CONFLUENCE
ENVIRONMENTAL COMPANY

Edwards Site
CRITICAL AREAS STUDY

Prepared for:

Edwards Fehu Holdings LLC
July 2024

146 N Canal Street, Suite 111 • Seattle, WA 98103 • www.confenv.com

Edwards Site
CRITICAL AREAS STUDY

Prepared for:

Edwards Fehu Holdings LLC
18230 240th Avenue SE
Maple Valley, WA 98038

Prepared by:

Confluence Environmental Company
Audrey Michniak, WPIT
Calvin Douglas, PWS

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1.0 INTRODUCTION

Confluence Environmental Company (Confluence) conducted a critical areas study on tax parcel 9206700-0170, located at 18230 240th Avenue SE, Maple Valley, Washington 98038 (site) (Figure 1). The study area included the site and the area within 300 feet of the site (Figure 1).

This study was completed to address the Notice of Incomplete letter (NOI) (ADDC23-0440– Environmental Triage RFI #1) issued on August 9, 2023, and Environmental Review (ADDC23-0440– Environmental Review RFI #2) issued on March 8, 2024, by King County. A previous critical areas study was conducted on the site by O'Neil Service Group (OSG) in September 2023 to address the initial August 2023 NOI letter. King County's review determined that the OSG report did not address wetlands in the area southeast of the site, did not address the aquatic area that flows through the site, and did not incorporate atypical methods to further investigate the possible presence of hydric soils in an area that had undergone disturbance.

On April 1, 2024, and June 13, 2024, Confluence conducted site investigations to determine the presence and extent of critical areas in the study area. The effort focused on wetlands and streams. Critical areas such as erosion hazard areas, steep slopes, and landslide hazard areas were not evaluated in this study.

During the April 1, 2024, site investigation, Confluence confirmed the absence of wetland conditions on the site. The June 13, 2024, investigation was conducted to confirm the boundaries of an off-site wetland (called Wetland A in this report) and to evaluate the aquatic area conveyance system. During the June 13, 2024, site investigation, Confluence had access to tax parcel 920670PUBL, located in the southeast portion of the study area (Figure 1). A wetland delineation was conducted along the site boundary to determine whether the off-site critical area buffer encroaches onto the site. An evaluation of aquatic area and surface drainage conveyance into and from an existing stormwater management facility was also conducted.

The site is currently developed with a single-family residence and 2 additional outbuildings used for storage. The study area is zoned Rural Area 5 (one dwelling unit per 5 acres).

Figure 1. Study area

2.0 METHODS

This section describes the methods used to confirm the presence or absence of critical areas.

2.1 Desktop Analysis

To develop a strategy for the site investigation, relevant regulations and GIS databases were reviewed.

Confluence reviewed the NOI (ADDC23-0440– Environmental Triage RFI #1) issued on August 9, 2023, and Environmental Review (ADDC23-0440– Environmental Review RFI #2) issued on March 8, 2024, by King County to understand the issues. Confluence also reviewed King County Code (KCC) 21A.24 to determine the standard buffer requirements for critical areas in the study area.

Confluence reviewed the GIS databases listed below for potential presence of wetlands, streams, lakes, or species listed under the Endangered Species Act as threatened or endangered in the study area. The study area was extended to 300 feet from the site to determine whether buffers for off-site critical areas encroach onto the site (300 feet is the largest buffer identified in KCC 21A.24.325).

- King County iMap (King County 2024)
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS 2024)
- Natural Resources Conservation Service (NRCS) Soil Survey (NRCS 2024a)
- Washington Department of Fish and Wildlife (WDFW) SalmonScape (WDFW 2024a)
- WDFW Priority Habitats and Species (PHS) (WDFW 2024b)
- Washington Department of Natural Resources (WDNR) Water Type GIS (WDNR 2024)

Confluence reviewed records obtained from the King County Public Records Office that included a copy of the Webster Lake Estates Plat Drawings (final approval dated February 1996) and a 1990 wetland report for Webster Lake (Jones & Stokes 1990). On the adjacent property southeast of the site (tax parcel 920670PUB), the plat drawings show the surveyed boundary of a wetland, labeled on the drawings as Tract D and Native Growth Protection Easement (NGPE).

Results of the GIS database searches and records obtained from King County are in Appendix A.

2.2 Site Investigation

On April 1, 2024, and June 13, 2024, Confluence conducted site investigations to determine the presence or absence of wetland or stream critical areas in the study area.

2.2.1 Wetlands

Confluence identifies wetlands and delineates their boundaries using the methods described by the U.S. Army Corps of Engineers (Corps) in the Corps of Engineers Wetlands Delineation Manual (Corps 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Corps 2010). Routine wetland identification and delineation methods (Section 2.2.1.1) were used on the off-site wetland (Wetland A). For the on-site area that required further investigation for the potential presence of hydric soils, atypical methods were also used, as described in Section 2.2.1.2. A more detailed description of routine delineation methodology is provided in Appendix B. Wetland delineation data forms completed during the site investigations are provided in Appendix C, wetland rating forms are provided in Appendix D, and photographs of the study area are provided in Appendix E.

2.2.1.1 Wetland Identification and Delineation—Routine Methods

The Corps typically requires that the following 3 characteristics be present for an area to be identified as a wetland: (1) hydrophytic vegetation, (2) hydric soil, and (3) wetland hydrology. For each criterion, there are several possible indicators that can be used to determine whether the criterion has been met. The indicators were established so that if a wetland were present, sufficient indicators would be observed at any time of the year, including the driest months, to identify the wetland.

To confirm the presence or absence of a wetland, data were collected from representative test plots in the area identified as a potential wetland. The locations of the test plots were based on previous reviews of the area in question or the presence of visual wetland indicators (e.g., wetland vegetation, evidence of standing water) or were selected to represent vegetative, topographic, or hydrologic features in the vicinity. Within these test plots, vegetation, soils, and hydrology were examined to determine whether wetland characteristics were present (see Appendix B for details). Typically, plots that meet all 3 wetland criteria are determined to be wetland plots, and plots that do not meet all 3 wetland criteria are determined to be upland plots. However, atypical methods were also employed at relevant test plot locations (Section 2.2.1.2).

Confluence used the PLANTS Database (NRCS 2023b) to provide consistency in scientific naming and the 2022 National Wetland Plant List (Corps 2022) to determine the wetland indicator status of plants.

The wetland boundary and test plot locations were flagged using orange ribbon flagging. The flags were mapped using a Trimble mapping grade GPS receiver capable of sub-meter accuracy after post-processing.

2.2.1.2 Wetland Identification and Delineation—Atypical Methods

King County's NOI (ADDC23-0440–Environmental Triage RFI #1), dated August 9, 2023, noted that an area in the center of the site exhibited wetland hydrology and vegetation characteristics but did not exhibit hydric soil indicators. Because the area in question has undergone disturbance, further investigation of soils was required.

Confluence used the method described in step 4d of the Problematic Hydric Soils—Procedure section in Chapter 5 of the regional supplement (Corps 2010). This method uses alpha, alpha-dipyridyl (a,a,-dipyridyl), a reagent that reacts with reduced iron, to determine if reduced (ferrous) iron is present. It is the most readily available method for assessing whether soils are exhibiting anaerobic conditions in the absence of typical hydric soil indicators. Per the regional supplement, "In some cases, [a,a,-dipyridyl] can be used to provide evidence that a soil is hydric when it lacks other hydric soil indicators. The soil is likely to be hydric if application of alpha, alpha-dipyridyl to mineral soil material in at least 60 percent of a layer at least 4 in. (10 cm) thick within a depth of 12 in. (30 cm) of the soil surface results in a positive reaction within 30 seconds evidenced by a pink or red coloration to the reagent during the growing season." The a,a,-dipyridyl paper test strips were laid across soil samples at various depths where soils were saturated within 12 inches of the soil surface and were visually assessed for a positive reaction in 60% of the applied strips indicating evidence of reduced conditions. Photographs were taken to document the paper test strip results and are included in Appendix E.

2.2.1.3 Wetland Rating

Confluence determined wetland ratings using the Washington State Wetland Rating System for Western Washington (Hruby and Yahnke 2023) to assess the resource value of any wetland identified in the study area. This rating system is based on the wetland functions and values, sensitivity to disturbance, rarity, and irreplaceability.

2.2.2 Aquatic Area

Due to the narrow width of the channel (1 to 3 feet), no flags were placed along the ordinary high water mark of the stream. Instead, a centerline of the stream's location was determined using a differential GPS with sub-meter accuracy.

3.0 RESULTS

Confluence identified and partially delineated 1 off-site wetland, Wetland A, in the study area but did not identify any on-site wetland area. Confluence determined that an unnamed stream in the study area is a Type O stream.

3.1 Desktop Analysis

The site is zoned Rural-5 Acre (R-5) and is located outside the urban growth boundary. King County iMap and USFWS's NWI do not identify any wetlands or streams within 300 feet of the study area (King County 2024; USFWS 2024).

The study documented in the April 1990 Webster Lake report (Jones & Stokes 1990) identified 7 wetlands in a 146-acre area that overlapped with the site and study area investigated for this report. No wetlands or aquatic areas were identified on the site, but one of the 7 wetlands was in the same general area as Wetland A (as referred to in this report). Wetland habitat identified in this area included palustrine open water, palustrine emergent, palustrine scrub-shrub, and palustrine forested systems.

As noted in Section 2.1, the Webster Lake Estates Plat Drawings, dated 1996, identify a wetland (referred to as Wetland A in this report) on the adjacent parcel to the southeast of the site (tax parcel 920670PUB), labeled Tract D and NGPE on the drawings.

The soil survey indicates the study area and surrounding areas include Alderwood gravelly sandy loam (8-15% slopes). This soil type is not considered a hydric soil (NRCS 2024a).

WDWF's SalmonScape does not indicate the presence of any streams or salmonid species in the study area (WDFW 2024a). WDFW's PHS system identifies a masked polygon that represents the presence of a little brown bat (*myotis lucifugus*) overlapping the study area. WDFW (2024c) confirmed that the little brown bat species identified was not observed in the study area.

WDFW (2024b) confirmed that no priority habitats or priority species are documented in the study area. WDNR (2024) does not identify any streams in the study area.

3.2 Site History and Conditions

King County provided historical aerial photographs of the site (Appendix F). Confluence also reviewed aerial imagery from Google Earth. The photographs and imagery show a history of vegetation clearing and construction at the site. A stream on the site has been modified with an 18-inch culvert and gravel driveway over the culvert. A portion of the stream between the culvert and 240th Avenue SE has had rounded river rock placed within the channel to reduce erosion. A 1990 Google Earth aerial image shows the site was completely forested prior to the development of the current single-family home in 1998. Due to the dense canopy cover, the stream identified in later aerials cannot be observed. The current single-family home and yard

development, located in the southern portion of the site, clearly show up in aerial photographs dating back to at least 2002. As of May 2013, the northern portion of the site was still forested with no clearing or structures apparent. In June 2014, clearing of woody vegetation in the area of the current outbuildings was apparent. A stream is observed to be flowing northeast from Wetland A to 240th Avene SE. Water from the stream appears to have flooded topographic depressions adjacent to the stream. By June 2016, additional vegetation had been cleared and a gravel driveway and shed had been placed adjacent to the stream. By May 2019, additional clearing had occurred to the north of the gravel driveway. The April 2021 aerial photograph shows an installed culvert and rock lined ditch.

3.3 Wetland Investigation

Confluence confirmed the presence of Wetland A southeast of the site but did not identify any wetland on the site. Application of the a,a,-dipyridyl method did not indicate the presence of hydric soils in the area with disturbed conditions.

3.3.1 Test Plots

During the April 1, 2024, site investigation, 6 test plots (TP-1 through TP-6) were established within the site boundaries adjacent to those established by OSG (2023; see Appendix G). During the June 13, 2024, site investigation, 2 test plots (TP-101 and TP-201) were established in the southeast portion of the study area. Test plot locations are shown on Figure 2. Test plot results are discussed below and summarized in Table 1, and detailed results are documented on the Wetland Delineation Data Forms in Appendix C. Technical terms are explained in Appendix B. Photographs of the site are in Appendix E.

Table 1. Summary of wetland determinations

Test Plot	Hydrophytic Vegetation?	Hydric Soils?	Wetland Hydrology?	Determination
On-site Test Plots				
TP-1	Yes	No	Yes	Upland
TP-2	Yes	No	Yes	Upland
TP-3	Yes	No	No	Upland
TP-4	Yes	No	Yes	Upland
TP-5	Yes	No	Yes	Upland
TP-6	Yes	No	Yes	Upland
Off-site Test Plots				
TP-101	Yes	Yes	Yes	Wetland
TP-201	Yes	No	No	Upland

Figure 2. Test plot and feature locations

3.3.1.1 Vegetation

Vegetation results are summarized in Table 2. Vegetation throughout the study area was not a clear indicator of either wetland or upland status. All test plots met the criterion for hydrophytic vegetation, even though 7 of the plots were determined to represent uplands.

