



**CRITICAL AREAS STUDY  
AND  
BUFFER AVERAGING PLAN**

**FOR**

**UNDERWOOD NELSON DEVELOPMENT LLC**  
**44<sup>TH</sup> AVENUE WEST AND 78<sup>TH</sup> STREET SW**  
**MUKILTEO, WA**

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## 1.0 INTRODUCTION

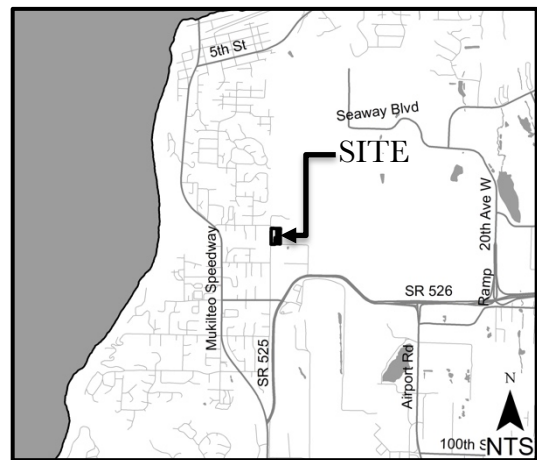
Wetland Resources, Inc. (WRI) performed site investigations on September 25 and December 21, 2018, to locate jurisdictional wetlands and streams on and in the vicinity of approximately four acres, composed of Snohomish County parcel numbers 28041000300100, 28041000300400, 28041000300500, and 28041000300600. The subject property is located northeast of the intersection of 44<sup>th</sup> Avenue West and 78<sup>th</sup> Street SW, in the city limits of Mukilteo, Washington. The Public Land Survey System (PLSS) locator for the property is Section 10, Township 28N, Range 4E, W.M. The site is located within the Everett Drainages Sub-basin of the Snohomish Watershed, Water Resources Inventory Area (WRIA) 7.

The subject property is located in a varied land-use setting, with residential development to the west, open space to the north, a church to the east, and light industrial/office to the south. The property is forested and does not contain any structures. Topography exhibits a gentle east/northeast aspect.

One wetland is located near the northwestern corner of the site. It is a small, depressional, scrub-shrub, Category IV wetland that lies mostly off-site to the north. In the City of Mukilteo, Category IV wetlands typically receive 40-foot buffers, pursuant to Mukilteo Municipal Code (MMC) 17.52B.100.



**Figure 1** - Aerial view of the subject property

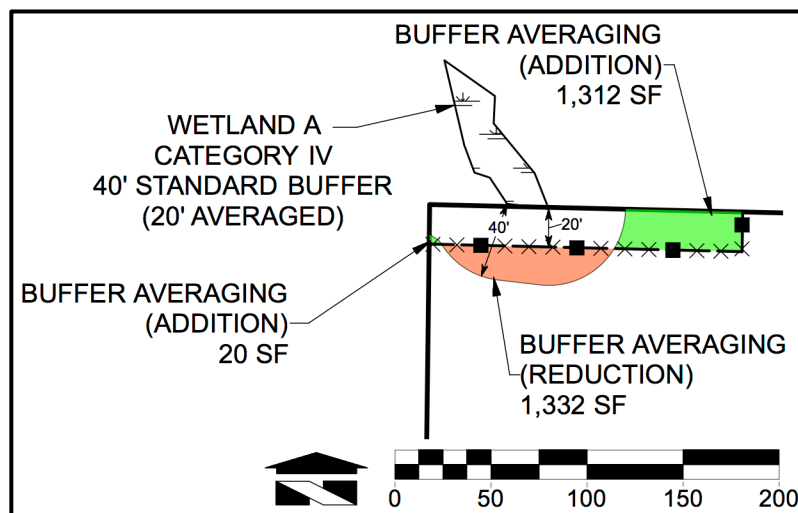


**Figure 2** - Vicinity of the subject site

## 2.0 PROJECT DESCRIPTION

Underwood Nelson Development LLC, hereafter referred to as the applicant, is proposing to construct an industrial warehouse facility and associated parking facilities on the subject site. The design is consistent with surrounding land use and zoning. In order to allow for enough space to construct the proposed industrial development, the applicant proposes to decrease the buffer width associated with Wetland A through buffer averaging, pursuant to MMC 17.52B.100(G). The overall footprint of the proposed project is reasonable based on use in the surrounding area, and is necessary to create an economically feasible development on the property.

The buffer will be decreased by 1,332 square feet adjacent to the southern portion of the wetland. As compensation, the additional buffer will be provided on either side of the width reduction at a 1:1 replacement ratio. A total of 1,312 square feet of additional buffer will be provided east of the width reduction, and 20 square feet will be provided to the east (see *Figure 3*).



**Figure 3** - Proposed buffer averaging

The buffer associated with Wetland A will not be decreased to less than 20 feet in any location. Additionally, the existing vegetation present within 20 feet of the wetland is native trees and shrubs.

## 3.0 CRITICAL AREAS DETERMINATION

### 3.1 REVIEW OF EXISTING INFORMATION

Prior to conducting the site visit, publicly available information was reviewed to gather background information on the subject property and the surrounding area in regards to wetlands, streams, and other critical areas. These sources include the following:

- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory: The NWI

map does not show any wetlands on or near the subject property.

- USDA/Natural Resources Conservation Service (NRCS) Web Soil Survey: The Web Soil Survey indicates that the subject property is underlain by Alderwood-Urban land complex, 2 to 8 and 8 to 15 percent slopes. The Alderwood-Urban series is a non-hydric soil.
- Washington Department of Fish and Wildlife (WDFW) SalmonScape Interactive Mapping System: The SalmonScape interactive map does not illustrate any streams on or near the subject property. The closest mapped waters used by fish are Powder Mill Gulch, approximately 0.8 miles to the northeast, and Puget Sound, approximately 0.8 miles to the west.
- WDFW Priority Habitat and Species (PHS) Interactive Map: A potential biodiversity area and/or corridor associated with Japanese Gulch is depicted partially extending over the subject site. A freshwater pond is located approximately 700 feet northwest of the subject site. No other features are mapped on or adjacent to the subject property by this resource.
- Snohomish County PDS Map Portal: The PDS Map Portal does not illustrate any wetlands or streams on or near the site. Several “remote-sensing based” wetlands are modeled east and northeast of the site. The closest modeled wetland is approximately 340 feet east of the site. Japanese Gulch Creek is mapped approximately 1,000 feet east of the site.

### **3.2 FIELD METHODOLOGY**

WRI staff conducted site investigations on September 25 and December 21, 2018, to locate any streams, lakes, and/or wetlands occurring within and near the project site.

Ordinary High Water Mark (OHWM) boundaries of streams, lakes, and shorelines are determined through use of methodology presented in The Washington State Department of Ecology document *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State* (Anderson et al 2016). Designation of streams and lakes is consistent with the water typing system established in the Washington Administrative Code (WAC) 222-16-030.

Wetland boundaries were determined using the routine approach described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (U.S. Army Corps of Engineers 2010). Under the routine methodology, the process for making a wetland determination is based on three steps:

- 1.) Examination of the site for hydrophytic vegetation (species present and percent cover);
- 2.) Examination of the site for hydric soils;
- 3.) Determining the presence of wetland hydrology

#### **3.2.1 Hydrophytic Vegetation Criteria**

The Corps Manual and 2010 Regional Supplement define hydrophytic vegetation as “the assemblage of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence.” Field

indicators are used to determine whether the hydrophytic vegetation criteria have been met. Examples of these indicators include, but are not limited to, the rapid test for hydrophytic vegetation, a dominance test result of greater than 50%, and/or a prevalence index score less than or equal to 3.0.

### **3.2.2 Soils Criteria and Mapped Description**

The 2010 Regional Supplement (per the National Technical Committee for Hydric Soils) defines hydric soils as soils “that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.” Field indicators are used to determine whether a given soil meets the definition for hydric soils. Indicators are numerous and include, but are not limited to, presence of a histosol or histic epipedon, a sandy gleyed matrix, depleted matrix, and redoximorphic depressions.

