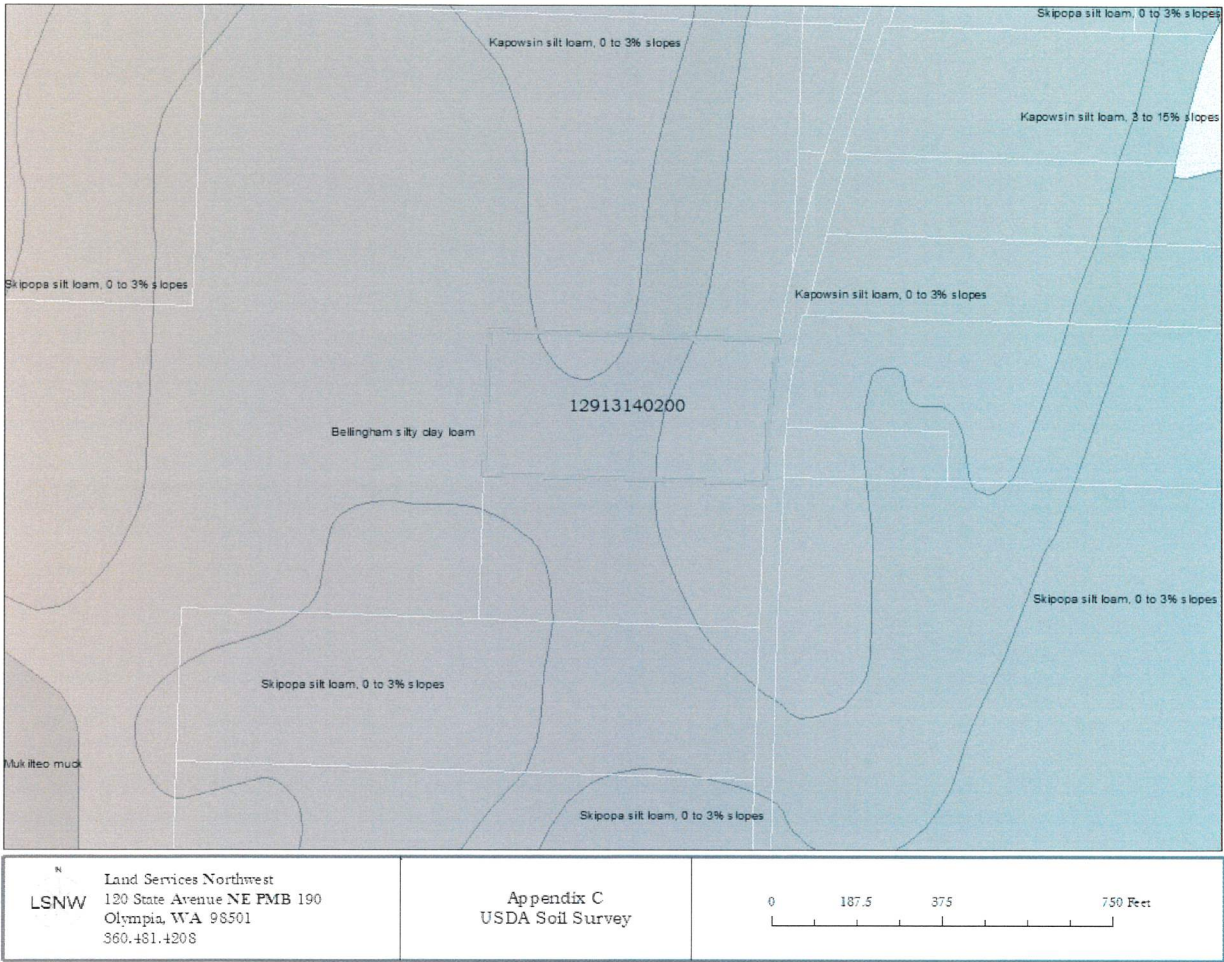






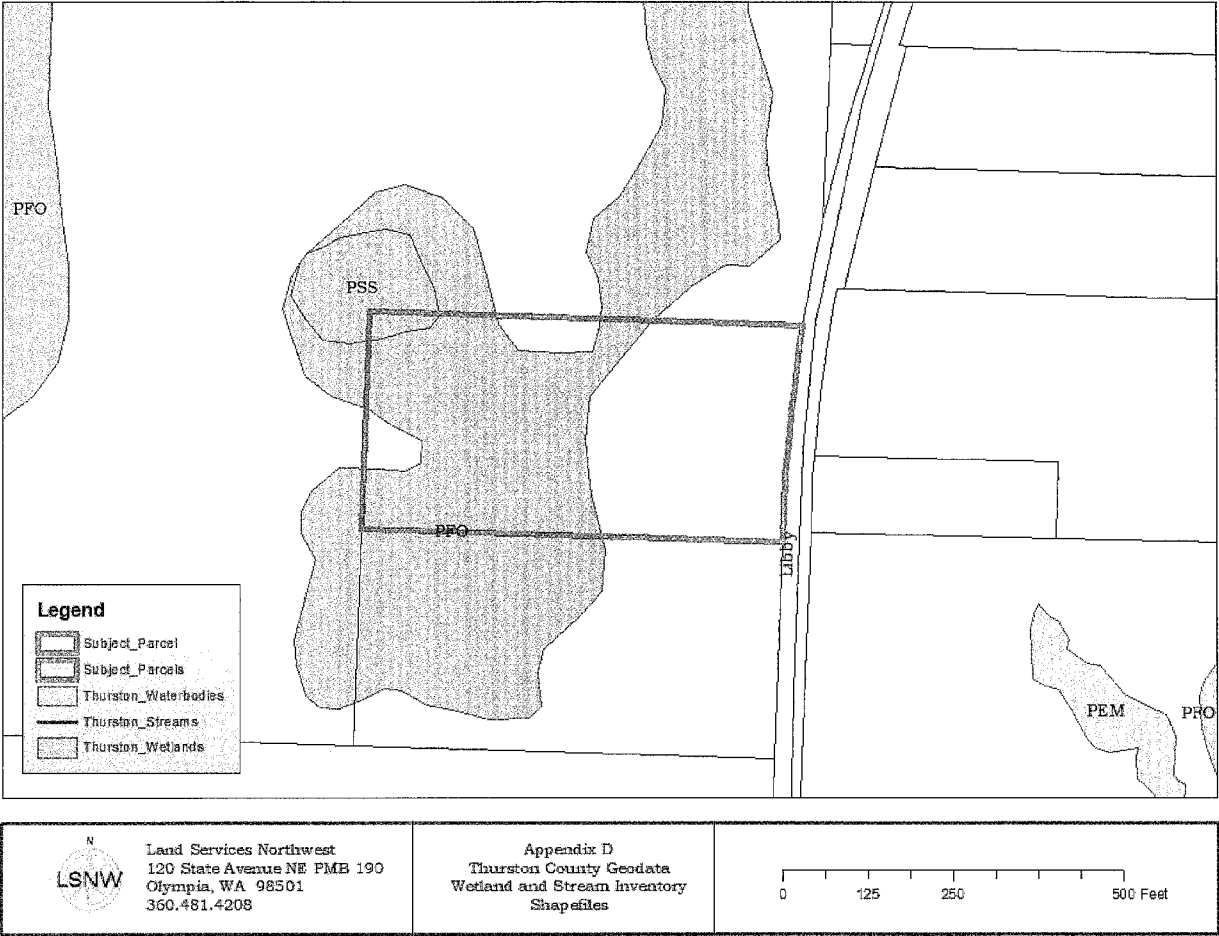












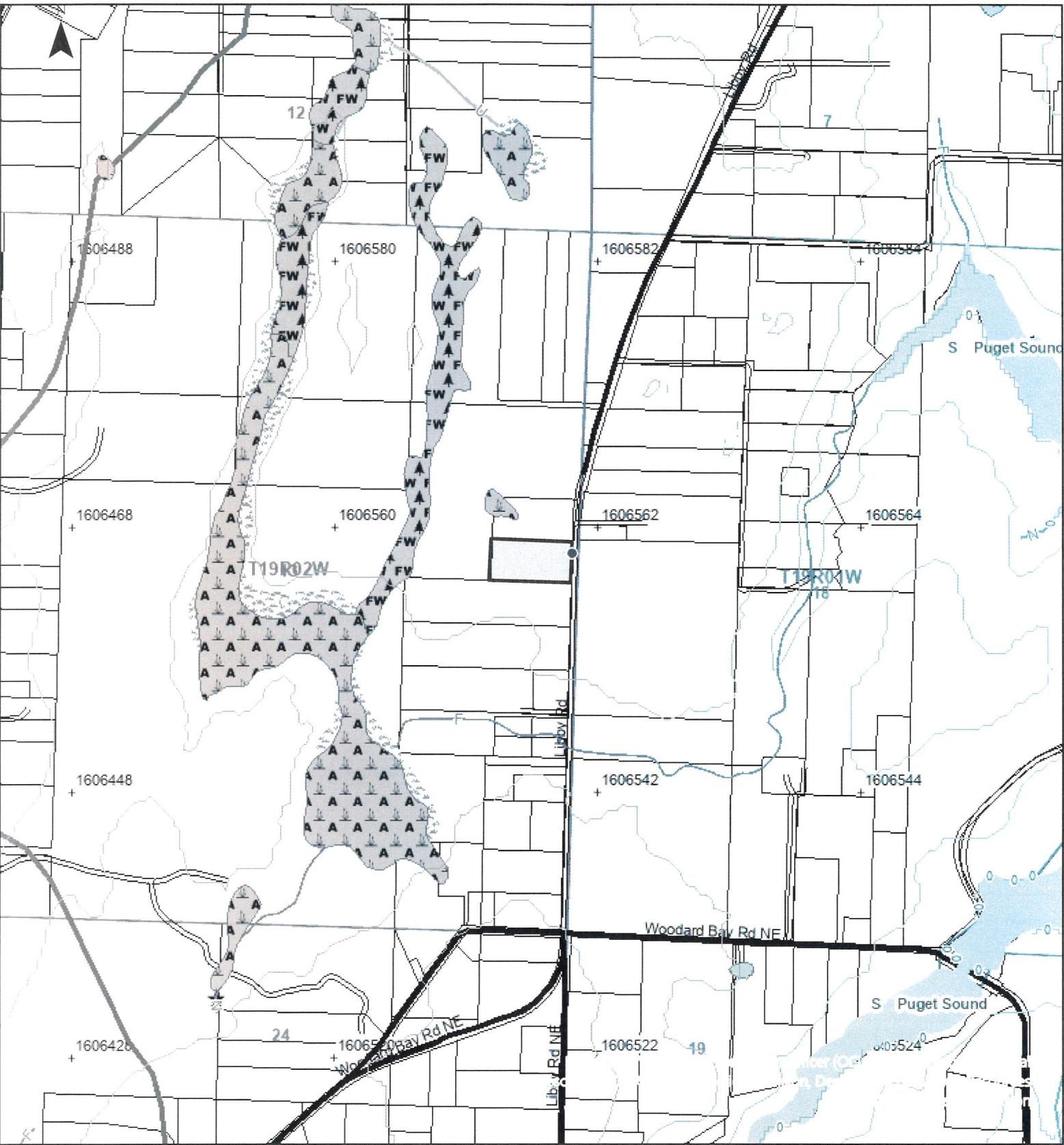
APPENDIX E - USGS 7.5 MINUTE TOPOGRAPHIC MAP



<p>LSNW</p> <p>Land Services Northwest 120 State Avenue NE PMB 190 Olympia, WA 98501 360.481.4208</p>	<p>Appendix E USGS Topo Map</p>	<p>0 250 500 1,000 Feet</p>
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APPENDIX F - WDNR FOREST PRACTICES APPLICATION MAP

Forest Practices Water Type Map



APPENDIX G – WDFW PHS and Salmonscape Data





# Priority Habitats and Species on the Web



Buffer radius: 330 Feet

Report Date: 12/19/2022

PHS Species/Habitats Overview:

Occurence Name	Federal Status	State Status	Sensitive Location
Freshwater Forested/Shrub Wetland	N/A	N/A	No
Big brown bat	N/A	N/A	Yes
Little Brown Bat	N/A	N/A	Yes



