

Map Unit Symbol	Map Unit Name
20	Cagey loamy sand
70	Mukilteo muck, drained
73	Nisqually loamy fine sand, 0 to 3 percent slopes
74	Nisqually loamy fine sand, 3 to 15 percent slopes
76	Norma silt loam



## Legend

 Project Location



Note: Map screenshot acquired from NRCS Web Soil Survey:  
<https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>,  
on 11/6/2022.

Yelm Community Park Master Plan  
Olympia, Washington

National Resource Conservation  
Service Web Soil Survey Map

September 2023

103284-010

**SHANNON & WILSON, INC.**  
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

**FIG. 8**

Appendix A

# Wetland Delineation Methodology

Appendix A

# WETLAND DELINEATION METHODOLOGY

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## A.1 INTRODUCTION

The triple-parameter approach, as required in the U.S. Army Corps of Engineers' (the Corps') 1987 *Corps of Engineers Wetland Delineation Manual* and the Corps' 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* was used to identify and delineate the wetlands on the site described in this report. The triple-parameter approach requires that vegetation, soils, and hydrology are each evaluated to determine the presence or absence of wetlands. An area is considered to be a wetland if each of the following is met: (a) dominant hydrophytic vegetation is present in the area, (b) the soils in the area are hydric, and (c) the necessary hydrologic conditions within the area are met.

A determination of wetland presence was made by conducting a Routine Delineation. Corresponding upland and wetland plots were recorded to characterize surface and subsurface conditions and more accurately determine the boundaries of on-site wetlands.

## A.2 WETLAND VEGETATION

Hydrophytic plants are plant species specially adapted for saturated and/or anaerobic conditions. These species can be found in areas where there is a significant duration and frequency of inundation, which produces permanently or periodically saturated soils. Hydrophytic species, due to morphological, physiological, and reproductive adaptations, have the ability to grow, effectively compete, reproduce, and thrive in anaerobic soil. Indicators of hydrophytic vegetation are based on the wetland indicator status of plant species on the national wetland plant list (Lichvar and others, 2016). Plants are categorized as Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), or Upland (UPL). Species in the facultative categories (FACW, FAC, and FACU) are recognized as occurring in both wetlands and non-wetlands to varying degrees. Most wetlands are dominated mainly by species rated as OBL, FACW, or FAC (Exhibit A-1).

**Exhibit A-1 Plant Indicator Status****Plant Indicator Status Categories**

Obligate Wetland (**OBL**) – Plants that almost always occur in wetlands.

Facultative Wetland (**FACW**) – Plants that usually occur in wetlands but may occur in non-wetlands.

Facultative (**FAC**) – Plants that occur in wetlands or non-wetlands.

Facultative Upland (**FACU**) – Plants that usually occur in non-wetlands but may occur in wetlands.

Obligate Upland (**UPL**) – Plants that almost never occur in wetlands.

Source: Lichvar and others, 2016

The approximate percentage of absolute cover for each of the different plant species occurring within the tree, sapling/shrub, woody vine, and herbaceous strata was determined. Trees within a 30-foot radius, sapling/shrubs and woody vines within a 15-foot radius, and herbaceous species within a 5-foot radius of each data point were identified and noted. However, where site conditions merited it, the dimensions of the tree, sapling/shrub, woody vine, and herbaceous strata were modified.

The dominance test is the primary hydrophytic vegetation indicator and it is used in all wetland delineations. Dominant plant species are considered to be those that, when cumulatively totaled in descending order of absolute percent cover, exceed 50% of the total absolute cover for each vegetative stratum. Any additional species individually representing 20% or greater of the total absolute cover for each vegetative stratum are also considered dominant. Hydrophytic vegetation is considered to be present when greater than 50% of the dominant plant species within the area had an indicator status of OBL, FACW, or FAC.

If a plant community does not meet the dominance test in areas where hydric soils and wetland hydrology are present, vegetation is reevaluated using the prevalence index, plant morphological adaptations for living in wetlands, and/or abundance of bryophytes (e.g., mosses) adapted to living in wetlands. The prevalence index is a weighted average that takes into account the abundance of all plant species within the sampling area to determine if hydrophytic vegetation is more or less prevalent. Using the prevalence index, all plants within the sampling area are grouped by wetland indicator status and absolute percent cover is summed for each group. Total cover for each indicator status group is weighted by the following multipliers: OBL=1, FACW=2, FAC=3, FACU=4, UPL=5. The prevalence index is calculated by dividing the sum of the weighted totals by the sum of total cover in the sampling area. A prevalence index of 3.0 or less indicates that hydrophytic vegetation is present.

### A.3 HYDRIC SOILS

Hydric soils are defined 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 (U.S. Department of Agriculture [USDA] Soil Conservation Service [SCS], 1994). Repeated periods of saturation and inundation for more than a few days, in combination with soil microbial activity, causes depletion in oxygen (anaerobic conditions) and results in delayed decomposition of organic matter and reduction of iron, manganese, and sulfur elements. As a result of these processes, most hydric soils develop distinctive characteristics observable in the field during both wet and dry periods (Vasilas and others, 2018). These characteristics may be exhibited as an accumulation of organic matter; bluish-gray, green-gray, or low chroma and high value soil colors; mottling or other concentrations of iron and manganese; and/or hydrogen sulfide odor similar to a rotten egg smell.

The USDA Natural Resources Conservation Service (NRCS) developed official hydric soil indicators as summarized in *Field Indicators of Hydric Soils in the United States* (Vasilas and others, 2018). These indicators were developed to assist in delineation of hydric soils and are based predominantly on hydric soils near the margins of wetlands. Some hydric soils, including soils within the wettest parts of wetlands, may lack any of the approved hydric soil indicators. If a hydric soil indicator is present, the soil is determined to be hydric. If no hydric soil indicator is present, additional site information is used to assess whether the soil meets the definition of hydric soil.

Identification of hydric soils was aided through observation of surface hydrologic characteristics and indicators of wetland hydrology (e.g., drainage patterns). Soil characteristics were observation at several data points, placed both inside and outside the wetland. Holes were dug with a shovel to the depth needed to document an indicator or to confirm the absence of hydric soil indicators. Soil organic content was estimated visually and texturally. Soil colors were examined in the field immediately after sampling. Dry soils were moistened. Soil colors were determined through analysis of the hue, value, and chroma best represented in the Munsell® Soil Color Chart (Munsell Color, 1992).

