



Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

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CRITICAL AREAS REPORT

FOR

MARYSVILLE – 1ST ST BYPASS ***CITY OF MARYSVILLE, WA***

Wetland Resources, Inc. Project #16218

Prepared By

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1.0 INTRODUCTION

Wetland Resources, Inc. (WRI) investigated a 23-acre site bounded by the Marysville Sewage Lagoon, Marysville public works facility, 1st Street, and Liberty Street in the City of Marysville. The investigation area is located within a portion of Section 33, Township 30N, Range 5E, and is composed of several Snohomish County tax parcels, including 00686200000400, 30053300101400, 30053300101600, 30053300101800, 30053300102000, 30053300102200, 30053300100500.

A majority of the investigation area is composed of one wetland, Wetland A. A network of drainage ditches is located within the boundary of Wetland A, though a defined bank/bed could not be found during the August site investigation due to flooded conditions. Wetland A is characterized as a depressional wetland with emergent, aquatic bed, scrub-shrub, and forested vegetation. Dominant vegetation within the wetland is composed of black cottonwood (*Populus balsamifera*), willow species (*Salix spp.*), cattail (*Typha latifolia*), reed canarygrass (*Phalaris arundinacea*), tule (*Schoenoplectus acutus*), hardhack (*Spiraea douglasii*), watercress (*Nasturtium officinale*), and duckweed (*Lemna minor*). Dominant vegetation in the small upland fringe of the site is composed of western red cedar (*Thuja plicata*), big leaf maple (*Acer macrophyllum*), Douglas fir (*Pseudotsuga menziesii*), Himalayan blackberry (*Rubus armeniacus*), non-native pasture grasses, and ornamental shrubs and trees. Wetland A received a Category II wetland rating, which receive 100-foot buffers in the City of Marysville.



Figure 1: Aerial view of the subject site.

1.1 CRITICAL AREAS CLASSIFICATION

1.1.1 Cowardin System Classification

According to the Cowardin System, as described in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979), the classification for the wetland associated with this site is:

Wetland A: Palustrine, Emergent, Persistent, Semi-permanently flooded, Diked/Impounded

1.1.2 City of Marysville Classification

Under the Marysville Municipal Code (MMC) 22E.010.060, wetlands are classified using the 2014 DOE Wetland Rating System for Western Washington. In the City of Marysville, streams are classified according to the stream typing system provided in WAC 222-16-030, and outlined in MMC 22E.010.210.

Wetland A: Wetland A was assigned a Category II rating under the 2014 DOE Rating System, with a total score of 22 points. Within the City of Marysville, wetlands that score between 20 and 22 points receive 100-foot protective buffers.

2.0 CRITICAL AREAS DETERMINATION REPORT

2.1 PUBLICALLY AVAILABLE DATA

Before conducting on-site investigations, a literature review was performed to identify records of wetlands and streams within the study area. The presence of wetlands and streams on these properties was determined using a combination of research, site assessment, observations from public roads, aerial photography, and the following resources: Marysville Municipal Code: Title 22E Environmental Standards, City of Marysville Critical Areas Map, USDA-NRCS Web Soil Survey, USFWS National Wetlands Inventory interactive map, Snohomish County “Snoscape” Landscape Imaging, WDFW SalmonScape interactive map, and WDFW Priority Habitats and Species website.

- *NRCS Web Soil Survey*
A majority of the site is surveyed by NRCS as containing Puget silty clay loam. The northern-most edge of the site contains Ragnar fine sandy loam, 0-8 percent slopes. Further description of these soils can be found in section 2.2.2 of this report.
- *National Wetlands Inventory (NWI)*
NWI displays Wetland A (PEM1Ch) covering a majority of the site. Just south of Wetland A, open water (L1UBHx) is displayed where the Marysville Sewage Lagoon is located.
- *Snohomish County SnoScape*
Snohomish County displays a floodway and density fringe area over a majority of the site, and a Type Ns/U stream network within the site. Other than very small steep slope areas around the perimeter of the site, there are no other critical areas displayed.

- *WDFW Priority Habitat and Species (PHS)*
PHS displays only the Wetland A complex within the vicinity of the site. No species of concern are displayed.
- *WDFW SalmonScape*
SalmonScape displays no fish-accessible bodies of water within the site vicinity.
- *City of Marysville Critical Areas Map*
The City displays an unregulated stream/ditch within the subject site, and the 100-year floodplain over a majority of the site. Within the geologic hazard map, the City displays moderate liquefaction susceptibility over a majority of the site.

2.2 FIELD DETERMINATION METHODOLOGY

Wetland Resources, Inc. (WRI) staff conducted a site visit on August 23, 2016, to locate and classify critical areas occurring within the site vicinity. At the time of our summer site visit, the weather was sunny with a high temperature of approximately 80 degrees Fahrenheit. Precipitation levels for the previous 3 months (May, June, and July 2016) are within normal range (<http://agacis.rcc-acis.org/53061/wets>).

Wetland conditions were evaluated using the methodology described in the Corps of Engineers Wetlands Delineation Manual (Final Report; January 1987), except where superseded by the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0, referred to as 2010 Regional Supplement). Our findings are consistent with these manuals. The following criteria descriptions were used in the boundary determination:

- 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

2.2.1 Hydrophytic Vegetation Criteria

The 2010 Regional Supplement defines hydrophytic vegetation as “assemblage of macrophytes that occur in areas where inundation or soil saturation is either permanent or have sufficient frequency and duration to influence plant occurrence.” Field indicators were used to determine whether the vegetation meets the definition for hydrophytic vegetation.

2.2.2 Soils Criteria and Mapped Description

The 2010 Regional Supplement 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 were used to determine whether a given soil meets the definition for hydric soils.

The soils underlying the site are mapped by the USDA Natural Resources Soil Conservation Service (NRCS) as Puget silty clay loam and Ragnar fine sandy loam. A detailed description of these soil units is provided below.