## PHS Species/Habitats Details:

Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PSSC
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

Big brown bat	
Scientific Name	<i>Eptesicus fuscus</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00605">http://wdfw.wa.gov/publications/pub.php?id=00605</a>

Little Brown Bat	
Scientific Name	<i>Myotis lucifugus</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00605">http://wdfw.wa.gov/publications/pub.php?id=00605</a>

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



# SalmonScape

## Map Controls

Layers

Legend

Active (3)

Tools

## Hydrography

JHD Water Courses

Coastline

Stream / Perennial

Intermittent / Ephemeral

Canal, Ditch

JHD Water Bodies

Swamp, Marsh

Lake, Pond, Reservoir

Glacier

JHD Area Features

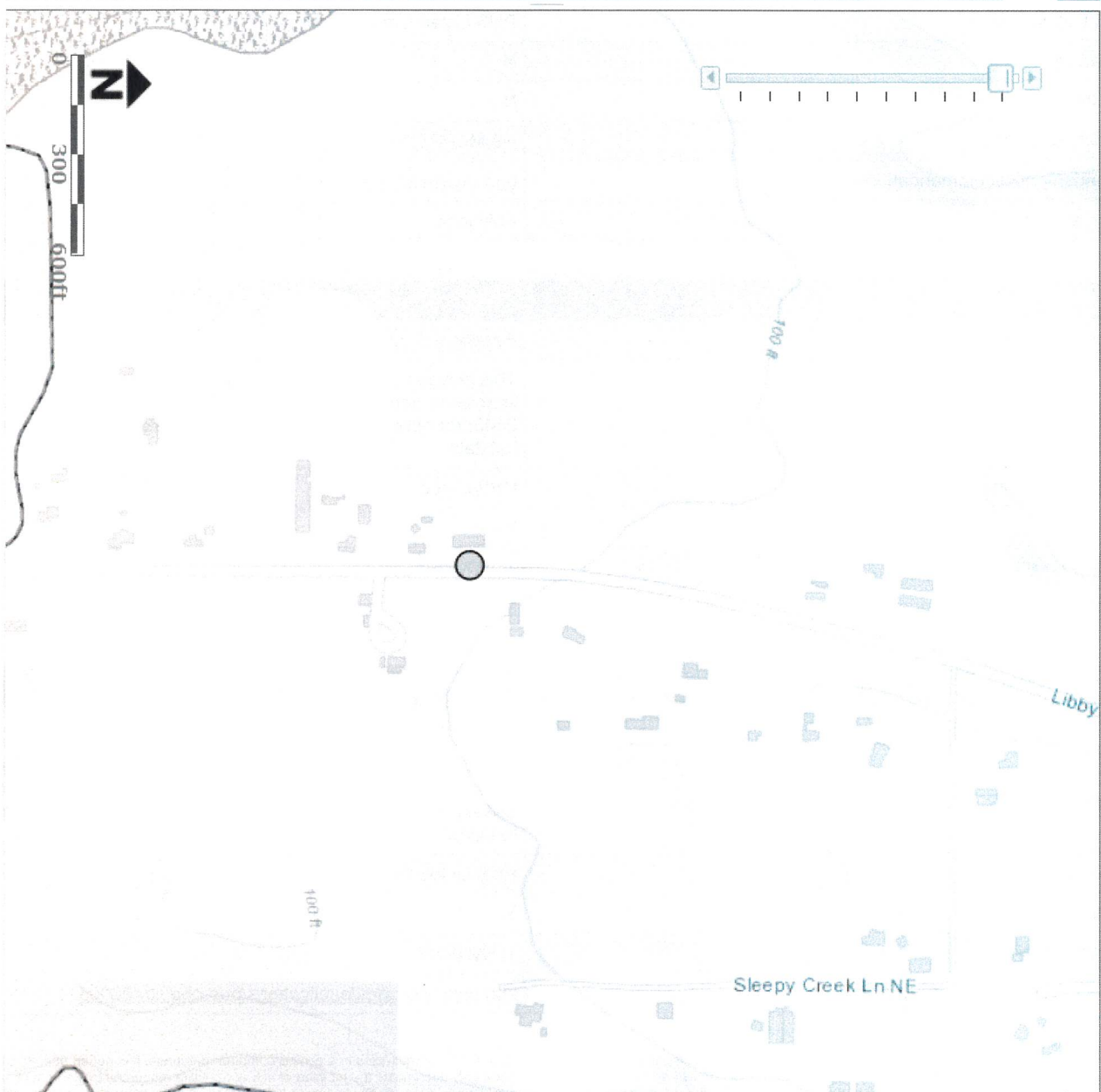
Canal, Ditch

Large Rivers

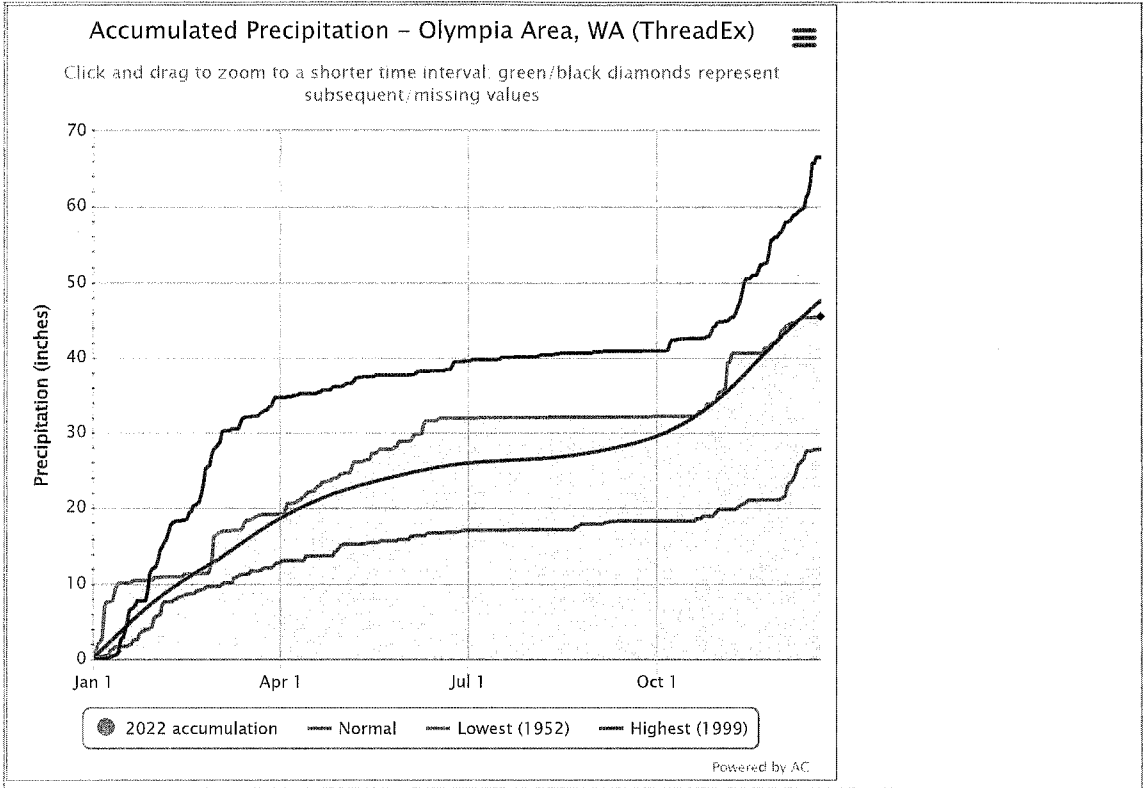
Rapids

## Fish Distribution

All SalmonScape Species



## Appendix H - NOAA NOW PRECIPITATION DATA



Note regarding subsequent/missing values

Appendix H - Test Pit Data

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Irish City/County: Thurston Sampling Date: 12.15.22  
 Applicant/Owner: Trevor Irish State: WA Sampling Point: TP1  
 Investigator(s): Alex Callender Section, Township, Range: S13192W  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): 2 Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: Wgs84  
 Soil Map Unit Name: Bellingham NWI classification: \_\_\_\_\_  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No _____	
Remarks:		

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Alnus rubra</u>	45	Y	FAC	
2. _____				
3. _____				
4. _____				
	45	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>Salix sitchensis</u>	40	Y	FACW	
2. <u>Physocarpus capitatus</u>	35	Y	FACW	
3. <u>Rosa pisocarpa</u>	5	N	FAC	
4. _____				
5. _____				
	80	= Total Cover		
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators: 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 <sup>1</sup> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) 5 - Wetland Non-Vascular Plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Carex obnupta</u>	65	Y	OBL	
2. <u>Polystichum munitum</u>	1	N	FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
	66	= Total Cover		
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. _____				
2. _____				
		= Total Cover		
% Bare Ground in Herb Stratum _____				
Remarks:				

## SOIL

Sampling Point: TP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-1	10YR3/1	100					Clay loam	
1-18	10YR5/2	90	10YR5/8	10			Clay loam	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>except MLRA 1</b> ) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: \_\_\_\_\_

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one required; check all that apply)				Secondary Indicators (2 or more required)			
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) ( <b>except MLRA 1, 2, 4A, and 4B</b> ) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> ) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) ( <b>MLRA 1, 2, 4A, and 4B</b> ) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)  <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3)  <input type="checkbox"/> FAC-Neutral Test (D5)  <input type="checkbox"/> Raised Ant Mounds (D6) ( <b>LRR A</b> ) <input type="checkbox"/> Frost-Heave Hummocks (D7)					

<b>Field Observations:</b> Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe)    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: \_\_\_\_\_

Remarks: \_\_\_\_\_

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Irish City/County: Thurston Sampling Date: 12.15.22  
 Applicant/Owner: Trevor Irish State: WA Sampling Point: TP2  
 Investigator(s): Alex Callender Section, Township, Range: S13192W  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): 2 Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: Wgs84  
 Soil Map Unit Name: Bellingham NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>		

Remarks:

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40</u> (A/B)
1. <u><i>Alnus rubra</i></u>	40	Y	FAC	
2. _____				
3. _____				
4. _____				
40 = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum (Plot size: _____ )</b>				
1. <u><i>Physocarpus capitatus</i></u>	5	Y	FACW	
2. _____				
3. _____				
5 = Total Cover				
<b>Herb Stratum (Plot size: _____ )</b>				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Polystichum munitum</i></u>	20	Y	FACU	
2. <u><i>Mahonia nervosa</i></u>	15	Y	FACU	
3. <u><i>Gaultheria shallon</i></u>	15	Y	FACU	
4. <u><i>Ilex aquifolium</i></u>	5	N	FACU	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
55 = Total Cover				
<b>Woody Vine Stratum (Plot size: _____ )</b>				<b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				

Remarks:



## SOIL

Sampling Point: TP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR4/3	100					Clay loam	
6-18	10YR5/2	100					Clay loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe)    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Irish City/County: Thurston Sampling Date: 12.15.22  
 Applicant/Owner: Trevor Irish State: WA Sampling Point: TPA1  
 Investigator(s): Alex Callender Section, Township, Range: S13192W  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): 2 Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: Wgs84  
 Soil Map Unit Name: Bellingham NWI classification: \_\_\_\_\_  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:			

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u><i>Alnus rubra</i></u>	45	Y	FAC	
2. _____				
3. _____				
4. _____				
45 = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum</b> (Plot size: _____)				
1. <u><i>Salix sitchensis</i></u>	40	Y	FACW	
2. <u><i>Physocarpus capitatus</i></u>	35	Y	FACW	
3. <u><i>Rosa pisocarpa</i></u>	5	N	FAC	
80 = Total Cover				
<b>Herb Stratum</b> (Plot size: _____)				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Carex obnupta</i></u>	65	Y	OBL	
2. <u><i>Polystichum munitum</i></u>	1	N	FACU	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
66 = Total Cover				
<b>Woody Vine Stratum</b> (Plot size: _____)				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks:				

## SOIL

Sampling Point: TP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-1	10YR3/1	100					Clay loam	
1-18	10YR5/2	90	10YR5/8	10			Clay loam	