Table 2. Summary of vegetation results

Test Plot	Dominant Vegetation (Indicator Status)	Met Criterion?	Rationale	Determination
On-Site Test Plots				
TP-1	Soft rush (*Juncus effusus*, FACW) Velvet grass (*Holcus lanatus*, FAC) *Poa* spp. (FAC) *Agrostis* (FAC)	Yes	Dominance Test.	Upland
TP-2	Soft rush (*Juncus effusus*, FACW) *Poa* spp. (FAC)	Yes	Dominance Test.	Upland
TP-3	*Poa* spp. (FAC) Reed canarygrass (*Phalaris arundinacea*, FACW)	Yes	Dominance Test.	Upland
TP-4	Soft rush (*Juncus effusus*, FACW) *Poa* spp. (FAC) Reed canarygrass (*Phalaris arundinacea*, FACW)	Yes	Dominance Test.	Upland
TP-5	Black cottonwood (*Populus balsamifera*, FAC) Soft rush (*Juncus effusus*, FACW) *Poa* spp. (FAC)	Yes	Dominance Test.	Upland
TP-6	Black cottonwood (*Populus balsamifera*, FAC) Douglas spirea (FACW) *Poa* spp. (FAC)	Yes	Did not meet any indicator.	Upland
Off-Site Test Plots				
TP-101	Himalayan blackberry (*Rubus armeniacus*, FAC) *Agrostis* (FAC) Fescue spp. (FAC) Velvet grass (*Holcus lanatus*, FAC)	Yes	Dominance Test.	Wetland
TP-201	Himalayan blackberry (*Rubus armeniacus*, FAC) *Agrostis* spp. (FAC) Fescue spp. (FAC) Velvet grass (*Holcus lanatus*, FAC)	Yes	Dominance Test.	Upland

3.3.1.2 Soils

Soil results obtained using routine methods are summarized in Table 3. As discussed in Section 2.2.1.2, a,a,-dipyridyl test strips were also used during the on-site investigation to determine whether soils in disturbed areas are hydric. Saturation was recorded in 5 of the 6 test plots. The a,a,-dipyridyl paper strips were applied to the saturated soils and visually inspected for greater than 60% reactivity. None of the test plots exceeded this threshold and, therefore, did not indicate hydric soil conditions. Though heavy equipment had been used on the site for tree

clearing, soils exhibited defined horizons and showed no indication of substantial disturbance or filling. No relict hydric soils or redoximorphic features were observed at any of the test plots. With a lack of hydric soil indicators and a low level reaction to the a,a,-dipyridyl strips, we conclude that a preponderance of evidence indicates that the soils examined do not meet the hydric criterion.

Table 3. Summary of soil results

Test Plot	Depth (inches)	Matrix		Redox Features		Texture	Met Criterion?	Rationale	Determination
		Color	%	Color	%				
On-Site Test Plots									
TP-1	0-4	10 YR 2/1	100	--	--	Silt loam	No	Soils did not meet any hydric soil indicator. Anaerobic conditions not indicated by a,a,-dipyridyl test.	Upland
	4-18	10 YR 3/3	100	--	--	Sandy loam			
TP-2	0-4	10 YR 3/2	100	--	--	Silt loam with gravel	No	Soils did not meet any hydric soil indicator. Anaerobic conditions not indicated by a,a,-dipyridyl test.	Upland
	4-12	10 YR 3/2	99	10YR 4/6	1	Loam with gravel			
	12-18	10YR 2/1	60	--	--	Silt loam with gravel			
		10YR 3/2	40	--	--				
TP-3	0-3	10 YR 2/2	100	--	--	Loam with gravel	No	Soils did not meet any hydric soil indicator. Anaerobic conditions not indicated by a,a,-dipyridyl test.	Upland
	3-14	10 YR 2/1	100	--	--	Loam with gravel			
	14-18	10YR 3/2	50	--	--	Loam with gravel			
		10YR 4/2	50	--	--	Loam			
TP-4	0-3	Organics	100	--	--	Thick root layer	No	Soils did not meet any hydric soil indicator. Anaerobic conditions not indicated by a,a,-dipyridyl test.	Upland
	3-14	10 YR 3/2	99	7.5 YR 5/8	1	Silt loam with gravel and charcoal			
	14-18	10YR 3/3	50	--	--	Silt loam with gravel			
		10YR 2/2	50	--	--				
TP-5	0-10	10 YR 2/2	99+	10YR 4/6	<1	Silt loam with gravel	No	Soils did not meet any hydric soil indicator. Anaerobic conditions not indicated by a,a,-dipyridyl test.	Upland
	10-18	10 YR 3/4	100	--	--	Silt loam with gravel			

Test Plot	Depth (inches)	Matrix		Redox Features		Texture	Met Criterion?	Rationale	Determination
		Color	%	Color	%				
TP-6	0-5	10 YR 3/2	100	--	--	Sandy loam with organics	No	Soils did not meet any hydric soil indicator. Anaerobic conditions not indicated by a,a,-dipyridyl test.	Upland
	5-11	10 YR 2/2	100	--	--	Loam with gravel			
	11-18	10 YR 2/1	100	--	--	Silt loam with gravel			
Off-Site Test Plots									
TP-101	0-11	10 YR 2/1	100	--	--	Loam	Yes	Soils met A11 (Depleted Below Dark Surface) indicator.	Wetland
	11-18	10 YR 4/3	98	10 YR 5/8	2	Loam			
TP-201	0-18	10 YR 2/2	100	--	--	Loam	No	Soils did not meet any hydric soil indicator.	Upland

3.3.1.3 Hydrology

Hydrology results are summarized in Table 4. Most of the test plots met the criterion for wetland hydrology but were still determined to not represent wetlands because they did meet the hydric soil criterion.

Table 4. Summary of hydrology results

Test Plot	Indicators (at least 1 primary or 2 secondary required to meet criterion)		Met criterion?	Determination
	Primary	Secondary		
On-Site Test Plots				
TP-1	Saturation (A3)	None	Yes	Upland
TP-2	High Water Table (A2), Saturation (A3)	None	Yes	Upland
TP-3	None	None	No	Upland
TP-4	Saturation (A3)	None	Yes	Upland
TP-5	High Water Table (A2), Saturation (A3)	None	Yes	Upland
TP-6	High Water Table (A2), Saturation (A3	None	Yes	Upland
Off-Site Test Plots				
TP-101	High Water Table (A2), Saturation (A3)	None	Yes	Wetland
TP-201	None	None	No	Upland

3.3.2 Discussion of On-Site Results

The results of Confluence's on-site investigation, which applied both routine and atypical methods, were consistent with the OSG (2023) results: wetland conditions are not present on the site.

Vegetation for all 6 test plots passed the dominance test; however, most dominant species have an indicator status of FAC. Wetland hydrology was observed in every test plot except TP-3. As discussed in Section 2.2.1.2, the a,a,-dipyridyl test was selected as the most readily available method for assessing whether soils are exhibiting anaerobic conditions in the absence of typical hydric soil indicators. As discussed in Section 3.3.1.2, no hydric soil indicators were observed in on-site test plots, and the a,a,-dipyridyl test did not indicate reducing conditions in greater than 60% of saturated soil horizons observed.

Based on the current site conditions observed by Confluence, vegetation clearing in the central portion of the site included several black cottonwood trees, which resulted in compacted soils from heavy equipment and likely a loss of water uptake by the trees. Compacted soils can lead to slower infiltration and standing water on the site following rain events. Black cottonwoods are well established along riparian zones, river corridors, and forested wetlands, and tree removal can change the local hydrologic regime. This kind of hydrologic change can support colonization by the kind of vegetation community observed on the site (soft rush and other facultative plants). Such characteristics are not uncommon in non-wetland sites in the Puget Lowlands.

3.3.3 Wetland A

The results of Confluence's off-site investigation confirmed the presence of Wetland A in the southeast portion of the study area. TP-101 met all 3 wetland criteria and represents Wetland A. Characteristics of Wetland A are summarized in Table 5, and its location is shown on Figure 2.

Table 5. Wetland summary

Wetland Name	Cowardin Classification[1]	Estimated Size (acres)	Wetland Rating[2]				
			Water Quality	Hydrology	Habitat	Total	Category
Wetland A	Palustrine forested	4.79	8	8	6	22	II

[1] FGDC 2013
[2] Hruby and Yahnke 2023

Confluence delineated approximately 162 feet of the wetland boundary to identify the encroachment of off-site wetland buffer onto the site. The remaining boundary of Wetland A was estimated using the NGPE boundary on the Webster Lake Estates Plat Drawings, evidence

of standing water on aerial photos, and visual observations during the site investigations. Wetland A is approximately 4.79 acres (209,000 square feet). According to the Cowardin classification system (FGDC 2013), Wetland A is a forested wetland. According to the Wetland Rating System (Hruby and Yahnke 2023), Wetland A was rated as a Category II wetland, with a water quality score of 8, hydrology score of 8, and habitat score of 6.

3.4 Stream

An unnamed stream begins off-site, flowing from Wetland A southeast of the site; flows in a northerly direction along the eastern boundary of the site; and then meanders to the west through the central portion of the site (Figure 2). The unnamed stream flows into a culvert beneath 240th Avenue SE that connects to a stormwater conveyance system which connects to a large stormwater detention pond at the end of 240th Avenue SE. Confluence accessed the parcel (tax parcel 9206700290) where these stormwater detention ponds were located and observed flowing water from the detention ponds to a stormwater control structure on the western portion of the site.

King County iMap (2024) identifies a stormwater pipe that connects to the stormwater management facility observed by Confluence. The outfall of this facility discharges flow to catch basins and ultimately to a piped underground conveyance that discharges to an unnamed stream approximately 0.2 miles to the west which is a tributary to Francis Lake. Water flowing from Francis Lake eventually connects to the Cedar River.

Per KCC 21A.24.355 A.4., *Type O waters include all segments of aquatic areas that are not type S, F or N waters and that are not physically connected to a Type S, F or N waters by an above-ground channel system, pipe or culvert, stream or wetland*. By this definition, the unnamed stream on the site is considered a Type O stream because the downstream conveyance is not physically connected to other aquatic areas by an above-ground channel system.

4.0 REGULATORY IMPLICATIONS

According to KCC 21A.24.325 and KCC 21A.24.358, the following standard buffers apply:

- Offsite Wetland A is a Category II wetland with a moderate habitat score; therefore, the standard buffer is 110 feet.
- The unnamed stream, a Type O stream, has a standard buffer of 25 feet.

Figure 3 shows the wetland and stream and their standard buffers. Development within these buffers or within the critical areas themselves requires compliance with KCC 21A.24.325 and KCC 21A.24.35.

Figure 3. Wetland A and stream buffer

5.0 IMPACT ANALYSIS

King County issued a NOI (application # ADDC23-0440) for a building permit application in August 2023. They requested that any impacted critical areas and their associated buffers be restored to pre-clearing and grading conditions, including removing fill and replanting native woody vegetation.

Impacts on the site include alteration of the Type O unnamed stream, the associated stream buffer, and a small portion of the off-site Wetland A buffer. An unpermitted 18-inch culvert, approximately 36 feet was installed, and a gravel driveway was placed over the culvert. Additionally, downstream from the culvert rounded rock cobbles and boulders were installed into the stream channel. Two detached structures (sheds) have also been built adjacent to the stream channel within the 25 foot stream buffer. Impacts to Wetland A buffer include the 2 detached structures and gravel driveway.

A restoration plan for stream and wetland impacts will be prepared pending review and approval of this critical areas study.

