CRITICAL AREAS STUDY

10408 Shoultes Road,
Marysville, Washington

Pavel Krykun
Marysville, Washington

Prepared By:
Eastside Environmental Pros, Inc.
Woodinville, Washington

20 July 2022

Report To: Pavel Krykun
10408 Shoultes Road,
Marysville, Washington 98258

Report Title: Critical Areas Study
Marysville, Washington

Project Number: EE-212

Prepared By: Eastside Environmental Pros, Inc.
14221 NE 181st Place, Suite P304,
Woodinville, WA 98072

Kellen Maloney
Kellen Maloney, PWS

Date: 20 July 2022

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1. Introduction

1.1 Report Purpose

Eastside Environmental Pros, Inc. was retained to conduct a critical areas assessment for the property located at 10408 Shoultes Road to determine environmental constraints associated with the demolition and reconstruction of a single-family residence. As part of this assessment, we evaluated critical areas (*i.e.* wetlands and streams) within 300 feet of a proposed work area limits. The area within 300 feet of the work limit is referred to as the "Study Area". This report has been prepared to comply with the requirements of Marysville Municipal Code (MMC) §22E.010.330 – *Permit process and application requirements*.

1.2 Limitations

This report and the information provided herein was prepared per the guidance of the best available science and technical guidance documents available during the time of report preparation. The findings, discussions, and conclusions made in this report are based on best professional judgement of the author(s) and field technicians available during the Site evaluation. All project work was limited by the scope, budget, and timing requirements of the project. The findings and conclusions provided in this report are subject to confirmation by applicable Local, State, and Federal agencies, depending on the scope of the project. No other warranty, expressed or implied, is made.

2. General Property Description and Land Use

2.1 Project Location

The Site is a single tax parcel located at 15228 73rd Avenue Southeast in the incorporated city limits of Marysville (Snohomish County Parcel 30051600100800) (**Figure 1**). The Public Land Survey System location of the Site is the northeastern quarter of Section 16, Township 30 North, Range 05 East, of the Willamette Meridian.

2.2 General Property Description and Historic Land Use

The Site is developed with a dilapidated single-family residence within the northeastern portion of the Site. There is also a portable garage containing a small RV that does not appear to be running. Other debris and garbage were observed throughout the eastern portion of the Site with some scattered down the hillslope to the west including a corrugated metal storage unit.

Vegetation

The vegetation onsite consists of two distinct communities. The developed eastern portion of the Site is dominated by herbaceous and shrub strata interspersed with deciduous and coniferous tree species. Invasive species were most prevalent in this area. The central and western portion of the Site was comprised of a dense forested stratum, relatively dense underlying shrub and herbaceous strata, and a woody vine stratum. The plant species onsite include: Bigleaf maple (*Acer macrophyllum*), western red cedar (*Thuja plicata*), Douglas fir

(*Pseudotsuga menziesii*), vine maple (*Acer circinatum*), salmonberry (*Rubus spectabilis),* stink currant (*Ribes bracteosum*), common ladyfern (*Atheryum cyclosorum*), swordfern (*Polystichum munitum*), bracken fern (*Pteridium aquilinum*), piggyback plant (*Tolmiea menziesii*), giant horsetail (*Equisetum telmateia*), stinging nettle (*Urtica dioica*), English ivy (*Hedera helix*), Himalayan blackberry (*Rubus armeniacus*), trailing blackberry (*Rubus ursinus*).

Topography

Topography within the eastern portion of the Site is relatively level but slopes down steeply to the west. The lowest elevation point is approximately 26 feet on the northwestern corner, and the highest elevation is 70 feet on the northeastern corner of the Site.

Weather Conditions

Climatic condition ranges were determined using the methodology described by Sprecher and Warne (2000) through the Army Corps of Engineers (Corps) Antecedent Precipitation Tool (APT). Local precipitation data were analyzed to determine the climatic conditions present during the 30 June 2022 Site evaluation. The APT determined that the evaluations were conducted during periods of wetter than normal climatic conditions (**Appendix A**).

3. Methodology

3.1 Field Investigation Procedures

3.1.1 Routine Methodology

A wetland delineation was conducted by Eastside Environmental Pros on 30 June 2022. Wetland delineations utilized the routine approach described in the *Corps of Engineers Wetland Delineation Manual* (Corps 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineers, 2010) (referred to as "Corps Manual"). Wetlands were classified according to MMC §22E.010.060.

Plant species were identified according to the taxonomy of *Flora of the Pacific Northwest* (Hitchcock and Cronquist 2018). Taxonomic nomenclature was updated by the U.S. Army Corps of Engineers National Wetland Plant List (Lichvar and Kartesz 2016). Wetland classes were determined using the U.S. Fish and Wildlife Service's system of wetland classification (Cowardin 1979). Hydrophytic vegetation was determined using the standard procedures described in the Army Corps of Engineers (Corps) Regional Supplement, which requires use of the dominance test, except when positive indicators of wetland hydrology and hydric soils are met, in which case the prevalence index or alternative indicators of hydrophytic vegetation may also be required.

Wetland hydrology was determined based on the presence of hydrologic indicators listed in the Army Corps of Engineers (Corps) regional supplement. Hydrology indicators include both

Primary Indicators and Secondary Indicators. To meet the definition of wetland hydrology, one Primary Indicator or two Secondary Indicators must be observed. Examples of wetland hydrology indicators include but are not limited to: drainage patterns drift lines, sediment deposition, watermarks, stream gauge data and flood predictions, historic records, visual observation of saturated soils, and visual observation of inundation.

Soil test pits were excavated to a depth of at least 20 inches below the soil surface to categorize and describe soil and hydrologic conditions within the Study Area. Soils on the Site were considered hydric if one or more of the hydric soil indicators listed in the Corps Regional Supplement were present. Examples of hydric soil indicators include: presence of organic soils, reduced matrix, depleted or gleyed soils, or, redoximorphic features in association with a reduced soil matrix. Soil colors were determined using the Munsell Soil Color Charts (Munsell Color 2009).

Appendix B contains wetland determination datasheets prepared by Eastside Environmental Pros for representative locations within the Study Area. These datasheets document vegetation, soils, and hydrology characteristics. **Appendix C** contains wetland rating forms used to categorize wetland(s) within the study area.

4. Results

4.1 Environmental Database Review

The following databases (Table 1) were reviewed prior to the 30 June 2022 field investigation.

Table 1. Public and Private Background Review Databases.

Resource	Findings
United States Fish and Wildlife Service: National Wetlands Inventory (NWI)	One (1) Palustrine, Forested, Seasonally Flooded (PFOC) wetland is mapped within the northwestern portion of the Study Area; One (1) Riverine, Intermittent, Streambed, Seasonally Flooded (R4SBC) system is mapped within the northwestern portion of the Study Area
Washington Department of Fish and Wildlife (WDFW): Priority Habitats and Species (PHS) on the Web	One (1) Wetland associated with Quilceda Creek is mapped within the northwestern portion of the Study Area; One (1) Freshwater Forested/Shrub Wetland is mapped within the northwestern portion of the Study Area; Several fish species are mapped within the northwestern portion of the study area including Chinook, Fall Chum, Coho, Fall Chinook, Winter Steelhead, Dolly Varden/Bull Trout, Summer Chinook, Summer Steelhead, and Resident Coastal Cutthroat.
United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS): Web Soil Survey	The entire Site is mapped within Ragnar fine sandy loam, 0-8% slopes map unit; the western portion of the Study Area is mapped within the Norma loam map unit.