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

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)  <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic
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<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: \_\_\_\_\_

## HYDROLOGY

<b>Wetland Hydrology Indicators:</b> Primary Indicators (minimum of one required; check all that apply)				Secondary Indicators (2 or more required)			
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)  <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3)  <input type="checkbox"/> FAC-Neutral Test (D5)  <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)					

<b>Field Observations:</b> Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe)    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: \_\_\_\_\_

Remarks: \_\_\_\_\_

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Irish City/County: Thurston Sampling Date: 12.15.22  
 Applicant/Owner: Trevor Irish State: WA Sampling Point: TPA2  
 Investigator(s): Alex Callender Section, Township, Range: S13192W  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): 2 Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: Wgs84  
 Soil Map Unit Name: Bellingham NWI classification: \_\_\_\_\_  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Remarks:			

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u><i>Alnus rubra</i></u>	40	Y	FAC	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>2</u> (A)
2. _____				Total Number of Dominant Species Across All Strata:	<u>5</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>40</u> (A/B)
4. _____					
			<u>40</u> = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:	
1. <u><i>Physocarpus capitatus</i></u>	5	Y	FACW	Total % Cover of:	Multiply by:
2. _____				OBL species	x 1 = _____
3. _____				FACW species	x 2 = _____
4. _____				FAC species	x 3 = _____
5. _____				FACU species	x 4 = _____
			<u>5</u> = Total Cover	UPL species	x 5 = _____
				Column Totals:	(A) _____ (B) _____
				Prevalence Index = B/A = _____	
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:	
1. <u><i>Polystichum munitum</i></u>	20	Y	FACU	<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation	
2. <u><i>Mahonia nervosa</i></u>	15	Y	FACU	<input type="checkbox"/> 2 - Dominance Test is >50%	
3. <u><i>Gaultheria shallon</i></u>	15	Y	FACU	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup>	
4. <u><i>Ilex aquifolium</i></u>	5	N	FACU	<input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
5. _____				<input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup>	
6. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
			<u>55</u> = Total Cover	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Present?	
1. _____				Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
2. _____					
			<u>_____</u> = Total Cover		
% Bare Ground in Herb Stratum _____					
Remarks:					

# SOIL

Sampling Point: TP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR4/3	100					Clay loam	
6-18	10YR5/2	100					Clay loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:

# HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe)    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Irish City/County: Thurston Sampling Date: 12.19.22  
 Applicant/Owner: Trevor Irish State: WA Sampling Point: TPB1  
 Investigator(s): Alex Callender Section, Township, Range: S13192W  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): 2 Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: Wgs84  
 Soil Map Unit Name: Bellingham NWI classification: \_\_\_\_\_  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:			

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum</b> (Plot size: _____ )				
1. _____				
2. _____				
3. _____				
4. _____				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5. _____				
6. _____				
7. _____				
8. _____				
<b>Herb Stratum</b> (Plot size: _____ )				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Carex obnupta</u>	100		OBL	
2. _____				
3. _____				
4. _____				
5. _____				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
11. _____				
_____ = Total Cover	100			
<b>Woody Vine Stratum</b> (Plot size: _____ )				
1. _____				
2. _____				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks:				

# SOIL

Sampling Point: TPB2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-1	10YR3/2	100					Silt loam	
1-4	10YR5/2	100					Silt loam	
4-18	10YR5/2	80	10YR5/8	20			Silt loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:

# HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> (LRR A)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 4" Saturation Present? (includes capillary fringe)    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Irish City/County: Thurston Sampling Date: 12.19.22  
 Applicant/Owner: Trevor Irish State: WA Sampling Point: TPB2  
 Investigator(s): Alex Callender Section, Township, Range: S13192W  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): 2 Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: Wgs84  
 Soil Map Unit Name: Bellingham NWI classification: \_\_\_\_\_  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No \_\_\_\_\_ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes x No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____ No <u>x</u>	Is the Sampled Area within a Wetland?	Yes _____ No <u>x</u>
Hydric Soil Present?	Yes _____ No <u>x</u>		
Wetland Hydrology Present?	Yes _____ No <u>x</u>		
Remarks:			

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40</u> (A/B)
1. _____				
2. _____				
3. _____				
4. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum</b> (Plot size: _____)				
1. <u>Salix sitchensis</u>	65	Y	FACW	
2. <u>Physocarpus capitatus</u>	20	Y	FACW	
3. _____				
4. _____				
5. _____				
85 = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
<b>Herb Stratum</b> (Plot size: _____)				
1. <u>Polystichum munitum</u>	20	Y	FACU	
2. <u>Mahonia nervosa</u>	20	Y	FACU	
3. <u>Carex leptopoda</u>	2	N	FAC	
4. <u>Rubus ursinus</u>	15	Y	FACU	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
57 = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <u>x</u> No _____
<b>Woody Vine Stratum</b> (Plot size: _____)				
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks:				



# SOIL

Sampling Point: TPB2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-14	10YR4/1	100					Silt loam	
14-18	10YR5/2	100					Silt loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:

# HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe)    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Irish City/County: Thurston Sampling Date: 12.19.22  
 Applicant/Owner: Trevor Irish State: WA Sampling Point: TPc1  
 Investigator(s): Alex Callender Section, Township, Range: S13192W  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): 2 Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: Wgs84  
 Soil Map Unit Name: Bellingham NWI classification: \_\_\_\_\_  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hydic Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks:			

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>Alnus rubra</u>	65	Y	FAC	
2. _____				
3. _____				
4. _____				
65 = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<b>Sapling/Shrub Stratum (Plot size: _____ )</b>				
1. <u>Physocarpus capitatus</u>	75	Y	FACW	
2. <u>Salix sitchensis</u>	15	N	FACW	
3. _____				
90 = Total Cover				
<b>Herb Stratum (Plot size: _____ )</b>				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Carex leptopoda</u>	10	Y	FAC	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10 = Total Cover				
<b>Woody Vine Stratum (Plot size: _____ )</b>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks:				

# SOIL

Sampling Point: TPB3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	10YR3/1	100					Clay loam	
2-6	10YR4/1	100					Clay loam	
6-18	10YR5/2	90	10YR5/6	10			Clay loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/>
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Remarks:

# HYDROLOGY

Wetland Hydrology Indicators:			
Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1)  <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3)  <input type="checkbox"/> Algal Mat or Crust (B4)  <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)  <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3)  <input type="checkbox"/> FAC-Neutral Test (D5)  <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)	

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 4" Saturation Present? (includes capillary fringe)    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Irish City/County: Thurston Sampling Date: 12.19.22  
 Applicant/Owner: Trevor Irish State: WA Sampling Point: TPC2  
 Investigator(s): Alex Callender Section, Township, Range: S13192W  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): 2 Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: Wgs84  
 Soil Map Unit Name: Bellingham NWI classification: \_\_\_\_\_  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>		
Remarks:		

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____ )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Pseudotsuga menziesii</u>	10	Y	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33</u> (A/B)
2. <u>Alnus rubra</u>	10	Y	FAC	
3. _____				
4. _____				
20 = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____ )				
1. <u>Symphoricarpos albus</u>	35	Y	FACU	
2. <u>Physocarpus capitatus</u>	5	N	FACW	
3. <u>Salix sitchensis</u>	45	Y	FACW	
85 = Total Cover				
Herb Stratum (Plot size: _____ )				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Polystichum munitum</u>	45	Y	FACU	
2. <u>Rubus ursinus</u>	10	Y	FACU	
3. <u>Carex leptopoda</u>	5	N	FAC	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
60 = Total Cover				
Woody Vine Stratum (Plot size: _____ )				<b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks:				

# SOIL

Sampling Point: TPB4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16	10YR3/3	100					Silt loam	
16-18	10YR4/3	100					Silt loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
--------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------

Remarks: \_\_\_\_\_

# HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

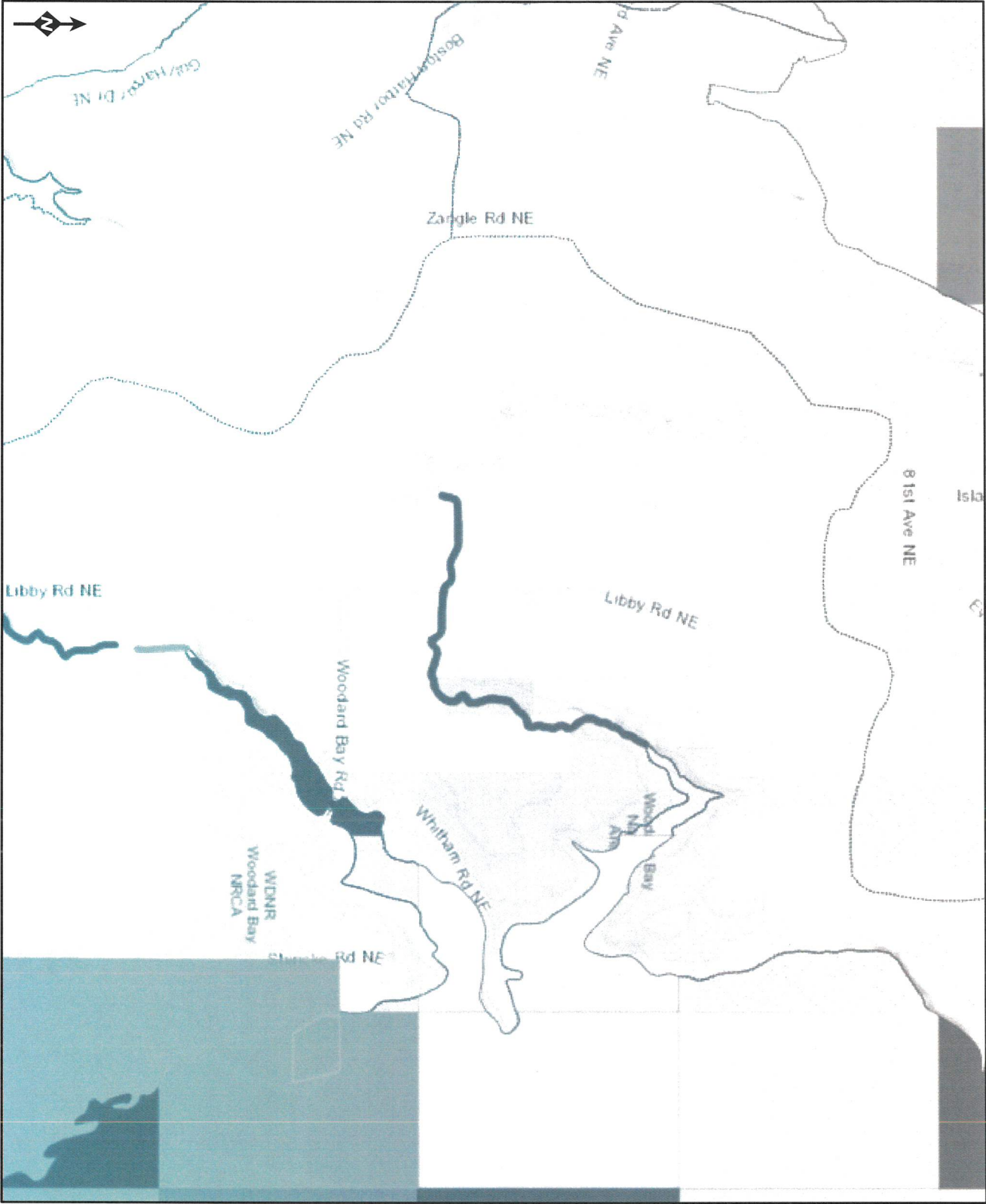
<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe)    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: \_\_\_\_\_