### **3.2.3 Hydrology Criteria**

Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on the characteristics of vegetation and soils due to anaerobic and chemically reducing conditions, respectively. The strongest indicators include the presence of surface water, a high water table, and/or soil saturation within at least 12 inches of the soil surface.

## **3.3 CRITICAL AREAS CLASSIFICATION**

In the City of Mukilteo, streams are typed through application of the Washington State Interim Water Typing system (WAC 222-16-031). Wetlands are classified based on categories determined through application of the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby 2014).

Streams, lakes, marine waters, and wetlands are all additionally classified using the U.S. Fish and Wildlife Service (USFWS) document, *Classifications of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979), also known as the “Cowardin Classification System.” The U.S. Army Corps of Engineers manual, *A Hydrogeomorphic Classification for Wetlands* (Brinson 1993), or HGM system, is also used for further wetland classification.

## **3.4 RESULTS OF THE SITE INVESTIGATION**

Based on the results of the site investigation and review of existing information, one wetland (Wetland A) is present near the northwest corner of the site. Due to degraded site conditions, especially in the central and southern portions of the property, habitat quality is low and does not meet the WDFW definition of a biodiversity area or corridor.



### 3.4.1 Wetland A (off-site)

*City of Mukilteo Rating:* Category IV

*Wetland Size:* 1,528 square feet

*Cowardin Classification:* Palustrine, Scrub-shrub Wetland, Broad-leaved Deciduous, Seasonally Flooded/Saturated (PSS1E)

*HGM Class:* Depressional

*Standard Buffer:* 40 feet [per MMC 17.52B.100(3)]

Wetland A receives 15 total points based on all functions. Wetlands that score between 9 and 15 total points are rated as Category IV, and typically receive 40-foot standard buffers in the City of Mukilteo.

Dominant vegetation within the wetland includes salmonberry (*Rubus spectabilis*; FAC) and fringed willowherb (*Epilobium ciliatum*; FACW). Additional plant species observed include four-line honeysuckle (*Lonicera involucrata*; FAC), Himalayan blackberry (*Rubus armeniacus*; FAC), and Western lady fern (*Athyrium filix-femina* ssp. *cyclosorum*; FAC). Both the dominant species within the wetland have an indicator status of facultative (FAC) or wetter, which meets the hydrophytic vegetation criteria per the Corps Manual and the 2010 Regional Supplement.

Soils within the wetland have a Munsell color of very dark grayish brown (2.5Y 3/2) with a silt loam texture and five percent redoximorphic concentrations of brownish yellow (10YR 6/6) in the upper 16 inches of the soil profile. These conditions meet the Redox Dark Surface (F6) hydric soil indicator. During our site December 2018 site investigation, soils were saturated to the surface, meeting the Saturation (A3) wetland hydrology indicator.

Given that the dominant vegetation comprises a hydrophytic community, soils meet hydric conditions, and wetland hydrology is present, this area meets wetland criteria.



**Figure 4** - Photograph of Wetland A, looking northeast.

### 3.4.2 On-site Characteristics (Non-wetland)

Vegetation in the areas mapped as non-wetland includes big leaf maple (*Acer macrophyllum*, FACU), Douglas fir (*Pseudotsuga menziesii*, FACU), red alder (*Alnus rubra*, FAC), Oso-berry (*Oemleria cerasiformis*, FACU), hardhack (*Spiraea douglasii*, FACW), Himalayan blackberry (*Rubus armeniacus*; FAC), red elderberry (*Sambucus racemosa*, FACU), western swordfern (*Polystichum munitum*, FACU), and trailing blackberry (*Rubus ursinus*, FACU). Typical soils underlying the areas mapped as non-wetland are very dark grayish brown (10YR 3/2) silt loam in the upper six inches, underlain by dark brown (10YR 3/3) gravelly loam. These soils were dry to slightly moist at the time of site investigations. Based on the lack of wetland indicators, it appears that the areas mapped a non-wetland are not inundated or saturated for a sufficient amount of time during the growing season to develop hydric conditions in the upper portion of the soil.



**Figure 5** - Photograph of typical non-wetland area.

### 3.4.3 Wildlife

WRI completed a fish and wildlife evaluation in January, 2019, to determine if any fish, wildlife, or habitats are present on the subject site that would restrict development. A separate report was prepared that meets the requirements of MMC 17.13.040(G).

MMC 17.52C.030 identifies Fish and Wildlife Habitat Conservation Areas (HCAs) as those areas with an association with certain protected species and habitats. Protected species include: 1) federally or state designated threatened, endangered, or sensitive species; 2) Washington Department of Fish and Wildlife (WDFW) designated priority species; and 3) species of local importance. Protected habitats include: 1) WDFW designated priority habitats; 2) habitats of local importance; 3) naturally occurring ponds less than 20-acres in size; 4) waters of the state



(excluding wetlands); 5) aquatic resources planted with game fish by governmental or tribal entities; 6) areas of rare plant species; and 7) land that connects habitat blocks and open space.

No areas on or adjacent to the subject site appear to meet the designation criteria of HCAs as defined by the City of Mukilteo in MMC 17.52C.030 or MMC 17.08 “Fish and wildlife habitat conservation areas (HCAs).” Therefore, the performance standards within MMC 17.52C are not germane to the proposed project. No fish, wildlife, or habitats are present on the subject site that should restrict development.

#### **4.0 COMPLIANCE WITH MMC 17.52.035 [NGPA PERFORMANCE STANDARDS]**

In the City of Mukilteo, regulated streams, wetlands and their buffers are designated collectively as Native Growth Protection Areas (NGPAs). All Native Growth Protection Areas (in this case, Wetland A and its associated buffer) shall be shown on the development site plans or final plat maps, and shall be noted as follows, per MMC 17.52.035:

*Any area in which development is prohibited by these critical areas regulations shall be set aside in a native growth protection area. NGPAs shall be placed in a separate tract on which development is prohibited, protected by execution of an easement, dedicated to a conservation organization or land trust, or similarly preserved through a permanent protective mechanism acceptable to the city. The location and limitation associated with the critical area and its buffer shall be shown on the face of the deed, site plan, or plat applicable to the property and shall be recorded with the Snohomish County assessor’s office.*

*B. Native growth protection areas and buffers shall not be used for storage or deposit of construction debris or material, or deposit of vegetative spoils.*

*C. All native growth protection areas shall be shown on the development site plans or final plat maps, and shall be noted as follows:*

*There shall be no clearing, excavation, or fill within a native growth protection area shown on the face of this site plan/plat, with the exception of required utility installation, removal of dangerous trees, thinning of woodlands for the benefit of the woodlands as determined by a certified landscape architect or arborist, and removal of obstructions on drainage courses, or as allowed under Section 17.52A.070, Vegetation management on steep slopes.*

*D. A temporary sign shall be placed at the boundary of all native growth protection areas during periods of construction, clearing, grading, or excavation on adjacent property. The sign shall describe the limitations of on-site disturbance and development within the native growth protection area. A permanent sign shall be placed at the boundary of all native growth protection areas describing the limitation on development. NGPA signs shall be spaced fifty feet on center along the periphery of the critical area.*

#### 4.1.1 NGPA Signage

Signs designating the presence of the NGPA are required to be posted along the NGPA boundary, which in this case is the outer boundary of the on-site wetland buffer. Signs must be placed at approximately 50-foot intervals around the perimeter of a NGPA. A single type 1 sign will meet this requirement on the subject site. An example of type 1 sign language is as follows:

**NATIVE GROWTH PROTECTION AREA**  
THIS WETLAND AND UPLAND BUFFER ARE PROTECTED TO  
PROVIDE WILDLIFE HABITAT AND MAINTAIN WATER QUALITY.  
PLEASE DO NOT DISTURB THIS VALUABLE RESOURCE.  
\*SEE RECORDED PLAT FOR RESTRICTIONS

The sign shall be constructed of aluminum or similar durable material. It shall be secured to 4" x 4" x 7' (minimum) pressure treated post buried a minimum of two feet in quick setting concrete.