Washington State Department of Natural Resources (WA DNR): Forest Practices Application Mapping Tool	One (1) Type S (Shoreline of the State) perennial stream (Quilceda Creek) is mapped within the northwestern portion of the Study Area.
WA DNR: Wetlands of High Conservation Value (WHCV) Map Viewer	No wetlands of high conservation value mapped within Study Area.
Washington Department of Fish and Wildlife (WDFW): SalmonScape Application	Several fish species associated with Quilceda Creek are mapped within the northwestern portion of the Study Area including Dolly Varden/Bull Trout, Summer Steelhead, Winter Steelhead, Summer Chinook, Pink Odd Year, Resident Coastal Cutthroat, Fall Chum, Fall Chinook, and Coho.
StreamNet Fish Data Application	Several fish species associated with Quilceda Creek are mapped within the northwestern portion of the Study Area including Coastal cutthroat, Bull trout, Chinook salmon, Steelhead, Chum, and Coho.
Northwest Indian Fisheries Commission (NWIFC) Statewide Integrated Fish Distribution (SWIFD) mapper	One (1) Type S state shoreline is mapped within the northwestern portion of the Study Area. This stream is named Quilceda Creek.
Snohomish County PDS Map Portal	One (1) Category III wetland is mapped within the northwestern portion of the Study Area; One (1) Type S stream is mapped within the northwestern portion of the Study Area.
U.S. Army Corps of Engineers (Corps) Antecedent Precipitation Tool	Wetter than normal climatic conditions

4.2 Analysis of Existing Site Conditions

One (1) wetland (Wetland A) was identified onsite and one (1) stream (Stream 1) was identified offsite to the west during the 30 June 2022 evaluation. No other critical areas (*i.e.* wetlands or streams) were identified during the site visit. **Table 2** below displays summary data for the identified critical areas.

Table 2. Critical Areas Summary Table.

Critical Area	Category / Type	Standard Buffer [2]
Wetland A	Category I, Habitat Score: 9	125 feet
Quilceda Creek[1]	Type S Shoreline	100 feet

[1] Quilceda Creek is a state shoreline and requires a 200-ft Shoreline Management Zone. This portion of the Site within the SMZ is within the Urban Conservancy Designation.
[2] All critical areas require a 15-foot building setback (BSBL) measured from the edge of the buffer.

4.2.1 Wetland A

Wetland A is a large, approximately 17-acre wetland located partially within the northwestern corner of the Site, and extends offsite to the west. The Cowardin classification of the wetland is palustrine forested, scrub-shrub, and emergent (Cowardin et al. 1979). Wetland A contains a slope and riverine hydrogeomorphic classification. When a wetland had both of these classes, it is rated as a Riverine classification.

Hydrology of the wetland is supported by groundwater and overbank flooding by Quilceda Creek. Surface water, saturation, and high-water table wetland hydrology indicators were observed onsite during the 30 June Site evaluation.

Vegetation within Wetland A includes western red cedar (*Thuja plicata*), salmonberry (*Rubus spectabilis*), stink currant (*Ribes bracteosum*), piggyback plant (*Tolmiea menziesii*), common lady fern (*Athyrium cyclosorum*), and giant horsetail (*Equisetum telmateia*).

Soils within Wetland A are characterized by a very dark brown (10YR 2/2) surface layer from 0 to 8 inches below the surface, underlain by a brown (10YR 4/3) layer with prominent dark yellowish-brown (10YR 4/6) redoximorphic concentrations from 8 to 16 inches.
These characteristics meet the criteria for the *Sandy Redox (S5)* hydric soil indicator.

Wetland A scored 9 points for Water Quality Functions, 8 points for Hydrologic Functions, and 9 points for Habitat Functions through Ecology's 2014 Rating System. The total score for functions is 26, which qualifies Wetland A as a Category I wetland. Wetlands meeting these criteria require a standard buffer width of 125 feet per MMC 22E.010.100.

4.2.2 Quilceda Creek

Quilceda Creek is located offsite to the west of the property boundary. The stream flows north to south through Wetland A along the western boundary of the Site. The channel bed of Quilceda Creek is composed of mostly fine substrates. The stream meets the physical criteria for the Type S classification through the State Interim Water Typing System (WAC 222-16-031). Quilceda Creek requires a 100-ft buffer measured from the OHWM and a 15-ft building setback per MMC 22E.010.220.

The western portion of the Site within 200 feet of Quilceda Creek is located within a Shoreline Management Zone (SMZ) and contains an Urban Conservation Environment designation. Development activities are proposed to occur outside of the SMZ and therefore do not require a letter of exemption or shoreline substantial development permit.

5. Proposed Project

The applicant proposes to demolish an existing house and build a single-family residence on the property. There is sufficient buildable area on the eastern portion of the Site to avoid any impacts to critical areas and their associated buffers.

6. Summary

The Subject Property is located at 10408 Shoultes Road, in Marysville, WA. One (1) wetland is located onsite, one (1) stream is located off site, and a portion of the site is located within a Shoreline Management Zone. Wetland A is a Category I wetland and requires a standard 125-foot buffer and 15-food building setback. Quilceda Creek is a Type S Shoreline of the State and requires a 100-foot buffer and 15-food building setback. As a state shoreline, Quilceda Creek also projects a 200-foot Shoreline Management Zone (SMZ) from the OHWM. The SMZ extends partially onsite from the west but does not extend into the proposed development area. The applicant proposes to demolish an existing house and construct a new single-family home. The proposed development will not impact any critical areas or their associated buffers.

7. References

City of Marysville. 2022. Marysville Critical Areas Code, Chapter 22E.010.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. *Classification of Wetlands and Deepwater Habitats of the United States.* FWSOBS-70/31, U.S. Fish and Wildlife Service, Department of the Interior, 1979.

Environmental Laboratory. *US Army Corps of Engineers Wetlands Delineation Manual.* Technical Report Y-87-1, Vicksburg, Miss.: US Army Corps of Engineers Waterways Experiment Station, 1987.

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Lichvar, R.W. *National Wetland Plant List.* ERCD/CRREL TR-12-11, Hanover, NH: U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, 2016.

Natural Resources Conservation Service. *Web Soil Survey.* 2022. http://soils.usda.gove/use/hydric/lists/state.html

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U.S. Army Corps of Engineers. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0).* Final Report, U. S. Army Corps of Engineers, Wetlands Regulatory Assistance Program, 2010.

U.S. Fish and Wildlife Service. *National Wetlands Inventory, Wetlands Online Mapper.* 2022. http://wetlandsfws.er.usgs.gov/wtlnds/launch.html.