### A.4 WETLAND HYDROLOGY

Wetland hydrology is determined by observable evidence that inundation or soil saturation have occurred during a significant portion of the growing season repeatedly over a period of years so that wet condition have been sufficient to produce wetland vegetation and hydric soils. Wetland hydrology indicators give evidence of a continuing wetland hydrologic regime. Wetland hydrology criteria were considered to be satisfied if it appeared that wetland hydrology was present for at least 5 to 12.5% (12 to 31 days) of the growing

season. The growing season in western Washington is typically considered to be from March 1 to October 31 (244 days). However, the growing season is considered to have begun when: (a) evidence of plant growth has begun on two non-evergreen vascular plants and (b) the soil reaches a temperature of 41 degrees Fahrenheit at a depth of 12 inches. The Seattle District Corps requires 14 consecutive days of inundation or saturation for wetland hydrology to be considered present.

Wetland hydrology was evaluated by direct visual observation of surface inundation or soil saturation in data plots. The area near each data point was examined for indicators of wetland hydrology. Wetland hydrology indicators are categorized as primary or secondary based on their estimated reliability. Wetland hydrology was considered present if there was evidence of one primary indicator or at least two secondary indicators.

Some primary indicators include surface water, a shallow water table or saturated soils observed within 12 inches of the surface, dried watermarks, drift lines, sediment deposits, water-stained leaves, and algal mat/crust. Some secondary indicators include a water table within 12 to 24 inches of the surface during the dry season; drainage patterns; a landscape position in a depression, drainage, or fringe of a water body; and a shallow restrictive layer capable of perching water within 12 inches of the surface.

## A.5 DISCLAIMER

This methodology was prepared for reference use only and is not intended to replace the 1987 *Corps of Engineers Wetlands Delineation Manual*, or the Corps' 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*.

## A.6 REFERENCES

Munsell Color, 1992, Munsell soil color charts: Newburgh, N.Y., Macbeth Division of Kollmorgen Instruments Corporation, 1 v.

Lichvar, R.W.; Banks, E.L.; Kirchner W.N.; and Melvin N.C., 2016, The national wetland plant list: 2016 update of wetland ratings: *Phytoneuron* 2016-30: 1-17. Available: [http://wetland\\_plants.usace.army.mil/](http://wetland_plants.usace.army.mil/)

- U.S. Army Corps of Engineers (USACE), 1987, Corps of Engineers wetlands delineation manual: Vicksburg, Miss., U.S. Army Corps of Engineers Waterways Experiment Station, Wetlands Research Program, Technical Report Y-87-1, 143 p., available: <https://www.lrh.usace.army.mil/Portals/38/docs/USACE%2087%20Wetland%20Delineation%20Manual.pdf>.
- U.S. Army Engineer Research and Development Center, 2010, Regional supplement to the Corps of Engineers wetland delineation manual: western mountains, valleys, and coast region (v. 2.0): Vicksburg, Miss., U.S. Army Corps of Engineers Research and Development Center, Report ERDC/EL TR-10-3, 151 p., available: <https://usace.contentdm.oclc.org/utis/getfile/collection/p266001coll1/id/7646>.
- U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS), 1994, Changes in hydric soils of the United States: Washington, D.C., Federal Register, 59 FR 35680-35695, July 13.
- Vasilas, L.M.; Hurt, G.W.; and Berkowitz, J.F., eds., 2018, Field indicators of hydric soils in the United States - a guide for identifying and delineating hydric soils, version 8.2, 2018: Washington, D.C., Natural Resources Conservation Service, 46 p., available: [https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_053171.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_053171.pdf).

Appendix B

# Wetland Data Forms

APPENDIX B: WETLAND DATA FORMS

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

Project/Site: Yelm Community Park City/County: Thurston County Sampling Date: 6/25/19  
 Applicant/Owner: City of Olympia State: WA Sampling Point: DP-1  
 Investigator(s): Amy Summe, Merci Clinton Section, Township, Range: S40 T17N R1W  
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): 1  
 Subregion (LRR): A Lat: 46.994296 Long: -122.851452 Datum: WGS84  
 Soil Map Unit Name: 70-Mukilteo muck, drained NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks.)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes x No       
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes	<u>X</u>	No	<u>    </u>
Hydric Soil Present?	Yes	<u>    </u>	No	<u>x</u>
Wetland Hydrology Present?	Yes	<u>    </u>	No	<u>x</u>

Is the Sampled Area within a Wetland? Yes      No x

Remarks:

## VEGETATION – Use scientific names of plants.

Tree Stratum	Plot size:	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Pseudotsuga menziesii</u>	<u>30 ft</u>	<u>75</u>	<u>Yes</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u>Populus balsamifera</u>		<u>30</u>	<u>Yes</u>	<u>FAC</u>	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. <u>    </u>					Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
4. <u>    </u>					
<u>105</u> = Total Cover					
Sapling/Shrub Stratum	Plot size:				Prevalence Index worksheet:
1. <u>    </u>	<u>15 ft</u>				Total % Cover of: <u>    </u> Multiply by: <u>    </u>
2. <u>    </u>					OBL species <u>    </u> x 1 = <u>    </u>
3. <u>    </u>					FACW species <u>    </u> x 2 = <u>    </u>
4. <u>    </u>					FAC species <u>    </u> x 3 = <u>    </u>
5. <u>    </u>					FACU species <u>    </u> x 4 = <u>    </u>
<u>0</u> = Total Cover					UPL species <u>    </u> x 5 = <u>    </u>
					Column Totals: <u>    </u> (A) <u>    </u> (B)
					Prevalence Index = B/A = <u>    </u>
Herb Stratum	Plot size:				Hydrophytic Vegetation Indicators:
1. <u>Ranunculus repens</u>	<u>3 ft</u>	<u>100</u>	<u>Yes</u>	<u>FAC</u>	<u>    </u> 1 - Rapid Test for Hydrophytic Vegetation
2. <u>Holcus lanatus</u>		<u>15</u>	<u>No</u>	<u>FAC</u>	<u>X</u> 2 - Dominance Test is >50%
3. <u>Phalaris arundinacea</u>		<u>70</u>	<u>Yes</u>	<u>FACW</u>	<u>    </u> 3 - Prevalence Index is ≤3.0 <sup>1</sup>
4. <u>    </u>					<u>    </u> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
5. <u>    </u>					<u>    </u> 5 - Wetland Non-Vascular Plants <sup>1</sup>
6. <u>    </u>					<u>    </u> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
7. <u>    </u>					<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. <u>    </u>					
9. <u>    </u>					
10. <u>    </u>					
11. <u>    </u>					
<u>185</u> = Total Cover					
Woody Vine Stratum	Plot size:				Hydrophytic Vegetation Present?
1. <u>    </u>	<u>3 ft</u>				Yes <u>X</u> No <u>    </u>
2. <u>    </u>					
<u>0</u> = Total Cover					
% Bare Ground in Herb Stratum <u>0</u>					