Remarks: \_\_\_\_\_



# 303d Water Quality Atlas Map



## Assessed Water/Sediment

### Water

- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

### Sediment

- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

### Parcels

- Parcel boundary

## Subbasins (12 digit HUCs)

- HUC boundary





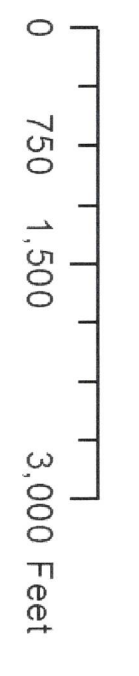
Legend

- Test\_Pits
- GPS2wppts12.15.2022
- Thurston\_Roads
- less than 1 acre
- Access\_Hab
- Rel\_Und
- High\_Int
- 1KM WetlandB
- Subject\_Property
- Wetland\_A
- Wetland\_B
- Wetland\_C
- GB
- Red: Band\_1
- Green: Band\_2
- Blue: Band\_3

Thurston 2018 Aerial

Land Services Northwest  
120 State Avenue NE PMB #190  
Olympia, WA 98501

Wetland B  
1KM Land Use  
Intensity Map





# Land Use Calculations

	ACRES	%	
1KM	1094		100
Wetland B	12		
1KM-WetA	1082		
High Intensity	1	0.000924	0.092421
Relatively Undisturbed	635	0.586876	58.68762
Low Medium Use	446	0.4122	41.21996

Accessible Habitat	652	0.595978	
Wetland B	12		
Accessible Habitat - WEtA	640	0.591497	
RU	401	0.37061	37.061
Low/Medium LU	239	0.220887	22.08872
High Intensity	0	0	0







Legend

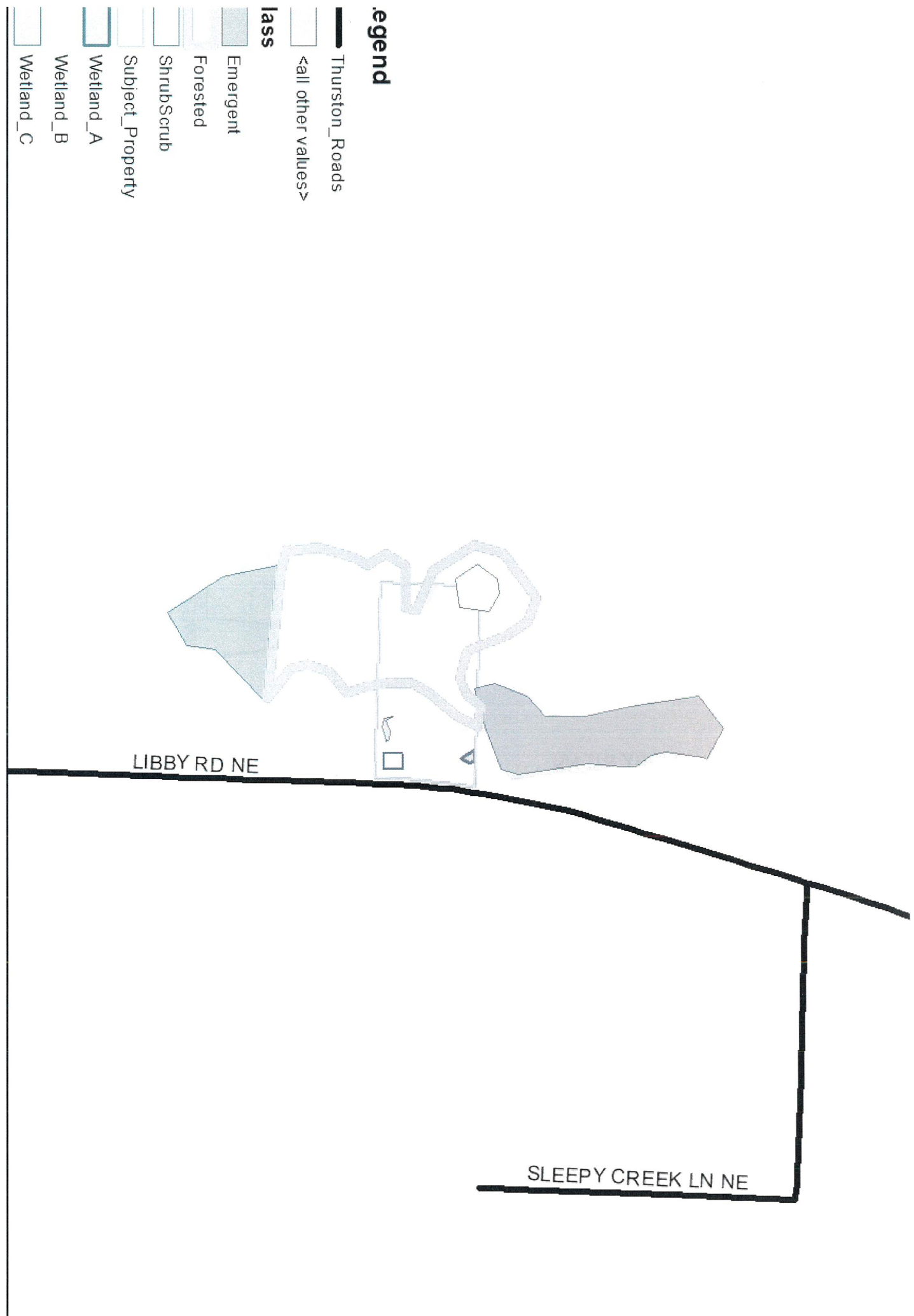
- Thurston\_Roads
- <all other values>
- Emergent
- Forested
- ShrubScrub
- Subject\_Property
- Wetland\_A
- Wetland\_B
- Wetland\_C

LSNW  
Land Services Northwest  
120 State Avenue NE PMB #190  
Olympia, WA 98501

LIBBY RD NE

SLEEPY CREEK LN NE

0 250 500 1,000 Feet



**Legend**

- Thurston\_Roads
- Subject\_Property
- Wetland\_A
- Wetland\_B
- Wetland\_C



Land Services Northwest  
120 State Avenue NE PMB #190  
Olympia, WA 98501

Seasonally Flooded

LIBBY RD NE

SLEEPY CREEK LN NE

0 250 500 1,000 Feet

Wetland B  
Hydro Class

# RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland BDate of site visit: 2/27/2021Rated by Alex CallenderTrained by Ecology? ☒ Yes ☐ NoDate of training Dec-13HGM Class used for rating SlopeWetland has multiple HGM classes? ☒ Yes ☐ No**NOTE: Form is not complete with out the figures requested** (figures can be combined).Source of base aerial photo/map 2018 Geodata**OVERALL WETLAND CATEGORY** III (based on functions ☒ or special characteristics ☐)

## 1. Category of wetland based on FUNCTIONS

- ☐ **Category I** - Total score = 23 - 27  
☐ **Category II** - Total score = 20 - 22  
☒ **Category III** - Total score = 16 - 19  
☐ **Category IV** - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	L	L	M	
Landscape Potential	L	L	H	
Value	H	L	H	
<b>Score Based on Ratings</b>	5	3	8	<b>16</b>

### Score for each function based on three ratings

(order of ratings is not important)

9 = H, H, H

8 = H, H, M

7 = H, H, L

7 = H, M, M

6 = H, M, L

6 = M, M, M

5 = H, L, L

5 = M, M, L

4 = M, L, L

3 = L, L, L

## 2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	<b>X</b>

## Maps and Figures required to answer questions correctly for Western Washington

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

### Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream ( <i>can be added to another figure</i> )	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

### Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	Cowardin
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	Dense Vegetation
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	L 2.2	150ft
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	1KM
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	303d
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	TMDL

### Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	Cowardin
Hydroperiods	H 1.2	Hydro
Plant cover of <b>dense</b> trees, shrubs, and herbaceous plants	S 1.3	dense rigid cover
Plant cover of <b>dense, rigid</b> trees, shrubs, and herbaceous plants ( <i>can be added to another figure</i> )	S 4.1	dense rigid cover
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	S 2.1, S 5.1	150ft
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	1KM
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	303d
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	TMDL



## HGM Classification of Wetland in Western Washington

For questions 1 -7, the criteria described must apply to the entire unit being rated.  
If hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☒ NO - go to 2

☐ YES - the wetland class is **Tidal Fringe** - go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☒ NO - **Saltwater Tidal Fringe (Estuarine)**

☐ YES - **Freshwater Tidal Fringe**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands.  
If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.  
Groundwater and surface water runoff are NOT sources of water to the unit.

☒ NO - go to 3

☐ YES - The wetland class is **Flats**

*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;

☐ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ NO - go to 4

☐ YES - The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

☒ The wetland is on a slope (*slope can be very gradual*),

☒ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps.  
It may flow subsurface, as sheetflow, or in a swale without distinct banks.

☒ The water leaves the wetland **without being impounded**.

☐ NO - go to 5

☒ YES - The wetland class is **Slope**

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

5. Does the entire wetland unit **meet all** of the following criteria?

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,

☐ The overbank flooding occurs at least once every 2 years.

☒ NO - go to 6

☐ YES - The wetland class is **Riverine**

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

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

☒ NO - go to 7

☐ YES - The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☒ NO - go to 8

☐ YES - The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT** (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

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

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

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

Wetland name or number

Wetland B

<b>SLOPE WETLANDS</b>		
<b>Water Quality Functions</b> - Indicators that the site functions to improve water quality		
S 1.0. Does the site have the potential to improve water quality?		
S 1.1. Characteristics of the average slope of the wetland: (a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)		
Slope is 1% or less	points = 3	2
Slope is > 1% - 2%	points = 2	
Slope is > 2% - 5%	points = 1	
Slope is greater than 5%	points = 0	
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions):		0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. <i>Dense means you have trouble seeing the soil surface (&gt;75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.</i>		
Dense, uncut, herbaceous plants > 90% of the wetland area	points = 6	1
Dense, uncut, herbaceous plants > ½ of area	points = 3	
Dense, woody, plants > ½ of area	points = 2	
Dense, uncut, herbaceous plants > ¼ of area	points = 1	
Does not meet any of the criteria above for plants	points = 0	
Total for S 1		3
Add the points in the boxes above		

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

S 2.0. Does the landscape have the potential to support the water quality function of the site?		
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?		0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1?		0
Other Sources		0
Total for S 2		0
Add the points in the boxes above		

**Rating of Landscape Potential** If score is: ☐ 1 - 2 = M ☒ 0 = L Record the rating on the first page

S 3.0. Is the water quality improvement provided by the site valuable to society?		
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?		0
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? At least one aquatic resource in the basin is on the 303(d) list.		0
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? Answer YES if there is a TMDL for the basin in which the unit is found?		2
Total for S 3		2
Add the points in the boxes above		

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

**SLOPE WETLANDS****Hydrologic Functions** - Indicators that the site functions to reduce flooding and stream erosion

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

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.*Dense, uncut, **rigid** plants cover > 90% of the area of the wetland

points = 1

All other conditions

points = 0

0

**Rating of Site Potential** If score is: ☐ 1 = M ☒ 0 = L

Record the rating on the first page

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

S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff?

Yes = 1 No = 0

0

**Rating of Landscape Potential** If score is: ☐ 1 = M ☒ 0 = L

Record the rating on the first page

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

S 6.1. Distance to the nearest areas downstream that have flooding problems:

The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)

points = 2

Surface flooding problems are in a sub-basin farther down-gradient

points = 1

No flooding problems anywhere downstream

points = 0

0

S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?