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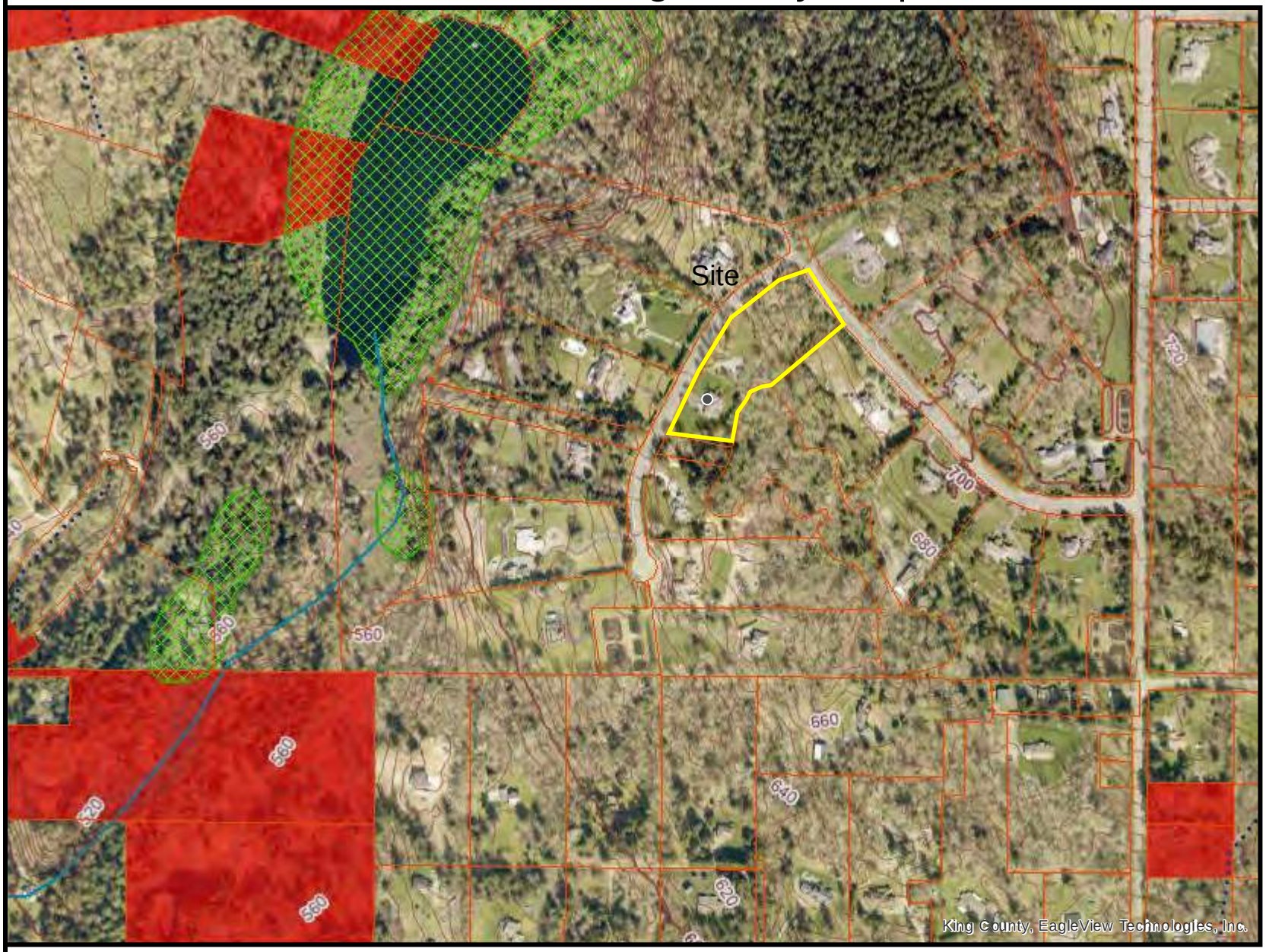
Appendix A

GIS Database Search Results and King County Records

King County iMap



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Date: 6/24/2024 Notes:

N

King County

Legend

- Parcels
- index contours - 100 foot
- contours - 5 foot (below 1000 feet) and 10 foot
- Potential landslide hazard areas (2016, see explanation--->)
- Erosion hazard (1990 SAO)
- Seismic hazard

U.S. Fish and Wildlife Service
National Wetlands Inventory

Edwards Property

June 24, 2024

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.

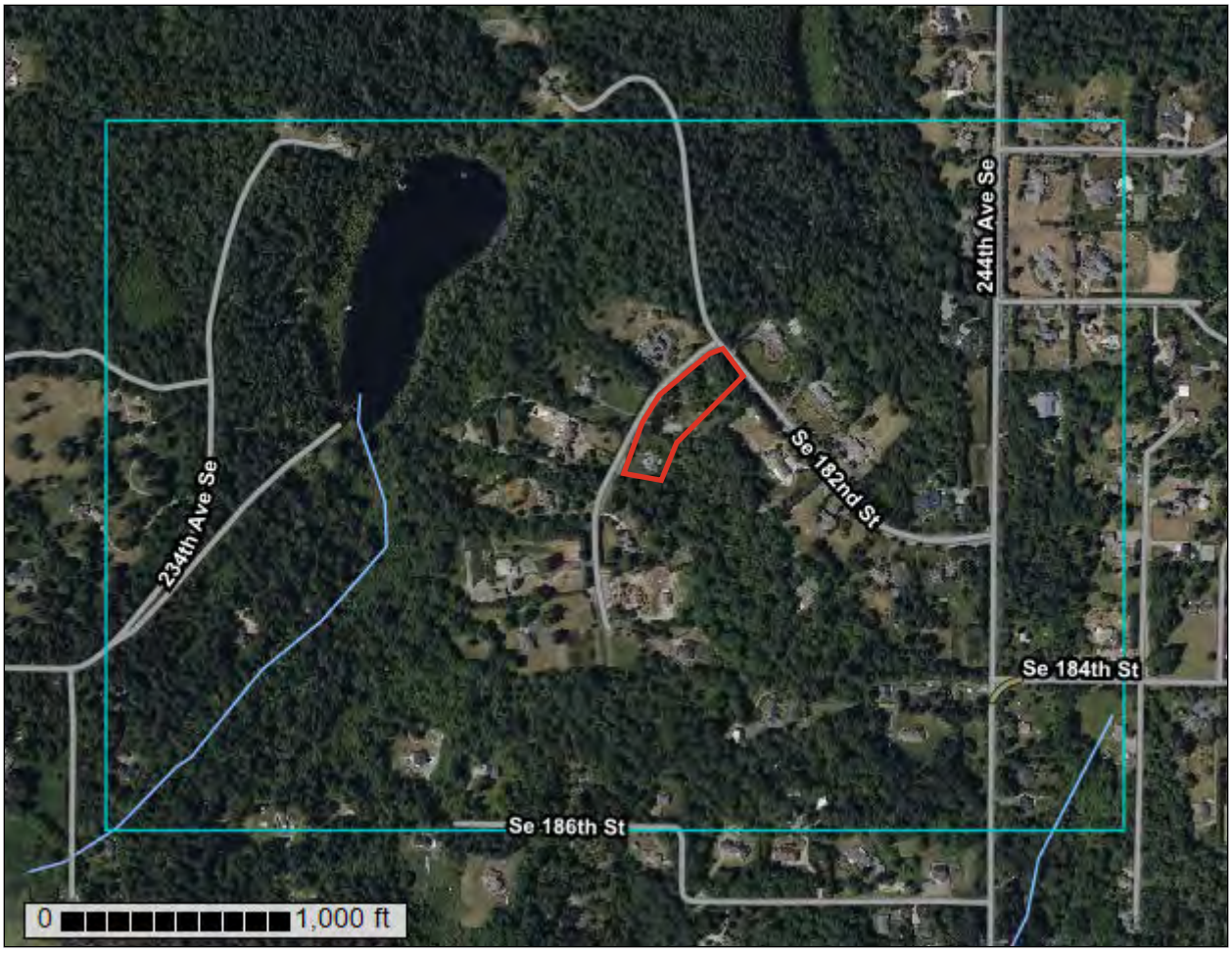
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for King County Area, Washington



June 24, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

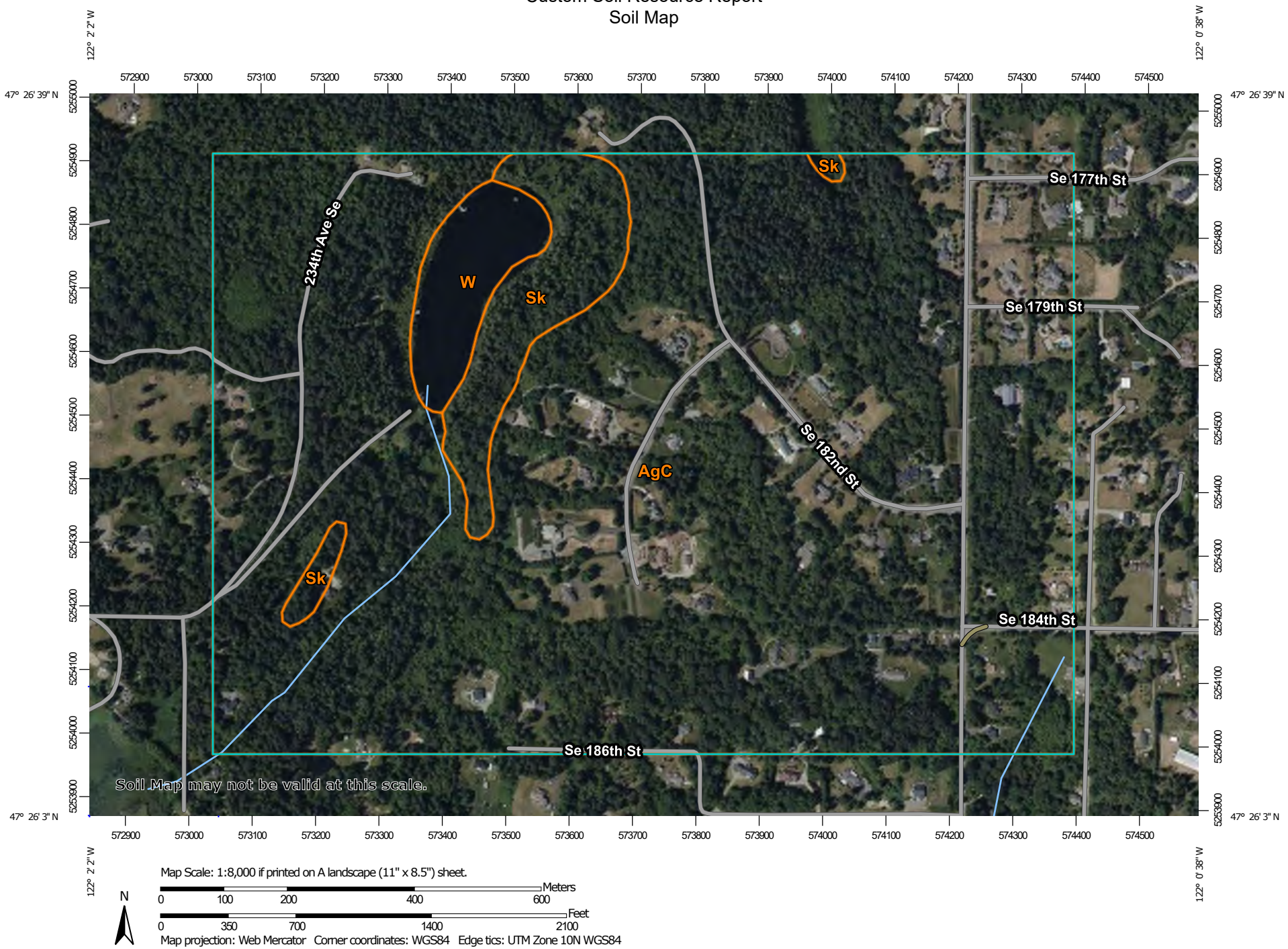
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: King County Area, Washington
Survey Area Data: Version 19, Aug 29, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 31, 2022—Sep 1, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AgC	Alderwood gravelly sandy loam, 8 to 15 percent slopes	289.7	91.0%
Sk	Seattle muck	18.4	5.8%
W	Water	10.3	3.2%
Totals for Area of Interest		**318.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

King County Area, Washington

AgC—Alderwood gravelly sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2t626
Elevation: 50 to 800 feet
Mean annual precipitation: 20 to 60 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 160 to 240 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Alderwood and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alderwood

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Nose slope, talf
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Glacial drift and/or glacial outwash over dense glaciomarine deposits

Typical profile

A - 0 to 7 inches: gravelly sandy loam
Bw1 - 7 to 21 inches: very gravelly sandy loam
Bw2 - 21 to 30 inches: very gravelly sandy loam
Bg - 30 to 35 inches: very gravelly sandy loam
2Cd1 - 35 to 43 inches: very gravelly sandy loam
2Cd2 - 43 to 59 inches: very gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: B
Ecological site: F002XA004WA - Puget Lowlands Forest
Forage suitability group: Limited Depth Soils (G002XN302WA), Limited Depth Soils (G002XS301WA), Limited Depth Soils (G002XF303WA)