Remarks:

## SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16	7.5yr 2.5/1	100					Sil/Loam	Soil very 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.)		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

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

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

## HYDROLOGY

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

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

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

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

Project/Site: Yelm Community Park City/County: Thurston County Sampling Date: 6/25/19  
 Applicant/Owner: City of Olympia State: WA Sampling Point: DP-2  
 Investigator(s): Amy Summe, Merci Clinton Section, Township, Range: S40 T17N R1W  
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): 1  
 Subregion (LRR): A Lat: 46.994296 Long: -122.851452 Datum: WGS84  
 Soil Map Unit Name: 70-Mukilteo muck, drained NWI classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No      (If no, explain in Remarks.)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes x No       
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:

## VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1.					
2.					
3.					
4.					
		<u>0</u>	= Total Cover		
Sapling/Shrub Stratum	(Plot size: <u>15 ft</u> )				<b>Prevalence Index worksheet:</b> Total % Cover of: Multiply by: OBL species <u>    </u> x 1 = <u>    </u> FACW species <u>    </u> x 2 = <u>    </u> FAC species <u>    </u> x 3 = <u>    </u> FACU species <u>    </u> x 4 = <u>    </u> UPL species <u>    </u> x 5 = <u>    </u> Column Totals: <u>    </u> (A) <u>    </u> (B) Prevalence Index = B/A = <u>    </u>
1.					
2.					
3.					
4.					
5.					
		<u>0</u>	= Total Cover		
Herb Stratum	(Plot size: <u>3 ft</u> )				<b>Hydrophytic Vegetation Indicators:</b> <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>x</u> <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 <sup>1</sup> <u>4</u> - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <u>5</u> - Wetland Non-Vascular Plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	<u>Ranunculus repens</u>	<u>30</u>	<u>No</u>	<u>FAC</u>	
2.	<u>Holcus lanatus</u>	<u>80</u>	<u>Yes</u>	<u>FAC</u>	
3.	<u>Phalaris arundinacea</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
4.	<u>Lotus corniculatus</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	
5.	<u>Juncus ensifolius</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	
6.	<u>Juncus effusus</u>	<u>20</u>	<u>No</u>	<u>FACW</u>	
7.	<u>Other grasses</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
8.					
9.					
10.					
11.					
		<u>190</u>	= Total Cover		
Woody Vine Stratum	(Plot size: <u>3 ft</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>
1.					
2.					
		<u>0</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>0</u>					

Remarks:

## SOIL

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	7.5YR2.5/1	95	5YR5/6	5	C	M	Silt/loam	
12-20	7.5YR2.5/1	90	5YR5/6	10	C	M	Silt/loam	

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

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

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

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

Remarks:

## HYDROLOGY

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

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 17 Saturation Present? (includes capillary fringe)    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 8	Wetland Hydrology Present?    Yes <input type="checkbox"/> No <input type="checkbox"/>
---	--

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

Remarks: Beaver activity documented on the site.

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

Project/Site: Yelm Community Park City/County: Thurston County Sampling Date: 6/25/19  
 Applicant/Owner: City of Olympia State: WA Sampling Point: DP-3  
 Investigator(s): Amy Summe, Merci Clinton Section, Township, Range: S40 T17N R1W  
 Landform (hillslope, terrace, etc.): Stream Bank Local relief (concave, convex, none): None Slope (%): 1  
 Subregion (LRR): A Lat: 46.994303 Long: -122.852004 Datum: WGS84  
 Soil Map Unit Name: 70-Mukilteo muck, drained NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No      (If no, explain in Remarks.)  
 Are Vegetation     , Soil     , or Hydrology      significantly disturbed? Are "Normal Circumstances" present? Yes x No       
 Are Vegetation     , Soil     , or Hydrology      naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
1. <u>Populus balsamifera</u>	<u>75</u>	<u>yes</u>	<u>FAC</u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
3. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
4. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>75</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Prevalence Index worksheet:</b> Total % Cover of: Multiply by: OBL species <u>    </u> x 1 = <u>    </u> FACW species <u>    </u> x 2 = <u>    </u> FAC species <u>    </u> x 3 = <u>    </u> FACU species <u>    </u> x 4 = <u>    </u> UPL species <u>    </u> x 5 = <u>    </u> Column Totals: <u>    </u> (A) <u>    </u> (B) Prevalence Index = B/A = <u>    </u>
1. <u>Oemleria cerasiformis</u>	<u>75</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Sambucus racemosa</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
3. <u>Spiraea douglasii</u>	<u>15</u>	<u>No</u>	<u>FACW</u>	
4. <u>Rubus armeniacus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
5. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>110</u> = Total Cover				
Herb Stratum (Plot size: <u>3 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Ranunculus repens</u>	<u>70</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Urtica dioica</u>	<u>60</u>	<u>No</u>	<u>FAC</u>	
3. <u>Phalaris arundinacea</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>	
4. <u>Tellima grandiflora</u>	<u>trace</u>	<u>No</u>	<u>FACU</u>	
5. <u>Geranium robertianum</u>	<u>50</u>	<u>No</u>	<u>FACU</u>	
6. <u>Galium aparine</u>	<u>40</u>	<u>No</u>	<u>FACU</u>	
7. <u>Carex deweyana</u>	<u>40</u>	<u>No</u>	<u>FAC</u>	
8. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
9. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
10. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
11. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>330</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>3 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No <u>    </u>
1. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
2. <u>    </u>	<u>    </u>	<u>    </u>	<u>    </u>	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				