Washington State Department of Fish and Wildlife. "*Priority Habitats and Species Database*." 2022. www.wdfw.wa.gov/mapping/phs

Washington State Department of Natural Resources. (2022). *Natural Heritage Information System.* Retrieved from http://www1.dnr.wa.gov/nhp/refdesk/datasearch/

FIGURES

IMAGE SOURCE: GOOGLE MAPS, WWW.MAPS.GOOGLE.COM (ACCESSED 22 JULY 2022)

ADDRESS
10408 SHOULTS ROAD,
MARYSVILLE, WA 98270

PARCEL: 30051600100800 (SNOHOMISH COUNTY)

N

EASTSIDE ENVIRONMENTAL PROS, INC. 14221 NE 181ST PLACE, SUITE P304 Woodinville, Washington 98072 Bus (425) 949-6659	FIGURE # 1 VICINITY MAP KRYKUN CRITICAL AREAS REPORT MARYSVILLE, WASHINGTON	SCALE NTS	DRAWN BY: KM
		DATE 7-22-2022	
		FIGURE 1	

U.S. Fish and Wildlife Service

National Wetlands Inventory

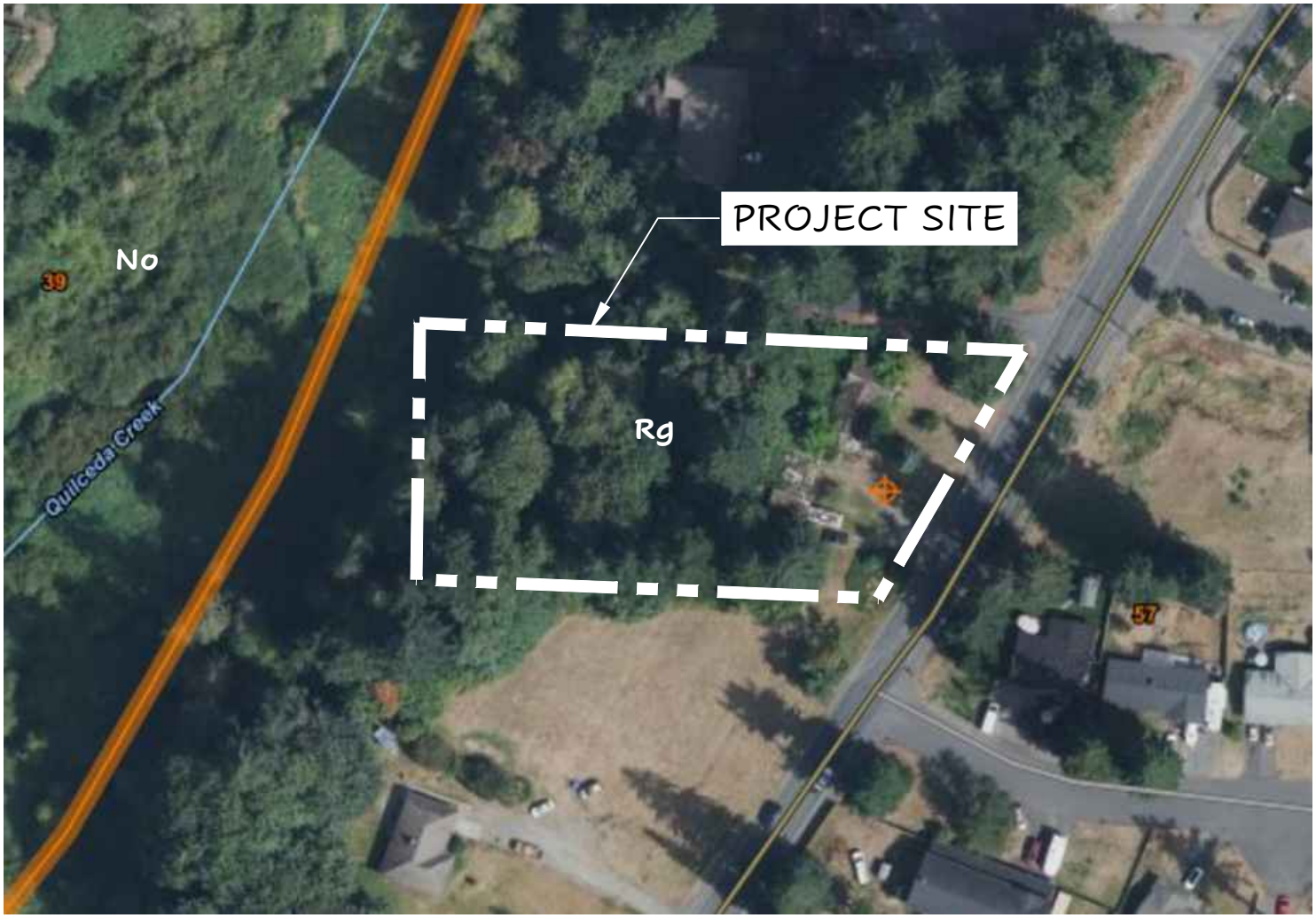
Figure 2/A - NWI Cowardin & Hydro

July 22, 2022

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



SOIL SURVEY STAFF, NATURAL RESOURCES CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE, WEB SOIL SURVEY. AVAILABLE ONLINE AT http://websoilsurvey.nrcs.usda.gov/. ACCESSED (7-22-2022).

LEGEND

KEY	DESCRIPTION
Rg	RAGNAR FINE SANDY LOAM, 0-8% SLOPES
No	NORMA LOAM

N

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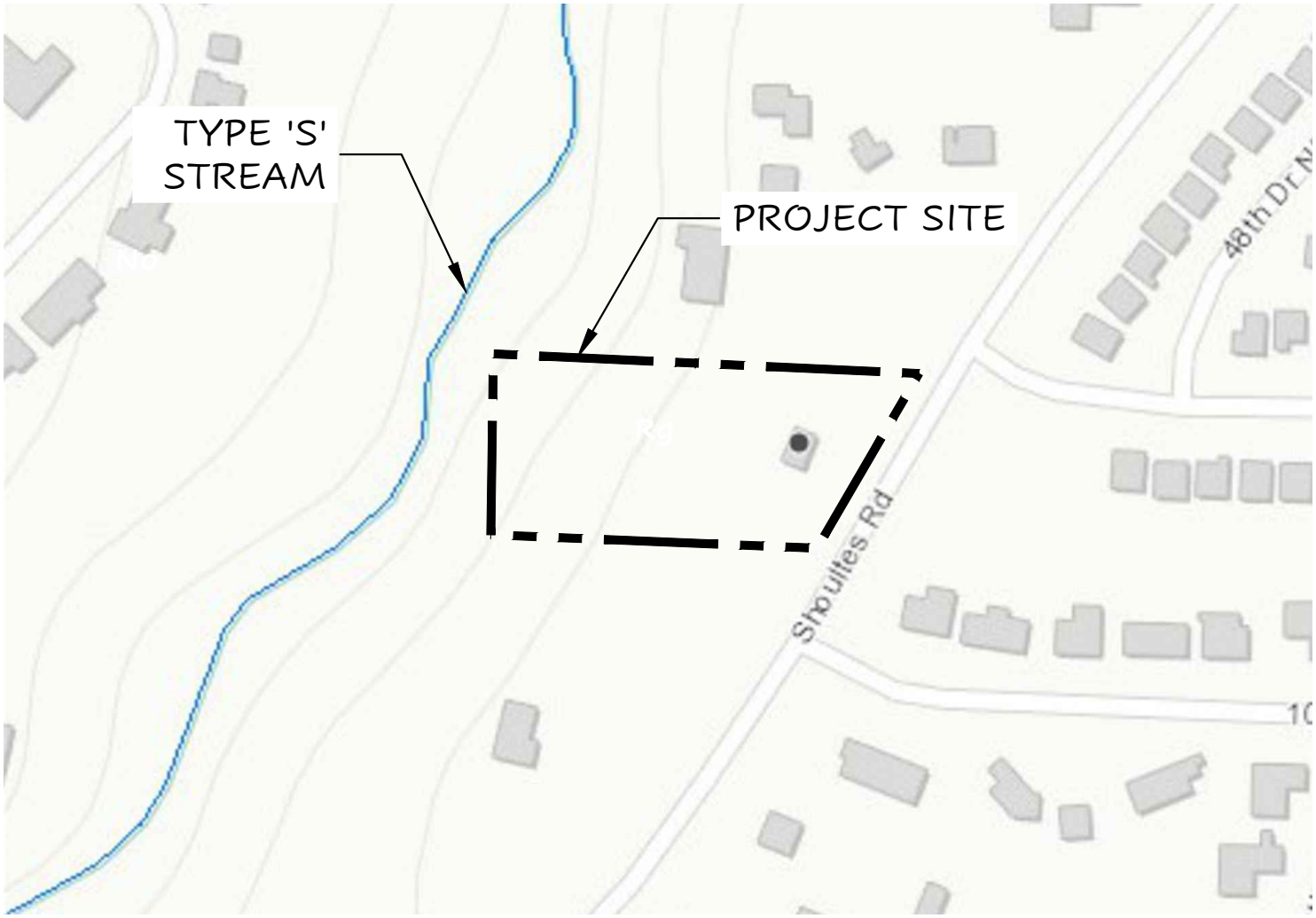
FIGURE # 3