Other vegetative classification: Limited Depth Soils (G002XN302WA), Limited Depth Soils (G002XS301WA), Limited Depth Soils (G002XF303WA)
Hydric soil rating: No

Minor Components

Indianola
Percent of map unit: 5 percent
Landform: Terraces, kames, eskers
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Everett
Percent of map unit: 5 percent
Landform: Moraines, eskers, kames
Landform position (two-dimensional): Shoulder, footslope
Landform position (three-dimensional): Base slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Shalcar
Percent of map unit: 3 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Norma
Percent of map unit: 2 percent
Landform: Drainageways, depressions
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sk—Seattle muck

Map Unit Setting
National map unit symbol: 1hmv4
Elevation: 0 to 1,000 feet
Mean annual precipitation: 25 to 50 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 150 to 250 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Seattle and similar soils: 75 percent

Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Seattle

Setting

Landform: Depressions
Parent material: Grassy organic material

Typical profile

H1 - 0 to 11 inches: muck
H2 - 11 to 60 inches: stratified mucky peat to muck

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 23.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R002XA003WA - Puget Lowlands Bogs and Fens
Forage suitability group: Wet Soils (G002XN102WA)
Other vegetative classification: Wet Soils (G002XN102WA)
Hydric soil rating: Yes

Minor Components

Tukwila

Percent of map unit: 10 percent
Landform: Depressions
Other vegetative classification: Wet Soils (G002XN102WA)
Hydric soil rating: Yes

Shalcar

Percent of map unit: 10 percent
Landform: Depressions
Other vegetative classification: Wet Soils (G002XF103WA)
Hydric soil rating: Yes

Bellingham

Percent of map unit: 3 percent
Landform: Depressions
Other vegetative classification: Wet Soils (G002XN102WA)
Hydric soil rating: Yes

Norma

Percent of map unit: 2 percent
Landform: Depressions
Other vegetative classification: Wet Soils (G002XN102WA)
Hydric soil rating: Yes

W—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

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Priority Habitats and Species on the Web


Lake
Maxar, Microsoft, Esri, HERE, Garmin, iPC, WDFW

Buffer radius: 300 Feet

Report Date: 06/24/2024

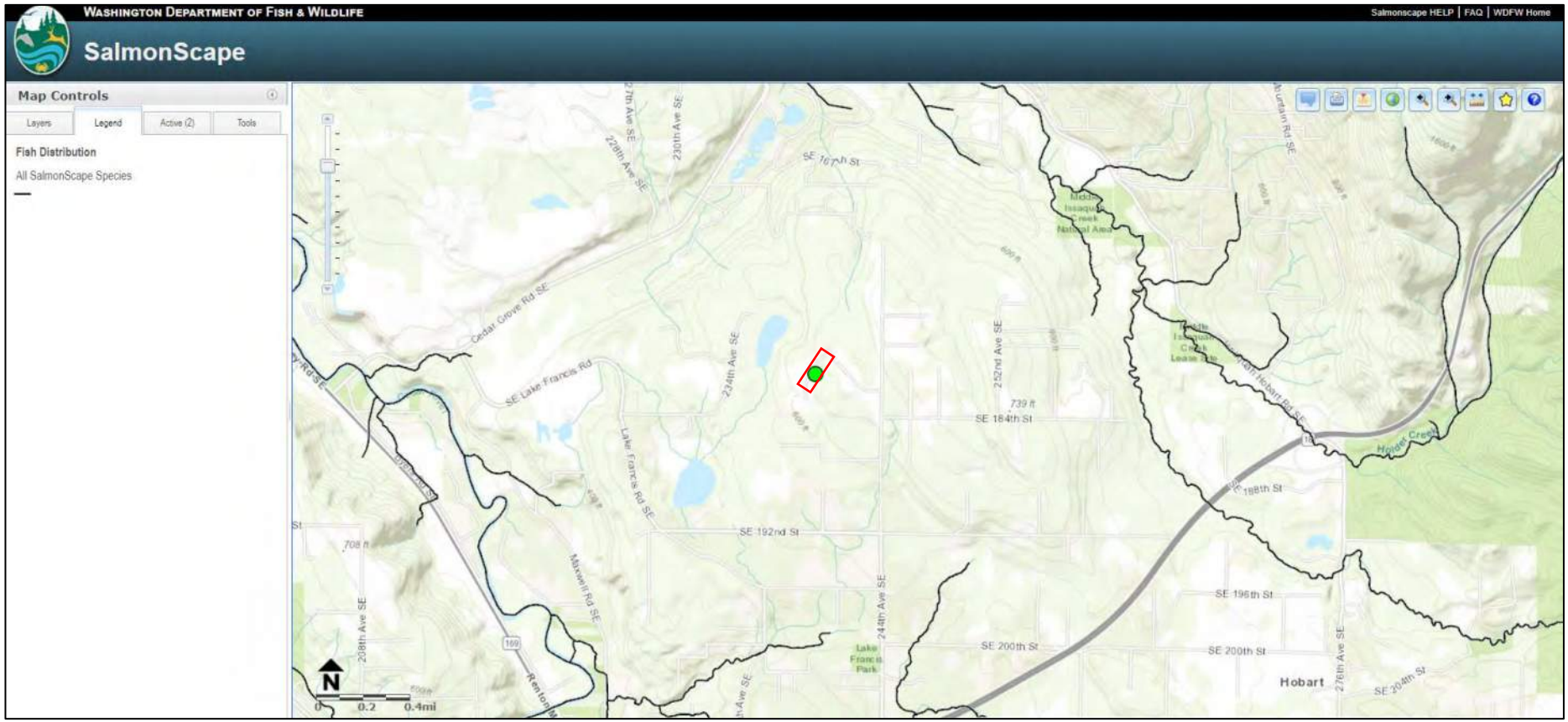
PHS Species/Habitats Overview:

Occurence Name	Federal Status	State Status	Sensitive Location
myotis spp			Yes

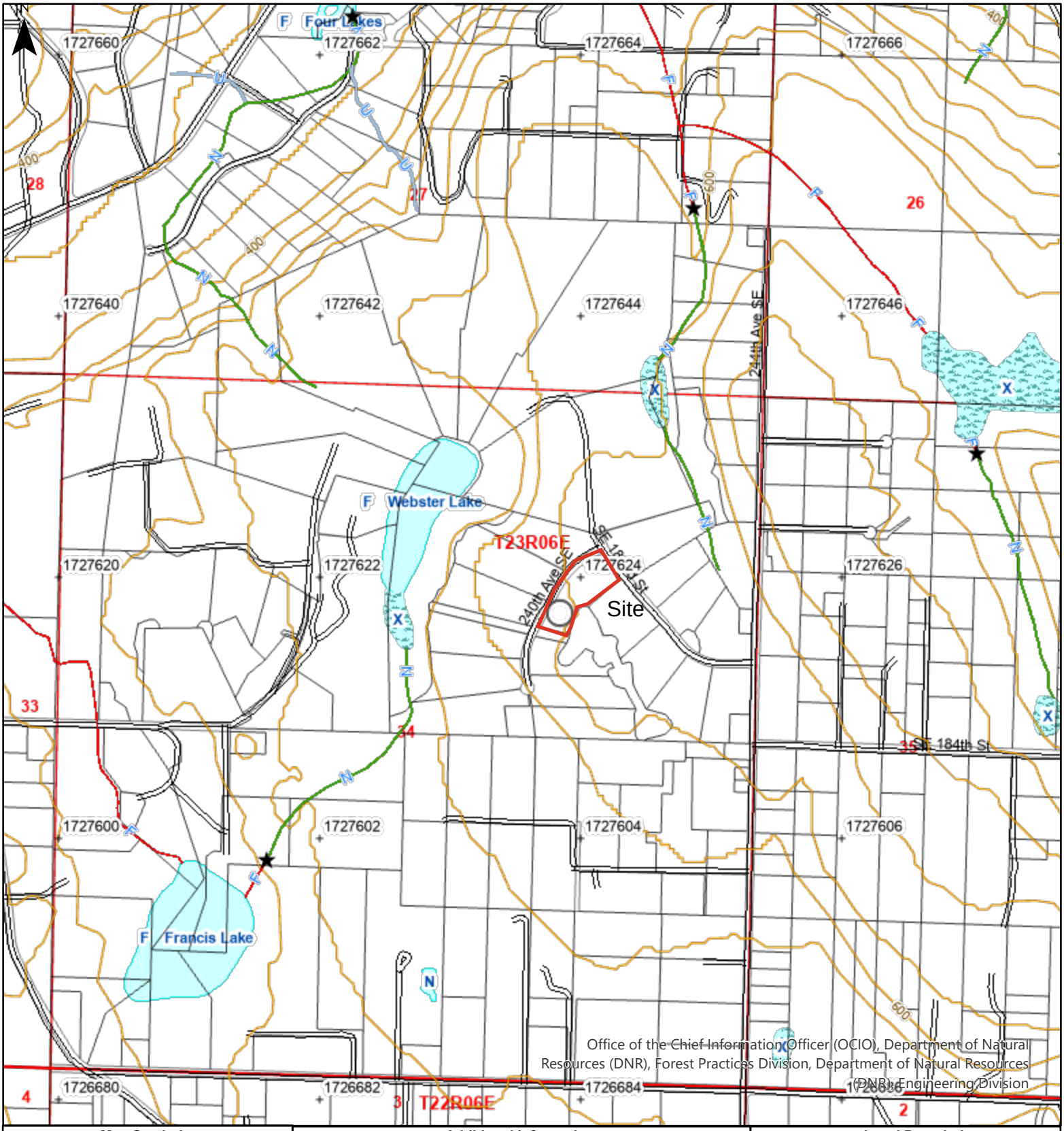
PHS Species/Habitats Details:

myotis spp	
Scientific Name	*Myotis yumanensis/lucifigus*
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP

SalmonScape: All Species



Forest Practices Activity Map - Application #_____



Map Symbols

- Harvest Boundary
- Road Construction
- Stream
- RMZ / WMZ Buffers
- Rock Pit
- Landing
- Waste Area
- Clumped WRTS/GRTS
- Existing Structure

Additional Information

Legal Description

S03 T22.0N R06.0E, S33 T23.0N R06.0E, S28 T23.0N R06.0E, S04 T22.0N R06.0E, S35 T23.0N R06.0E, S02 T22.0N R06.0E, S26 T23.0N R06.0E, S27 T23.0N R06.0E, S34 T23.0N R06.0E

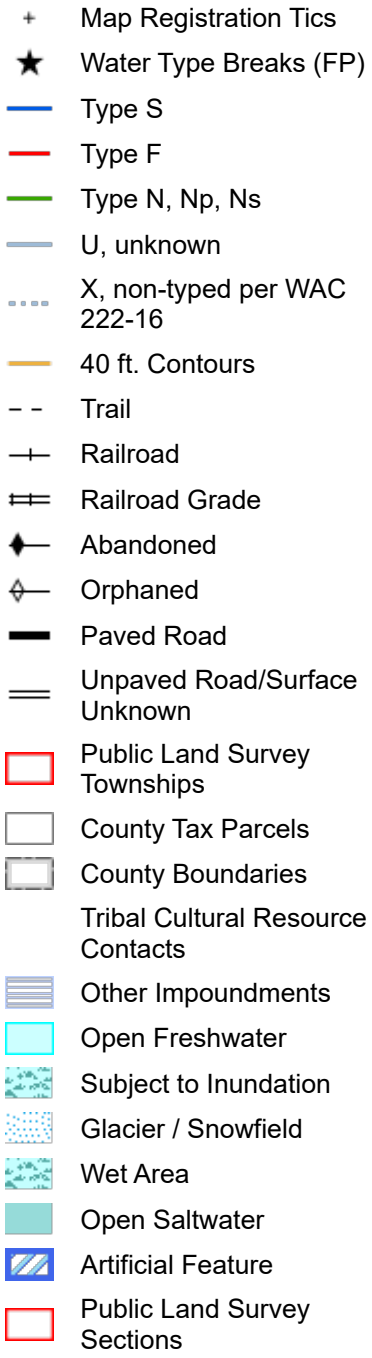
WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

Approximate Scale : 1:12,000

0 500 1,000 2,000 Feet

Date: 6/24/2024 Time: 2:24 PM

Legend


Map Registration Tics
Water Type Breaks (FP)
Type S
Type F
Type N, Np, Ns
U, unknown
X, non-typed per WAC 222-16
40 ft. Contours
Trail
Railroad
Railroad Grade
Abandoned
Orphaned
Paved Road
Unpaved Road/Surface Unknown
Public Land Survey Townships
County Tax Parcels
County Boundaries
Tribal Cultural Resource Contacts
Other Impoundments
Open Freshwater
Subject to Inundation
Glacier / Snowfield
Wet Area
Open Saltwater
Artificial Feature
Public Land Survey Sections

Appendix B
Wetland Delineation Methods

Edwards Site CAS: Appendix B

CONFLUENCE ENVIRONMENTAL COMPANY WETLAND DELINEATION METHODS

Prepared by:

Confluence Environmental Company
2024

TABLE OF CONTENTS

This appendix describes the methods used to confirm the presence or absence of wetlands in a study area.