Remarks:

## SOIL

Sampling Point: DP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-17	7.5YR2.5/1	100					Silt/loam	

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

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

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

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

Remarks:

## HYDROLOGY

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

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	<b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" 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: Yelm Community Park City/County: Thurston County Sampling Date: 6/25/19  
 Applicant/Owner: City of Olympia State: WA Sampling Point: DP-4  
 Investigator(s): Amy Summe, Merci Clinton Section, Township, Range: S40 T17N R1W  
 Landform (hillslope, terrace, etc.): Stream Bank Local relief (concave, convex, none): None Slope (%): 1  
 Subregion (LRR): A Lat: 46.994303 Long: -122.852004 Datum: WGS84  
 Soil Map Unit Name: 70-Mukilteo muck, drained NWI classification: None  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No    (If no, explain in Remarks.)  
 Are Vegetation   , Soil   , or Hydrology    significantly disturbed? Are "Normal Circumstances" present? Yes x No     
 Are Vegetation   , Soil   , or Hydrology    naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)
1. <u>Pseudotsuga menziesii</u>	<u>65</u>	<u>yes</u>	<u>FACU</u>	
2. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
3. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
4. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
<u>75</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Prevalence Index worksheet:</b> Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>40</u> x 2 = <u>80</u> FAC species <u>50</u> x 3 = <u>150</u> FACU species <u>125</u> x 4 = <u>500</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>215</u> (A) <u>730</u> (B) Prevalence Index = B/A = <u>3.4</u>
1. <u>Rubus armeniacus</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Sambucus racemosa</u>	<u>5</u>	<u>Yes</u>	<u>FACU</u>	
3. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
4. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
5. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
<u>10</u> = Total Cover				
Herb Stratum (Plot size: <u>3 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b> 1 - Rapid Test for Hydrophytic Vegetation 2 - Dominance Test is >50% 3 - Prevalence Index is ≤3.0 <sup>1</sup> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) 5 - Wetland Non-Vascular Plants <sup>1</sup> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Galium aparine</u>	<u>50</u>	<u>Yes</u>	<u>FACU</u>	
2. <u>Phalaris arundinacea</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>	
3. <u>Agrostis capillaris</u>	<u>25</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Vicia sp.</u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
5. <u>Lolium perenne</u>	<u>20</u>	<u>No</u>	<u>FAC</u>	
6. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
7. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
8. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
9. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
10. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
11. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
<u>117</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>3 ft</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Present?</b> Yes <u>  </u> No <u>X</u>
1. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
2. <u>  </u>	<u>  </u>	<u>  </u>	<u>  </u>	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				

Remarks:

Sampling Point: DP-4

## HYDROLOGY

US Army Corps of Engineers

Appendix C

# Site Photographs

APPENDIX C: SITE PHOTOGRAPHS

APPENDIX C: SITE PHOTOGRAPHS



**Exhibit C-1: View of Wetland A from the North. Wetland Continues Beyond the Forest in the Background.**



**Exhibit C-2: Example of Forested Area of Wetlands. Photo Taken Along Eastern Edge of Wetland A.**

APPENDIX C: SITE PHOTOGRAPHS



**Exhibit C-3: Example of Forested Uplands Around Wetland A. Photo Taken to the East of Wetland A.**



**Exhibit C-4: Tilled Agricultural Fields in the Study Area**

APPENDIX C: SITE PHOTOGRAPHS



Exhibit C-5: Planted Forested Upland Area, North of Wetland A



Exhibit C-6: Image of One of the Oregon White Oak Stands Located in the Study Area

APPENDIX C: SITE PHOTOGRAPHS



**Exhibit C-7: View of Dry Chambers Ditch Channel Upstream of Wetland A**



**Exhibit C-8: View of Wetted Chambers Ditch Channel West of Wetland A**

Appendix D

# Wetland Rating Forms

APPENDIX D: WETLAND RATING FORMS

## RATING SUMMARY – Western Washington

Name of wetland (or ID #):   Wetland A   Date of site visit:   25-Jun-19  Rated by   Merci Clinton   Trained by Ecology? ☒ Yes ☐ No Date of training   10/30/2018  HGM Class used for rating   Depressional & Flats   Wetland has multiple HGM classes? ☐ Yes ☒ No

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

Source of base aerial photo/map   Esri  OVERALL WETLAND CATEGORY   II   (based on functions ☒ or special characteristics ☐ )

## 1. Category of wetland based on FUNCTIONS

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	H	M	H	
Landscape Potential	H	M	L	
Value	H	H	H	<b>Total</b>
Score Based on Ratings	9	7	7	<b>23</b>

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

9 = H, H, H

8 = H, H, M

7 = H, H, L

7 = H, M, M

6 = H, M, L

6 = M, M, M

5 = H, L, L

5 = M, M, L

4 = M, L, L

3 = L, L, L

## 2. Category based on SPECIAL CHARACTERISTICS of wetland

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

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

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	2
Map of the contributing basin	D 4.3, D 5.3	3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	6

### Riverine Wetlands

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

### Lake Fringe Wetlands

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

### Slope Wetlands

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

## HGM Classification of Wetland in Western Washington

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

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

- ☒ NO - go to 2 ☐ YES - the wetland class is **Tidal Fringe** - go to 1.1

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

- ☐ **NO - Saltwater Tidal Fringe (Estuarine)** ☐ **YES - Freshwater Tidal Fringe**  
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands.*  
*If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

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

- ☒ NO - go to 3 ☐ **YES** - The wetland class is **Flats**  
*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

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

- ☐ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;  
☐ At least 30% of the open water area is deeper than 6.6 ft (2 m).

- ☒ NO - go to 4 ☐ **YES** - The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

- ☐ The wetland is on a slope (*slope can be very gradual*),  
☐ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.  
☐ The water leaves the wetland **without being impounded**.