NRCS SOILS MAP
KRYKUN CRITICAL AREAS REPORT
MARYSVILLE, WASHINGTON

SCALE	DRAWN BY:
NTS	KM
DATE	
7-22-2022	
FIGURE	3



SOURCE: NORTHWEST INDIAN FISHERIES COMMITTEE; STATE WIDE INTEGRATED FISH DISTRIBUTION APPLICATION.

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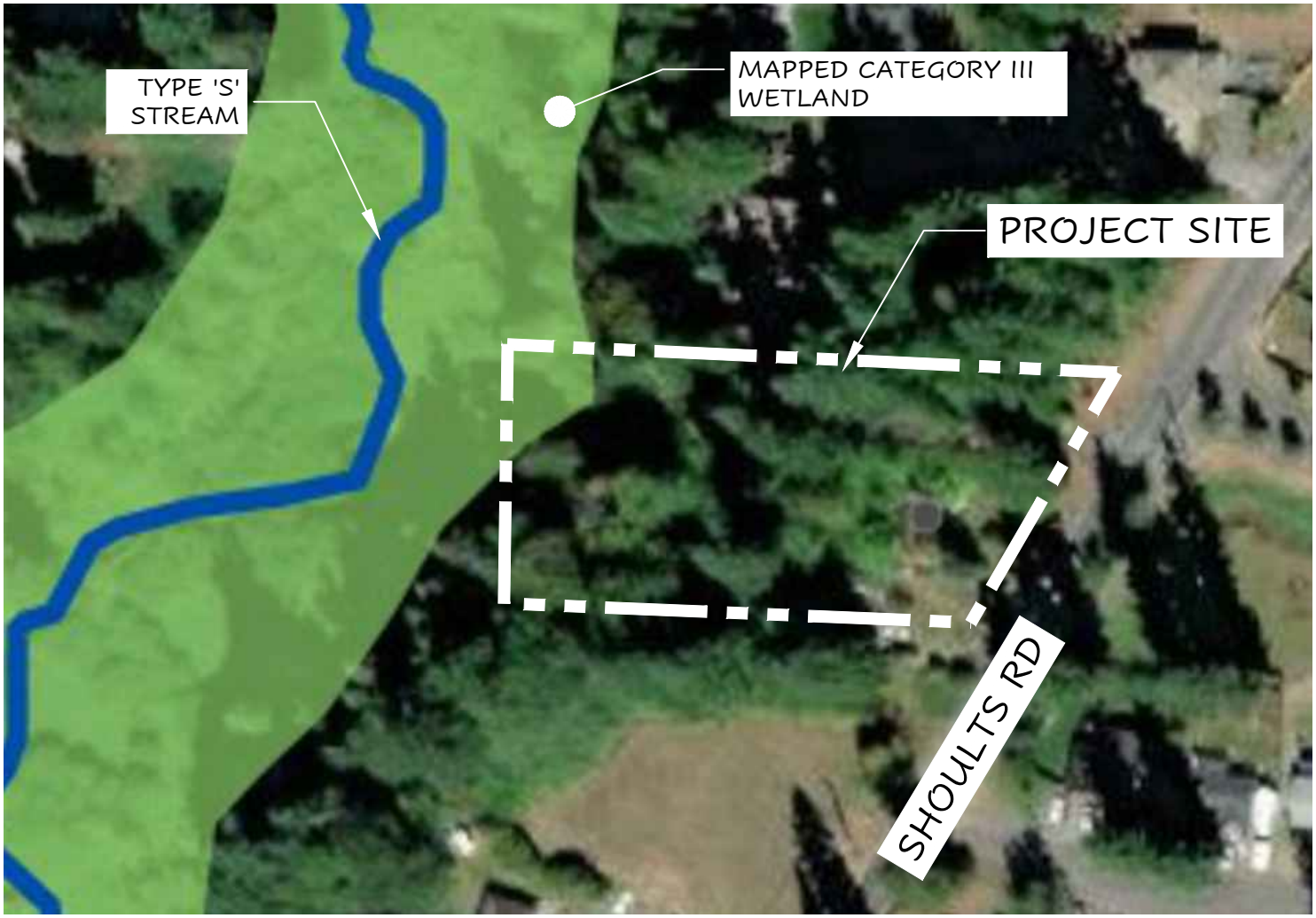
FIGURE #4

NWIFC SWIFD MAP
KRYKUN CRITICAL AREAS REPORT
MARYSVILLE, WASHINGTON

SCALE	DRAWN BY:
NTS	KM
DATE	
7-22-2022	
FIGURE	4



SOURCE: CITY OF MARYSVILLE GIS

N

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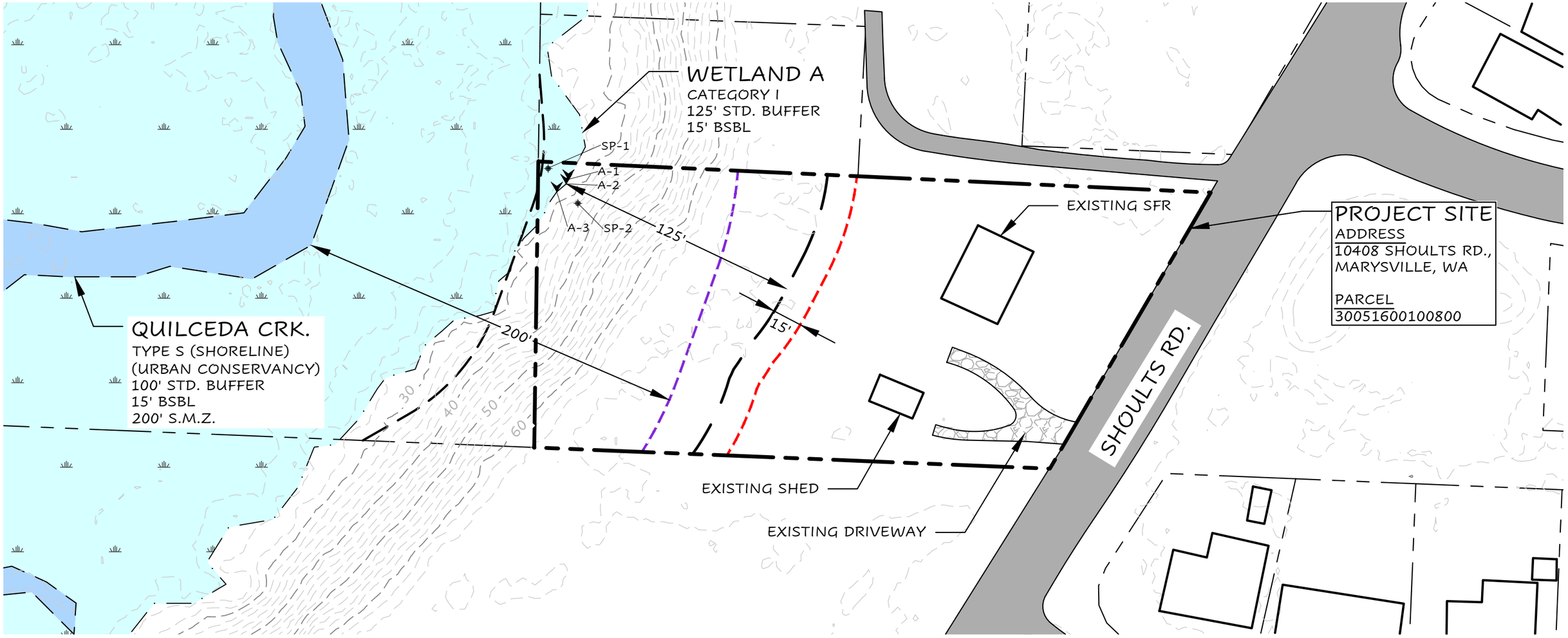
FIGURE # 5