Yes = 2 No = 0

0

Total for S 6

Add the points in the boxes above

0

**Rating of Value** If score is: ☐ 2 - 4 = H ☐ 1 = M ☒ 0 = L

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:





**These questions apply to wetlands of all HGM classes.**

**HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

- |                                                                                                                                                                                          |                                  |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed                                                                                                                                                     | 4 structures or more: points = 4 | 4 |
| <input checked="" type="checkbox"/> Emergent                                                                                                                                             | 3 structures: points = 2         |   |
| <input checked="" type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover)                                                                                                    | 2 structures: points = 1         |   |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover)                                                                                                        | 1 structure: points = 0          |   |
| <i>If the unit has a Forested class, check if:</i>                                                                                                                                       |                                  |   |
| <input checked="" type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon |                                  |   |

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

- |                                                                                              |                                     |          |
|----------------------------------------------------------------------------------------------|-------------------------------------|----------|
| <input type="checkbox"/> Permanently flooded or inundated                                    | 4 or more types present: points = 3 | 1        |
| <input checked="" type="checkbox"/> Seasonally flooded or inundated                          | 3 types present: points = 2         |          |
| <input type="checkbox"/> Occasionally flooded or inundated                                   | 2 types present: points = 1         |          |
| <input checked="" type="checkbox"/> Saturated only                                           | 1 types present: points = 0         |          |
| <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland |                                     |          |
| <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland           |                                     |          |
| <input type="checkbox"/> <b>Lake Fringe wetland</b>                                          |                                     | 2 points |
| <input type="checkbox"/> <b>Freshwater tidal wetland</b>                                     |                                     | 2 points |

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

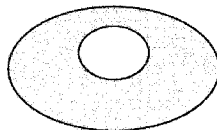
- |                 |                |            |   |
|-----------------|----------------|------------|---|
| If you counted: | > 19 species   | points = 2 | 1 |
|                 | 5 - 19 species | points = 1 |   |
|                 | < 5 species    | points = 0 |   |

H 1.4. Interspersion of habitats

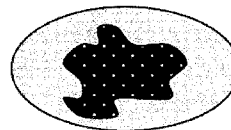
Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



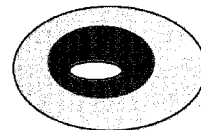
**None** = 0 points



**Low** = 1 point

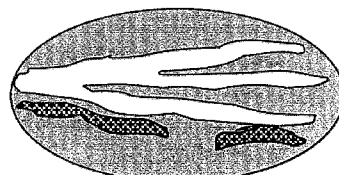
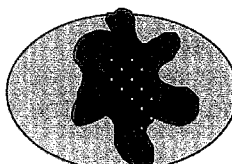
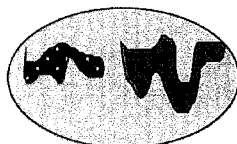


**Moderate** = 2 points



2

All three diagrams in this row are  
**HIGH** = 3 points



<b>H 1.5. Special habitat features:</b> Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>		4
<input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long) <input checked="" type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input checked="" type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present ( <i>cut shrubs or trees that have not yet weathered where wood is exposed</i> ) <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated ( <i>structures for egg-laying by amphibians</i> ) <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)		
<b>Total for H 1</b>		
Add the points in the boxes above		
<b>12</b>		
<b>Rating of Site Potential</b> If Score is: <input type="checkbox"/> 15 - 18 = H <input checked="" type="checkbox"/> 7 - 14 = M <input type="checkbox"/> 0 - 6 = L Record the rating on the first page		

<b>H 2.0. Does the landscape have the potential to support the habitat function of the site?</b>		
<b>H 2.1 Accessible habitat (include only habitat that directly abuts wetland unit).</b> Calculate: 37 % undisturbed habitat + ( 22 % moderate & low intensity land uses / 2 ) = 48%  If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20 - 33% of 1 km Polygon points = 2 10 - 19% of 1 km Polygon points = 1 < 10 % of 1 km Polygon points = 0		3
<b>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.</b> Calculate: 59 % undisturbed habitat + ( 41 % moderate & low intensity land uses / 2 ) = 79.5%  Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0		3
<b>H 2.3 Land use intensity in 1 km Polygon: If</b> > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1km Polygon is high intensity points = 0		0
<b>Total for H 2</b>		
Add the points in the boxes above		6
<b>Rating of Landscape Potential</b> If Score is: <input checked="" type="checkbox"/> 4 - 6 = H <input type="checkbox"/> 1 - 3 = M <input type="checkbox"/> < 1 = L Record the rating on the first page		

<b>H 3.0. Is the habitat provided by the site valuable to society?</b>	
<b>H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose only the highest score that applies to the wetland being rated.</b>	
Site meets ANY of the following criteria: points = 2 <input type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page) <input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) <input type="checkbox"/> It is mapped as a location for an individual WDFW priority species <input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources <input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan	
Site has 1 or 2 priority habitats (listed on next page) with in 100m points = 1	

Wetland name or number

Wetland B

Site does not meet any of the criteria above

points = 0

**Rating of Value** If Score is: ☐ 2 = H ☒ 1 = M ☐ 0 = L

*Record the rating on the first page*

## WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:

<http://wdfw.wa.gov/conservation/phs/list/>

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

- ☐ **Aspen Stands**: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds**: Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature forests**: Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- ☐ **Oregon White Oak**: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☒ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies**: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☒ **Instream**: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs**: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus**: Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☒ **Snags and Logs**: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number

Wetland B

addressed elsewhere.

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
<b>SC 1.0. Estuarine Wetlands</b> Does the wetland meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to <b>SC 1.1</b>      <input type="checkbox"/> No = <b>Not an estuarine wetland</b> </div>	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I</b>      <input type="checkbox"/> No - Go to <b>SC 1.2</b> </div>	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25) <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or ungrazed or un-mowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I</b>      <input type="checkbox"/> No = <b>Category II</b> </div>	
<b>SC 2.0. Wetlands of High Conservation Value (WHCV)</b>	
SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to <b>SC 2.2</b>      <input type="checkbox"/> No - Go to <b>SC 2.3</b> </div>	
SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I</b>      <input type="checkbox"/> No = <b>Not WHCV</b> </div>	
SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? <a href="http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpnwetlands.pdf">http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpnwetlands.pdf</a> <div style="text-align: right;"> <input type="checkbox"/> Yes - <b>Contact WNHP/WDNR and to SC 2.4</b>      <input type="checkbox"/> No = <b>Not WHCV</b> </div>	
SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I</b>      <input type="checkbox"/> No = <b>Not WHCV</b> </div>	
<b>SC 3.0. Bogs</b>	
Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i>	
SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to <b>SC 3.3</b>      <input type="checkbox"/> No - Go to <b>SC 3.2</b> </div>	
SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to <b>SC 3.3</b>      <input type="checkbox"/> No = <b>Is not a bog</b> </div>	
SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Is a Category I bog</b>      <input type="checkbox"/> No - Go to <b>SC 3.4</b> </div> <p><b>NOTE:</b> If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog.</p>	
SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed	



Wetland name or number

Wetland B

in Table 4 provide more than 30% of the cover under the canopy?

☐ Yes = **Is a Category I bog**

☐ No = **Is not a bog**

<p><b>SC 4.0. Forested Wetlands</b></p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <b><i>If you answer YES you will still need to rate the wetland based on its functions.</i></b></p> <p><input type="checkbox"/> <b>Old-growth forests</b> (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.</p> <p><input type="checkbox"/> <b>Mature forests</b> (west of the Cascade Crest): Stands where the largest trees are 80-200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).</p> <p><input type="checkbox"/> Yes = <b>Category I</b>    <input type="checkbox"/> No = <b>Not a forested wetland for this section</b></p>	
<p><b>SC 5.0. Wetlands in Coastal Lagoons</b></p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</p> <p><input type="checkbox"/> The lagoon in which the wetland is located contains ponded water that is saline or brackish (&gt; 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</p> <p><input type="checkbox"/> Yes - Go to <b>SC 5.1</b>    <input type="checkbox"/> No = <b>Not a wetland in a coastal lagoon</b></p> <p><b>SC 5.1. Does the wetland meet all of the following three conditions?</b></p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 ac (4350 ft<sup>2</sup>)</p> <p><input type="checkbox"/> Yes = <b>Category I</b>    <input type="checkbox"/> No = <b>Category II</b></p>	
<p><b>SC 6.0. Interdunal Wetlands</b></p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <b><i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i></b></p> <p>In practical terms that means the following geographic areas:</p> <p><input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103</p> <p><input type="checkbox"/> Grayland-Westport: Lands west of SR 105</p> <p><input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109</p> <p><input type="checkbox"/> Yes - Go to <b>SC 6.1</b>    <input type="checkbox"/> No = <b>Not an interdunal wetland for rating</b></p> <p><b>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?</b></p> <p><input type="checkbox"/> Yes = <b>Category I</b>    <input type="checkbox"/> No - Go to <b>SC 6.2</b></p> <p><b>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</b></p> <p><input type="checkbox"/> Yes = <b>Category II</b>    <input type="checkbox"/> No - Go to <b>SC 6.3</b></p> <p><b>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?</b></p> <p><input type="checkbox"/> Yes = <b>Category III</b>    <input type="checkbox"/> No = <b>Category IV</b></p>	
<p><b>Category of wetland based on Special Characteristics</b></p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	

# 303d Water Quality Atlas Map



Esri, NASA, NGA, USGS, FEMA  
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS,  
FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri

Miles 0 0.23 0.45 0.68





Legend

- Rel\_Und
- Access\_Hab
- 1kmC
- Subject\_Property
- Thurston\_Roads
- Wetland\_C
- Thurston 2018 Aerial
- IGB
- Red: Band\_1
- Green: Band\_2
- Blue: Band\_3



# Land Use Calculations

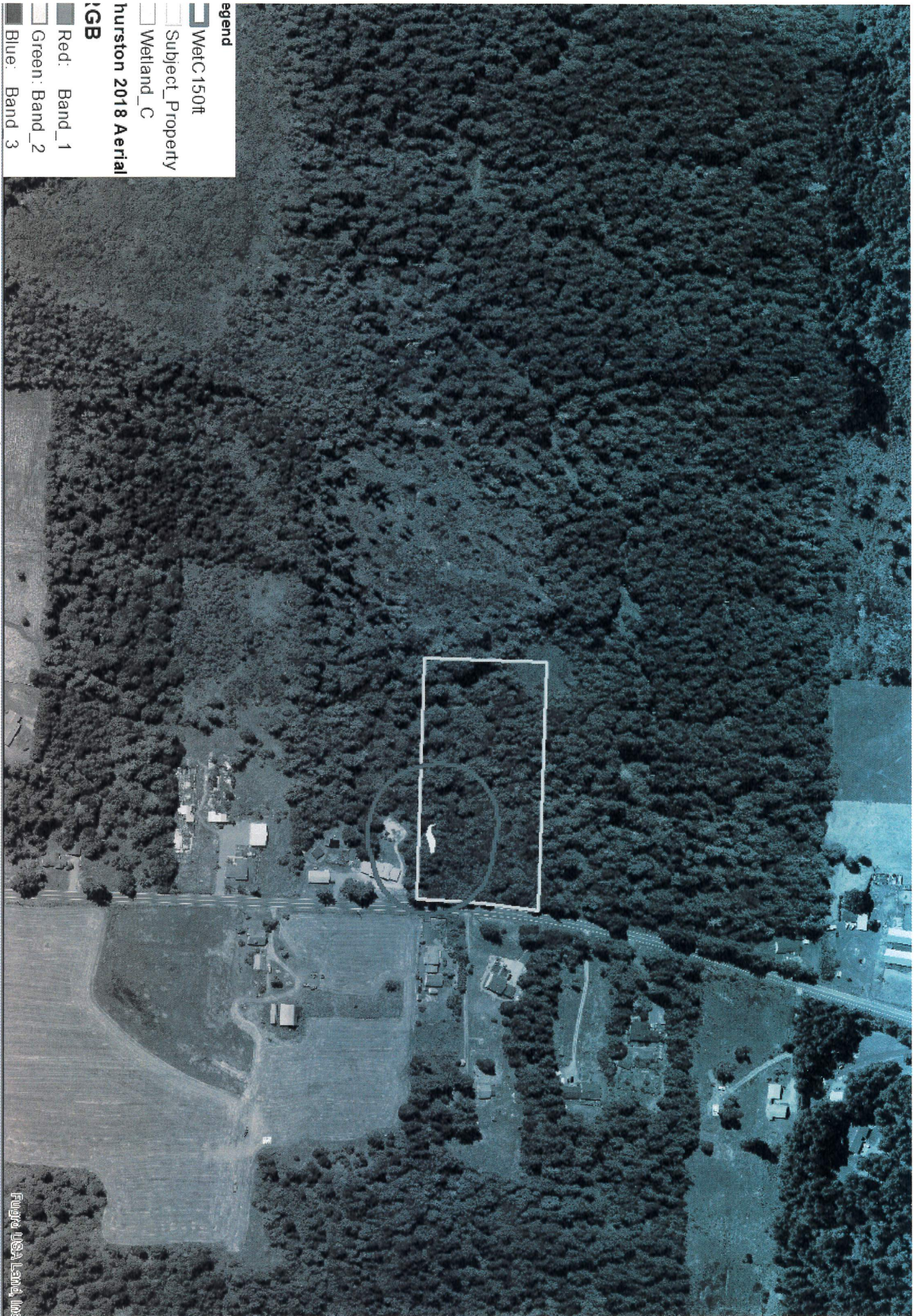
	ACRES	%	
1KM	791		100
WetlandC	0.027		
1KM-WetC	790.973		
High Intensity	1	0.001264	0.126427
Relatively Undisturbed	416	0.525935	52.59345
Low Medium Use	373.973	0.472801	47.28012