- ☒ NO - go to 5 ☐ **YES** - The wetland class is **Slope**

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

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

- ☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,  
☐ The overbank flooding occurs at least once every 2 years.

- ☒ NO - go to 6 ☐ **YES** - The wetland class is **Riverine**

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

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

☐ NO - go to 7

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

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

☐ NO - go to 8

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

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

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

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

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

NOTES and FIELD OBSERVATIONS:  
NRCS (Mukilteo muck, drained)

<b>DEPRESSIONAL AND FLATS WETLANDS</b>		
<b>Water Quality Functions</b> - Indicators that the site functions to improve water quality		
<b>D 1.0. Does the site have the potential to improve water quality?</b>		
<b>D 1.1. Characteristics of surface water outflows from the wetland:</b> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 <input checked="" type="checkbox"/> Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing. points = 1 <input type="checkbox"/> Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1		1
<b>D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</b> Yes = 4 No = 0		4
<b>D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</b> Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > 1/2 of area points = 3 Wetland has persistent, ungrazed plants > 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0		5
<b>D 1.4. Characteristics of seasonal ponding or inundation:</b> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > 1/2 total area of wetland points = 4 Area seasonally ponded is > 1/4 total area of wetland points = 2 Area seasonally ponded is < 1/4 total area of wetland points = 0		4
Total for D 1		<b>14</b>

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

<b>D 2.0. Does the landscape have the potential to support the water quality function of the site?</b>		
<b>D 2.1. Does the wetland unit receive stormwater discharges?</b> Yes = 1 No = 0		0
<b>D 2.2. Is &gt; 10% of the area within 150 ft of the wetland in land uses that generate pollutants?</b> Yes = 1 No = 0		1
<b>D 2.3. Are there septic systems within 250 ft of the wetland?</b> Yes = 1 No = 0		1
<b>D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1 - D 2.3?</b> Source <u>nitrate in groundwater</u> Yes = 1 No = 0		1
Total for D 2		<b>3</b>

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

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

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

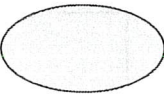

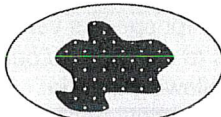
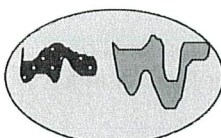

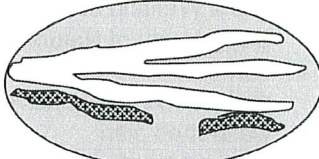
<b>DEPRESSIONAL AND FLATS WETLANDS</b>		
<b>Hydrologic Functions</b> - Indicators that the site functions to reduce flooding and stream degradation		
<b>D 4.0. Does the site have the potential to reduce flooding and erosion?</b>		
<b>D 4.1. Characteristics of surface water outflows from the wetland:</b>		
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	0
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unobstructed, or slightly constricted, surface outlet that is permanently flowing	points = 0	
<b>D 4.2. Depth of storage during wet periods: <i>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.</i></b>		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	3
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
<input checked="" type="checkbox"/> Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
<input type="checkbox"/> The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	
<b>D 4.3. Contribution of the wetland to storage in the watershed: <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i></b>		
<input type="checkbox"/> The area of the basin is less than 10 times the area of the unit	points = 5	3
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
<input type="checkbox"/> Entire wetland is in the Flats class	points = 5	
<b>Total for D 4</b>		<b>6</b>
<b>Rating of Site Potential</b> If score is: <input type="checkbox"/> 12 - 16 = H <input checked="" type="checkbox"/> 6 - 11 = M <input type="checkbox"/> 0 - 5 = L <i>Record the rating on the first page</i>		
<b>D 5.0. Does the landscape have the potential to support hydrologic function of the site?</b>		
<b>D 5.1. Does the wetland unit receive stormwater discharges?</b>	Yes = 1 No = 0	0
<b>D 5.2. Is &gt; 10% of the area within 150 ft of the wetland in land uses that generate excess runoff?</b>	Yes = 1 No = 0	1
<b>D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at &gt;1 residence/ac, urban, commercial, agriculture, etc.)?</b>	Yes = 1 No = 0	1
<b>Total for D 5</b>		<b>2</b>
<b>Rating of Landscape Potential</b> If score is: <input type="checkbox"/> 3 = H <input checked="" type="checkbox"/> 1 or 2 = M <input type="checkbox"/> 0 = L <i>Record the rating on the first page</i>		
<b>D 6.0. Are the hydrologic functions provided by the site valuable to society?</b>		
<b>D 6.1. The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.</b>		
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		2
<input checked="" type="checkbox"/> Flooding occurs in a sub-basin that is immediately down-gradient of unit.	points = 2	
<input checked="" 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 type="checkbox"/> There are no problems with flooding downstream of the wetland.	points = 0	
<b>D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?</b>		
Yes = 2 No = 0		0

Wetland name or number   A  

Total for D 6	Add the points in the boxes above	2
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**Rating of Value** If score is: ☒ 2 - 4 = H    ☐ 1 = M    ☐ 0 = L

*Record the rating on the first page*

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

<p>H 1.5. Special habitat features:</p> <p>Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt; 4 in diameter and 6 ft long)</li> <li><input checked="" type="checkbox"/> Standing snags (dbh &gt; 4 in) within the wetland</li> <li><input checked="" type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)</li> <li><input checked="" type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt; 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>)</li> <li><input checked="" type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)</li> <li><input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)</li> </ul>	5
<p>Total for H 1</p>	17