#### 5.0 COMPLIANCE WITH MMC 17.52B.100(G)(2) [WETLAND BUFFER AVERAGING]

In the City of Mukilteo, wetland buffer averaging is allowed when stipulated conditions are met to allow for reasonable use of a parcel. The proposed project has been designed to meet these requirements. Wetland buffer averaging criteria for reasonable use of a parcel, listed in MMC 17.52B.100(G)(2), are presented below in *italics* with responses in normal text.

*G. Buffer Averaging. The widths of buffers may be averaged if this will improve the protection of wetland functions or if it is the only way to allow for reasonable use of a parcel. There is no scientific information available to determine if averaging the widths of buffers actually protects wetland functions; therefore, averaging shall only be allowed in the below-listed situations. Averaging may be used in conjunction with any of the other provisions for reduction in buffers including off-site buffer mitigation through use of the MHR.*

*2. Averaging to allow reasonable use of a parcel may be permitted when all of the following are met:*

*a. There are no feasible alternatives to the site design that could be accomplished without buffer averaging.*

In order to construct an economically feasible warehouse and associated parking facilities that are consistent with the surrounding industrial land uses, the buffer associated with Wetland A would be permanently impacted by the construction footprint. The proposed buffer averaging will modify, and thereby avoid, these permanent impacts.

*b. The averaged buffer will not result in degradation of the wetland's functions and values as demonstrated by a report from a qualified wetland professional.*

Vegetation along the southern side of the northern property line is comprised of native forest, whereas vegetation further south has less developed trees and is degraded with invasive species, such as Himalayan blackberry. Therefore, removal of the southernmost portion of the buffer in tandem with replacement through additional buffer along the northern property line will provide a net improvement of buffer function and will not result in degradation of wetland functions or values.

*c. The total buffer area after being averaged is equal to the area required without the averaging.*

Additional buffer will be provided at a 1:1 replacement ratio. As a result, the total area of the buffer associated with Wetland A will remain unchanged.

*d. The buffer at its narrowest point is never less than fifty percent of the required buffer width.*

The modified buffer will be 20 feet wide at its narrowest point, which is 50-percent of the standard buffer width.

*e. Mitigation sufficient to compensate for the impacts as determined by a qualified specialist is provided for all buffer averaging proposals.*

This proposal will provide buffer area that is at least as high in quality as that being removed through buffer averaging. Additionally, the proposed final modified buffer will form a continuous strip of protective native vegetation along the northern property line in the northwest corner of the subject site, providing a protective barrier between the wetland and the proposed warehouse facility. Given these attributes, the proposed buffer averaging plan will provide sufficient compensatory mitigation.

## **6.0 WETLAND FUNCTIONS AND VALUES ASSESSMENT**

Pursuant to requirements set forth in MMC 17.52B.140 critical areas reports shall assess the impacts of any alteration proposed for a critical area or buffer. The following assessment is intended to compare the current and post-development functions and values provided by Wetland A in the vicinity of the project area.

### **6.1 METHODOLOGY**

The methodology for this functions and values assessment is based on professional opinion developed through past field analyses and interpretation. This assessment pertains specifically to the on-site wetland system, but is typical for assessments of similar systems common to Western Washington.

### **6.2 FUNCTIONAL COMPONENTS**

Wetlands in Western Washington perform a variety of ecosystem functions. Included among the most important functions provided by wetlands are stormwater control, water quality improvement, fish and wildlife habitat, aesthetic value, recreational opportunities and education. The most commonly assessed functions and their descriptions are listed below.

### **6.3 EXISTING CONDITIONS**

#### **6.3.1 Wetland A**

The primary hydrologic source of this depressional wetland is surface water from surrounding upslope locations to the west and south (including the subject site). In most cases, depressional

wetlands are particularly valuable to society as pollution and stormwater control features. Their ability to retain hydrology provides opportunities for removal of particulates and pollutants from the water column, as well as attenuation of surface water velocities during storm events.

Wetland A provides moderate water quality functions overall. The wetland's seasonally ponded nature in conjunction with persistent, ungrazed plants and no surface outlet affords high site potential to improve water quality conditions of captured seasonal hydrology. However, although land uses adjacent to Wetland A commonly generate pollutants, the wetland unit does not receive stormwater discharges or other direct sources of pollutants, so the potential to improve water quality of landscape inputs is moderate at best. Additionally, areas down gradient of the wetland do not have compromised water quality, and thus the opportunity to improve down gradient conditions is low.

The hydrologic functions of Wetland A provide a low to moderate level of flood protection overall. Wetland A is able to somewhat attenuate the runoff produced by the surrounding landscape due to its lack of a surface outlet. However, a shallow depth of storage limits this function. Although, theoretically, that Wetland A comprises a relatively large proportion of its contributing basin means the wetland unit is an important feature in the landscape, this is really an effect of a small basin area overall, and that the wetland is near the uppermost area of the Japanese Gulch basin. Flooding problems do not exist down-gradient of the wetland unit, resulting in low opportunity for the wetland to make a substantive effect on flood control functionality in the area.

The habitat provided by the wetland unit is low overall. The small wetland unit has only a scrub-shrub plant community class, lacking any interspersion. Further, the small size and limited vegetative complexity do not provide special habitat features such as snags, downed logs, etc. The surrounding landscape is highly disturbed, functionally disconnecting the unit from most of the surrounding area as accessible habitat. The nearby Japanese Gulch biodiversity area provides some important habitat resources. However, Wetland A is near the terminus of that system, and thus its contribution to the overall habitat functioning is poor, especially considering the low habitat quality within the unit.

## **6.4 POST-MITIGATION FUNCTIONS AND VALUES**

### *Proposed Protections*

Wetland A will be protected in perpetuity by an on-site buffer area equal in size to that which currently exists. The buffer addition areas will replace those reduced as part of the proposed buffer averaging. The buffer edge will be demarcated with permanent NGPA signage consistent with MMC 17.52.035. The northern 20 feet of the subject site is higher in habitat, vegetative, and protective quality than the area to the south. This is because the northernmost portion of the site is forested with native trees and shrubs, providing habitat resources and barrier functions. However, habitat quality declines moving south from the northern property boundary. Therefore, critical area protection and habitat functions contributed by the proposed averaged buffer are expected to be at least as high in functional quality as the standard provided by strict application of the municipal code.

### *Expected Functions and Values*

The proposed additional buffer areas are at least of equal ecological functional value as those being removed through buffer averaging. The native trees and shrubs in the additional buffer (compared to invasive species located in portions of the area being reduced) are expected to provide a functional lift to the associated wetland through improved protective ability as well as contributions to hydrologic function.

Through compliance with the MMC, the proposed buffer averaging plan will protect wetland functions and values. Any effect of the project actions on the opportunity for the wetland to provide its functions and values, limited as they are, will be insignificant or discountable.

## **7.0 USE OF THIS REPORT**

This Critical Areas Study and Buffer Averaging Plan has been prepared for Underwood Nelson Development, LLC, to assist with identifying on-site and nearby critical areas and applying appropriate mitigation as required by the City of Mukilteo. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions.

The laws applicable to critical areas are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the applicant's attempt to comply with the laws now in effect.

This report conforms to the standard of care employed by ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

*Wetland Resources, Inc.*

A handwritten signature in dark ink that reads "Scott Walters". The signature is fluid and cursive, with the first name "Scott" and last name "Walters" clearly distinguishable.