Accessible Habitat	441	0.557522	
Wetland C	0.027		
Accessible Habitat - WEtC	440.973	0.557507	
RU	86	0.108727	10.87268
Low/Medium LU	281.973	0.356489	35.64888
High Intensity	73	0.092291	9.229139



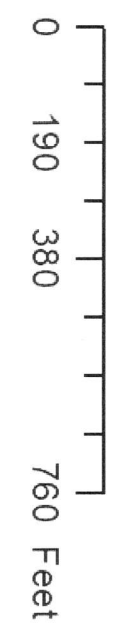
**Legend**

- WetC 150ft
- Subject\_Property
- Wetland\_C
- Wetland\_2018 Aerial
- IGB
- Red: Band\_1
- Green: Band\_2
- Blue: Band\_3



Land Services Northwest  
 120 State Avenue NE PMB #190  
 Olympia, WA 98501

150ft Land Use







Land Services Northwest  
120 State Avenue NE PMB #190  
Olympia, WA 98501

Cowardin



**Legend**

- ☐ Subject\_Property
- ☐ Wetland\_C

**IGB**

- Red: Band\_1
- Green: Band\_2
- Blue: Band\_3

**hurston 2018 Aerial**



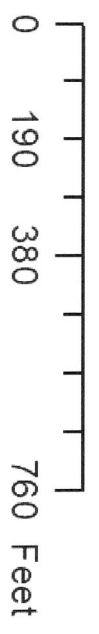
Seasonally Flooded

Fugate USA Land, Inc.

LSNW

Land Services Northwest  
120 State Avenue NE PMB #190  
Olympia, WA 98501

Hydro





## RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland CDate of site visit: 12/19/2022Rated by Alex CallenderTrained by Ecology? ☒ Yes ☐ NoDate of training Dec-13HGM Class used for rating Depressional & FlatsWetland has multiple HGM classes? ☐ Yes ☒ No

**NOTE: Form is not complete with out the figures requested** (figures can be combined).

Source of base aerial photo/map 2017 NAIP

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

### 1. Category of wetland based on FUNCTIONS

- ☐ **Category I** - Total score = 23 - 27  
☐ **Category II** - Total score = 20 - 22  
☒ **Category III** - Total score = 16 - 19  
☐ **Category IV** - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	M	L	M	
Landscape Potential	M	M	H	
Value	H	L	H	
<b>Score Based on Ratings</b>	<b>7</b>	<b>4</b>	<b>8</b>	<b>Total 19</b>

**Score for each  
function based  
on three  
ratings**

(order of ratings  
is not  
important)

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

### 2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	

Wetland name or number

None of the above	X
-------------------	---

## Maps and Figures required to answer questions correctly for Western Washington

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	Cowardin
Hydroperiods	D 1.4, H 1.2	Hydro
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	Outlet
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	150ft
Map of the contributing basin	D 4.3, D 5.3	303d
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	1KM
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	303d
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

### Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream ( <i>can be added to another figure</i> )	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

### Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

### Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of <b>dense</b> trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of <b>dense, rigid</b> trees, shrubs, and herbaceous plants ( <i>can be added to another figure</i> )	S 4.1	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	

Wetland name or number

polygons for accessible habitat and undisturbed habitat		
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

## HGM Classification of Wetland in Western Washington

For questions 1 -7, the criteria described must apply to the entire unit being rated.

If hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☒ NO - go to 2

☐ YES - the wetland class is **Tidal Fringe** - go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☐ NO - **Saltwater Tidal Fringe (Estuarine)**

☐ YES - **Freshwater Tidal Fringe**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

☒ NO - go to 3

☐ YES - The wetland class is **Flats**

*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?

☐ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;

☐ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☒ NO - go to 4

☐ YES - The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?

☐ The wetland is on a slope (*slope can be very gradual*),

☐ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

☐ The water leaves the wetland **without being impounded**.

☒ NO - go to 5

☐ YES - The wetland class is **Slope**

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

5. Does the entire wetland unit **meet all** of the following criteria?

☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,

☐ The overbank flooding occurs at least once every 2 years.

☒ NO - go to 6

☐ YES - The wetland class is **Riverine**

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

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

☐ NO - go to 7

☒ YES - The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☐ NO - go to 8

☐ YES - The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT** (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

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

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

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

NOTES and FIELD OBSERVATIONS:

3



Wetland name or number

**DEPRESSIONAL AND FLATS WETLANDS****Water Quality Functions** - Indicators that the site functions to improve water quality

<b>D 1.0. Does the site have the potential to improve water quality?</b>		
<b>D 1.1. Characteristics of surface water outflows from the wetland:</b>		
Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet).	points = 3	2
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet.	points = 2	
<input checked="" type="checkbox"/> Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 1	
<input type="checkbox"/> Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 1	
<b>D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</b>		
Yes = 4 No = 0		0
<b>D 1.3. Characteristics and distribution of persistent plants</b> (Emergent, Scrub-shrub, and/or Forested Cowardin classes):		
Wetland has persistent, ungrazed, plants > 95% of area	points = 5	5
Wetland has persistent, ungrazed, plants > 1/2 of area	points = 3	
Wetland has persistent, ungrazed plants > 1/10 of area	points = 1	
Wetland has persistent, ungrazed plants < 1/10 of area	points = 0	
<b>D 1.4. Characteristics of seasonal ponding or inundation:</b>		
<i>This is the area that is ponded for at least 2 months. See description in manual.</i>		
Area seasonally ponded is > 1/2 total area of wetland	points = 4	4
Area seasonally ponded is > 1/4 total area of wetland	points = 2	
Area seasonally ponded is < 1/4 total area of wetland	points = 0	
<b>Total for D 1</b>		<b>11</b>

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

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

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

<b>D 3.0. Is the water quality improvement provided by the site valuable to society?</b>		
<b>D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?</b>	Yes = 1 No = 0	0
<b>D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?</b>	Yes = 1 No = 0	0
<b>D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the basin in which the unit is found)?</b>	Yes = 2 No = 0	2
<b>Total for D 3</b>		<b>2</b>

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

Wetland name or number

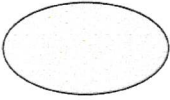
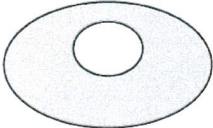


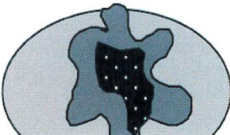
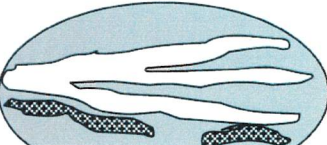
<b>DEPRESSIONAL AND FLATS WETLANDS</b>		
<b>Hydrologic Functions</b> - Indicators that the site functions to reduce flooding and stream degradation		
<b>D 4.0. Does the site have the potential to reduce flooding and erosion?</b>		
<b>D 4.1. Characteristics of surface water outflows from the wetland:</b>		
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	2
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
<b>D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.</b>		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	0
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
<input checked="" type="checkbox"/> Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
<input type="checkbox"/> The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	
<b>D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</b>		
<input type="checkbox"/> The area of the basin is less than 10 times the area of the unit	points = 5	3
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
<input type="checkbox"/> Entire wetland is in the Flats class	points = 5	
<b>Total for D 4</b>		<b>5</b>
<b>Rating of Site Potential</b> If score is: <input type="checkbox"/> 12 - 16 = H <input type="checkbox"/> 6 - 11 = M <input checked="" type="checkbox"/> 0 - 5 = L Record the rating on the first page		
<b>D 5.0. Does the landscape have the potential to support hydrologic function of the site?</b>		
<b>D 5.1. Does the wetland unit receive stormwater discharges?</b>		Yes = 1 No = 0
<b>D 5.2. Is &gt; 10% of the area within 150 ft of the wetland in land uses that generate excess runoff?</b>		Yes = 1 No = 0
<b>D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at &gt;1 residence/ac, urban, commercial, agriculture, etc.)?</b>		Yes = 1 No = 0
<b>Total for D 5</b>		<b>1</b>
<b>Rating of Landscape Potential</b> If score is: <input type="checkbox"/> 3 = H <input checked="" type="checkbox"/> 1 or 2 = M <input type="checkbox"/> 0 = L Record the rating on the first page		
<b>D 6.0. Are the hydrologic functions provided by the site valuable to society?</b>		
<b>D 6.1. The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.</b>		
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		0
<input type="checkbox"/> • Flooding occurs in a sub-basin that is immediately down-gradient of unit.	points = 2	
<input type="checkbox"/> • Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
<input type="checkbox"/> Flooding from groundwater is an issue in the sub-basin.	points = 1	
<input type="checkbox"/> The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. Explain why	points = 0	
<input checked="" type="checkbox"/> There are no problems with flooding downstream of the wetland.	points = 0	

Wetland name or number

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2    No = 0	0
Total for D 6	Add the points in the boxes above	0

**Rating of Value** If score is: ☐ 2 - 4 = H    ☐ 1 = M    ☒ 0 = L

*Record the rating on the first page*

These questions apply to wetlands of all HGM classes.		
<b>HABITAT FUNCTIONS</b> - Indicators that site functions to provide important habitat		
H 1.0. Does the site have the potential to provide habitat?		
<p>H 1.1. Structure of plant community: <i>Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.</i></p> <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> Aquatic bed  <input checked="" type="checkbox"/> Emergent  <input checked="" type="checkbox"/> Scrub-shrub (areas where shrubs have &gt; 30% cover)  <input type="checkbox"/> Forested (areas where trees have &gt; 30% cover)  <i>If the unit has a Forested class, check if:</i>  <input checked="" type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon </div> <div> 4 structures or more: points = 4  3 structures: points = 2  2 structures: points = 1  1 structure: points = 0 </div> </div>		2
<p>H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (<i>see text for descriptions of hydroperiods</i>).</p> <div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> Permanently flooded or inundated  <input checked="" type="checkbox"/> Seasonally flooded or inundated  <input type="checkbox"/> Occasionally flooded or inundated  <input checked="" type="checkbox"/> Saturated only  <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland  <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland  <input type="checkbox"/> <b>Lake Fringe wetland</b>  <input type="checkbox"/> <b>Freshwater tidal wetland</b> </div> <div> 4 or more types present: points = 3  3 types present: points = 2  2 types present: points = 1  1 types present: points = 0 </div> </div> <div style="text-align: right;"> <b>2 points</b>  <b>2 points</b> </div>		2
<p>H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>. <i>Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. <b>Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle</b></i></p> <p>If you counted:</p> <div style="display: flex; justify-content: space-between;"> <div> &gt; 19 species  5 - 19 species  &lt; 5 species </div> <div> points = 2  points = 1  points = 0 </div> </div>		2
<p>H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. <i>If you have four or more plant classes or three classes and open water, the rating is always high.</i></p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p><b>None</b> = 0 points</p> </div> <div style="text-align: center;">  <p><b>Low</b> = 1 point</p> </div> <div style="text-align: center;">  <p><b>Moderate</b> = 2 points</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-end; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p>All three diagrams in this row are <b>HIGH</b> = 3 points</p>		2



Wetland name or number

				
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<b>H 1.5. Special habitat features:</b> Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>		4
<input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long) <input checked="" type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) <input checked="" type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present ( <i>cut shrubs or trees that have not yet weathered where wood is exposed</i> ) <input checked="" type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated ( <i>structures for egg-laying by amphibians</i> ) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)		
<b>Total for H 1</b> <span style="float: right;">Add the points in the boxes above</span>		
<b>Rating of Site Potential</b> If Score is: <input type="checkbox"/> 15 - 18 = H <input checked="" type="checkbox"/> 7 - 14 = M <input type="checkbox"/> 0 - 6 = L <i>Record the rating on the first page</i>		
<b>12</b>		