**Rating of Site Potential** If Score is: ☒ 15 - 18 = H ☐ 7 - 14 = M ☐ 0 - 6 = L *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat function of the site?		
H 2.1 Accessible habitat (include <i>only habitat that directly abuts wetland unit</i> ). Calculate: 0 % undisturbed habitat + ( 14 % moderate & low intensity land uses / 2 ) = 7%  If total accessible habitat is: <div> <div>&gt; 1/3 (33.3%) of 1 km Polygon</div> <div>20 - 33% of 1 km Polygon</div> <div>10 - 19% of 1 km Polygon</div> <div>&lt; 10 % of 1 km Polygon</div> </div> <div> <div>points = 3</div> <div>points = 2</div> <div>points = 1</div> <div>points = 0</div> </div>		0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. Calculate: 0 % undisturbed habitat + ( 24 % moderate & low intensity land uses / 2 ) = 12%  <div> <div>Undisturbed habitat &gt; 50% of Polygon</div> <div>Undisturbed habitat 10 - 50% and in 1-3 patches</div> <div>Undisturbed habitat 10 - 50% and &gt; 3 patches</div> <div>Undisturbed habitat &lt; 10% of 1 km Polygon</div> </div> <div> <div>points = 3</div> <div>points = 2</div> <div>points = 1</div> <div>points = 0</div> </div>		2
H 2.3 Land use intensity in 1 km Polygon: If <div> <div>&gt; 50% of 1 km Polygon is high intensity land use</div> <div>≤ 50% of 1km Polygon is high intensity</div> </div> <div> <div>points = (-2)</div> <div>points = 0</div> </div>		-2
Total for H 2		0

Rating of Landscape Potential If Score is: ☐ 4 - 6 = H ☐ 1 - 3 = M ☒ < 1 = L Record the rating on the first page

<p>H 3.0. Is the habitat provided by the site valuable to society?</p>		
<p>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></p> <p>Site meets ANY of the following criteria:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page)</li> <li><input checked="" type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)</li> <li><input checked="" type="checkbox"/> It is mapped as a location for an individual WDFW priority species</li> <li><input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources</li> <li><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</li> </ul> <p>Site has 1 or 2 priority habitats (listed on next page) with in 100m</p> <p>Site does not meet any of the criteria above</p>		<p>points = 2</p> <p>2</p> <p>points = 1</p> <p>points = 0</p>

Wetland name or number   A  

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

*Record the rating on the first page*

## WDFW Priority Habitats

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

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

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

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

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

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

**CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS**

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

Wetland name or number   A  

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

☐ Yes = **Is a Category I bog**

☒ No = **Is not a bog**

**SC 4.0. Forested Wetlands**

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.***

- ☐ **Old-growth forests** (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.
- ☐ **Mature forests** (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).

☐ Yes = **Category I**    ☒ No = **Not a forested wetland for this section**

**SC 5.0. Wetlands in Coastal Lagoons**

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

- ☐ 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
- ☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*)

☐ Yes - Go to **SC 5.1**    ☒ No = **Not a wetland in a coastal lagoon**

**SC 5.1. Does the wetland meet all of the following three conditions?**

- ☐ 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).
- ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or ungrazed or un-mowed grassland.
- ☐ The wetland is larger than 1/10 ac (4350 ft<sup>2</sup>)

☐ Yes = **Category I**    ☐ No = **Category II**

**SC 6.0. Interdunal Wetlands**

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.***

In practical terms that means the following geographic areas:

- ☐ Long Beach Peninsula: Lands west of SR 103
- ☐ Grayland-Westport: Lands west of SR 105
- ☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109

☐ Yes - Go to **SC 6.1**    ☒ No = **Not an interdunal wetland for rating**

**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)?**

☐ Yes = **Category I**    ☐ No - Go to **SC 6.2**

**SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?**

☐ Yes = **Category II**    ☐ No - Go to **SC 6.3**

**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?**

☐ Yes = **Category III**    ☐ No = **Category IV**









**Category of wetland based on Special Characteristics**

If you answered No for all types, enter "Not Applicable" on Summary Form



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

### Legend

- |   |   |
|---|---|
|  Emergent    |  Occasionally inundated    |
|  Forested    |  Permanently inundated     |
|  Scrub-shrub |  Saturated                 |
|  Outlet      |  Seasonally flowing stream |



0 125 250 500 Feet

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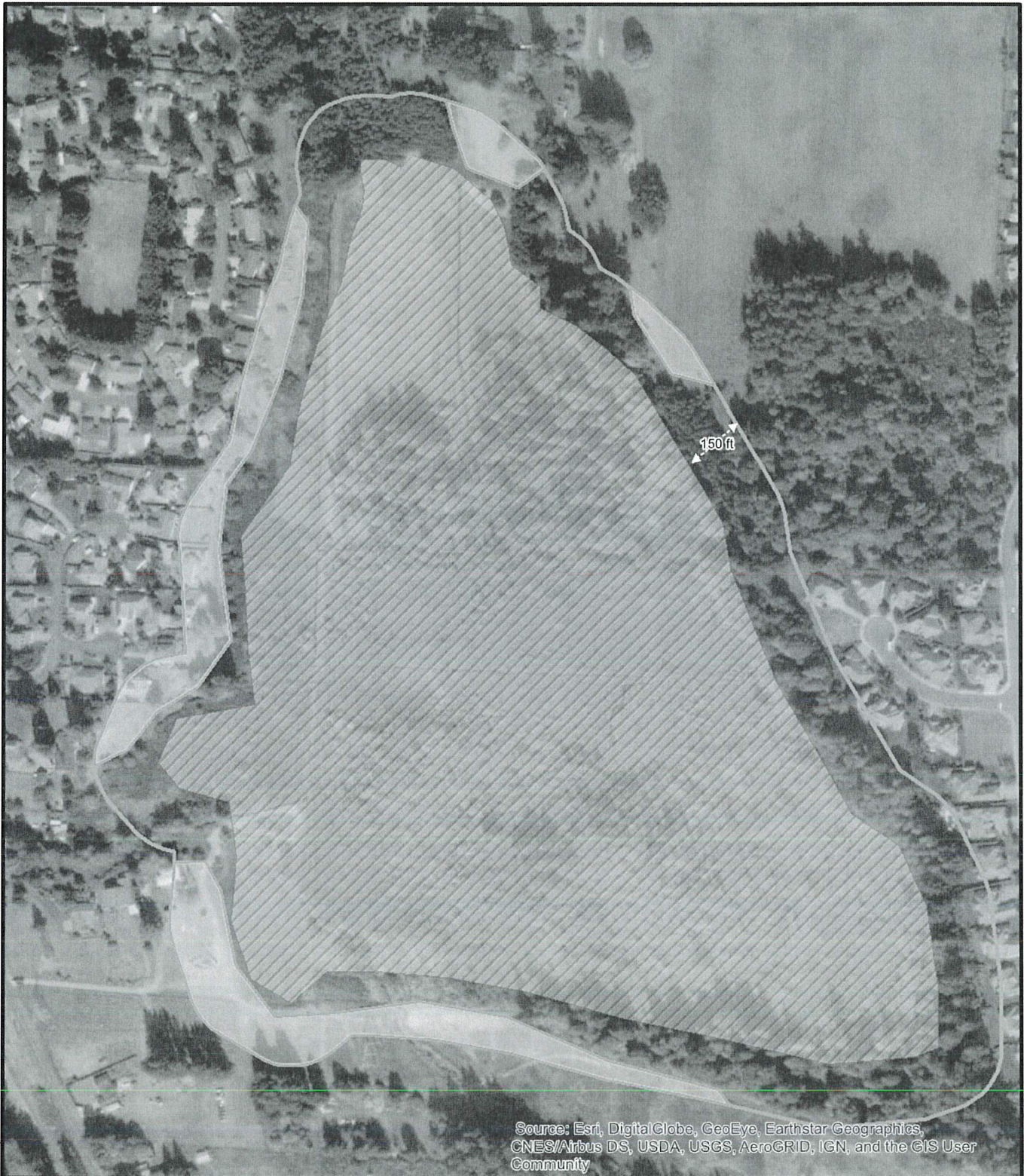
### COWARDIN CLASSES AND HYDROPERIODS