Puget silty clay loam is described as a very deep soil in depressional areas on flood plains. It has been artificially drained. The soil formed in alluvium. Typically, the surface layer is dark grayish brown silty clay loam about 9 inches thick. The underlying material to a depth of 60 inches or more is olive gray and gray silty clay loam. In some areas the soil is not drained and is not protected from flooding. Included in this unit are areas of Snohomish, Sumas, Sultan, and Pilchuck soils on flood plains and Puyallup soils on stream terraces. Puget, Snohomish, and Sumas soils are listed on the *Hydric Soils List for Washington*.

The Ragnar series is described as moderately well drained on outwash plains. The surface layer is typically a dark brown fine sandy loam about two inches thick. The upper part of the subsoil is dark brown and brown sandy loam about 22 inches thick. Included in this unit are areas of Everett, Indianola, Pastik and Wilson soils on terraces and outwash plains. Other small inclusions may be areas of Everett, Indianola, and Ragnar soils on terraces and outwash plains. Included areas make up about 15 percent of the total acreage.

2.2.3 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 characteristics of vegetation and soils due to anaerobic and chemically reducing conditions, respectively.

Additionally, areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days \geq 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas inundated or saturated between five and 12.5 percent of the growing season in most years may or may not be wetlands. Areas saturated to the surface for less than five percent of the growing season are non-wetlands. Field indicators were used to determine whether wetland hydrology parameters were met on this site.

2.3 BOUNDARY DETERMINATION FINDINGS

2.3.1 Wetland A

Dominant vegetation within Wetland A consists of black cottonwood (FAC), red alder (*Alnus rubra*; FAC), willow species (FACW), hardhack, salmonberry (*Rubus spectabilis*; FAC), bittersweet nightshade (*Solanum dulcamara*; FAC), reed canarygrass (FACW), tule (OBL), cattail (OBL), giant horsetail (*Equisetum telmateia*; FACW), watercress (OBL), and duckweed (OBL). Typical soils in this area are very dark brown (10YR 2/2) sandy clay loam with dark reddish brown (2.5YR 2.5/4) redox concentrations from 0 to 11 inches. From 11 to 20 inches, soils are black (10Y 2.5/1) sandy loam with dark reddish brown (5YR 3/4) redox concentrations. Soils were saturated at 11 inches below the surface. Also, a strong hydrogen sulfide odor is present in the

first 12 inches. Within the permanently inundated area, soils are very dark gray (10YR 3/1) and a strong hydrogen sulfide odor is present.

Field observations indicate that the area mapped as wetland is flooded, ponded, or saturated long enough during the growing season to develop anaerobic conditions in the upper part of the soils. Therefore, the vegetation, soil, and hydrologic criteria are all met for the on-site wetland.

2.3.2 Non-wetland Areas

Dominant vegetation in the non-wetland areas adjacent to the wetland is represented by western red cedar, big leaf maple, Douglas fir, Himalayan blackberry, non-native pasture grasses, and ornament shrubs and trees. Typical soils in this area are very dark grayish brown (10YR 3/2) or very dark brown (10YR 2/2) sandy loam with no redox features present. Large rocks and gravel were mixed in throughout the soil profile. Soils were dry throughout the profile at the time of our site investigation. Soils sampled in the area mapped as non-wetland do not appear to be flooded, ponded, or saturated long enough during the growing season to develop anaerobic conditions in the upper part, and therefore do not appear to meet wetland soils criteria.

Given that the dominant vegetative community is not hydrophytic, direct hydrologic indicators are lacking, and hydric soils are absent in these areas, it appears that areas mapped as non-wetland do not meet criteria for wetlands.

2.4 WILDLIFE ASSESSMENT

Wetlands, streams, and their buffers often contain resources such as food, water, thermal cover and hiding cover in close proximity, which wildlife species need to thrive. Birds and small mammals likely utilize and reside in and around the on-site wetland. The following are typical avian species that may utilize the on-site wetland and buffer: red-tailed hawk (*Buteo jamaicensis*), great blue heron (*Ardea herodias*), American crow (*Corvus brachyrhynchos*), black-capped chickadee (*Poecile atricapillus*), bushtit (*Psaltriparus minimus*), dark-eyed junco (*Junco hyemalis*), European starling (*Sturnus vulgaris*), northern flicker (*Colaptes auratus*), rufous-sided towhee (*Pipilo erythrophthalmus*), song sparrow (*Melospiza melodia*), steller's jay (*Cyanocitta stelleri*), cedar waxwing (*Bombycilla cedrorum*), and winter wren (*Troglodytes troglodytes*). Mammalian species that may utilize this site include bats (*Myotis spp.*), deer mice (*Peromyscus maniculatus*), eastern cottontail rabbits (*Sylvilagus floridanus*), raccoons (*Procyon lotor*), shrews (*Sorex spp.*), squirrels (*Sciuris griseus*, *Tamiasciurus douglasii*), and Virginia opossums (*Didelphis virginiana*). Amphibian species expected to use this site include pacific tree frog (*Hyla regilla*), northwestern salamander (*Ambystoma gracile*), and rough-skinned newt (*Taricha granulosa*). These lists are not intended to be all-inclusive, and may omit some bird, mammalian or amphibian species that utilize the site.

3.0 FUNCTIONS AND VALUES ASSESSMENT

3.1 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 and buffer, but is typical for assessments of similar systems common to Western Washington.

3.1.1 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.

Hydrologic Functions

Wetlands often function as natural water storage areas during periods of precipitation and flooding. By storing water that otherwise might be channeled into open flow systems, wetlands can attenuate or modify potentially damaging effects of storm events, reducing erosion and peak flows to downstream systems. Additionally, the soils underlying wetlands are often less permeable, providing long-term storage of stormwater or floodflow and controlling baseflows of downstream systems. Stormwater storage capacity and floodflow attenuation are generally a function of the size of the wetland and their topographic characteristics.