<b>H 2.0. Does the landscape have the potential to support the habitat function of the site?</b>		
<b>H 2.1 Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>).</b> <i>Calculate:</i> 10 % undisturbed habitat + ( 35 % moderate & low intensity land uses / 2 ) = 27.5%		
If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon <span style="float: right;">points = 3</span> 20 - 33% of 1 km Polygon <span style="float: right;">points = 2</span> 10 - 19% of 1 km Polygon <span style="float: right;">points = 1</span> < 10 % of 1 km Polygon <span style="float: right;">points = 0</span>		2
<b>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.</b> <i>Calculate:</i> 52 % undisturbed habitat + ( 47 % moderate & low intensity land uses / 2 ) = 75.5%		
Undisturbed habitat > 50% of Polygon <span style="float: right;">points = 3</span> Undisturbed habitat 10 - 50% and in 1-3 patches <span style="float: right;">points = 2</span> Undisturbed habitat 10 - 50% and > 3 patches <span style="float: right;">points = 1</span> Undisturbed habitat < 10% of 1 km Polygon <span style="float: right;">points = 0</span>		3
<b>H 2.3 Land use intensity in 1 km Polygon: If</b> > 50% of 1 km Polygon is high intensity land use <span style="float: right;">points = (-2)</span> ≤ 50% of 1km Polygon is high intensity <span style="float: right;">points = 0</span>		
<b>Total for H 2</b> <span style="float: right;">Add the points in the boxes above</span>		5
<b>Rating of Landscape Potential</b> If Score is: <input checked="" type="checkbox"/> 4 - 6 = H <input type="checkbox"/> 1 - 3 = M <input type="checkbox"/> < 1 = L <i>Record the rating on the first page</i>		

<b>H 3.0. Is the habitat provided by the site valuable to society?</b>	
<b>H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? Choose only the highest score that applies to the wetland being rated.</b> Site meets ANY of the following criteria: <span style="float: right;">points = 2</span>	
<input type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page) <input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) <input type="checkbox"/> It is mapped as a location for an individual WDFW priority species <input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources <input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a	
2	

Wetland name or number

watershed plan	
Site has 1 or 2 priority habitats (listed on next page) with in 100m	points = 1
Site does not meet any of the criteria above	points = 0

**Rating of Value** If Score is: ☒ **2 = H** ☐ **1 = M** ☐ **0 = L**

*Record the rating on the first page*

## WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:

<http://wdfw.wa.gov/conservation/phs/list/>

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

- ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- ☐ **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☒ **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☒ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☒ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are >

Wetland name or number

12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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



## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
<b>SC 1.0. Estuarine Wetlands</b> Does the wetland meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to <b>SC 1.1</b>      <input type="checkbox"/> No = <b>Not an estuarine wetland</b> </div>	
<b>SC 1.1.</b> Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I</b>      <input type="checkbox"/> No - Go to <b>SC 1.2</b> </div>	
<b>SC 1.2.</b> Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25) <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or ungrazed or un-mowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I</b>      <input type="checkbox"/> No = <b>Category II</b> </div>	
<b>SC 2.0. Wetlands of High Conservation Value (WHCV)</b>	
<b>SC 2.1.</b> Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to <b>SC 2.2</b>      <input type="checkbox"/> No - Go to <b>SC 2.3</b> </div>	
<b>SC 2.2.</b> Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I</b>      <input type="checkbox"/> No = <b>Not WHCV</b> </div>	
<b>SC 2.3.</b> Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? <a href="http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhwpwetlands.pdf">http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhwpwetlands.pdf</a> <div style="text-align: right;"> <input type="checkbox"/> Yes - <b>Contact WNHP/WDNR and to SC 2.4</b>      <input type="checkbox"/> No = <b>Not WHCV</b> </div>	
<b>SC 2.4.</b> Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Category I</b>      <input type="checkbox"/> No = <b>Not WHCV</b> </div>	
<b>SC 3.0. Bogs</b>	
Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i>	
<b>SC 3.1.</b> Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to <b>SC 3.3</b>      <input type="checkbox"/> No - Go to <b>SC 3.2</b> </div>	
<b>SC 3.2.</b> Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? <div style="text-align: right;"> <input type="checkbox"/> Yes - Go to <b>SC 3.3</b>      <input type="checkbox"/> No = <b>Is not a bog</b> </div>	
<b>SC 3.3.</b> Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? <div style="text-align: right;"> <input type="checkbox"/> Yes = <b>Is a Category I bog</b>      <input type="checkbox"/> No - Go to <b>SC 3.4</b> </div> <p><b>NOTE:</b> If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog.</p>	
<b>SC 3.4.</b> Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir,	

Wetland name or number

western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy?

☐ Yes = **Is a Category I bog**

☐ No = **Is not a bog**

<p><b>SC 4.0. Forested Wetlands</b></p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i><b>If you answer YES you will still need to rate the wetland based on its functions.</b></i></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Old-growth forests</b> (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.</li> <li><input type="checkbox"/> <b>Mature forests</b> (west of the Cascade Crest): Stands where the largest trees are 80-200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).</li> </ul> <p><input type="checkbox"/> Yes = <b>Category I</b>    <input type="checkbox"/> No = <b>Not a forested wetland for this section</b></p>	
<p><b>SC 5.0. Wetlands in Coastal Lagoons</b></p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</li> <li><input type="checkbox"/> The lagoon in which the wetland is located contains ponded water that is saline or brackish (&gt; 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</li> </ul> <p><input type="checkbox"/> Yes - Go to <b>SC 5.1</b>    <input type="checkbox"/> No = <b>Not a wetland in a coastal lagoon</b></p> <p><b>SC 5.1. Does the wetland meet all of the following three conditions?</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).</li> <li><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</li> <li><input type="checkbox"/> The wetland is larger than 1/10 ac (4350 ft<sup>2</sup>)</li> </ul> <p><input type="checkbox"/> Yes = <b>Category I</b>    <input type="checkbox"/> No = <b>Category II</b></p>	
<p><b>SC 6.0. Interdunal Wetlands</b></p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i><b>If you answer yes you will still need to rate the wetland based on its habitat functions.</b></i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103</li> <li><input type="checkbox"/> Grayland-Westport: Lands west of SR 105</li> <li><input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109</li> </ul> <p><input type="checkbox"/> Yes - Go to <b>SC 6.1</b>    <input type="checkbox"/> No = <b>Not an interdunal wetland for rating</b></p> <p><b>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?</b></p> <p><input type="checkbox"/> Yes = <b>Category I</b>    <input type="checkbox"/> No - Go to <b>SC 6.2</b></p> <p><b>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</b></p> <p><input type="checkbox"/> Yes = <b>Category II</b>    <input type="checkbox"/> No - Go to <b>SC 6.3</b></p> <p><b>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?</b></p> <p><input type="checkbox"/> Yes = <b>Category III</b>    <input type="checkbox"/> No = <b>Category IV</b></p>	
<p><b>Category of wetland based on Special Characteristics</b></p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	

## Appendix K – Forester Letter

CASCADE FORESTRY, LLC  
3624 104<sup>TH</sup> Ave. SW  
OLYMPIA, WA 98512  
425-280-7745  
[cascadeforestry@yahoo.com](mailto:cascadeforestry@yahoo.com)

December 15, 2022

Dear Key:

I am writing this letter to provide my expert opinion on the amount of board feet cleared from the property located at 7125 Libby Rd NE, Olympia, WA.

In my expert opinion, established over 45 years as an expert consulting forester as well as an expert in thinning, harvesting, replanting, and timber marketing, Mr. Irish did not remove any marketable timber from the property. Marketable timber is salable due to size and quality, at least 16 feet long and of sound wood, and at least 5 inches in diameter, small end.

The property in question has been previously clear cut. In fact, the specific area in question is where the existing culvert, driveway, and log road is located.

In my professional opinion, the work done here would more so be qualified as maintenance. Mr. Irish removed brush, bushes, plants, weeds, and residual brush, branches, stumps, and dead/rotted/hollow trees and downed logs, or or leftover discarded material from previous logging.

The only potentially marketable timber in the area in question was left untouched.

In my opinion, no marketable timber was removed and the residual brush is still on site. If I were to estimate a volume of the material removed, it would not exceed 1000 board feet.

Feel free to contact me if you have any additional questions.

Thank you,

  
Stan Butterfield; Cascade Forestry, LLC





THURSTON COUNTY PEST AND  
VEGETATION MANAGEMENT POLICY

Revised: 12/16/2014

Section 1. Purpose.

The purpose of this policy is to provide guidelines for county personnel who are involved with operations and provide advice related to pests and vegetation management. This policy will not govern private parties on private land or other government agencies. It is the intent of the county to set an example in implementing integrated pest and vegetation management programs that minimize the use of pesticides.

Section 2. Definitions.

Integrated Pest Management (IPM). An approach to pest and vegetation control that utilizes regular monitoring to determine if and when treatments are needed. The approach emphasizes physical, mechanical, cultural, and biological tactics to keep pest numbers or vegetation problems low enough to prevent intolerable damage, annoyance, or public safety hazards. When chemical controls are necessary, they will be the least toxic available and will be used only when no other control methods would be effective or practical. The components of an IPM program are:

- I. Monitoring involves surveying the problem situation in order to understand and identify the extent and location of the problem;

- II. Determining injury and action levels.
  - A. Injury level refers to the point in the growth of the pest or vegetation problem at which it will cause some unacceptable level of safety, recreational, public health, ecosystem, aesthetic, or economic injury.
  - B. Action level is the level at which action must be taken to prevent a pest population or vegetation problem at a specific site from reaching the injury level.
- III. Timing involves applying a treatment action during the most vulnerable time in the life cycle of the pest or vegetation with the least impact on natural enemies.
- IV. Selecting optimal strategies. The goals for selecting treatment tactics and developing pest management strategies include:
  - A. Least disruptive of those natural controls which are present;
  - B. Least hazardous to human health;
  - C. Minimal impact to non-target organisms;
  - D. Least damaging to the general environment;
  - E. Best preserves the natural system;
  - F. Most likely to produce permanent reduction in the pest and vegetation;
  - G. Ability to carry out effectively;
  - H. Cost effectiveness in short and long term.

- V. Evaluating treatment strategies is required to help assess the effectiveness of the control program. These records will be useful in developing future control strategies.

IPM prescriptions - are control or eradication plans utilizing the principals of IPM that are specific to types of sites and/ or pests and vegetation.

IPM programs - are department-level programs that are developed to implement the Pest and Vegetation Management Policy.

Pest - Any insect, rodent, nematode, snail, slug, weed and any form of plant or animal life or virus, except virus on or in a living person or other animal, that adversely interferes with the aesthetic, health, environmental, or economic goals of humans.

Pesticide - Any substance registered by the Washington State Department of Agriculture as a pesticide.

IPM Program Coordinator - The Environmental Health Division Director or his or her designee.

### Section 3. Affected Departments and Programs.

The policy applies to all Thurston County departments and programs involved directly or indirectly in pest and/ or vegetation management. The giving of advice to the public on management of pests and vegetation is subject only to Section 5.

#### Section 4. Integrated Pest and Vegetation Management Programs.

Departments and programs managing pests or vegetation will develop and implement comprehensive written integrated pest and vegetation management programs in accordance with the requirements of this policy.

All programs will be initially accountable to the public through approval from the Thurston County Board of County Commissioners. After the initial IPM program has been approved by the Board of County Commissioners, the departments shall submit an annual report to the Pest and Vegetation Management Advisory Committee and the IPM Program Coordinator. The report shall include:

- A. Identification of any changes made in the implementation of the approved program.
- B. Evaluation of the previous year's program.
- C. An implementation plan for the current year.
- D. List of pesticides used, amount of pesticides applied, location of application, pest controlled, and name of applicator.

The integrated pest and vegetation management programs shall include the following elements:

- I. Goals and objectives of the program.
- II. Existing county and department-wide policies and laws pertaining to the control of vegetation and pests and the use of pesticides.