1.0 METHODOLOGIES

Confluence delineates the boundaries of wetlands using the "Routine Determinations for Areas Less Than 5 Acres in Size" method described by the U.S. Army Corps of Engineers (Corps) in the Corps of Engineers Wetlands Delineation Manual (Delineation Manual; Corps 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Regional Supplement; Corps 2010). The Regional Supplement was part of a nationwide effort to address regional wetland characteristics and improve the accuracy and efficiency of wetland-delineation procedures. The Regional Supplement uses the best available science to address regional differences in climate, geology, soils, hydrology, and plant and animal communities that cannot be addressed in a single national document, such as the Delineation Manual. The Regional Supplement was designed for use with the 1987 Delineation Manual and all subsequent versions. Where differences in the 2 documents occur, the Regional Supplement takes precedence over the 1987 Delineation Manual (Corps 2010). The Regional Supplement was developed to clarify the indicators of hydrophytic vegetation, hydric soils, and wetland hydrology found in the region (these indicators are discussed in detail in Section 2.0). It is important to note that areas that may have been determined to be wetlands under the 1987 Delineation Manual may not be determined to be wetlands under the Regional Supplement, and vice versa.

Confluence uses the PLANTS Database (NRCS 2024) for scientific names and the 2020 National Wetland Plant List (Corps 2020) to determine the wetland indicator status of plants. Wetlands are classified using the Cowardin Classification System (FGDC 2013). Confluence determines the wetland rating using Washington State Department of Ecology's Wetland Rating System for Western Washington (Hruby 2014). The National Wetland Inventory is also researched to determine if wetlands have previously been identified on the property (USFWS 2024).

The locations of test plots, soil cores, and wetland edges on a project property are recorded using a differential Global Positioning System with sub-meter accuracy. Delineated and surveyed wetland boundaries are subject to verification and approval by jurisdictional agencies.

2.0 WETLAND CRITERIA

There is specific technical language that applies to the study of wetlands. This section briefly explains the language Confluence uses in its wetland delineation reports.

The identification of wetlands is based on 3 criteria: hydrophytic vegetation, hydric soils, and hydrology. Each criterion has a number of indicators that can be used to determine whether the criterion has been met. The Corps, which is the federal authority on the regulation of wetlands,

has developed the guidance and the data form that are the standards used in all wetland determinations. The information presented below is based on their Delineation Manual (Corps 1987) and Regional Supplement (Corps 2010).

In order to confirm the presence of a wetland, data are collected from representative test plots chosen within and outside of a potential wetland. The test plots are representative of particular vegetative, topographic, and hydrologic features in the vicinity. Within the test plots particular data (see sections below) about vegetation, soils, and hydrology are collected to determine whether wetland characteristics are present. Plots that meet all 3 wetland criteria are wetland plots; plots that do not meet all 3 wetland criteria are upland (i.e., nonwetland) plots. The test plots (along with topographic and vegetative shifts) then inform the delineation of wetland boundaries.

2.1 Hydrophytic Vegetation

Vegetation is often the first visual cue that an area is a wetland. Similarly, vegetation often also signals the shift from wetland to upland. The question regarding plants to be answered when performing a wetland delineation is, "Is the vegetation hydrophytic?" That is, is the vegetation of the variety that is adapted to live in wetter-than-average conditions? To determine the answer, there are a few resources and steps to follow. First, the indicator status for each plant present in the test plot is determined from the National Wetland Plant List (Corps 2020). The indicator status is a continuum from almost exclusively occurring in wetlands (obligate wetland plants, or OBL) to almost never occurring in wetlands (obligate upland plants, or UPL). The middle ground between those 2 extremes is known as a facultative plant (or FAC), which is found equally in wetland and upland environments. The FAC category has 2 further gradations: facultative upland plants (FACU), which are plants that are usually found in uplands, and facultative wetland plants (FACW), which are plants that are usually found in wetlands.

After the status of each plant species in the test plot has been determined, the hydrophytic vegetation indicators can be applied. The application of the indicators is performed sequentially, and once one is "passed," the box for hydrophytic vegetation is checked, and the process continues to the next criterion. The first hydrophytic vegetation indicator is the "Rapid Test," which means with a quick visual survey, all the plants in the test plot are either OBL or FACW. The second test is the "Dominance Test." For the Dominance Test, the total number of dominant species in the test plot is divided by the number of species that are OBL, FACW, or FAC. The resulting percentage must be greater than 50 to pass this test. The third test is the "Prevalence Index." The Prevalence Index is a weighted average of the absolute cover of all the plant species present in the plot, regardless of dominance. There are also 2 other, less common, indicators: morphological adaptations (e.g., buttressed trunks) and nonvascular plant species (e.g., sphagnum moss).

2.2 Hydric Soils

The soils tell the story about the presence of water over time. The National Technical Committee defines a hydric soil as, "A soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (USDA Soil Conservation Service 1994). The question to be answered here is, "Has water been present long enough and recently enough to form hydric soils?" In order to examine the soil characteristics, a test pit must be dug, usually to about 18 inches. A sliver of soil from the test pit is extracted with a shovel (i.e., the soil profile) to examine the layers. The thickness, color, texture, redoximorphic features, and any other interesting information about each layer are observed and recorded. Those features are described more fully below.

- **Thickness.** Layers are measured to the nearest inch. Usually, each soil profile has at least 2 layers.
- **Color.** Color is determined by comparison to a color chart. The industry standard is the Munsell Soil-Color Chart, which assigns each color a designation for hue, value, and chroma (e.g., 10YR 3/2, where 10YR=hue, 3=value, and 2=chroma).
- **Texture.** The precision of texture description for the purpose of wetland delineation is at a general scale. The Washington State University texture chart (Cogger 2010) is often used, but the delineator just needs to determine if the soil is sandy or loamy/clayey.
- **Redoximorphic Features.** The most common redoximorphic features are concentrations or depletions of iron in the soil matrix. Concentrations occur as red or yellow deposits, and depletions occur as grayish deposits.

When the soil profile is fully described, it can be determined whether any of the layers meets a hydric soil indicator. The presence of any hydric soil indicator signifies a hydric soil, although a soil may be hydric and not meet any of these indicators. There are 19 hydric soil indicators in our region, 1 of which were observed at the site (Corps 2010). Additional hydric soil terminology definitions are in the sidebar.

More Hydric Soils Definitions
(adapted from Corps 2010)

Matrix: the dominant soil volume in a given soil layer

Depleted Matrix: the volume of a soil horizon in which soil processes have removed or transformed iron, creating colors of low chroma and high value, specifically:

- Value ≥5, chroma = 1, with or without redoximorphic features
- Value ≥6, chroma = 1 or 2, with or without redoximorphic features
- Value of 4 or 5, chroma =2, ≥2% distinct or prominent redoximorphic features
- Value of 4, chroma =1, ≥2% distinct or prominent redoximorphic features

Distinct: readily seen, but contrasting* moderately with comparison color

Prominent: readily seen and contrasting* greatly with comparison color

*See Corps 2010, Table A1, page 130 for full key on contrast determinations.

- **A11—Depleted Below Dark Surface.** A soil layer with a depleted matrix, with 60% or more chroma of ≤2, which starts within 12 inches of the surface and is at least 6 inches thick. Layers above the depleted layer must have a value ≤3, and a chroma ≤2.

2.3 Hydrology

Wetland hydrology is the broadest criterion and has to do with signs of saturation and inundation in the test plot. While hydrophytic vegetation and hydric soils are the result of hydrology, they remain even during the dry season, whereas wetland hydrology can be less apparent or absent during the dry season. The hydrology indicators are broad enough to encompass characteristics that may be present even during the dry season. Hydrology indicators are in 4 groups:

- Group A is based on direct observation of surface or ground water.
- Group B consists of evidence that the site is subject to inundation.
- Group C consists of other evidence that soil is or was saturated.
- Group D consists of landscape, vegetation, and soil characteristics indicating contemporary wet conditions.

The indicators are further divided into 2 categories: primary and secondary. A test plot must have either 1 primary or 2 secondary indicators to pass the hydrology criterion. Primary and secondary indicators observed during this delineation are recorded on the wetland delineation data forms in Appendix C.

3.0 REFERENCES

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Appendix C

Wetland Delineation Data Forms

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

Project/Site: Edwards Parcel City/County: Maple Valley / King County Sampling Date: 4/1/24

Applicant/Owner: Eric Edwards State: WA Sampling Point: TP-1

Investigator(s): CKD, ATM Section, Township, Range: S34 T23N R06E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): shallow concave Slope (%): 6-3

Subregion (LRR): A Lat: 47.43994 Long: 122.02091 Datum: WGS 1984

Soil Map Unit Name: Alderwood gravelly sandy loam 8-15% slopes NWI classification: none

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

Are Vegetation X, 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: adjacent to OSG SP-6

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1. N/A			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 1m)			
1. Juncus effusus	60	✓	FACW
2. Clover	2		FAC
3. velvet grass	20	✓	FAC
4. Poa	10	✓	FAC
5. agrostis	20	✓	FAC
6. dandelion	2		FAC
7.			
8.			
9.			
10.			
11.			
	104 = Total Cover		
Woody Vine Stratum (Plot size: 1m)			
1. N/A			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

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 = ____
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:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ 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:

SOIL

Sampling Point: TP-1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100	–	–	–	–	SiL	W/ GRAVEL
4-18	10YR 3/3	100	–	–	–	–	SaSiL	W/ GRAVEL

[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: L-strips started @ #1, test results: 10% few red dots not prominent

Followed procedure in Ch. 5 of regional manual for problematic hydric soils (pg 109)

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): 16"

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 12"

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

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

Project/Site: Edwards Parcel City/County: Maple Valley / King County Sampling Date: 4/1/24
Applicant/Owner: Eric Edwards State: WA Sampling Point: TP-2
Investigator(s): CKD, AHM Section, Township, Range: S34 T25N R6E
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none Slope (%): 0-1
Subregion (LRR): A Lat: 47.44027 Long: 122.02116 Datum: WGS 1984
Soil Map Unit Name: Alderwood gravelly sandy loam 8-15% slope NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation X, 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____ No ✓	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks: adjacent to OSG SP-5

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 m)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 5 m)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 1 m)			
1. Juncus effusus	30	✓	FACW
2. Velvet grass	10	____	FAC
3. Poa	60	✓	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 1 m)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (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:
- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ 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:

SOIL

Sampling Point: TP-2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					SiL	W/ GRAVEL
4-12	10YR 3/1	99	10YR 4/6	1%	C	PL,M	LOAM	W/ GRAVEL
12-18+	10YR 2/1	60	—		—		SiL	W/ GRAVEL
DUAL	10YR 3/2	40	—		—			

[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:

α,α test @ 1130, test results: <1% two red dots, not prominent

Followed procedure in Ch. 5 of regional manual for problematic hydric soils (pg. 104)

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): 12

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): 12

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

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

Project/Site: Edwards Parcel City/County: Maple valley/King County Sampling Date: 4/1/24
Applicant/Owner: Eric Edwards State: WA Sampling Point: TP-3
Investigator(s): CKD, AHM Section, Township, Range: S34 T23N R6E
Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): A Lat: 47.43994 Long: 122.02150 Datum: WGS 1984
Soil Map Unit Name: Alderwood gravelly sandy loam 8-15% slope NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation X, 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks: ADJACENT TO OS6 SP-1

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 1m)			
1. Poa	60	✓	FAC
2. Phalaris	40	✓	FACW
3. Ranunculus	5		
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 1m)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (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:
- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ 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:

SOIL

Sampling Point: TP-3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	100	—	—	—		LOAM	W/ GRAVEL
3-14	10YR 2/1	100	—	—	—	—	LOAM	W/ GRAVEL
14-18	10YR 3/2	60	—	—	—	—	LOAM	W/ GRAVEL
	10YR 4/2	40	—	—	—	—	LOAM	

[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:

pH strip results: 0%

Followed procedure in Ch. 5 of regional manual for problematic hydric soils (pg 109)

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:

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

Project/Site: Edwards Parcel City/County: Maple Valley / King County Sampling Date: 4/11/24