Water Quality

Surface water quality improvement is another evaluated function. Surface runoff during periods of precipitation increases the potential for sediments and pollutants to enter surface water. Wetlands improve water quality by acting as filters as water passes through them, trapping sediments and pollutants from surface water. Pondered areas within depressional wetlands also allow sediments to drop out of suspension, thereby increasing water quality. As development increases, the potential for polluted water to reach wetlands and streams also increases. Unnaturally high inputs of pollutants, which are often found in urbanized areas, along with the size of the wetlands and the vegetation structure within them are the main limiting factors of this function.

Wildlife Habitat

Wetlands have potential to provide diverse habitat for aquatic, terrestrial, and avian species for nesting, rearing, resting, cover, and foraging. Wildlife species are commonly dependent upon a variety of intermingled habitat types, including: wetlands, adjacent uplands, large bodies of water, and movement corridors between them. Human intrusion, including development within and adjacent to wetlands, and impacts to movement corridors are the most limiting factors for wildlife habitat functions.

3.2 EXISTING FUNCTIONS AND VALUES

3.2.1 Wetland A

Hydrologic Function

Wetland A is considered a depressional wetland, with a slightly constricted, permanent outlet. In general, wetlands in depressional areas with limited outlets store greater amounts of water than wetlands containing outlets with unrestricted flows. Depressional wetland areas, such as this, provide flood reduction functions by sequestering surface flows during storm events, thereby reducing the rate of hydrologic input downstream. This function should be emphasized because of its position within the 100-year floodplain. By providing storage for stormwater, depressions attenuate surface flows, thus allowing floodwaters to reach downstream waterways over an increased period of time. The heights of downstream water levels are thereby reduced, decreasing over-bank flooding in urbanized areas. This wetland collects and temporarily stores precipitation as well as runoff from the surrounding area during storm events. The wetland therefore provides a high value for this function.

Water Quality

This wetland provides water quality benefits as water moves through the surrounding urbanized system. Since this wetland is relatively large, has a high depth of storage, and contains a slightly constricted outlet, the residence time is moderate to high. Depressional wetlands improve water quality by allowing sediment to settle out of the sequestered stormwater due to the reduction in flow velocity. This sediment is often ionically bonded to pollutants such as phosphorous. Additionally, the surrounding disturbed land use contributes highly to the wetland's value. Wetland A therefore provides a moderate to high value for this function.

Wildlife Habitat

Wetland A has moderate potential to perform a wildlife habitat function. The wetland has moderate structural complexity and is composed of multiple vegetation classes. There is high species diversity and multiple hydroperiods. The vegetation within the wetland provides resources such as food, water, thermal cover and hiding cover in close proximity, which wildlife species need to thrive. Roads, commercial development, and residential development surrounding the wetland disturb the continuity of the corridor, thus decreasing the opportunity for wildlife use. Although the site itself provides a high habitat function, the isolation limits the ability to provide a higher value for this function. Therefore, Wetland A provides a moderate value for this function.

4.0 USE OF THIS REPORT

This Critical Areas Report is supplied to the City of Marysville as a means of determining on-site wetland conditions, as required during the permitting process by the City of Marysville. 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 wetlands 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.

The work for this report has conformed to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work of this report and any implied representation or warranty is disclaimed.

Wetland Resources, Inc.



Elyse Denkers
Associate Ecologist



Scott Brainard, PWS
Principal Ecologist

5.0 REFERENCES

- Cowardin, L.M., V. Carter, F.C. Golet and E.T. Laroe. 1979. *Classification of Wetlands and Deep Water Habitats of the United States*. U.S. Fish and Wildlife Service. FWS/OBS 79/31.
- Hruby, T. 2014. *Washington State Wetland Rating System for Western Washington: 2014 Update*. Washington State Department of Ecology. Publication #14-06-029. October 2014.
- Marysville, City of. Marysville Municipal Code, Title 22E Environmental Standards. 2015.
- Marysville, City of. 2012. Marysville Critical Areas Map. <http://marysvillewa.gov/326/Maps>.
- Marysville, City of, Washington Department of Ecology, U.S. Army Corps of Engineers. 2013. *Advance Wetland Mitigation Agreement for the City of Marysville, Washington*.
- Lichvar, R.W. 2014. *The National Wetland Plant List*. Phytoneuron 2014-41: 1–42. Published April 2, 2014.
- Seattle District, Corps of Engineers. December 2010. Environmental Assessment, Qwuloolt Section 544 Ecosystem Restoration Project, Marysville Washington.
- Snohomish, County of. 2016. SnoScape Interactive Mapping Tool. <http://gis.snoco.org/maps/snoscape/>
- Snohomish Estuary Wetland Integration Plan (SEWIP). 1997. Available at http://www.everettwa.org/cityhall/upload_directory/SEWIP%201997.pdf97
- U.S. Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*. Environmental Laboratory, Vicksburg, MS. Publication # ERDC/EL TR-10-3.
- U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetland Delineation Manual*. Technical Report Y-87-1. Environmental Laboratory, Vicksburg, MS.
- U.S. Department of Agriculture- Natural Resource Conservation Service (USDA-NRCS). 2016. Web Soil Survey. (<http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>)
- U.S. Fish and Wildlife Service (USFWS). 2016. National Wetlands Inventory (NWI) Interactive Mapping Tool. (<http://www.fws.gov/wetlands/Data/Mapper.html>)
- Washington Department of Fish and Wildlife. 2016. SalmonScape, Interactive Mapping Tool. (<http://apps.wdfw.wa.gov/salmonscape/map.html>).
- Washington Department of Fish and Wildlife. 2016. Priority Habitats and Species, Interactive Mapping Tool. (<http://wdfw.wa.gov/mapping/phs/>).