- III. General description of the scope of responsibility with a general description of properties maintained.
- IV. Program policy statements for implementing the Pest and Vegetation Management Policy will include, at a minimum:
  - A. Pest and vegetation management considerations in the design, remodeling, and building of all county facilities, parks, and roads;
  - B. IPM policy requirements in bid specifications for contracts by those affected by this policy;
  - C. A recognition of the responsibility for the control of noxious weeds and the need to coordinate with the Noxious Weed Control Board.
- V. Operational guidelines and standards for general maintenance activities, and IPM prescriptions as needed for specific pests.
- VI. Procedures for at least the following:
  - A. Public notification of pesticide applications:
    - 1. Develop posting procedures that are in compliance with federal and Washington State requirements, and county guidelines and policies. Posting must include name of pesticide, anticipated or actual date of application, description of application area, phone number of department, and contact person. In order to reduce the likelihood of uninformed

exposure to chemical applications, notification shall be posted in a timely manner prior to and subsequent to the application of pesticides.

2. Public notification in addition to posting shall comply with federal and state laws. Notification may include identified known interested or affected parties, residents, and adjacent property owners.

B. Receiving approval from the Board of Health. Any application of pesticides in a Sensitive Area will require approval from the Board of Health.

C. Application procedures.

1. Develop pesticide application procedures in accordance with (1) federal and state requirements and county guidelines, (2) Integrated Pest Management procedures, and (3) the following:

- a. County personnel and agents shall not apply two or more pesticides simultaneously;
- b. County personnel and agents who apply pesticides shall be licensed by Washington State as Public Pesticide Operators;
- c. County personnel or their agents that perform broadcast pesticide applications shall develop calibration procedures and calibrate application equipment at least annually or

when equipment is put into service and maintain documentation for each calibration.

2. Develop record-keeping procedures for the application of pesticides, which will be kept for a minimum of 20 years. Pesticide application records will include:

- a. Date and time of pesticide application;
- b. Specific location of application;
- c. Purpose of application (target species);
- d. Material, lot number, EPA registration number, amount, rate, and concentration used;
- e. Method of application;
- f. Temperature, wind speed and direction, weather conditions;
- g. Applicator's name and operator's license number;
- h. Apparatus license plate number or equipment number;
- i. Evaluation of results.

D. Pesticide spill response procedures. Develop notification and response procedures in accordance with federal, state, and county requirements in the event of a pesticide spill.

E. Pesticide storage. Develop pesticide storage procedures in accordance with federal, state, and county requirements.

- F. Cleaning of equipment. Develop procedures describing the actions taken in cleaning equipment and disposing of rinsate.
  - G. Transportation of pesticides. Develop procedures describing the transportation of pesticides in accordance with federal and state laws, and describe the precautions taken in transporting pesticides.
- VII. Long-term time lines, if appropriate, for program development and policy implementation, e.g. 1 to 5- and 10-year plans. Anticipated major budget implications shall also be included in the plan, for example major equipment acquisition and changes in personnel levels.

#### Section 5. Providing Advice To the Public.

Advice on the management of pests and vegetation given to the public or other agencies shall comply with the following:

- I. Advice will be consistent with the intent of the Pest and Vegetation Management Policy;
- II. Advice shall include information on IPM, sensitive area issues, and alternative control measures to pesticides;
- III. If advice on pesticides is provided, recommend, whenever possible, a pesticide that has passed the Thurston County Environmental Health Division pesticide review criteria. However, when a review has not been performed, or a pesticide

has been rejected for use by the county, information about safety, precautions, and any known chemical hazards should be provided;

- IV. Advice on application of pesticides must be in strict compliance with label directions. A county employee providing such advice shall be licensed by the Washington State Department of Agriculture as Public Pesticide Operator or Public Pest Control Consultant.

#### Section 6. Sensitive Areas.

- I. Proposals to apply pesticides to Sensitive Areas shall require approval from the Thurston County Board of Health. Site- and/or pest-specific IPM prescriptions must be submitted along with the recommended pesticide to the IPM Program Coordinator, the Pest and Vegetation Management Advisory Committee, then the Board of Health for approval.
- II. For purposes of this policy, Sensitive Areas include:
  - A. Surface waters, including lakes, ponds, and both perennial and intermittent streams.
  - B. Critical Aquifer Recharge Areas Categories I, II, and III as defined in the Thurston County Code Ch. 24.10.
  - C. Any areas identified through the Washington State Department of Natural Resources Natural Heritage Program or by the Washington State Department of Fish and Wildlife as having sensitive, threatened or

endangered species.

- D. Sanitary Control Areas of any known well or spring location as defined in the Washington State Drinking Regulations (WAC 246-290, WAC 246 291) or Article III of the Sanitary Code for Thurston County.
- E. Stormwater ditches, swales, and retention/detention ponds.
- F. Wetlands, as defined in the Thurston County Critical Areas Ordinance.
- G. Buffer zones - a minimum of 100 feet from those areas listed above in this subsection.

III. The Washington State Department of Ecology provides the opportunity for Thurston County government to comment on pesticide application permits in Thurston County waterways. The intent of these comments shall be to encourage development programs that minimize the use of pesticides. Staff will evaluate the requests for pesticide applications based on the following criteria:

- A. The pest and vegetation problem has been assessed, and control is deemed necessary;
- B. The use of the pesticide is a necessary element of an integrated pest and vegetation management prescription, or the proponent is making significant progress in developing and implementing IPM programs;
- C. The risk to public health, ground water, and the environment is shown to



be minimal.

Proposals or applications that do not meet these criteria will be opposed by Thurston County.

Section 7. Board of County Commissioners and the Board of Health.

The Thurston County Board of County Commissioners will initially approve county departments' IPM programs. Thereafter, the Pest and Vegetation Management Advisory Committee will report to the Board of County Commissioners on implementation of the programs.

IPM prescriptions involving application of pesticides to Sensitive Areas shall be approved by the Thurston County Board of Health at a public meeting. Approval from the Board of Health will also be required to use a pesticide that fails the review process or in an emergency situation when a review has not been performed. The criteria that the Board of Health will use are:

- I. The pest and vegetation problem has been assessed, and the action level has been met;
- II. The use of the pesticide is a necessary element of the integrated pest and vegetation management prescription;
- III. The risk to public health, ground water, and the environment is determined to be minimal.

The Board of County Commissioners or the Board of Health may prohibit or restrict the use of specific pesticides, or products that contain those pesticides, that they find pose unacceptable risks to public health or the environment.

The Board of County Commissioners prohibit the use of the neonicotinoid class of systemic insecticide active ingredients for outdoor use on County owned or managed property. These chemicals are known to cause adverse effects to beneficial pollinators at concentrations expected from registered uses. The prohibited list of neonicotinoid active ingredients includes the following chemicals: acetamiprid, imidacloprid, dinotefuran, clothianidin, and thiamethoxam.

#### Section 8. IPM Program Coordinator.

The IPM Program Coordinator will provide:

- I. Assistance to the departments in implementing this policy.
- II. Staff support to the Pest and Vegetation Management Advisory Committee and assistance in developing and presenting committee recommendations and positions to the Board of Health.
- III. Staff support to the county's IPM Team, an internal committee made up of program managers responsible for implementing the policy.
- IV. Staff assistance and professional recommendations to the Board of Health or the Board of County Commissioners on issues related to pest and vegetation management.

- V. Coordination, comments, and recommendations to state departments and other agencies on policies, permits, and other vegetation and pest management issues affecting Thurston County.
- VI. Support for outreach and educational programs on IPM.
- VII. Comments and recommendations on IPM programs and IPM prescriptions to the Pest and Vegetation Management Advisory Committee, the Board of Health, and Board of County Commissioners.

Section 9. Pesticide Hazard Identification - Review of Pesticides By the Environmental Health Division.

- I. Review criteria.

Pesticides used by departments or programs of the county shall be only those that have not failed the Thurston County Environmental Health Division's pesticide review criteria or specifically allowed by the Thurston County Board of Health.

- A. Information to be considered in a review shall include, but not necessarily be limited to: active ingredients, registration status, degradation products, contaminants/ inert ingredients, mobility, persistence, bioaccumulation, acute toxicity, aquatic toxicity, carcinogenicity, developmental and reproductive toxicity, mutagenicity, neurotoxicity, skin/eye irritation, data gaps, and applicator safety. The review will be based on professional consideration of these factors.

The Environmental Health Division is responsible for development and modification of review guidelines. These guidelines are intended to provide consistency in conducting pesticide reviews. The Pest and Vegetation Management Advisory Committee will review the guidelines on a periodic basis and provide recommendations and comments.

B. Only pesticides of the lowest possible hazard shall be used. Except as provided in paragraph C below, pesticides with a high degree of hazard include those having:

1. One or more of four types of chronic toxicity characteristics (carcinogenicity, mutagenicity, reproductive toxicity, and developmental toxicity); or
2. Carcinogenicity, mutagenicity, or reproductive and developmental effects from a single study that are dose-related or major; or
3. Adverse effects in the lab occurring at or near concentrations that may be reached in the environment; or
4. The characteristics of high mobility and persistence; or
5. An acute toxicity (LD50) of less than 50 mg/ kg when tested on mammals.

C. The above factors may be greatly influenced by other considerations, resulting in a low hazard potential. Pesticides that have one of the above characteristics may still be considered to be of low hazard if:

1. Studies with adverse effects are outweighed by studies without adverse effects (considering such factors as test quality, severity of effects, type of species, doses); or
2. Based on a qualitative evaluation of available information, the application technique could not result in exposures toxic to non-target organisms.

## II. Inert or Other Pesticide Ingredients.

If the identity of the inert ingredients is known, the inert ingredients shall be evaluated with as much information as is available. Products containing low hazard ingredients shall be used preferentially. If the identity of the inert ingredients is unknown, preference will be given to pesticides of those manufacturers who provide full disclosure of all ingredients. If toxicological data is not available for an inert ingredient, then EPA's lists of inert ingredients can be reviewed to determine potential hazards and aid in selecting products with the fewest hazards.

Pesticides with inert ingredients on EPA's Lists 1 and 2 (those with known or suspect toxicological concern) shall not be used.

Pesticides with inert ingredients on List 3 (unknown toxicity) will have their Material Safety Data Sheet (MSDS) reviewed to see if the ingredient is listed as a known chemical of

concern. Pesticides with ingredients on List 4 will be used preferentially over products with List 3 ingredients.

Pesticides with inert ingredients on List 4 (minimal concern) will be presumed to satisfy the review criteria.

#### IV. Review process.

All departments and programs of Thurston County and the Pest and Vegetation Management Advisory Committee shall have the opportunity to participate and contribute to the Environmental Health Division review. Environmental Health will accept information from the public for consideration in the review process. Findings from the review will be submitted to the appropriate department or program for consideration and action, and also will be sent to the IPM Program Coordinator. Reviews will be updated as new information becomes available.

#### Section 10. Pest and Vegetation Management Advisory Committee.

In order to assist in implementing this policy, a Pest and Vegetation Management Advisory Committee has been established. The committee may be composed of up to nine people appointed by the Thurston County Board of Health. The Committee shall include two or three members representing agriculture and two or three members representing environmental interests. The committee may also include experts in toxicology and representation from relevant state agencies.



The committee shall review and make recommendations to all departments and programs affected by this policy, the Board of County Commissioners, and the Board of Health, as appropriate, on the following:

- I. The pesticide review conducted by the Environmental Health Division;
- II. The pest and vegetation management programs developed by all Departments and programs affected by this policy. The Committee shall annually review any changes and assess progress in implementation of the programs;
- III. Proposed IPM prescriptions to be considered by the Board of Health.
- IV. Any proposals or requirements to update this policy;
- V. Other assignments made by the Board of Health or Board of County Commissioners.

The committee shall meet as needed or at least once every year for these purposes. The IPM Program Coordinator shall be responsible for providing staff support to the committee with assistance from pertinent departments. The chairperson of the committee shall be selected by its members. The committee shall keep minutes of its meetings and shall regularly report to the Board of Health on its activities.