Applicant/Owner: Eric Edwards State: WA Sampling Point: TP4

Investigator(s): CKD, AHM Section, Township, Range: S34 T23N R06E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 47.44010 Long: 122.02127 Datum: WGS1984

Soil Map Unit Name: Alderwood gravelly sandy loam 8-15% slope NWI classification: none

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

Are Vegetation X, 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: adjacent to OSG SP-4

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 5 m)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 1 m)			
1. Juncus effusus	50	✓	FACW
2. Poa	50	✓	FAC
3. ranuleus	5		FAC
4. phalaris	20	✓	FACW
5. clover	2		FAC
6.			
7.			
8.			
9.			
10.			
11.			
	127 = Total Cover		
Woody Vine Stratum (Plot size: 1 m)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (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:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ 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:

SOIL

Sampling Point: TP-4

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	– ORG	–	–	–	–	–	ORG	THICK ROOT LAYER ORG.
3-14	10YR 3/2	99	7.5YR 5/8	1	C	M	SiL	W/ GRAVEL, CHARCOAL
14-18	10YR 3/3	50	–	–	–	–	SIL	W/ GRAVEL
	10YR 2/2	50	–	–	–	–	"	"

[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: 2 of 2 test strips @ 12-18, test results: 3% several red dots

Followed procedure in Ch. 5 of regional manual for problematic hydric soils (pg. 109)

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): 13"

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): 10"

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

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

Project/Site: Edwards Parcel City/County: Maple Valley / King County Sampling Date: 4/11/24

Applicant/Owner: Eric Edwards State: WA Sampling Point: TP-5

Investigator(s): CKD, AHM Section, Township, Range: S34 T23N R06E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 47.43994 Long: 122.02150 Datum: WGS1984

Soil Map Unit Name: Alderwood gravelly sandy loam 8-15% slopes NWI classification: none

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

Are Vegetation X, 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: ADJACENT TP DP6 SP-2 evidence of heavy machinery within 10', aerial photos show drainage in trees copy from 2013-2024

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Cottonwood	20	✓	FAC
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: 5 m)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 1 m)			
1. Juncus	25	✓	FACW
2. Poa	60	✓	FAC
3. phalaris	5		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: 1 m)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (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:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ 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:

SOIL

Sampling Point: TP-5

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-10	10YR 3/2	99+	10YR 4/6	<1%	C	M	SiL	W/ GRAVEL
10-18	10YR 3/4	100	—	—	—	—	SiL	W/ GRAVEL

[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:

α-α test strip @ 16-10, test results: 0%

Followed procedure in ch. 5 of regional manual for problematic Hydric Soils (pg 109)

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): 12"

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 11"

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

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

Project/Site: Edwards Parcel City/County: Maple valley / King County Sampling Date: 4/1/24
Applicant/Owner: Eric Edwards State: WA Sampling Point: TP-6
Investigator(s): CKD, AHM Section, Township, Range: S34 T23N R06E
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): A Lat: 47.44123 Long: 122.02139 Datum: WGS1984
Soil Map Unit Name: Alderwood gravelly sandy loam 8-15% slopes NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation X, 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 ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: adjacent to DSG SP. 3. Followed procedure in ch. 5 of regional manual for problematic Hydric soils (pg. 109)

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10 m)			
1. Cottonwood	50	✓	FAC
2.			
3.			
4.			
	50 = Total Cover		
Sapling/Shrub Stratum (Plot size: 5 m)			
1. Spirea	40	✓	FACW
2.			
3.			
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: 1 m)			
1. Poa	40	✓	FAC
2. agrostis	5		FAC
3. PHARalis	10		FACW
4. clover	5		FAC
5. bracken fern	5		FAC
6.			
7.			
8.			
9.			
10.			
11.			
	105 = Total Cover		
Woody Vine Stratum (Plot size: 1 m)			
1. R. URSINUS	2		FAC
2. Cutleaf BB	5		FAC
	7 = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (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:
- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ 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:

SOIL

Sampling Point: TP-6

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-5	10YR 3/2	100	—	—	—	—	Sandy loam	W/ organics
5-11	10YR 2/2	100	—	—	—	—	LOAM	W/ GRAVEL
11-18	10YR 2/1	100	—	—	—	—	SiL	W/ GRAVEL

[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:

α-α test strip @ 1630

Result of α-α strips: 10% spots and blotching observed.

* see remarks on 1st pg on procedure for hydric soils

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): 9"

Saturation Present? (includes capillary fringe) Yes ✓ No ____ Depth (inches): 3"

Wetland Hydrology Present? Yes ✓ No ____

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

Remarks:

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

Project/Site: Edwards Property City/County: Maple Valley/King County Sampling Date: 06/13/24

Applicant/Owner: Eric Edwards State: WA Sampling Point: TP-2

Investigator(s): CKD, AHM Section, Township, Range: S34 T23N R06E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 47.43953 Long: -122.02129 Datum: WGS 1984

Soil Map Unit Name: Alderwood gravelly sandy loam (8-15%) NWI classification: none

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

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

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

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

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

Remarks: Note: TP flag labeled TP-2 in field, located along central portion of site behind single family home

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10m)			
1. SEQUOIA GIGANT.	30	✓	NR
2. SEQ. SEMPER.	25	✓	NR
3.			
4.			
	55	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5m)			
1. RUBR – Himalayan blackberry	20	✓	FAC
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. AGROSTIS	50	✓	FAC
2. FESCUE	20	✓	FAC
3. HOLA	20	✓	FAC
4. URTCH	10		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 1m)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 0

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 =	____
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:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ 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: Note Sequoia spp. are Not rated (NR) plant indicator species so are not calculated in dominance test

SOIL

Sampling Point: TP-20

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/2	100	—	—	—	—	LOAM	W/ WOOD, GRAVEL IN PROFILE

[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: OPPOSITE OF DRAINAGE

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: NO HYDRIC INDICATORS

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

Project/Site: Edwards Property City/County: Maple Valley / King County Sampling Date: 06/13/24

Applicant/Owner: Evie Edwards State: WA Sampling Point: TP-101

Investigator(s): KD, AHM Section, Township, Range: S34 T23N R06E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 47.43955 Long: 122.02125 Datum: WGS 1984

Soil Map Unit Name: Alderwood gravelly sandy loam (0-15%) NWI classification: PFO

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 ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:
Note: TP flag labeled TP-1 in field, located off-site in wetland SE ~~property~~ on tax parcel 9206770 PUBL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10m)	Absolute % Cover	Dominant Species?	Indicator Status
1. ALRU - red alder	10		FAC
2. ACMA - big leaf maple	5		FACU
3.			
4.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5m)			
1. RUAR - Himalayan blackberry	45	✓	FAC
2.			
3.			
4.			
5.			
	45	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. AGROSTIS	40	✓	FAC
2. FESCUR	30	✓	FAC
3. HOLCUS LANATUS	25	✓	FAC
4. STINKY BOB	5		FACW
5. EPIL WATSON	T		FAC
6. VITCH	T		FAC
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 1m)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 6

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 = ____
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:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ 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:

SOIL

Sampling Point: TP-101

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/1	100	—	—	—	—	LOAM	
11-18	10YR 4/3	98	10YR 5/8	2	C	M	LOAM	

[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: WETLAND BOUNDARY GOES TO DRAINAGE

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): 4"

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 9"

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks: STANDING WATER IN WETLAND @ 50' INSIDE

Appendix D
Wetland Rating Forms

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 6/13/24

Rated by C. Douglas, A. Michniak Trained by Ecology? ☒ Yes ☐ No Date of training 2007 & 2024

HGM Class used for rating Depressional & slope 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 World Imagery

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

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

X **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 (M) L	H (M) L	H (M) L	
Landscape Potential	(H) M L	(H) M L	H (M) L	
Value	(H) M L	(H) M L	H (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	X

Wetland name or number A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	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 *(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	

Wetland name or number A

HGM Classification of Wetlands in Western Washington

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

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

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

◉ NO – go to 2 ○ **YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

◉ **NO – Saltwater Tidal Fringe (Estuarine)** ○ **YES – Freshwater Tidal Fringe**

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

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

◉ NO – go to 3 ○ **YES** – The wetland class is **Flats**

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

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

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

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

◉ NO – go to 4 ○ **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

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

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

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

○ NO – go to 5 ◉ **YES –** The wetland class is **Slope**

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

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

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

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

Wetland name or number A

◉ NO – go to 6 ○ **YES** – The wetland class is **Riverine**

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

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

○ NO – go to 7 ◉ **YES** – The wetland class is **Depressional**

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

◉ NO – go to 8 ○ **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number 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. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	2
Total for D 1 Add the points in the boxes above	**9**

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

D 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? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	1
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_____ Yes = 1 No = 0	0
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? Yes = 1 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? Yes = 1 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*)? Yes = 2 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*

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

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

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

D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outletpoints = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	3
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	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? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 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.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	**3**

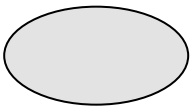
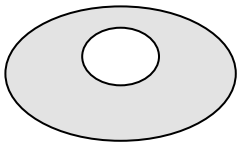
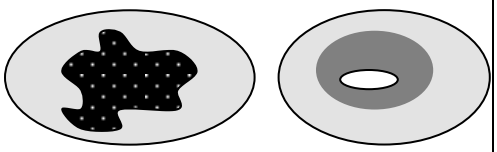
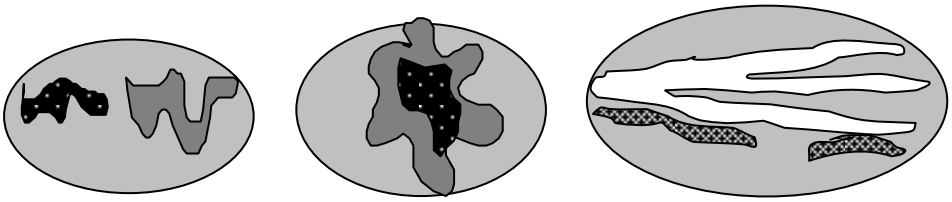
Rating of Landscape Potential If score is: ☒ **3 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

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): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 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 There are no problems with flooding downstream of the wetland. points = 0	2
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	**2**

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

Wetland name or number A

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____Aquatic bed — 4 structures or more: points = 4 ____Emergent — 3 structures: points = 2 __x__Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 __x__Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* __x__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*). __x__Permanently flooded or inundated — 4 or more types present: points = 3 __x__Seasonally flooded or inundated — 3 types present: points = 2 ____Occasionally flooded or inundated — 2 types present: points = 1 __x__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 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 	2

Wetland name or number A

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.* __X__Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). __X__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)* __X__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)* __X__Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	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?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* 40 % undisturbed habitat 5 **+** [(% moderate and low intensity land uses)/2]___ = 42.5 % 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:* 20 % undisturbed habitat 5 **+** [(% moderate and low intensity land uses)/2]___ = 22.5 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	2
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	-2
Total for H 2 Add the points in the boxes above	**3**

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	**1**

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

Wetland name or number A

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

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

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

X **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.