USACE WETLAND DETERMINATION DATA FORMS

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

Project/Site: City of Marysville- 1st St Bypass City/County: Marysville Sampling Date: 8/23/16
 Applicant/Owner: City of Marysville State: WA Sampling Point: S1
 Investigator(s): ED & JR Section, Township, Range: S33, T30N, R5E
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): A Lat: 48.048706 Long: -122.168312 Datum: NAD83
 Soil Map Unit Name: Puget silty clay loam NWI classification: PEM

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

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Populus balsamifera</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>20</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____
<u>35</u> = Total Cover				
<u>35</u> = Total Cover				
<u>85</u> = Total Cover				
<u>100</u> = Total Cover				
<u>0</u> = Total Cover				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<u>0</u> = Total Cover				
<u>0</u> = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				
Remarks:				

SOIL

Sampling Point: S1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-11	10YR 2/2	90	2.5YR 2.5/4	10	C	M	sandy cl lm	
11-20	10Y 2.5/1	85	5YR 3/4	10	C	M	sandy lm	
			5YR 3/4	5	C	PL		

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) <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)	Indicators for Problematic Hydric Soils³: <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
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Restrictive Layer (if present): 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"/> 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 checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)
Field Observations: 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 checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 11 (includes capillary fringe)	Wetland Hydrology Present? 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: City of Marysville- 1st St Bypass City/County: Marysville Sampling Date: 8/23/16
 Applicant/Owner: City of Marysville State: WA Sampling Point: S2
 Investigator(s): ED & JR Section, Township, Range: S33, T30N, R5E
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): A Lat: 48.048706 Long: -122.168312 Datum: NAD83
 Soil Map Unit Name: Puget silty clay loam NWI classification: N/A

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"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology 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"/>
Remarks: Outside Wetland A.	

VEGETATION – Use scientific names of plants.

<u>Tree Stratum</u> (Plot size: 15ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
				<u>0</u> = Total Cover
<u>Sapling/Shrub Stratum</u> (Plot size: 10ft radius)				
1. <u>Rubus armeniacus</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
				<u>15</u> = Total Cover
<u>Herb Stratum</u> (Plot size: 5ft radius)				
1. <u>Phalaris arundinecea</u>	<u>100</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Convolvulus arvensis</u>	<u>30</u>	<u>Y</u>	<u>UPL</u>	
3. <u>Equisetum arvense</u>	<u>15</u>	<u>N</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
				<u>145</u> = Total Cover
<u>Woody Vine Stratum</u> (Plot size: 10ft radius)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
				<u>0</u> = Total Cover
<u>% Bare Ground in Herb Stratum</u> <u>0</u>				

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
 Total Number of Dominant Species Across All Strata: 3 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by:
 OBL species _____ x 1 = 0
 FACW species _____ x 2 = 0
 FAC species _____ x 3 = 0
 FACU species _____ x 4 = 0
 UPL species _____ x 5 = 0
 Column Totals: 0 (A) 0 (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 Rapid Test for Hydrophytic Vegetation
 Dominance Test is >50%
 Prevalence Index is ≤3.0¹
 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Wetland Non-Vascular Plants¹
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No

Remarks:

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

Project/Site: City of Marysville- 1st St Bypass City/County: Marysville Sampling Date: 8/23/16
 Applicant/Owner: City of Marysville State: WA Sampling Point: S3
 Investigator(s): ED & JR Section, Township, Range: S33, T30N, R5E
 Landform (hillslope, terrace, etc.): hummock Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): A Lat: 48.048534 Long: -122.172861 Datum: NAD83
 Soil Map Unit Name: Puget silty clay loam NWI classification: N/A

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"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology 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"/>
Remarks: On top of hummock within Wetland A- NW corner.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Pseudotsuga menziesii</u>	<u>80</u>	<u>Y</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____	<u>80</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: 10ft radius)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____
1. <u>Rubus armeniacus</u>	<u>50</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Ilex aquifolium</u>	<u>15</u>	<u>Y</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Herb Stratum (Plot size: 5ft radius)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
_____	<u>65</u>	= Total Cover		
1. <u>Equisetum arvense</u>	<u>40</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Convolvulus arvensis</u>	<u>10</u>	<u>Y</u>	<u>UPL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
Woody Vine Stratum (Plot size: 10ft radius)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
% Bare Ground in Herb Stratum <u>30</u>				

Remarks:

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

Project/Site: City of Marysville- 1st St Bypass City/County: Marysville Sampling Date: 8/23/16
 Applicant/Owner: City of Marysville State: WA Sampling Point: S4
 Investigator(s): ED & JR Section, Township, Range: S33, T30N, R5E
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR): A Lat: 48.048433 Long: -122.173183 Datum: NAD83
 Soil Map Unit Name: Puget silty clay loam NWI classification: PEM

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"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: Inside Wetland A- NW corner.	

VEGETATION – Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Notes
Tree Stratum (Plot size: 15ft radius)				
1. <u>Populus balsamifera</u>	<u>50</u>	<u>Y</u>	<u>FAC</u>	
2. _____				
3. _____				
4. _____				
	<u>50</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: 10ft radius)				
1. <u>Rubus armeniacus</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
2. _____				
3. _____				
4. _____				
5. _____				
	<u>10</u>	= Total Cover		
Herb Stratum (Plot size: 5ft radius)				
1. <u>Phalaris arundinecea</u>	<u>100</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Typha latifolia</u>	<u>10</u>	<u>N</u>	<u>OBL</u>	
3. <u>Equisetum telmateia</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
				= Total Cover
Woody Vine Stratum (Plot size: 10ft radius)				
1. <u>Solanum dulcamara</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
2. _____				
	<u>10</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>0</u>				

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)
 Total Number of Dominant Species Across All Strata: 4 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by:
 OBL species _____ x 1 = 0
 FACW species _____ x 2 = 0
 FAC species _____ x 3 = 0
 FACU species _____ x 4 = 0
 UPL species _____ x 5 = 0
 Column Totals: 0 (A) 0 (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 Rapid Test for Hydrophytic Vegetation
 Dominance Test is >50%
 Prevalence Index is ≤3.0¹
 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Wetland Non-Vascular Plants¹
 Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No

Remarks:

SOIL

Sampling Point: **S4**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-5								PHAR root mat
5-18	10YR 3/1	100*					sandy cl lm	too saturated to see any indicators

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input checked="" 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)
	<input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input checked="" type="checkbox"/> Other (Explain in Remarks)

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

Restrictive Layer (if present): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:
It is likely that these soils are saturated frequently enough that redox features cannot form. The presence of a strong hydrogen sulfide odor also indicates that soils are likely permanently inundated.