MARYSVILLE GIS
KRYKUN CRITICAL AREAS REPORT
MARYSVILLE, WASHINGTON

SCALE	DRAWN BY:
NTS	KM
DATE	
7-22-2022	
FIGURE	5



PLAN LEGEND

- PROPERTY LINE
- EXISTING WETLAND
- WETLAND BUFFER
- A-# WETLAND FLAG LOCATION
- SP-# SOIL TEST PIT LOCATION
- STREAM ORDINARY HIGH WATER MARK (OHWM)
- STREAM BUFFER
- 15-FT BUILDING SETBACK (BSBL)
- SHORELINE MANAGEMENT ZONE (SMZ)

PARCEL DATA EXTRACTED FROM SNOHOMISH COUNTY GIS. ELEVATION DATA EXTRACTED FROM 2017 LiDAR DATA. WETLAND BOUNDARIES WERE LOCATED WITH AN EOS ARROW 100 SUB-METER GPS DEVICE.

GRAPHIC SCALE
0 25' 50' 100'
1"=50'
(IN FEET)

N

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FIGURE # 6
EXISTING CONDITIONS MAP
KRYKUN WETLAND STUDY
SNOHOMISH COUNTY, WASHINGTON

SCALE	DRAWN BY:
AS SHOWN	KM
DATE	
7-20-2022	
FIGURE	
6	

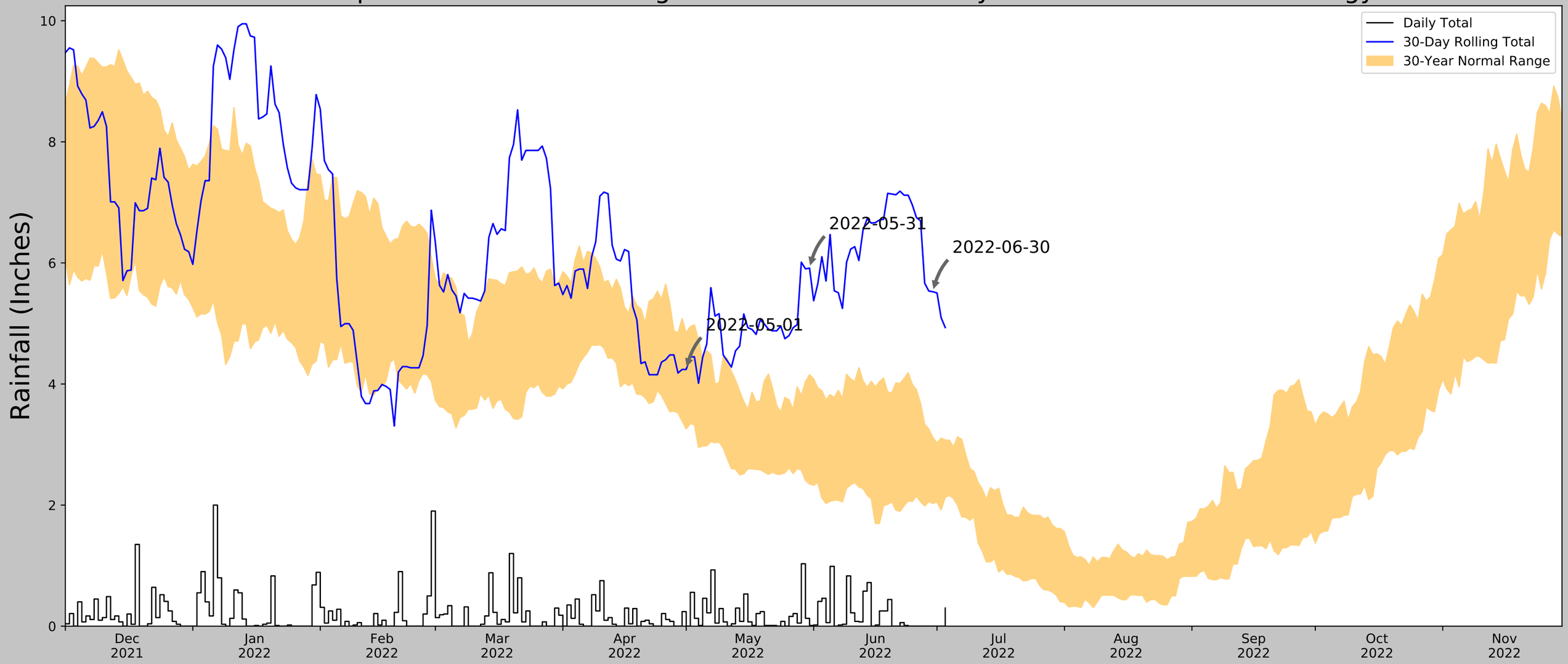
C:\Eastside Environmental Pros\CAD-GIS Drive\EE-212\Plans\EEP-212 CA 2022-07.dwg

APPENDIX A

Normal Precipitation Worksheet
Eastside Environmental Pros, 2022.

This normal precipitation analysis follows the methodology described by Sprecher and Warne (2000). The Corps Antecedent Precipitation application tool was used to determine that wetter than normal climatic conditions were present during the 30 June 2022 Site Evaluation.