Scott Walters  
*Associate Ecologist*

## 8.0 REFERENCES

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Appendix A  
Wetland Determination Data Forms



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

Project/Site: 44th Ave W & 78th St SW - Warehouse Project City/County: Mukilteo Sampling Date: Dec. 21, 2018  
 Applicant/Owner: Underwood Nelson Development LLC State: WA Sampling Point: S1  
 Investigator(s): J. Laufenberg Section, Township, Range: S10, T28N, R04E  
 Landform (hillslope, terrace, etc.): slight hillslope Local relief (concave, convex, none): none Slope (%): <5%  
 Subregion (LRR): A Lat: 47.929167 Long: -122.292602 Datum: WGS84  
 Soil Map Unit Name: Alderwood-Urban land complex, 2 to 8 and 8 to 15 percent slopes NWI classification: none

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<br>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: 5m <sup>2</sup> )               | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>2</u> (B)<br><br>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><br>Total % Cover of: _____ Multiply by:<br>OBL species _____ x 1 = <u>0</u><br>FACW species _____ x 2 = <u>0</u><br>FAC species _____ x 3 = <u>0</u><br>FACU species _____ x 4 = <u>0</u><br>UPL species _____ x 5 = <u>0</u><br>Column Totals: <u>0</u> (A) <u>0</u> (B)<br><br>Prevalence Index = B/A = _____  |
| <b>Sapling/Shrub Stratum (Plot size: 3m<sup>2</sup>)</b> |                     |                      |                     |   |
| 1. <u>Rubus armeniacus</u>                               | <u>80</u>           | <u>Y</u>             | <u>FAC</u>          |   |
| 2. <u>Spiraea douglasii</u>                              | <u>20</u>           | <u>Y</u>             | <u>FACW</u>         |   |
| 3. _____   | _____               | _____                | _____               |   |
| 4. _____   | _____               | _____                | _____               |   |
| 5. _____   | _____               | _____                | _____               |   |
|  |                     | = Total Cover        |                     | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> Rapid Test for Hydrophytic Vegetation<br><input checked="" type="checkbox"/> Dominance Test is >50%<br><input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Wetland Non-Vascular Plants <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| <b>Herb Stratum (Plot size: 1m<sup>2</sup>)</b>          |                     |                      |                     |   |
| 1. _____   | _____               | _____                | _____               |   |
| 2. _____   | _____               | _____                | _____               |   |
| 3. _____   | _____               | _____                | _____               |   |
| 4. _____   | _____               | _____                | _____               |   |
| 5. _____   | _____               | _____                | _____               |   |
| 6. _____   | _____               | _____                | _____               |   |
| 7. _____   | _____               | _____                | _____               |   |
| 8. _____   | _____               | _____                | _____               |   |
| 9. _____   | _____               | _____                | _____               |   |
| 10. _____  | _____               | _____                | _____               |   |
| 11. _____  | _____               | _____                | _____               |   |
|  |                     | = 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 _____                      |                     |                      |                     | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>  |
| Remarks:   |                     |                      |                     |   |

## SOIL

Sampling Point: S1

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

| Depth<br>(inches) | Matrix        |     | Redox Features |   |                   | Loc <sup>2</sup> | Texture | Remarks |
|-------------------|---------------|-----|----------------|---|-------------------|------------------|---------|---------|
|                   | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> |                  |         |         |
| 0-6               | 10YR 3/2      | 100 | -              | - | -                 | -                | Si Lo   | Dry     |
| 6-16+             | 10YR 3/3      | 100 | -              | - | -                 | -                | Grv Lo  | Dry     |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |

<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.)**

- |  |  |
|--|--|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                                  |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                              |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>except MLRA 1</b> ) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                          |
| <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)                            |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10)  
☐ Red Parent Material (TF2)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes ☐ No ☒

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9) ( <b>except MLRA 1, 2, 4A, and 4B</b> ) |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Salt Crust (B11)  |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Aquatic Invertebrates (B13)                                       |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)                     |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Presence of Reduced Iron (C4)                                     |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)                        |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )                  |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Other (Explain in Remarks)  |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) |  |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |  |

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)  
☐ Drainage Patterns (B10)  
☐ Dry-Season Water Table (C2)  
☐ Saturation Visible on Aerial Imagery (C9)  
☐ Geomorphic Position (D2)  
☐ Shallow Aquitard (D3)  
☐ FAC-Neutral Test (D5)  
☐ Raised Ant Mounds (D6) (**LRR A**)  
☐ Frost-Heave Hummocks (D7)

**Field Observations:**

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

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

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: 44th Ave W & 78th St SW - Warehouse Project City/County: Mukilteo Sampling Date: Dec. 21, 2018  
 Applicant/Owner: Underwood Nelson Development LLC State: WA Sampling Point: S2  
 Investigator(s): J. Laufenberg Section, Township, Range: S10, T28N, R04E  
 Landform (hillslope, terrace, etc.): slight hillslope Local relief (concave, convex, none): none Slope (%): <5%  
 Subregion (LRR): A Lat: 47.929225 Long: -122.292924 Datum: WGS84  
 Soil Map Unit Name: Alderwood-Urban land complex, 2 to 8 and 8 to 15 percent slopes NWI classification: none

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<br>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: 5m <sup>2</sup> )               | Absolute % Cover | Dominant Species? | Indicator Status | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>2</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)   |
|--|------------------|-------------------|------------------|---|
| 1. _____   | _____            | _____             | _____            |   |
| 2. _____   | _____            | _____             | _____            |   |
| 3. _____   | _____            | _____             | _____            |   |
| 4. _____   | _____            | _____             | _____            |   |
|  |                  |                   | = Total Cover    | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by:<br>OBL species _____ x 1 = <u>0</u><br>FACW species _____ x 2 = <u>0</u><br>FAC species _____ x 3 = <u>0</u><br>FACU species _____ x 4 = <u>0</u><br>UPL species _____ x 5 = <u>0</u><br>Column Totals: <u>0</u> (A) <u>0</u> (B)<br><br>Prevalence Index = B/A = _____  |
| <b>Sapling/Shrub Stratum (Plot size: 3m<sup>2</sup>)</b> |                  |                   |                  |   |
| 1. <u>Rubus spectabilis</u>                              | <u>80</u>        | <u>Y</u>          | <u>FAC</u>       |   |
| 2. <u>Rubus armeniacus</u>                               | <u>20</u>        | <u>N</u>          | <u>FAC</u>       |   |
| 3. <u>Lonicera involucrata</u>                           | <u>20</u>        | <u>N</u>          | <u>FACW</u>      |   |
|  |                  |                   | = Total Cover    |   |
| <b>Herb Stratum (Plot size: 1m<sup>2</sup>)</b>          |                  |                   |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> Rapid Test for Hydrophytic Vegetation<br><input checked="" type="checkbox"/> Dominance Test is >50%<br><input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Wetland Non-Vascular Plants <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 1. <u>Epilobium ciliatum</u>                             | <u>5</u>         | <u>Y</u>          | <u>FACW</u>      |   |
| 2. <u>Athyrium filix-femina</u>                          | <u>trace</u>     | <u>N</u>          | <u>FAC</u>       |   |
| 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: S2

[illegible]

## 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 checked="" 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><br>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>to surface</u><br>(includes capillary fringe) |   | <b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |  |
| 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: 44th Ave W & 78th St SW - Warehouse Project City/County: Mukilteo Sampling Date: Dec. 21, 2018  
 Applicant/Owner: Underwood Nelson Development LLC State: WA Sampling Point: S3  
 Investigator(s): J. Laufenberg Section, Township, Range: S10, T28N, R04E  
 Landform (hillslope, terrace, etc.): slight hillslope Local relief (concave, convex, none): none Slope (%): <5%  
 Subregion (LRR): A Lat: 47.928988 Long: -122.292924 Datum: WGS84  
 Soil Map Unit Name: Alderwood-Urban land complex, 2 to 8 and 8 to 15 percent slopes NWI classification: none