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 checked="" type="checkbox"/> High Water Table (A2) <input checked="" 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 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 checked="" 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 checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)

Field Observations: 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): 3 Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0 (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

2014 DOE WETLAND RATING FORM

Wetland name or number Wetland A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): City of Marysville- 1st St Bypass Date of site visit: 8/23/16

Rated by SB Trained by Ecology? Yes No Date of training Sept 2016

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 ESRI

OVERALL WETLAND CATEGORY II (based on functions or special characteristics)

1. Category of wetland based on FUNCTIONS

 Category I – Total score = 23 - 27

Category II – Total score = 20 - 22

 Category III – Total score = 16 - 19

 Category IV – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	H <input type="checkbox"/> <input checked="" type="checkbox"/> L	H <input type="checkbox"/> <input checked="" type="checkbox"/> L	H <input type="checkbox"/> <input checked="" type="checkbox"/> L	
Landscape Potential	<input checked="" type="checkbox"/> M L	<input checked="" type="checkbox"/> M L	H M <input checked="" type="checkbox"/> L	
Value	<input checked="" type="checkbox"/> M L	<input checked="" type="checkbox"/> M L	<input checked="" type="checkbox"/> M L	TOTAL
Score Based on Ratings	8	8	6	22

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	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	<input checked="" type="checkbox"/>

Wetland name or number Wetland 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 dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid 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	

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 Wetland 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 Wetland A

DEPRESSIONAL AND FLATS WETLANDS		
Water Quality Functions - Indicators that the site functions to improve water quality		
D 1.0. Does the site have the potential to improve water quality?		
D 1.1. <u>Characteristics of surface water outflows from the wetland:</u> <input type="checkbox"/> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 <input type="checkbox"/> 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	
D 1.2. <u>The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 <input type="checkbox"/> No = 0	0	
D 1.3. <u>Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</u> <input type="checkbox"/> Wetland has persistent, ungrazed, plants > 95% of area points = 5 <input checked="" type="checkbox"/> Wetland has persistent, ungrazed, plants > ½ of area points = 3 <input type="checkbox"/> Wetland has persistent, ungrazed plants > 1/10 of area points = 1 <input type="checkbox"/> Wetland has persistent, ungrazed plants < 1/10 of area points = 0	3	
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> <input type="checkbox"/> Area seasonally ponded is > ½ total area of wetland points = 4 <input checked="" type="checkbox"/> Area seasonally ponded is > ¼ total area of wetland points = 2 <input type="checkbox"/> Area seasonally ponded is < ¼ total area of wetland points = 0	2	
Total for D 1	Add the points in the boxes above	6

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

D 2.0. Does the landscape have the potential to support the water quality function of the site?		
D 2.1. Does the wetland unit receive stormwater discharges?	<input type="checkbox"/> Yes = 1 <input type="checkbox"/> No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	<input type="checkbox"/> Yes = 1 <input type="checkbox"/> No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 <input type="checkbox"/> No = 0	0
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? Source <u>sewage treatment facility</u>	<input type="checkbox"/> Yes = 1 <input type="checkbox"/> No = 0	1
Total for D 2	Add the points in the boxes above	3

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

D 3.0. Is the water quality improvement provided by the site valuable to society?		
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?	<input type="checkbox"/> Yes = 1 <input type="checkbox"/> No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?	<input type="checkbox"/> Yes = 1 <input type="checkbox"/> No = 0	1
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)?	<input type="checkbox"/> Yes = 2 <input type="checkbox"/> No = 0	2
Total for D 3	Add the points in the boxes above	4

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

For D 1.1 - < 3' of ponding was observed above the invert of the outflow.

Wetland name or number Wetland 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 type="checkbox"/> Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	0
<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 checked="" type="checkbox"/> Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
D 4.2. <u>Depth of storage during wet periods</u> : 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	5
<input checked="" 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 type="checkbox"/> Marks of ponding less than 0.5 ft (6 in)	points = 0	
D 4.3. <u>Contribution of the wetland to storage in the watershed</u> : 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	5
<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 10

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?	<input type="checkbox"/> Yes = 1 <input type="checkbox"/> No = 0	1
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	1
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	1
Total for D 5		Add the points in the boxes above 3

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 checked="" type="checkbox"/> • Flooding occurs in a sub-basin that is immediately down-gradient of unit.	points = 2	2
<input type="checkbox"/> • Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
<input type="checkbox"/> Flooding from groundwater is an issue in the sub-basin.	points = 1	
<input type="checkbox"/> The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. Explain why _____	points = 0	
<input 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 <input type="checkbox"/> No = 0 0
Total for D 6		Add the points in the boxes above 2

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.

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

2

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**

2

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft².