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**FIG. 1**



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

## Legend

-  Wetland A
-  150 Foot Buffer
-  Pollutant Generating Surface



0 125 250 500 Feet

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## 150 FOOT BOUNDARY

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**FIG. 2**

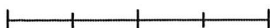


## Legend

-  Wetland A
-  Contributing Basin



0 0.25 0.5 1 Miles



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## MAP OF THE CONTRIBUTING BASIN

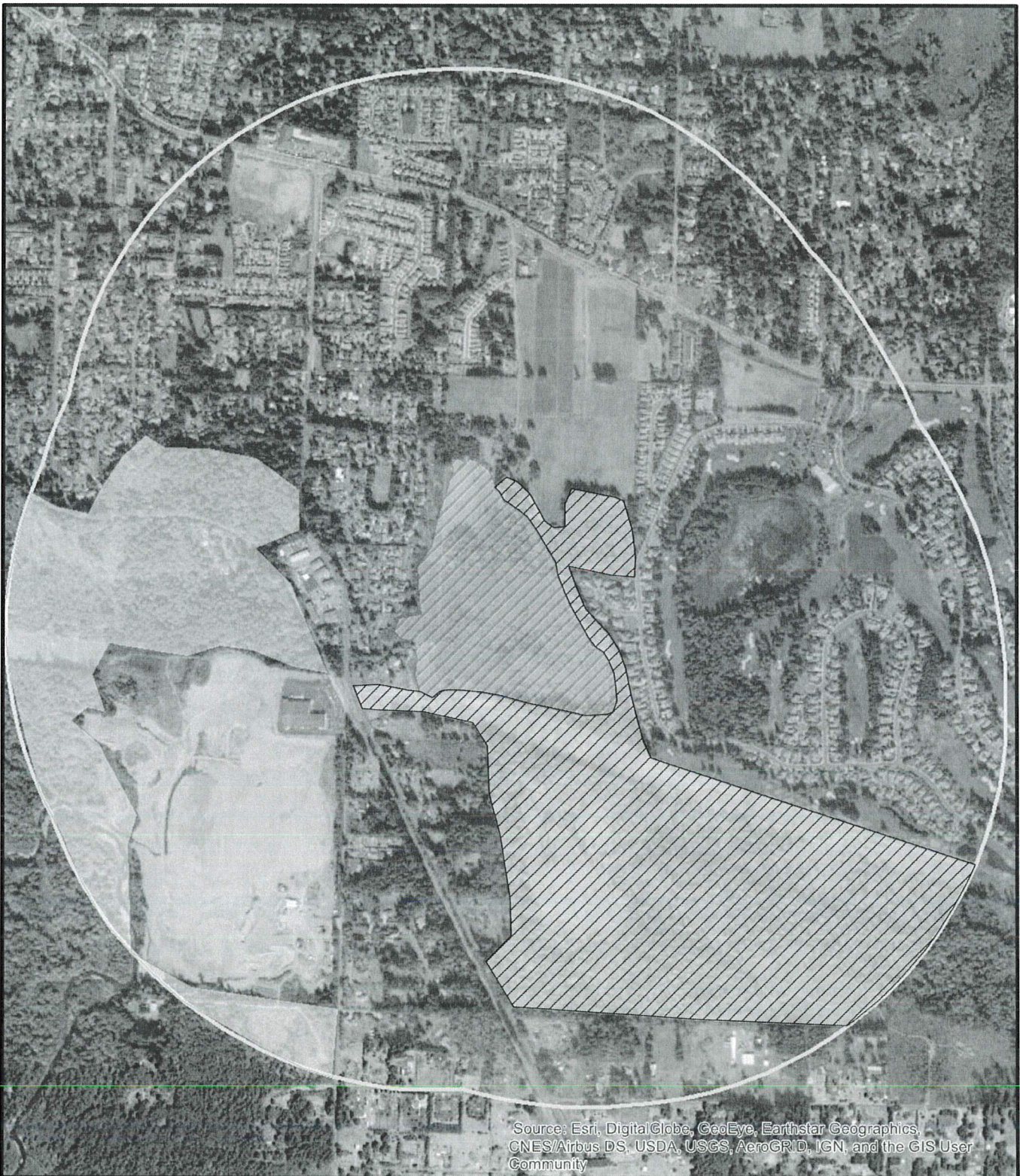
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
**FIG. 3**

Filename: I:\EF\SEA\103000s\103284 Yelm Hwy Commu\GIS\MXD\1 Km Buffer.mxd Date: 8/5/2019 mac



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

## Legend

-  Wetland A
-  1 Kilometer Buffer
-  Moderate & Low Intensity Land Use
-  Accessible Habitat