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	48.089465, -122.167091
Observation Date	2022-06-30
Elevation (ft)	66.4
Drought Index (PDSI)	Moderate wetness (2022-05)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-06-30	2.026772	3.115748	5.523622	Wet	3	3	9
2022-05-31	2.347244	4.15315	5.913386	Wet	3	2	6
2022-05-01	3.258268	4.846457	4.240158	Normal	2	1	2
Result							Wetter than Normal - 17

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
MONROE	47.8453, -121.9944	120.079	18.666	53.679	9.402	10965	89
MONROE 0.6 SE	47.8526, -121.9712	73.163	1.188	46.916	0.59	6	0
MONROE 1.8 NW	47.8785, -122.0066	128.937	2.363	8.858	1.084	4	1
DUVALL 0.8 WNW	47.7391, -121.9841	129.921	7.353	9.842	3.381	14	0
WOODINVILLE 0.9 ENE	47.7531, -122.0943	288.058	7.879	167.979	4.869	117	0
WOODINVILLE 1.7 SE	47.7295, -122.0836	217.848	9.009	97.769	4.935	7	0
SNOHOMISH 3.5 NNE	47.9641, -122.0572	255.906	8.708	135.827	5.101	1	0
STARTUP 1 E	47.8664, -121.7175	169.948	12.92	49.869	6.458	237	0
EVERETT	47.9753, -122.195	60.039	12.922	60.04	6.591	2	0

APPENDIX B

Wetland Determination Datasheets
Eastside Environmental Pros, 2022.

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

Project/Site: EE-212 City/County: Marysville/Snohomish Sampling Date: 6-30-2022

Applicant/Owner: Pavel Krykun State: WA Sampling Point: SP-1

Investigator(s): Rebecca Bramwell Section, Township, Range: NE 1/4 S16, T30N, R05E, W.M.

Landform (hillslope, terrace, etc.): hillslope depression Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): A Lat: Long: Datum: NAD83

Soil Map Unit Name: Norma loam NWI classification: PFOC, R4SBC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ☒ No ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐

Remarks: This sample point is located within Wetland A, within the southeastern portion of the Site

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata	80	Yes	FAC
2.			
3.			
4.			
	80 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus spectabillis	20	Yes	FAC
2. Ribes bracteosum	10	Yes	FAC
3.			
4.			
5.			
	30 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Tolmiea menziesii	20	Yes	FAC
2. Athyrium cyclosorum	15	Yes	FAC
3. Equisetum telmateia	5	No	FACW
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: 15 ft)			
1. None			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (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 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks: *Rooted on fallen tree trunks

SOIL

Sampling Point: SP-1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/2	100	-	-	-	-	LoS	
8-16	10YR 4/3	80	10YR 4/6	20	C	M	Sand	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1 (**except MLRA 1**))
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks: Hydric soil criteria not met. Sandy redox classification requires chroma 2 or less and 2+ percent redoximorphic features within 6 inches of the surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 0

Water Table Present? Yes ☒ No ☐ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 0

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks: Wetland hydrology criteria met. saturation was present at surface.

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

Project/Site: EE-212 City/County: Marysville/Snohomish Sampling Date: 6-30-2022

Applicant/Owner: Pavel Krykun State: WA Sampling Point: SP-2

Investigator(s): Rebecca Bramwell Section, Township, Range: NE 1/4 S16, T30N, R05E, W.M.

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 30

Subregion (LRR): A Lat: Long: Datum: NAD83

Soil Map Unit Name: Norma loam NWI classification: PFOC, R4SBC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ☐ No ☒ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒

Remarks: This sample point is located within the upland areas to the east of Wetland A. Wetland criteria were not met.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer macrophyllum*	50	Yes	FACU
2.			
3.			
4.			
	50 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Acer circinatum*	40	Yes	FAC
2.			
3.			
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. *Polystichum munitum*	60	Yes	FACU
2. *Equisetum telmateia*	20	Yes	FACW
3. *Urtica dioica*	15	No	FAC
4.			
5.			
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: 15 ft)			
1. *None*			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks: Hydrophytic vegetation criteria not met.

SOIL

Sampling Point: SP-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	100					LOs	
8-16	10YR 3/3	100					LOs	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1 (**except MLRA 1**))
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

APPENDIX C

Wetland Rating Forms
Eastside Environmental Pros, 2022.

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 6/30/2022
Rated by RB Trained by Ecology? ☐ Yes ☒ No Date of training 10-2018
HGM Class used for rating Riverine 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 _____

OVERALL WETLAND CATEGORY I (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	
			Circle the appropriate ratings	
Site Potential	H	H	H	
Landscape Potential	H	M	H	
Value	H	H	H	**TOTAL**
Score Based on Ratings	9	8	9	26

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		☒

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1/A
Hydroperiods	H 1.2	1/A
Ponded depressions	R 1.1	1/A
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	1/A
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1/A
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	1/A
Map of the contributing basin	R 2.2, R 2.3, R 5.2	B
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	C
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	D
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	E

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 *(can be added to another figure)*	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 (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	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.

☐ 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

Wetland A

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.*

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

R 1.0. Does the site have the potential to improve water quality?	
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event: Depressions cover >$^3/_4$ area of wetland points = 8 Depressions cover > ½ area of wetland points = 4 Depressions present but cover < ½ area of wetland points = 2 No depressions present points = 0	8
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not** Cowardin classes) Trees or shrubs > $^2/_3$ area of the wetland points = 8 Trees or shrubs > $^1/_3$ area of the wetland points = 6 Herbaceous plants (> 6 in high) > $^2/_3$ area of the wetland points = 6 Herbaceous plants (> 6 in high) > $^1/_3$ area of the wetland points = 3 Trees, shrubs, and ungrazed herbaceous < $^1/_3$ area of the wetland points = 0	6
Total for R 1 Add the points in the boxes above	14

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

R 2.0. Does the landscape have the potential to support the water quality function of the site?	
R 2.1. Is the wetland within an incorporated city or within its UGA? Yes = 2 No = 0	2
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area? Yes = 1 No = 0	1
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years? Yes = 1 No = 0	1
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4 Other sources _____ Yes = 1 No = 0	0
Total for R 2 Add the points in the boxes above	4

Rating of Landscape Potential If score is: ☒ **3-6 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?	
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi? Yes = 1 No = 0	1
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	0
R 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 drainage in which the unit is found*) Yes = 2 No = 0	2
Total for R 3 Add the points in the boxes above	3

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

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion

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

R 4.1. Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 20 points = 9 If the ratio is 10-20 points = 6 If the ratio is 5-<10 points = 4 If the ratio is 1-<5 points = 2 If the ratio is < 1 points = 1	6
R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have >90% cover at person height. These are NOT Cowardin classes).* Forest or shrub for >1/3 area OR emergent plants > 2/3 area points = 7 Forest or shrub for > 1/10 area OR emergent plants > 1/3 area points = 4 Plants do not meet above criteria points = 0	7
Total for R 4 Add the points in the boxes above	13

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

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

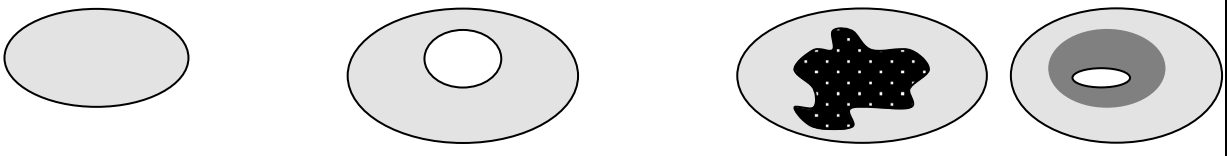
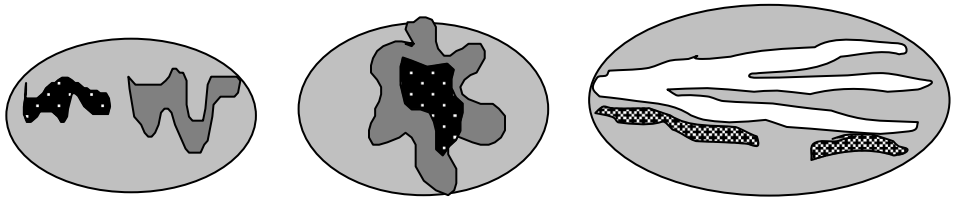
R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	0
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	1
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	1
Total for R 5 Add the points in the boxes above		2