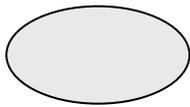
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle

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

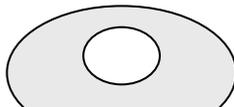
2

H 1.4. Interspersion of habitats

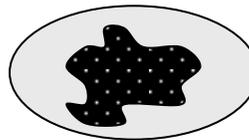
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



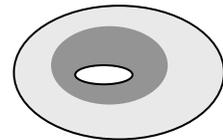
None = 0 points



Low = 1 point

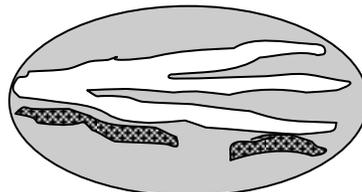
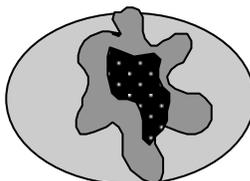
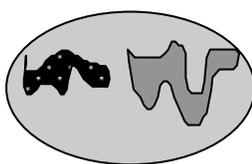


Moderate = 2 points



2

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



Wetland name or number Wetland A

<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> <p><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long).</p> <p><input checked="" type="checkbox"/> Standing snags (dbh > 4 in) within the wetland</p> <p><input checked="" type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or 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)</p> <p><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>)</p> <p><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>)</p> <p><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>)</p>	4	
Total for H 1	Add the points in the boxes above	12

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 functions of the site?		
<p>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>).</p> <p>Calculate: % undisturbed habitat <u>2</u> + [(% moderate and low intensity land uses)/2] <u>0</u> = <u>2</u> %</p> <p>If total accessible habitat is:</p> <p><input type="checkbox"/> > 1/3 (33.3%) of 1 km Polygon points = 3</p> <p><input type="checkbox"/> 20-33% of 1 km Polygon points = 2</p> <p><input type="checkbox"/> 10-19% of 1 km Polygon points = 1</p> <p><input checked="" type="checkbox"/> < 10% of 1 km Polygon points = 0</p>	0	
<p>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.</p> <p>Calculate: % undisturbed habitat <u>29</u> + [(% moderate and low intensity land uses)/2] <u>6</u> = <u>35</u> %</p> <p><input type="checkbox"/> Undisturbed habitat > 50% of Polygon points = 3</p> <p><input checked="" type="checkbox"/> Undisturbed habitat 10-50% and in 1-3 patches points = 2</p> <p><input type="checkbox"/> Undisturbed habitat 10-50% and > 3 patches points = 1</p> <p><input type="checkbox"/> Undisturbed habitat < 10% of 1 km Polygon points = 0</p>	2	
<p>H 2.3. Land use intensity in 1 km Polygon: If</p> <p><input checked="" type="checkbox"/> > 50% of 1 km Polygon is high intensity land use points = (- 2)</p> <p><input type="checkbox"/> ≤ 50% of 1 km Polygon is high intensity points = 0</p>	-2	
Total for H 2	Add the points in the boxes above	0

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

H 3.0. Is the habitat provided by the site valuable to society?		
<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: points = 2</p> <p><input checked="" type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page)</p> <p><input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)</p> <p><input type="checkbox"/> It is mapped as a location for an individual WDFW priority species</p> <p><input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources</p> <p><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</p> <p><input type="checkbox"/> Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1</p> <p><input type="checkbox"/> Site does not meet any of the criteria above points = 0</p>	2	

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 addressed elsewhere.

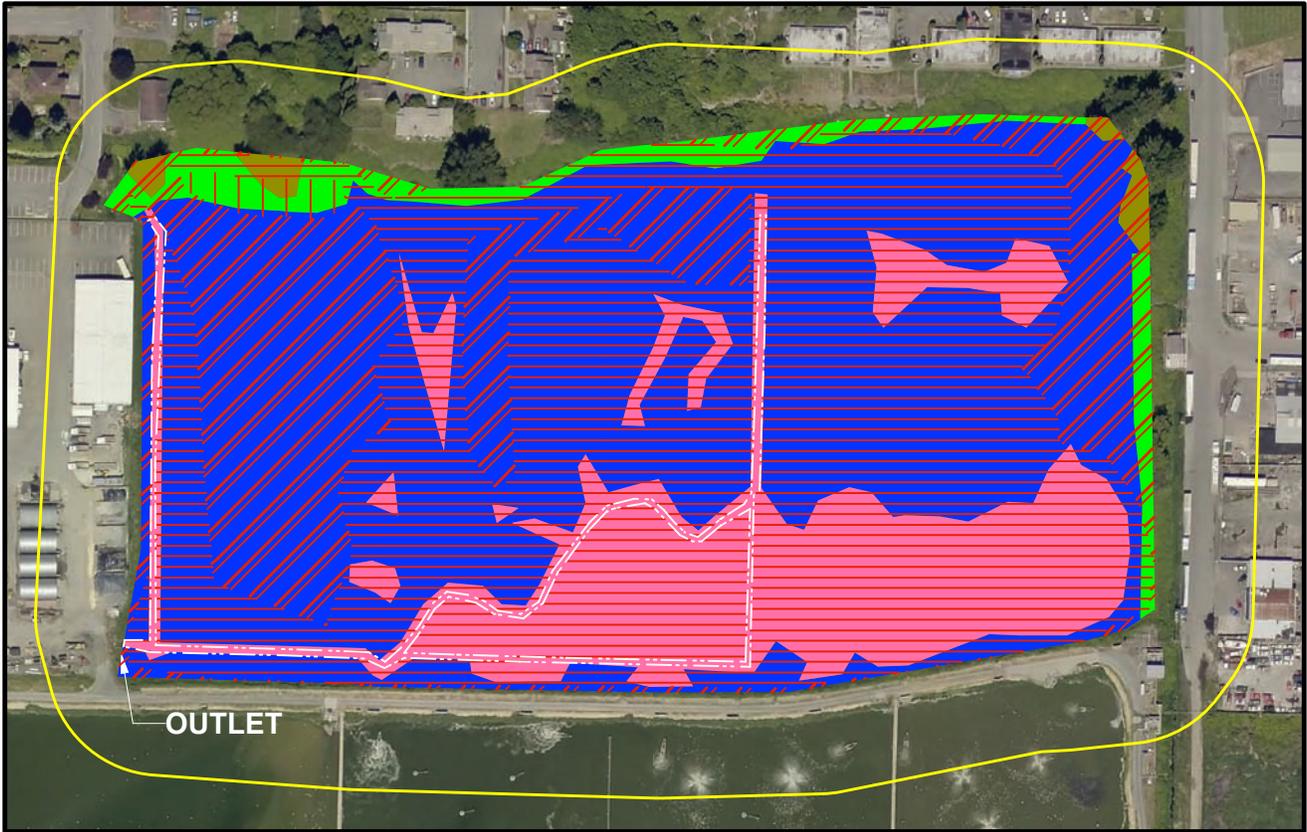
CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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>SC 1.0. Estuarine wetlands 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 Yes –Go to SC 1.1 No= Not an estuarine wetland</p>	
<p>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? Yes = Category I No - Go to SC 1.2</p>	<p>Cat. I</p>
<p>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 un-grazed or unmowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = Category I No = Category II</p>	<p>Cat. I Cat. II</p>
<p>SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to SC 2.2 No – Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = Category I No = Not a WHCV SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – Contact WNHP/WDNR and go to SC 2.4 No = Not a WHCV 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? Yes = Category I No = Not a WHCV</p>	<p>Cat. I</p>
<p>SC 3.0. Bogs 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? Yes – Go to SC 3.3 No – Go to SC 3.2 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? Yes – Go to SC 3.3 No = Is not a bog 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? Yes = Is a Category I bog No – Go to SC 3.4 NOTE: 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 in Table 4 provide more than 30% of the cover under the canopy? Yes = Is a Category I bog No = Is not a bog</p>	<p>Cat. I</p>