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: 5m <sup>2</sup> )          | Absolute % Cover | Dominant Species? | Indicator Status | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>3</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.3%</u> (A/B)  |
|---|------------------|-------------------|------------------|--|
| 1. <u>Pseudotsuga menziesii</u>                     | <u>20</u>        | <u>Y</u>          | <u>FACU</u>      |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by:<br>OBL species <u>0</u> x 1 = <u>0</u><br>FACW species <u>0</u> x 2 = <u>0</u><br>FAC species <u>80</u> x 3 = <u>240</u><br>FACU species <u>40</u> x 4 = <u>160</u><br>UPL species <u>0</u> x 5 = <u>0</u><br>Column Totals: <u>120</u> (A) <u>400</u> (B)<br><br>Prevalence Index = B/A = <u>3.33</u>  |
| <u>20</u> = Total Cover                             |                  |                   |                  |  |
| Sapling/Shrub Stratum (Plot size: 3m <sup>2</sup> ) |                  |                   |                  |  |
| 1. <u>Rubus armeniacus</u>                          | <u>80</u>        | <u>Y</u>          | <u>FAC</u>       |  |
| 2. _____  | _____            | _____             | _____            | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> Rapid Test for Hydrophytic Vegetation<br><input type="checkbox"/> Dominance Test is >50%<br><input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)<br><input type="checkbox"/> Wetland Non-Vascular Plants <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| <u>80</u> = Total Cover                             |                  |                   |                  |  |
| Herb Stratum (Plot size: 1m <sup>2</sup> )          |                  |                   |                  |  |
| 1. <u>Polystichum munitum</u>                       | <u>20</u>        | <u>Y</u>          | <u>FACU</u>      |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| 7. _____  | _____            | _____             | _____            |  |
| 8. _____  | _____            | _____             | _____            |  |
| 9. _____  | _____            | _____             | _____            |  |
| 10. _____   | _____            | _____             | _____            |  |
| 11. _____   | _____            | _____             | _____            |  |
| <u>20</u> = Total Cover                             |                  |                   |                  |  |
| Woody Vine Stratum (Plot size: _____)               |                  |                   |                  |  |
| 1. _____  | _____            | _____             | _____            | <b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>   |
| 2. _____  | _____            | _____             | _____            |  |
| _____ = Total Cover                                 |                  |                   |                  |  |
| % Bare Ground in Herb Stratum _____                 |                  |                   |                  |  |
| Remarks:  |                  |                   |                  |  |

## SOIL

Sampling Point: S3

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

| Depth<br>(inches) | Matrix        |     | Redox Features |   |                   | Loc <sup>2</sup> | Texture | Remarks |
|-------------------|---------------|-----|----------------|---|-------------------|------------------|---------|---------|
|                   | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> |                  |         |         |
| 0-5               | 10YR 3/2      | 100 | -              | - | -                 | -                | Si Lo   | Moist   |
| 5-16              | 10YR 3/3      | 100 | -              | - | -                 | -                | Grv Lo  | Dry     |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |
|                   |               |     |                |   |                   |                  |         |         |

<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.)**

- |  |  |
|--|--|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                                  |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                              |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>except MLRA 1</b> ) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                          |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                              |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input checked="" 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)                            |

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes ☐ No ☒

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

- |  |  |
|--|--|
| <input type="checkbox"/> Surface Water (A1)                        | <input type="checkbox"/> Water-Stained Leaves (B9) ( <b>except MLRA 1, 2, 4A, and 4B</b> ) |
| <input type="checkbox"/> High Water Table (A2)                     | <input type="checkbox"/> Salt Crust (B11)  |
| <input type="checkbox"/> Saturation (A3)                           | <input type="checkbox"/> Aquatic Invertebrates (B13)                                       |
| <input type="checkbox"/> Water Marks (B1)                          | <input type="checkbox"/> Hydrogen Sulfide Odor (C1)  |
| <input type="checkbox"/> Sediment Deposits (B2)                    | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)                     |
| <input type="checkbox"/> Drift Deposits (B3)                       | <input type="checkbox"/> Presence of Reduced Iron (C4)                                     |
| <input type="checkbox"/> Algal Mat or Crust (B4)                   | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)                        |
| <input type="checkbox"/> Iron Deposits (B5)                        | <input type="checkbox"/> Stunted or Stressed Plants (D1) ( <b>LRR A</b> )                  |
| <input type="checkbox"/> Surface Soil Cracks (B6)                  | <input type="checkbox"/> Other (Explain in Remarks)  |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) |  |
| <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)   |  |

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Water Table Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_

Saturation Present? Yes ☐ No ☒ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)

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

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

Remarks:



Appendix B  
DOE Wetland Rating Form and Figures



Wetland name or number A

## RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 9/25/2018  
Rated by JL Trained by Ecology? ☒ Yes ☐ No Date of training 9/2014  
HGM Class used for rating DEPRESSIONAL Wetland has multiple HGM classes? ☐ Y ☒ N

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

**OVERALL WETLAND CATEGORY IV** (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<br>Water Quality   | Hydrologic  | Habitat   |              |
|--------------------------------|--|---|---|--------------|
| Circle the appropriate ratings |  |   |   |              |
| Site Potential                 | <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L | H <input type="checkbox"/> M <input type="checkbox"/> L | H <input type="checkbox"/> M <input type="checkbox"/> L |              |
| Landscape Potential            | H <input type="checkbox"/> M <input type="checkbox"/> L                          | H <input type="checkbox"/> M <input type="checkbox"/> L | H <input type="checkbox"/> M <input type="checkbox"/> L |              |
| Value                          | H <input type="checkbox"/> M <input type="checkbox"/> L                          | H <input type="checkbox"/> M <input type="checkbox"/> L | H <input type="checkbox"/> M <input type="checkbox"/> L | <b>TOTAL</b> |
| Score Based on<br>Ratings      | <b>6</b>   | <b>5</b>  | <b>4</b>  | <b>15</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                          | <input type="checkbox"/> I <input type="checkbox"/> II  |
| Wetland of High Conservation Value | <input type="checkbox"/> I  |
| Bog                                | <input type="checkbox"/> I  |
| Mature Forest                      | <input type="checkbox"/> I  |
| Old Growth Forest                  | <input type="checkbox"/> I  |
| Coastal Lagoon                     | <input type="checkbox"/> I <input type="checkbox"/> II  |
| Interdunal                         | <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> IV |
| None of the above                  | <input checked="" type="checkbox"/>   |

Wetland name or number A

## 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  | A1       |
| Hydroperiods  | D 1.4, H 1.2         | A1       |
| Location of outlet ( <i>can be added to map of hydroperiods</i> )   | D 1.1, D 4.1         | A1       |
| Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )   | D 2.2, D 5.2         | A1       |
| Map of the contributing basin   | D 4.3, D 5.3         | A2       |
| 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  | A2       |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website)   | D 3.1, D 3.2         | A3       |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web)  | D 3.3                | A4       |

### 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 figure above</i> )                   | S 4.1                |          |
| Boundary of 150 ft buffer ( <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 polygons for accessible habitat and undisturbed habitat | H 2.1, H 2.2, H 2.3  |          |
| Screen capture of map of 303(d) listed waters in basin (from Ecology website)   | S 3.1, S 3.2         |          |
| Screen capture of list of TMDLs for WRIA in which unit is found (from web)  | S 3.3                |          |