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

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

R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site.* The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	2
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for R 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*

HABITAT FUNCTIONS - These questions apply to wetlands of all HGM classes. 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	4
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ☒ Permanently flooded or inundated — 4 or more types present: points = 3 ☐ Seasonally flooded or inundated — 3 types present: points = 2 ☐ Occasionally flooded or inundated — 2 types present: points = 1 ☐ Saturated only — 1 type present: points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☒ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** — **2 points** ☐ **Freshwater tidal wetland** — **2 points**	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *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 All three diagrams in this row are **HIGH** = 3points 	3

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☒ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ☒ Standing snags (dbh > 4 in) within the wetland ☒ 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) ☐ 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 *(cut shrubs or trees that have not yet weathered where wood is exposed)* ☒ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ☒ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	5
Total for H 1 Add the points in the boxes above	15

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?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 20 **+** [(% moderate and low intensity land uses)/2] 25 **=** 45% If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	3
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 20 **+** [(% moderate and low intensity land uses)/2] 50 **=** 70% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	3
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	6

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?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 ☒ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☒ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	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 multilayered 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 *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes –Go to **SC 1.1** ☐ No= **Not an estuarine wetland**	
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**	No
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ 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 *Spartina*, see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. ☐ 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**	No
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**	No
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** 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**	No

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**	No
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 un-grazed or unmowed grassland. ☐ The wetland is larger than $^1/_{10}$ ac (4350 ft^2) ☐ Yes = **Category I** ☐ No = **Category II**	No
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**	No
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	N/A

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U.S. Fish and Wildlife Service

National Wetlands Inventory

Figure 2/A - NWI Cowardin & Hydro

July 22, 2022

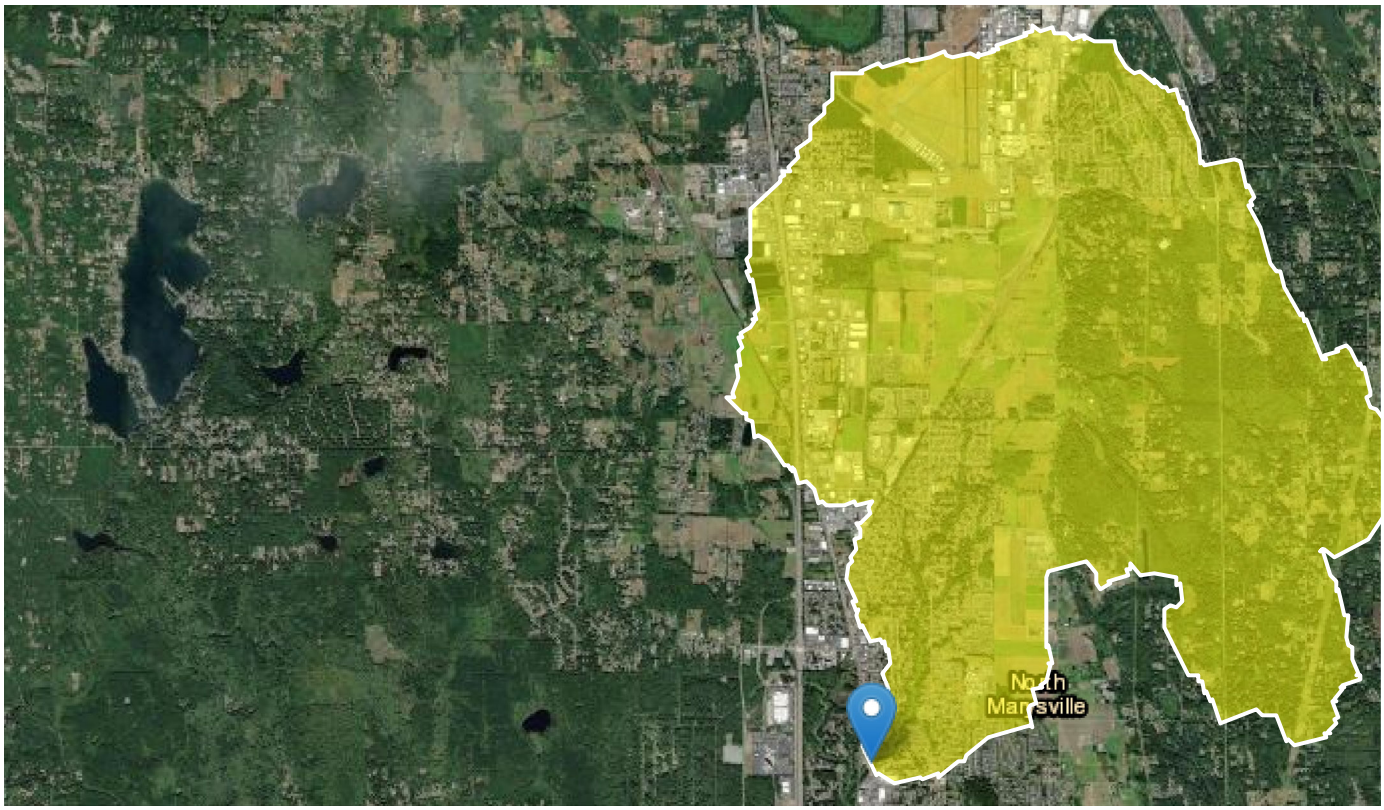
Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Figure B - Contributing Basin

Region ID: WA
Workspace ID: WA20220722202223
Clicked Point (Latitude, Longitude): 48.08700, -122.17271
Time: 2022-07-22 13:22:46 -0700