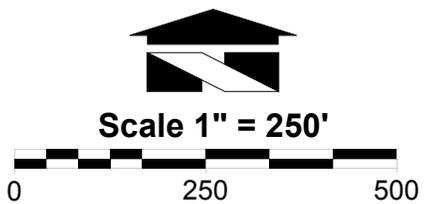
Wetland name or number Wetland A

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MARYSVILLE- 1ST ST BYPASS
 WETLAND RATING FIGURE A1 - WETLAND A



LEGEND	
	SCRUB-SHRUB
	AQUATIC BED
	EMERGENT VEGETATION
	FORESTED VEGETATION
	SATURATED ONLY
	SEASONALLY FLOODED
	PERMANENTLY FLOODED
	150' FROM WL BOUNDARY
	PERENNIAL STREAM



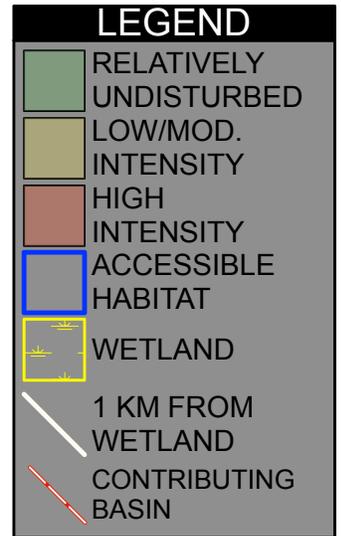
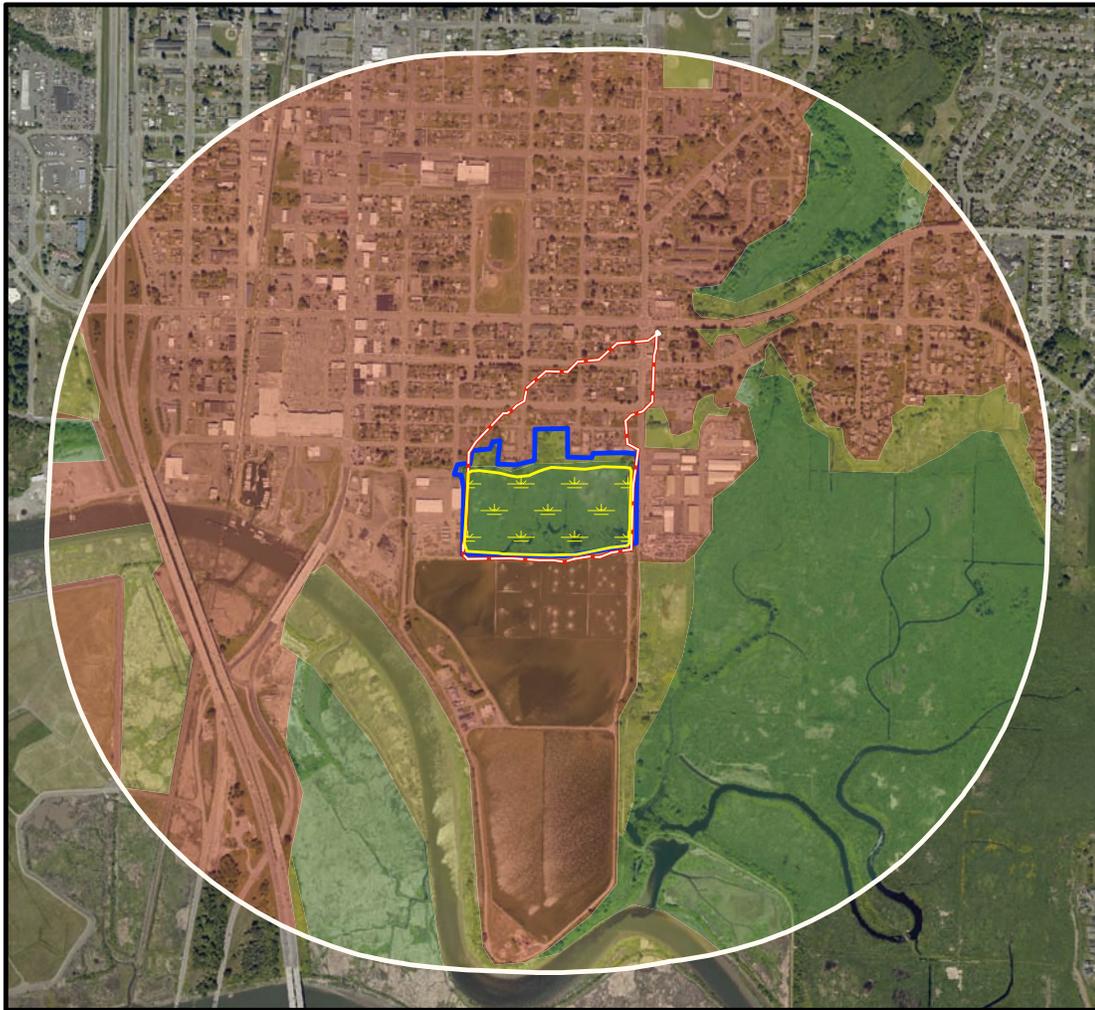
Wetland Resources, Inc.
 Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance
 9505 19th Avenue S.E. Suite 106 Everett, Washington 98208
 Phone: (425) 337-3174
 Fax: (425) 337-3045
 Email: mailbox@wetlandresources.com