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## 1 KILOMETER POLYGON

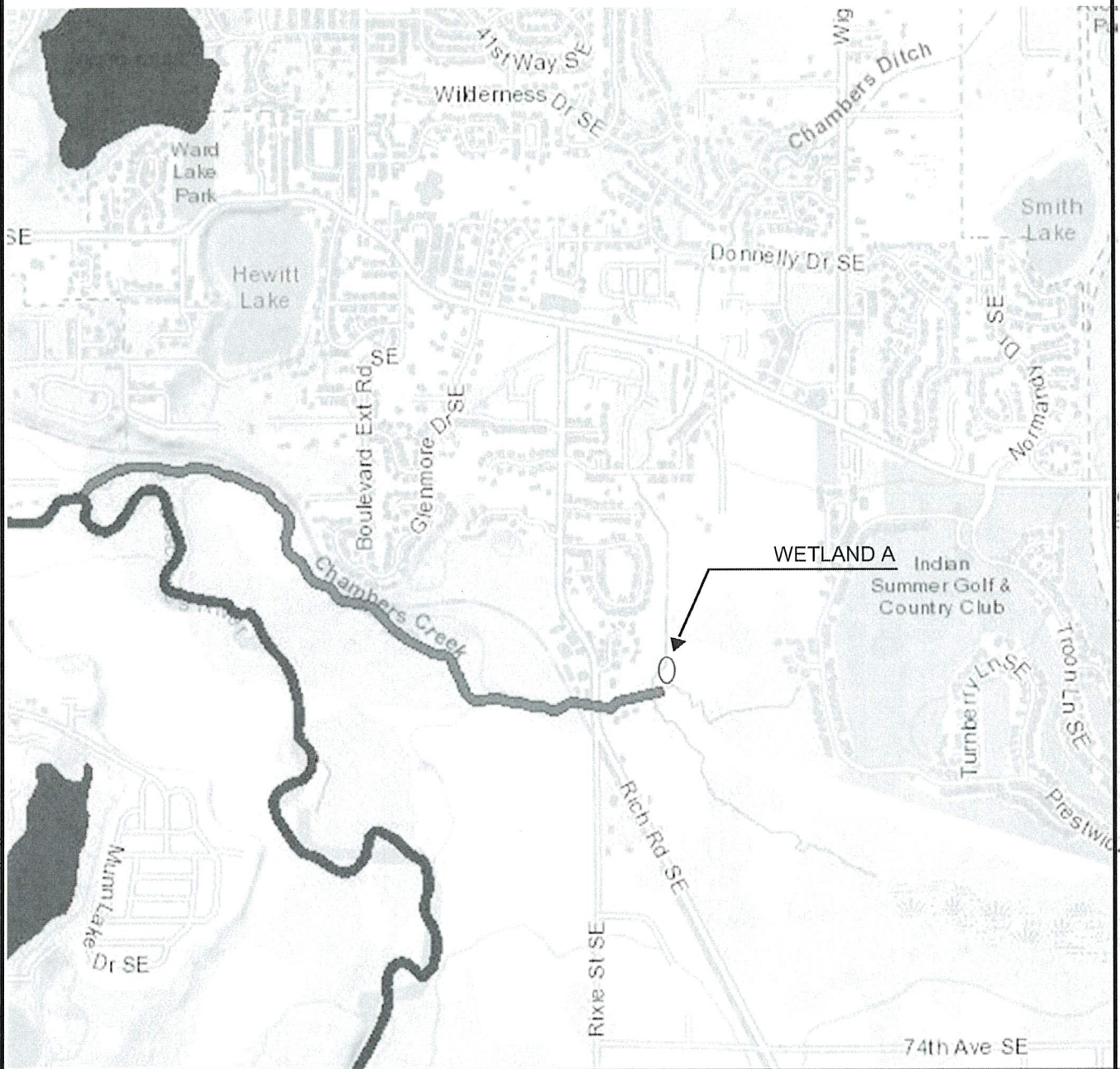
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**FIG. 4**

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\GIS\MXD\Rating fig 5.mxd Date: 2/11/2019 MAC



#### Water

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



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### WETLAND A 303(D) LISTED WATERS

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**FIG. 5**

**DEPARTMENT OF ECOLOGY**  
State of Washington  
**Thurston County**

102336 Port of Everett\Baywood\GIS\MXD\Rating\_fig\_6.mxd

Ecology homepage > Water & Shorelines > Water improvement > Total Maximum Daily Load process > Directory of projects > Thurston County

### Water quality improvement projects

Select the waterbody or pollutant name to find more information about the specific project.

Waterbody Name(s)	Pollutant(s)	Status	Project Lead(s)
<a href="#">Deschutes River</a>	Temperature	EPA Approved and Has an implementation plan	<a href="#">Andrew Kolosseus</a> 360-407-7543
<a href="#">Deschutes River</a>	Dissolved Oxygen pH Sediment Fecal Coliform	Pending	<a href="#">Andrew Kolosseus</a> 360-407-7543
<a href="#">Budd Inlet</a>	Dissolved Oxygen	Under development	<a href="#">Leanne Weiss</a> 360-407-0243
<a href="#">Upper Chehalis River Watershed</a>	Ammonia-N BOD (5-day) Dissolved Oxygen <a href="#">Fecal Coliform</a> <a href="#">Temperature</a>	EPA Approved	<a href="#">Devan Rostorfer</a> 360-690-4665
<a href="#">Henderson Inlet Watershed</a>	Multi-parameter	EPA approved and Has an implementation plan	<a href="#">Donovan Gray</a> 360-407-6407
<a href="#">Nisqually Watershed</a>	Dissolved Oxygen Fecal Coliform	EPA approved and Has an implementation plan	<a href="#">Donovan Gray</a> 360-407-6407
<a href="#">Totten/Eld Inlets Tributaries</a>	Fecal Coliform Temperature	EPA approved Has an implementation plan	<a href="#">Andrew Kolosseus</a> 360-407-7543

To request ADA accommodation, call Ecology at 360-407-7668, 711 (relay service), or 877-833-6341 (TTY). More about our [accessibility services](#).

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### WETLAND A LISTED TMDL'S SCREENSHOT

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**FIG. 6**

Appendix E

# Buffer Mitigation Plan

APPENDIX E: BUFFER MITIGATION PLAN