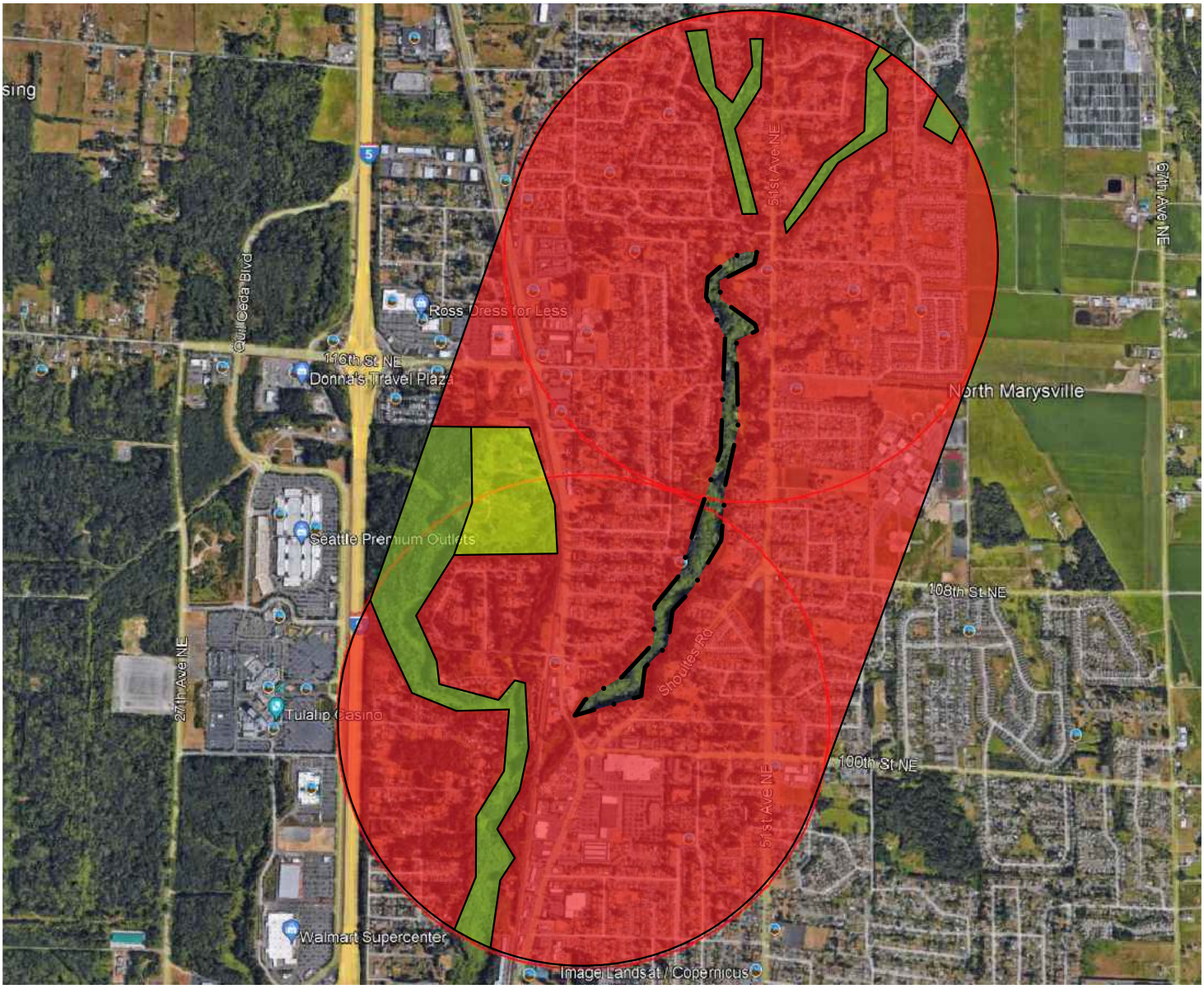


Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	20.27	square miles
PRECPRIS10	Basin average mean annual precipitation for 1981 to 2010 from PRISM	46.5	inches

Peak-Flow Statistics



PLAN LEGEND

	UNDISTURBED HABITAT	6%
	MODERATELY DISTURBED HABITAT	5%
	HIGH INTENSITY LAND USE	89%

N

EASTSIDE ENVIRONMENTAL PROS, INC.
14221 NE 181ST PLACE, SUITE P304
Woodinville, Washington 98072
Bus (425) 949-6659

FIGURE # C

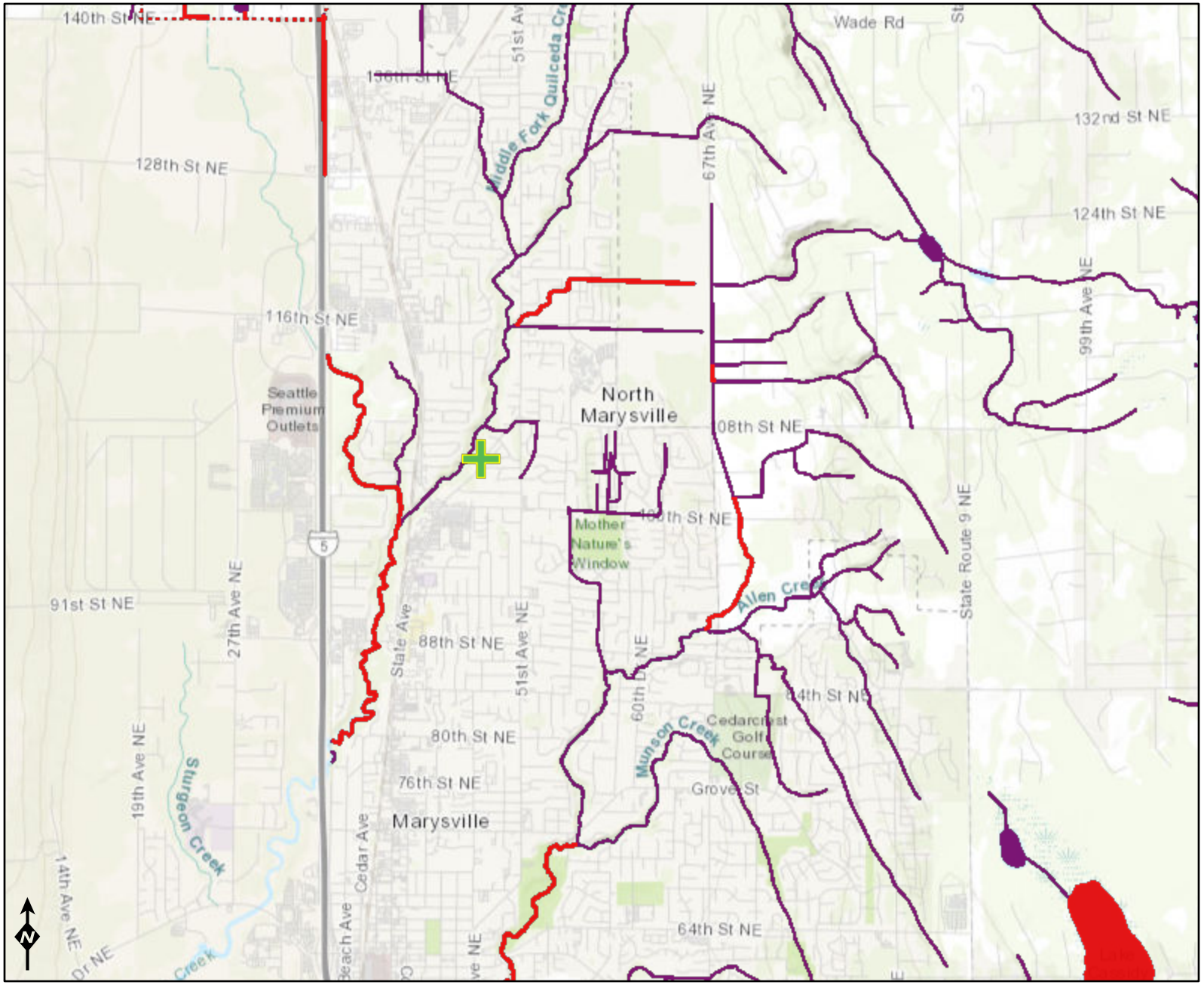
MAP OF HABITAT WITHIN 1-KILOMETER
KRYKUN WETLAND STUDY
SNOHOMISH COUNTY, WASHINGTON

SCALE	DRAWN BY:
NTS	KM
DATE	
7-20-2022	
FIGURE	C

C:\Eastside Environmental Pros\CAD-GIS Drive\EE-212\Plans\EEP-212 CA 2022-07.dwg

July 12, 2022

Figure D - WQ Atlas



Assessed Water/Sediment

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

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

Water Quality Standards

- All Standards

Miles
0 0.5 1 2

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

DEPARTMENT OF ECOLOGY
State of Washington

Figure D - TMDL's in Basin

Snohomish River Tributaries
Fecal Coliform
Total Maximum Daily Load

Submittal Report

June 2001
Publication Number 00-10-087
printed on recycled paper