Wetland name or number **A**\_\_\_\_\_

## HGM Classification of Wetlands in Western Washington

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

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

Wetland name or number A**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   | <input type="checkbox"/> | Riverine                   |
| Slope + Depressional   | <input type="checkbox"/> | Depressional               |
| Slope + Lake Fringe  | <input type="checkbox"/> | Lake Fringe                |
| Depressional + Riverine along stream within boundary of depression | <input type="checkbox"/> | Depressional               |
| Depressional + Lake Fringe   | <input type="checkbox"/> | Depressional               |
| Riverine + Lake Fringe   | <input type="checkbox"/> | Riverine                   |
| Salt Water Tidal Fringe and any other class of freshwater wetland  | <input type="checkbox"/> | 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 A

| <b>DEPRESSIONAL AND FLATS WETLANDS</b>  |  |           |
|---|--|-----------|
| <b>Water Quality Functions - Indicators that the site functions to improve water quality</b>  |  |           |
| <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><br><input checked="" type="checkbox"/> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3<br><input type="checkbox"/> Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2<br><input type="checkbox"/> Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1<br><input type="checkbox"/> Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1 | <b>3</b>                                 |           |
| <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 <b>No = 0</b>  | <b>0</b>                                 |           |
| <b>D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</b><br><input checked="" type="checkbox"/> Wetland has persistent, ungrazed, plants > 95% of area points = 5<br><input type="checkbox"/> Wetland has persistent, ungrazed, plants > ½ of area points = 3<br><input type="checkbox"/> Wetland has persistent, ungrazed plants > 1/10 of area points = 1<br><input type="checkbox"/> Wetland has persistent, ungrazed plants < 1/10 of area points = 0   | <b>5</b>                                 |           |
| <b>D 1.4. Characteristics of seasonal ponding or inundation:</b><br><i>This is the area that is ponded for at least 2 months. See description in manual.</i><br><input checked="" type="checkbox"/> Area seasonally ponded is > ½ total area of wetland points = 4<br><input type="checkbox"/> Area seasonally ponded is > ¼ total area of wetland points = 2<br><input type="checkbox"/> Area seasonally ponded is < ¼ total area of wetland points = 0  | <b>4</b>                                 |           |
| <b>Total for D 1</b>  | <b>Add the points in the boxes above</b> | <b>12</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 <b>No = 0</b>                    | <b>0</b> |
| <b>D 2.2. Is &gt; 10% of the area within 150 ft of the wetland in land uses that generate pollutants?</b>                                 | <b>Yes = 1</b> No = 0                    | <b>1</b> |
| <b>D 2.3. Are there septic systems within 250 ft of the wetland?</b>  | Yes = 1 <b>No = 0</b>                    | <b>0</b> |
| <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><br>Source _____ | Yes = 1 <b>No = 0</b>                    | <b>0</b> |
| <b>Total for D 2</b>  | <b>Add the points in the boxes above</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 <b>No = 0</b>                    | <b>0</b> |
| <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 <b>No = 0</b>                    | <b>0</b> |
| <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 <b>No = 0</b>                    | <b>0</b> |
| <b>Total for D 3</b>   | <b>Add the points in the boxes above</b> | <b>0</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 A**DEPRESSIONAL AND FLATS WETLANDS****Hydrologic Functions** - Indicators that the site functions to reduce flooding and stream degradation

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

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

- |  |            |          |
|--|------------|----------|
| <input checked="" type="checkbox"/> Wetland is a depression or flat depression with no surface water leaving it (no outlet)      | points = 4 | <b>4</b> |
| <input type="checkbox"/> Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet | points = 2 |          |
| <input type="checkbox"/> Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch           | points = 1 |          |
| <input type="checkbox"/> Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing       | points = 0 |          |

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.

- |   |            |          |
|---|------------|----------|
| <input type="checkbox"/> Marks of ponding are 3 ft or more above the surface or bottom of outlet  | points = 7 | <b>0</b> |
| <input type="checkbox"/> Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet | points = 5 |          |
| <input 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 |          |
| <input type="checkbox"/> Wetland is flat but has small depressions on the surface that trap water | points = 1 |          |
| <input checked="" type="checkbox"/> Marks of ponding less than 0.5 ft (6 in)                      | points = 0 |          |

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.

- |  |            |          |
|--|------------|----------|
| <input checked="" type="checkbox"/> The area of the basin is less than 10 times the area of the unit | points = 5 | <b>5</b> |
| <input type="checkbox"/> The area of the basin is 10 to 100 times the area of the unit               | points = 3 |          |
| <input type="checkbox"/> 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 |          |

Total for D 4

Add the points in the boxes above

**9****Rating of Site Potential** If score is: 12-16 = H ✓ 6-11 = M 0-5 = L

Record the rating on the first page

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

|   |  |          |
|---|--|----------|
| D 5.1. Does the wetland receive stormwater discharges?  | Yes = 1 <input type="checkbox"/> No = <input type="checkbox"/>   | <b>0</b> |
| D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?   | <input type="checkbox"/> Yes = 1 <input type="checkbox"/> No = 0 | <b>1</b> |
| D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? | <input type="checkbox"/> Yes = 1 <input type="checkbox"/> No = 0 | <b>1</b> |
| Total for D 5   | Add the points in the boxes above                                | <b>2</b> |

**Rating of Landscape Potential** If score is: 3 = H ✓ 1 or 2 = M 0 = L

Record the rating on the first page

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

D 6.1. The 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.

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):

- |  |            |          |
|--|------------|----------|
| <input type="checkbox"/> • Flooding occurs in a sub-basin that is immediately down-gradient of unit.   | points = 2 | <b>0</b> |
| <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 |          |

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**

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



Wetland name or number A**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.*

- ☐ Aquatic bed 4 structures or more: points = 4  
☐ Emergent 3 structures: points = 2  
☒ Scrub-shrub (areas where shrubs have > 30% cover) 2 structures: points = 1  
☐ Forested (areas where trees have > 30% cover) 1 structure: points = 0  
*If the unit has a Forested class, check if:*  
☐ 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

**0****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*).

- ☐ Permanently flooded or inundated 4 or more types present: points = 3  
☒ Seasonally flooded or inundated 3 types present: points = 2  
☐ Occasionally flooded or inundated 2 types present: points = 1  
☒ Saturated only 1 type present: points = 0  
☐ Permanently flowing stream or river in, or adjacent to, the wetland  
☐ Seasonally flowing stream in, or adjacent to, the wetland  
☐ **Lake Fringe wetland** 2 points  
☐ **Freshwater tidal wetland** 2 points

**1****H 1.3. Richness of plant species**

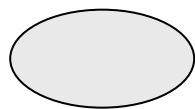
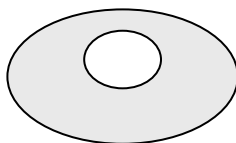
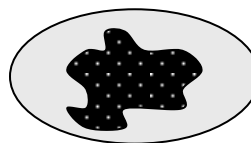
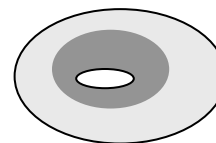
Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>.

*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*

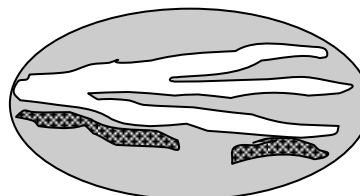
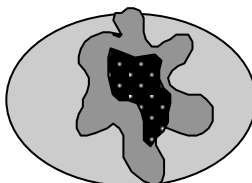
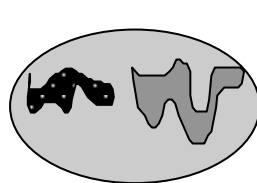
- If you counted: > 19 species points = 2  
                           5 - 19 species points = 1  
                           < 5 species points = 0

**1****H 1.4. Interspersion of habitats**

Decide from the diagrams below whether interspersion 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****0**

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



Wetland name or number A

|   |                                   |          |
|---|-----------------------------------|----------|
| <b>H 1.5. Special habitat features:</b><br>Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i><br><input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long).<br><input type="checkbox"/> Standing snags (dbh > 4 in) within the wetland<br><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)<br><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> )<br><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> )<br><input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants ( <i>see H 1.1 for list of strata</i> ) |                                   | <b>0</b> |
| Total for H 1   | Add the points in the boxes above | <b>2</b> |