X **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number A

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**	◯**Cat. I**
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 un-mowed 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**	◯**Cat. I** ◯**Cat. II**
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**	◯**Cat. I**
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**	◯**Cat. I**

Wetland name or number A

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**	○ **Cat. I**
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 un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) ○ Yes = **Category I** ◉ No = **Category II**	○ **Cat. I** ○ **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 ○ Yes – Go to **SC 6.1** ◉ No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? ○ Yes = **Category I** ○ No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? ○ Yes = **Category II** ○ No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? ○ Yes = **Category III** ○ No = **Category IV**	○ **Cat I** ○ **Cat. II** ○ **Cat. III** ○ **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	NA

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CONFLUENCE
ENVIRONMENTAL COMPANY

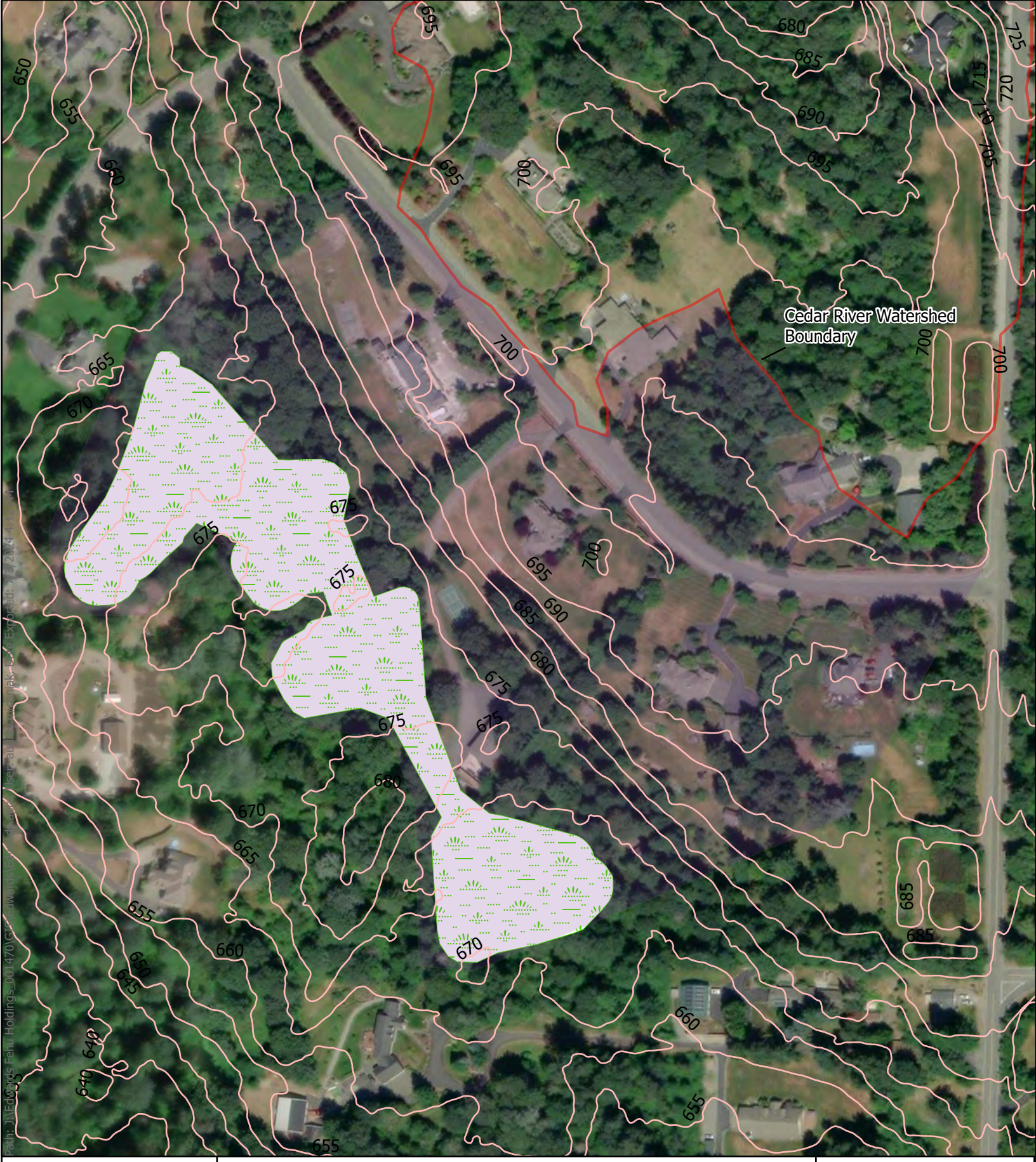
Cowardin Class
- Forested
- Scrub-shrub
- Wetland A 150 ft Analysis

Note: The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/groundcover) that each cover 20% within the Forested polygon.

N

0 150 Feet


Hydroperiod
Saturated
Seasonally flooded
Permanently flooded
Wetland A Outlet
Stream (Type N)
Note: Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing.
Areas is seasonally ponded is >1/4 total area of wetland
N
0
150
Feet
CONFLUENCE
ENVIRONMENTAL COMPANY



CONFLUENCE
ENVIRONMENTAL COMPANY

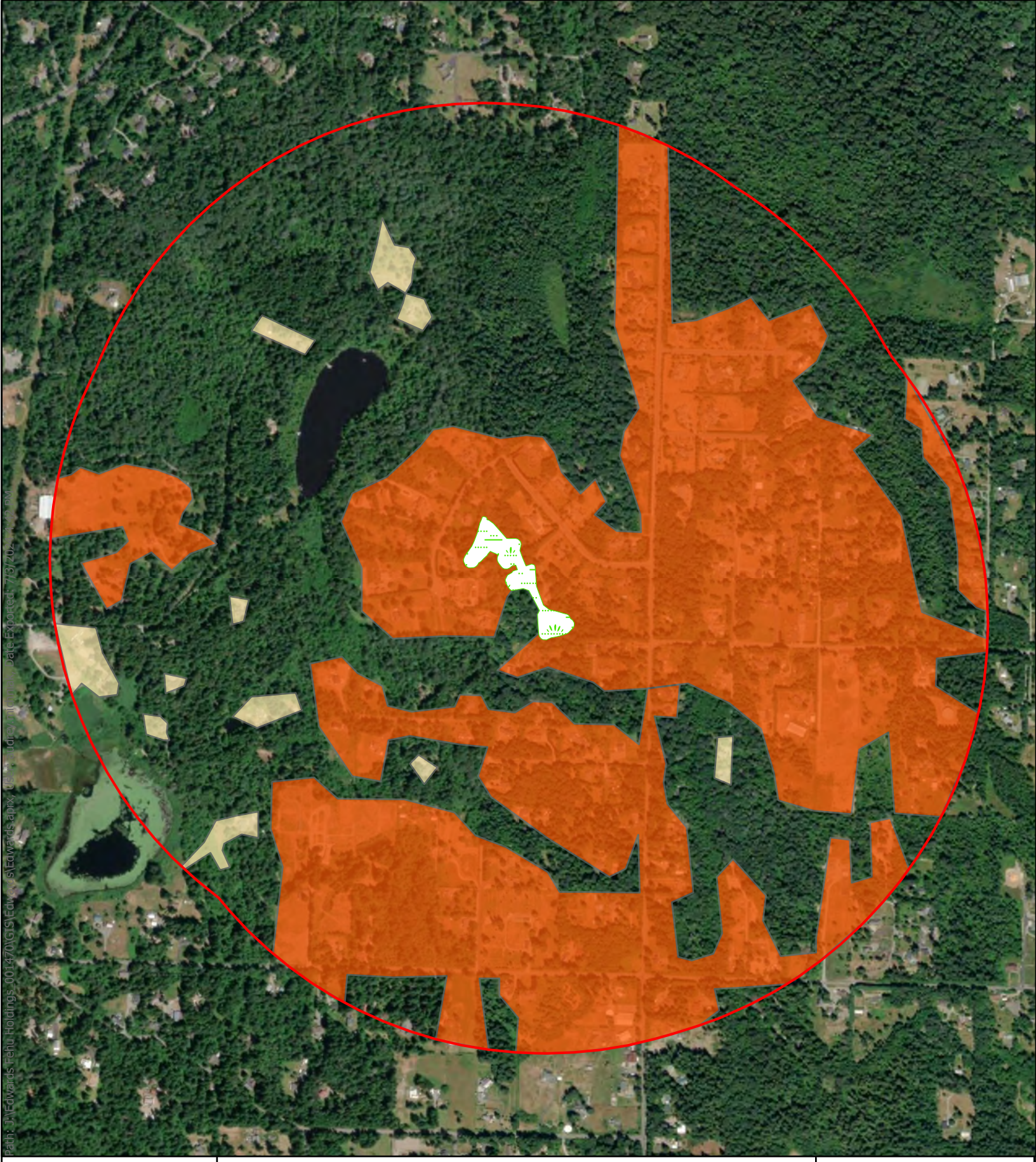
Wetland A

Contributing Basin

Note:
The area of the basin is less than 10 times the area of the unit.
There is more than 25% of the contributing basin of the wetland covered with intensive human land uses.

N

0 190 Feet



CONFLUENCE
ENVIRONMENTAL COMPANY

Wetland A
Wetland A 1km Buffer

Land Use Intensity
High Intensity
Moderate and Low Intensity

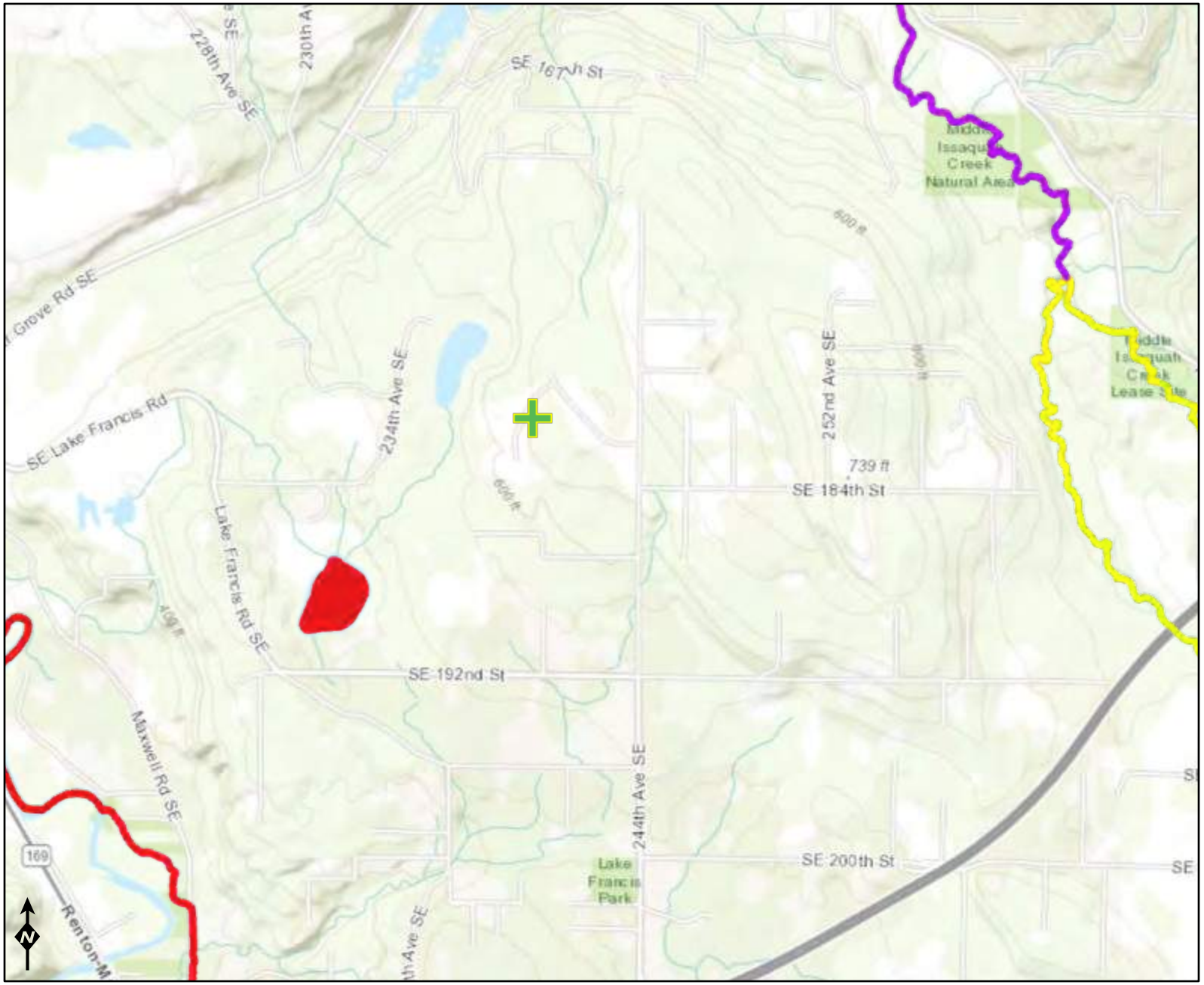
Note: Unshaded areas represent relatively undisturbed habitat.