WETLAND RATING
Wetland A

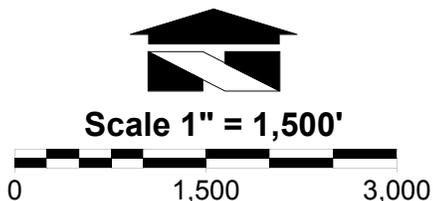
City of Marysville
 Jeff Laycock
 80 Columbia Ave
 Marysville, WA 98270

Figure A1
 WRI Job # 16218
 Drawn by: ED

MARYSVILLE- 1ST ST BYPASS
WETLAND RATING FIGURE A2 - WETLAND A



**CONTRIBUTING BASIN
AREA RELATIVE TO
WETLAND UNIT IS 2:1**



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**

City of Marysville
Jeff Laycock
80 Columbia Ave
Marysville, WA 98270

Figure A2
WRI Job # 16218
Drawn by: ED

MARYSVILLE- 1ST ST BYPASS
 WETLAND RATING FIGURE A3 - WETLAND A

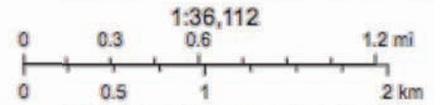


Image courtesy of USGS Earthstar Geographics SIO © 2016 Microsoft Corporation © 2015 HERE © AND

LEGEND

-  WETLAND LOCATION
-  AQUATIC RESOURCES ON THE 303(d) LIST

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

City of Marysville
 Jeff Laycock
 80 Columbia Ave
 Marysville, WA 98270

Figure A3
 WRI Job # 16218
 Drawn by: ED

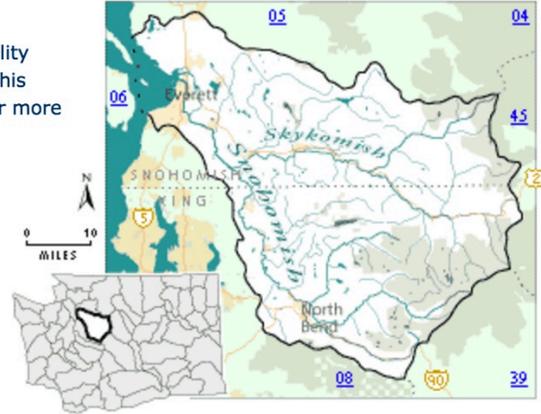
MARYSVILLE- 1ST ST BYPASS
WETLAND RATING FIGURE A4 - WETLAND A

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

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

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**

City of Marysville
 Jeff Laycock
 80 Columbia Ave
 Marysville, WA 98270

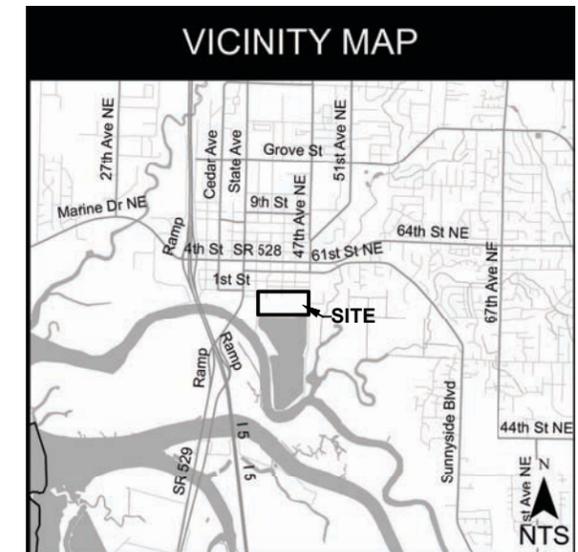
Figure A4
 WRI Job # 16218
 Drawn by: ED

CRITICAL AREAS MAP, SHEET 1/1

CRITICAL AREAS MAP

MARYSVILLE - 1ST ST BYPASS

PORTION OF SECTION 33, TOWNSHIP 30N, RANGE 5E, W.M.

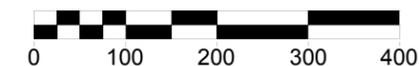


LEGEND

- SURVEYED WETLAND BOUNDARY
- APPROX. WETLAND BOUNDARY
- 100-YR FLOODPLAIN
- STEEP SLOPES $\geq 33\%$ (SNOHOMISH CO.)
- 5' CONTOURS
- SNOHOMISH CO. PARCELS



Scale 1" = 200'



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Critical Areas Map
Marysville - 1st St Bypass
 City of Marysville

City of Marysville
 Attn: Jeff Laycock
 80 Columbia Ave
 Marysville, WA 98270

Sheet 1/1
 WRI Job#: 16218
 Drawn by: ED
 Date: 10/06/2016