**Rating of Site Potential** If score is: 15-18 = H 7-14 = M ☒ 0-6 = L

Record the rating on the first page

|   |                                   |           |
|---|-----------------------------------|-----------|
| <b>H 2.0. Does the landscape have the potential to support the habitat functions of the site?</b>   |                                   |           |
| <b>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>).</b><br><i>Calculate:</i> % undisturbed habitat <u>0</u> + [(% moderate and low intensity land uses)/2] <u>7</u> = <u>7</u> %<br>If total accessible habitat is:<br><input type="checkbox"/> > 1/3 (33.3%) of 1 km Polygon points = 3<br><input type="checkbox"/> 20-33% of 1 km Polygon points = 2<br><input type="checkbox"/> 10-19% of 1 km Polygon points = 1<br><input checked="" type="checkbox"/> < 10% of 1 km Polygon points = 0           |                                   | <b>0</b>  |
| <b>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.</b><br><i>Calculate:</i> % undisturbed habitat <u>8</u> + [(% moderate and low intensity land uses)/2] <u>10</u> = <u>18</u> %<br><input type="checkbox"/> Undisturbed habitat > 50% of Polygon points = 3<br><input type="checkbox"/> Undisturbed habitat 10-50% and in 1-3 patches points = 2<br><input checked="" type="checkbox"/> Undisturbed habitat 10-50% and > 3 patches points = 1<br><input type="checkbox"/> Undisturbed habitat < 10% of 1 km Polygon points = 0 |                                   | <b>1</b>  |
| <b>H 2.3. Land use intensity in 1 km Polygon: If</b><br><input checked="" type="checkbox"/> > 50% of 1 km Polygon is high intensity land use points = (- 2)<br><input type="checkbox"/> ≤ 50% of 1 km Polygon is high intensity points = 0  |                                   | <b>-2</b> |
| Total for H 2   | Add the points in the boxes above | <b>-1</b> |

**Rating of Landscape Potential** If score is: 4-6 = H 1-3 = M ☒ < 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? <i>Choose only the highest score that applies to the wetland being rated.</i></b><br>Site meets ANY of the following criteria: points = 2<br><input type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page)<br><input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)<br><input type="checkbox"/> It is mapped as a location for an individual WDFW priority species<br><input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources<br><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<br><input checked="" type="checkbox"/> Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1<br><input type="checkbox"/> Site does not meet any of the criteria above points = 0 |  | <b>1</b> |

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

Record the rating on the first page

Wetland name or number A

## 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 addressed elsewhere.

| Wetland Type  | Category                                   |
|---|--|
| <p><i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i></p> <p><b>SC 1.0. Estuarine wetlands</b></p> <p>Does the wetland meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal,</p> <p><input type="checkbox"/> Vegetated, and</p> <p><input type="checkbox"/> With a salinity greater than 0.5 ppt</p> <p>Yes –Go to <b>SC 1.1</b>      <b>No = Not an estuarine wetland</b></p>   |  |
| <p><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?</p> <p>Yes = <b>Category I</b>      No - Go to <b>SC 1.2</b></p>   | <b>Cat. I</b>                              |
| <p><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?</p> <p><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)</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 unmowed grassland.</p> <p><input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p> <p>Yes = <b>Category I</b>      No = <b>Category II</b></p>  | <p><b>Cat. I</b></p> <p><b>Cat. II</b></p> |
| <p><b>SC 2.0. Wetlands of High Conservation Value (WHCV)</b></p> <p><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?</p> <p>Yes – Go to <b>SC 2.2</b>      <b>No – Go to SC 2.3</b></p> <p><b>SC 2.2.</b> Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?</p> <p>Yes = <b>Category I</b>      <b>No = Not a WHCV</b></p> <p><b>SC 2.3.</b> Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland?</p> <p><a href="http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf">http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf</a></p> <p>Yes – <b>Contact WNHP/WDNR and go to SC 2.4</b>      No = <b>Not a WHCV</b></p> <p><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?</p> <p>Yes = <b>Category I</b>      No = <b>Not a WHCV</b></p>  |  |
| <p><b>SC 3.0. Bogs</b></p> <p>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></p> <p><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?</p> <p>Yes – Go to <b>SC 3.3</b>      <b>No – Go to SC 3.2</b></p> <p><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?</p> <p>Yes – Go to <b>SC 3.3</b>      <b>No = Is not a bog</b></p> <p><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?</p> <p>Yes = <b>Is a Category I bog</b>      No – Go to <b>SC 3.4</b></p> <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> <p><b>SC 3.4.</b> Is an area with peats or mucks forested (&gt; 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 in Table 4 provide more than 30% of the cover under the canopy?</p> <p>Yes = <b>Is a Category I bog</b>      No = <b>Is not a bog</b></p> |  |
|   | <b>Cat. I</b>                              |

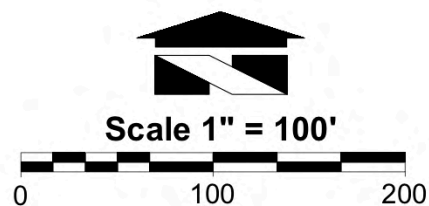
Wetland name or number A

|   |   |
|---|---|
| <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 style="text-align: right;">Yes = <b>Category I</b>      No = <b>Not a forested wetland for this section</b></p>   | <b>Cat. I</b>   |
| <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 style="text-align: right;">Yes – Go to <b>SC 5.1</b>      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 unmowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 ac (4350 ft<sup>2</sup>)</p> <p style="text-align: right;">Yes = <b>Category I</b>      No = <b>Category II</b></p> | <b>Cat. I</b><br><br><br><br><br><br><br><b>Cat. II</b>   |
| <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 style="text-align: right;">Yes – Go to <b>SC 6.1</b>      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><br/>Yes = <b>Category I</b>      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><br/>Yes = <b>Category II</b>      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><br/>Yes = <b>Category III</b>      No = <b>Category IV</b></p>   | <b>Cat I</b><br><br><br><br><br><br><br><b>Cat. II</b><br><br><br><br><b>Cat. III</b><br><br><br><br><b>Cat. IV</b> |
| <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>  | <b>N/A</b>  |

Wetland name or number \_\_\_\_\_

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UNDERWOOD NELSON DEVELOPMENT - 44TH AVE W/78TH ST SW  
WETLAND RATING FIGURE 1 - WETLAND A



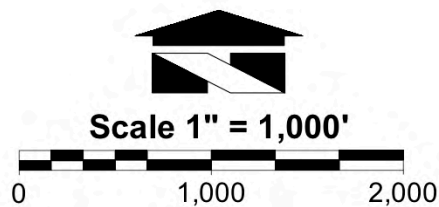
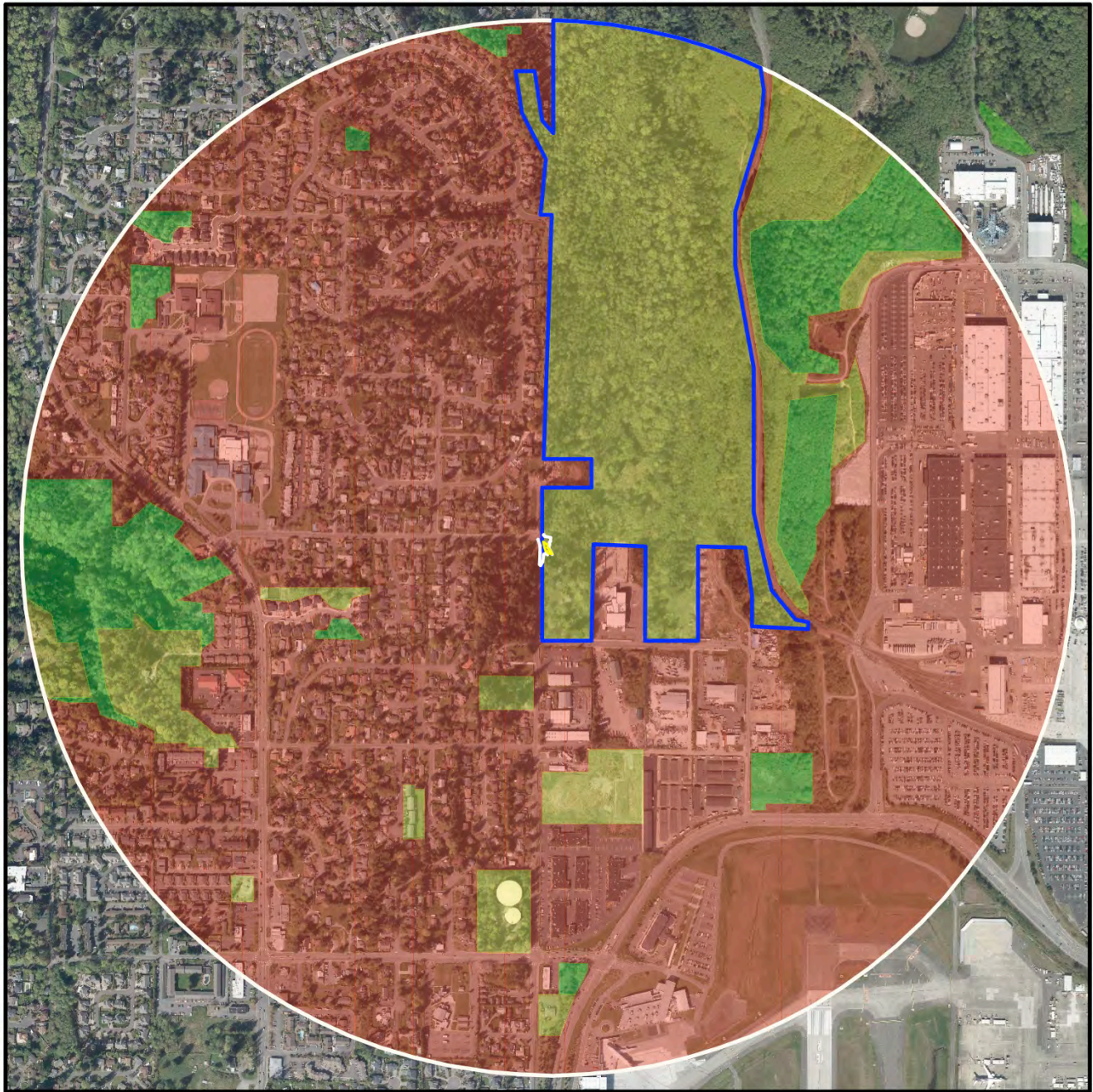
**Wetland Resources, Inc.**  
Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance  
9505 19th Avenue S.E. Suite 106 Everett, Washington 98208  
Phone: (425) 337-3174  
Fax: (425) 337-3045  
Email: mailbox@wetlandresources.com

| WETLAND RATING<br>Wetland A   |   |
|---|---|
| Underwood Nelson Development, LLC<br>Attn: Greg Nelson<br>PO Box 1301<br>Seahurst, WA 98096 | Figure A-1<br>WRI Job # 18307<br>Rated by: TA |





UNDERWOOD NELSON DEVELOPMENT - 44TH AVE W/78TH ST SW  
WETLAND RATING FIGURE 2 - WETLAND A



**CONTRIBUTING BASIN  
AREA RELATIVE TO  
WETLAND UNIT IS 6:1**

**Wetland Resources, Inc.**  
Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance  
9505 19th Avenue S.E. Suite 106 Everett, Washington 98208  
Phone: (425) 337-3174  
Fax: (425) 337-3045  
Email: mailbox@wetlandresources.com

**WETLAND RATING  
Wetland A**

Underwood Nelson Development, LLC  
Attn: Greg Nelson  
PO Box 1301  
Seahurst, WA 98096

Figure A-2  
WRI Job # 18307  
Rated by: TA

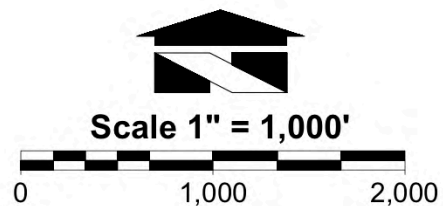




UNDERWOOD NELSON DEVELOPMENT - 44TH AVE W/78TH ST SW  
WETLAND RATING FIGURE 3 - WETLAND A



NOTE: THERE ARE NO AQUATIC RESOURCES ON THE 303(d) LIST FOR THIS AREA.



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Phone: (425) 337-3174  
Fax: (425) 337-3045  
Email: mailbox@wetlandresources.com

**WETLAND RATING  
Wetland A**

Underwood Nelson Development, LLC  
Attn: Greg Nelson  
PO Box 1301  
Seahurst, WA 98096  
Figure A-3  
WRI Job # 18307  
Rated by: TA





# UNDERWOOD NELSON DEVELOPMENT - 44TH AVE W/78TH ST SW

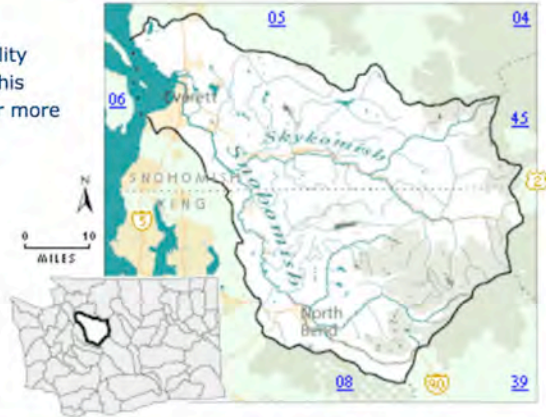
## WETLAND RATING FIGURE 4 - WETLAND A

### WRIA 7: Snohomish

The following table lists overview information and links to specific water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

#### Counties

- [King](#)
- [Snohomish](#)



| Waterbody Name                  | Pollutant(s)  | Status**   | TMDL Lead                                   |
|---------------------------------|---|--|---|
| <a href="#">Lake Loma</a>       | Total Phosphorus  | Straight to implementation project under development | <a href="#">Tricia Shoblom</a> 425-649-7288 |
| <a href="#">Snohomish River</a> | <a href="#">French Creek / Pilchuck River</a>   | Under development                                    | <a href="#">Ralph Svrcek</a> 425-649-7165   |
|                                 | <ul style="list-style-type: none"> <li>• Dissolved Oxygen</li> <li>• Temperature</li> </ul>   |  |   |
|                                 | <a href="#">Dioxin</a>  | EPA approved   | <a href="#">Ralph Svrcek</a> 425-649-7165   |
|                                 | <a href="#">Estuary</a>   | EPA approved   | <a href="#">Ralph Svrcek</a> 425-649-7165   |
|                                 | <a href="#">Tributaries</a> <ul style="list-style-type: none"> <li>• Fecal Coliform</li> </ul> Tributaries: <ul style="list-style-type: none"> <li>• Allen Creek</li> <li>• Quilceda Creek</li> <li>• French Creek</li> <li>• Woods Creek</li> <li>• Pilchuck River</li> <li>• Marshlands (Wood Creek) {2}</li> </ul> | EPA approved   | <a href="#">Ralph Svrcek</a> 425-649-7165   |
|                                 | <a href="#">Snoqualmie River</a>  | EPA approved   | <a href="#">Ralph Svrcek</a> 425-649-7165   |
|                                 | <ul style="list-style-type: none"> <li>• Ammonia-N</li> <li>• BOD (5-day)</li> <li>• Fecal Coliform</li> </ul> Temperature  | EPA approved<br>Has an implementation plan           |   |

\*\* Status will be listed as one of the following: Approved by EPA, Under Development or Implementation



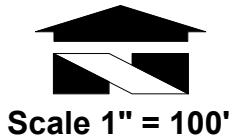
## Appendix C

### Critical Areas Study and Buffer Averaging Plan Map





PORTION OF SECTION 10, TOWNSHIP 28N, RANGE 4E, W.M.



**Scale 1" = 100'**



WETLAND

— — — — BUFFER

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

## BUFFER AVERAGING (ADDITION)

## BUFFER AVERAGING (REDUCTION)

— — ■ — — CRITICAL AREAS SIGN

—X—X—X—X—X— SPLIT-RAIL FENCING

S1

## DATA SITE



*Wetland Resources, Inc.*

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E. Suite 106 Everett, Washington 98208

Phone: (425) 337-3174

Fax: (425) 337-3045

Email: mailbox@wetlandresources.com

## MUKILTEO, WA

Underwood Nelson Dev, LLC

Attn: Greg Nelson

PO Box 1301

Seahurst, WA 98062

Sheet 1/1

WRI Job#: 18307

Drawn by: S. Walters

Date: February 2019