N

0 1,000 Feet

July 3, 2024

18230 240th Ave SE, Maple Valley, WA 98038



Assessed Water/Sediment

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

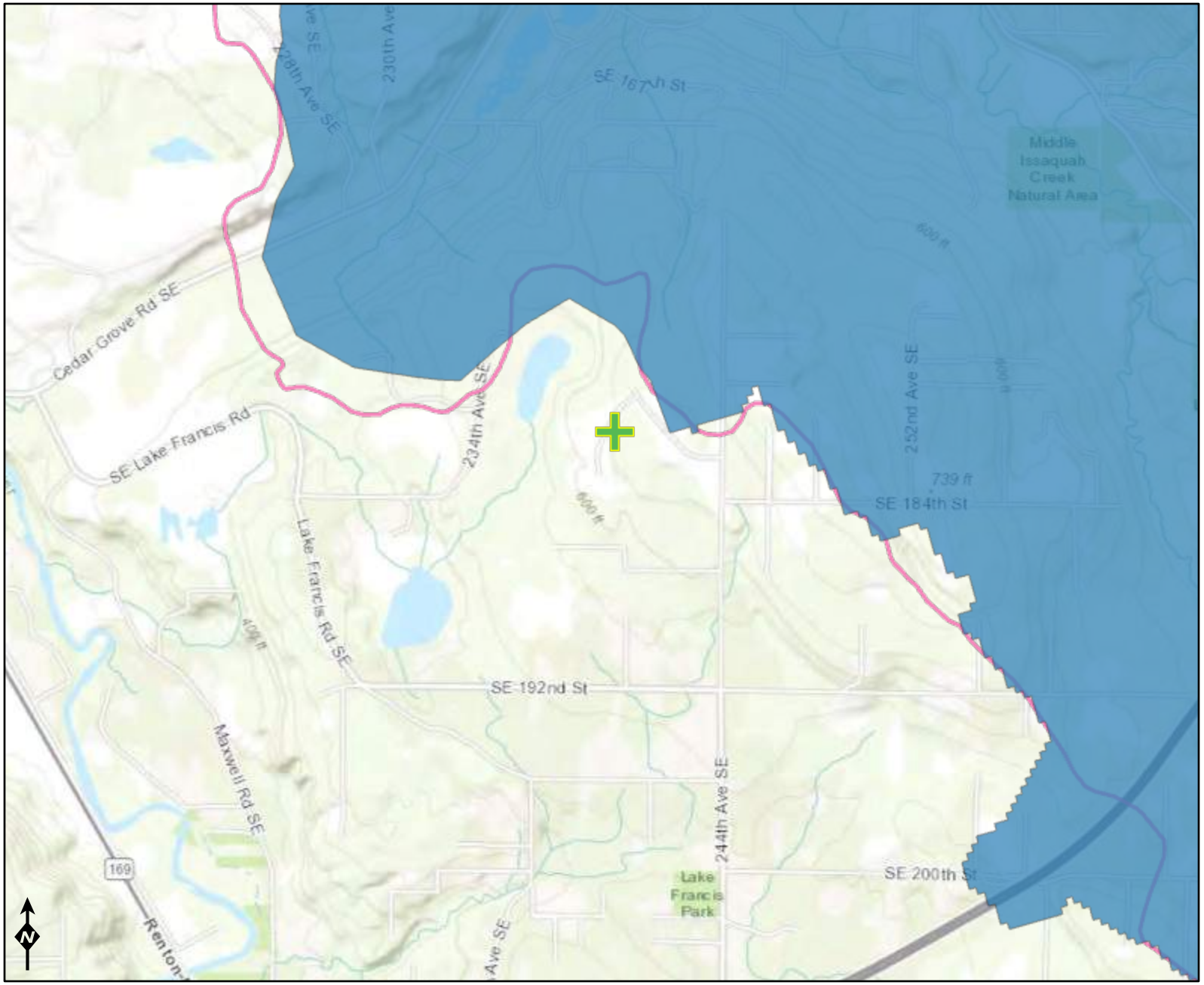
Sediment
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

Miles
0 0.23 0.45 0.9

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

July 3, 2024

TMDL



WQ Improvement Projects

- TMDL - Approved
- 4B - Approved
- STI - Approved
- ARP - Approved
- TMDL - In Development
- STI - In Development
- ARP - In Development

Subbasins (10 digit HUCs)

- HUC boundary

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

Miles
0 0.23 0.45 0.9

Appendix E
Study Area Photographs

Photo 1. Soil profile at TP-1

Photo 2. a,a,-Dipyridyl paper results at TP-1

Photo 3. Soil profile at TP-2

Photo 4. a,a,-Dipyridyl paper results at TP-2

Photo 5. Soil profile at TP-3

Photo 6. a,a,-Dipyridyl paper results at TP-3

Photo 7. Soil profile at TP-4

Photo 8. a,a,-Dipyridyl paper results at TP-4

Photo 9. Soil profile at TP-5

Photo 10. a,a,-Dipyridyl paper results at TP-5

Photo 11. Soil profile at TP-6

Photo 12. a,a,-Dipyridyl paper results at TP-6

Photo 13. Soil profile at TP-101 (Note: field flag is labeled TP-1)

Photo 14. View of TP-101 facing east (Wetland A)

Photo 15. Soil profile at TP-201 (Note field flag is labeled TP-2)

Photo 16. View of TP-201 facing south

Photo 17. Rock lined ditch facing east towards site

Photo 18. Rock lined ditch facing west towards 240th Street

Photo 19. Rock lined ditch facing east towards site

Photo 20. Rock lined ditch facing west towards 240th Avenue SE

Photo 21. Off-site Wetland A with associated stream outlet that leads to 240 Avenue SE

Photo 22. Continuation of stream along eastern portion of site.

Appendix F
Aerial Photographs

ADDC23-0440 Aerial Photos

Figure 1: 2015 aerial (pre-disturbance) showing original channel and an adjacent area of standing water.

Figure 2: 2015 Aerial showing a possible second channel

Figure 3: 2015 aerial (pre-disturbance) showing isolated inundated areas

Figure 4: 2019 aerials showing significant vegetation removal and soil disturbance beneath cottonwood trees as well as a gravel driveway and sheds that were built without permits.

Figure 5: April 1, 2021 Aerial photo showing culverted stream, stream bed impacts, and many areas of isolated standing water or saturation throughout grassy area.

Appendix G
2023 Wetland Delineation Memo

OSG O'Neill Service Group

Wetland Delineation Memorandum

To: Remy Mathonnet, Ecological reviewer, King County Permitting Division
From: Shannon Ingebright, WPIT, O'Neill Service Group
Mike Foster, PWS, O'Neill Service Group
CC: Eric Edwards, Property Owner
Project: Edwards Barn
Address: 18230 240th Ave SE Maple Valley 98038 – Parcel No. 9206700-0170
Date: September 26, 2023

INTRODUCTION

This Wetland Delineation Memorandum is in response to an Incomplete Application Notice (ADDC23-0440 – Environmental Triage RFI #1) dated August 9, 2023 from the King County Permitting Division, Department of Local Services. A site investigation was conducted by Shannon Ingebright (WPIT) on September 19, 2023 to perform a wetland determination. The determination is summarized in this memo and is intended to satisfy the request for additional information regarding site specific critical areas found within 300 feet of the proposed project.

The study area is a portion of the 3.6-acre parcel (King County Parcel No. 9206700-0170) located at 18230 240th Ave SE in King County, near Maple Valley, WA. The parcel is situated in the southeastern quarter of Section 34, Township 25 North, Range 6 East. The subject parcel is in the Madsen Creek-Cedar River Sub-watershed (12-digit HUC 171100120107) in the Cedar – Sammamish Water Resources Area (WRIA 8). The study area is a rural residential zone.

METHODS

Sampling points were identified based on the presence of wetland vegetation and geomorphic position. The sampling pits were selected to be within the area of disturbance identified in the letter. Furthermore, areas that were low in elevation and exhibited visual signs of wetland vegetation were chosen. The most likely areas to be wetland were chosen. The study area was also evaluated for the presence of fill material since the letter suggests the site may have been filled. Methodology for evaluating sampling points followed the standard protocols outlined in the sources listed below. The Atypical Method for wetland delineation was not used since vegetation and soils are indicative of previous conditions in the study area.

- Army Corps of Engineers Wetlands Delineation Manual (USACE 1987)
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, Version 2.0 (USACE 2010).
- USACE guidance for OHWM identification (USACE 2014).

Sampling points were evaluated based on observations of vegetation, soils, and hydrology in conjunction with the public domain sources listed below. Both the lawn areas and islands of Black cottonwood along 240th Avenue SE were screened for the presence of primary and secondary hydrology indicators. Wetlands were classified using the U.S. Fish and Wildlife Service (USFWS) classification system (Cowardin) (USFWS 2017; FGDC 2013) and the hydrogeomorphic classification system (HGM) (Brinson 1993). The 2020 National Plant List was used to determine plant indicator status (USACE 2020). Sampling Point locations were marked with pink pin flags.

The following public-domain sources were reviewed for information on precipitation, topography, drainage patterns, soils, vegetation, and potential or known wetlands and streams in the project vicinity.

- King County Imap Portal (King County 2023)
- Natural Resources Conservation Service (NRCS) Climate Data for King County, Renton Municipal AP Station (NRCS 2023a) (Appendix A)
- National Wetlands Inventory (NWI) maps (USFWS 2017; FGDC 2013)
- Soil Survey of King County Washington (NRCS 2023b)
- NRCS Hydric Soil List (NRCS 2023c)

RESULTS

Six data points were taken in the most representative areas. No fill was detected. The site appeared to have been recently cleared, with the soil surface remaining relatively in-tact. No major grading was evident; however some tree root masses may have been removed. Wetland Determination Data Forms are provided in Appendix B. The following Figures correspond to each sampling pit: SP-1 (Figure 1), SP-2 (Figure 2), SP-3 (Figure 3), SP-4 (Figure 4), SP-5 (Figure 5), SP-6 (Figure 6). Sampling Point 2 (SP-2) is indicative of the general conditions of the study area and is summarized below.

Grass (FAC) and soft rush (FACW) dominate SP-2 with other sampling points exhibiting 5 percent or less of small-fruited bulrush (*Scirpus microcarpus*, OBL), velvet grass (*Holcus lanatus*, FAC), hairy catsear (*Hypochaeris radicata*, FACU), herb robert (*Geranium robertianum*, FACU), and bracken fern (*Pteridium aquilinum*, FACU). SP-2 meets the dominance test for hydrophytic vegetation.

The soil is composed of three layers. The first layer (0 to 13 inches) is a very dark brown (10YR 2/2) loamy sand. The second layer (13 to 24 inches) is a dark yellowish brown (10YR 3/4) silty clay loam with 2 percent prominent redoximorphic concentrations (7.5YR 5/8). The third layer (24-31 inches) is a brown (10YR 4/3) sandy loam with 5 percent prominent redoximorphic concentrations (10YR 5/6). No hydric soil indicators are met at SP-2.

No wetland hydrologic indicators are present in SP-2. No hydrology was observed. Drier than normal precipitation conditions were present prior to the September 12, 2023 site visit (Appendix A). Light precipitation was recorded in the ten days preceding field work. But no indicators are present. Wetland hydrology indicators are not met.

DISCUSSION

Overall, the data from the six data pits suggests that the study area is not a wetland. Although redoximorphic concentrations are present, the soils are too bright to meet hydric soil indicators. The plant community meets the criteria for hydrophytic vegetation however the plant community is marginal.

The study area has been significantly altered by human means through vegetation removal. It is estimated that vegetation began to be removed in 2015. No evidence of filled material was observed. This was evidenced by the absence of decomposed organic matter and vegetation between soil layers which could indicate additional soil placement. Additionally, soil horizons were generally consistent across all sampling points even in areas that were more "lush" with facultative wet and obligate plant species. Soil surface layer removal was also not observed. Bare spots, scrapes, or the presence of straw to protect newly seeded soils on the ground surface was not identified. Overall, the plant community is marginal and does not indicate the presence of wetland conditions. The hydrology of the site is likely supported by precipitation flowing south, down the adjacent slope, and into Wetland 1 and the drainage swale. Groundwater is likely present to some extent in the wet season.

Figure 1 – Sampling Pit 1. This SP is located near the gravel driveway and was adjusted per KC comments.

Figure 2 – SP-2. This sampling pit is located approximately 30 feet from a POBA island with understory vegetation.

Figure 3 – SP-3.

Figure 4 – SP-4. This soil pit is located in a lush area where the grass is a little taller. This is the SP that was recommended to be added by the KC Ecologist.

Figure 5 – SP-5.

Figure 6 – SP-6.

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Appendix A: Comparison of Observed and Normal Precipitation

The Regional Delineation Supplement Version 2.0 (USACE 2010) recommends using methods described in Chapter 19 in Engineering Field Handbook (NRCS 2015) to determine if precipitation occurring in the three full months prior to the site visit was normal, drier than normal, or wetter than normal. Actual rainfall is compared to the normal range of the 30-year average. The following table shows this information.

Monthly precipitation data for September 12, 2023 field visit for Renton Municipal AP, Washington.

		Long-term rainfall records[a]							
	Month	3 yrs. in 10 less than	Average	3 yrs. in 10 more than	Rain fall[a]	Condition dry, wet, normal[b]	Condition Value	Month weight value	Product of previous two columns
1st prior month	AUG	0.19	0.79	0.86	0.45	N	2	3	6
2nd prior month	JULY	0.18	0.48	0.53	0.01	D	1	2	2
3rd prior month	JUNE	0.87	1.42	1.71	0.62	D	1	1	1
								Sum	**9**

[a] NRCS 2023a

[b] Conditions are considered normal if they fall within the low and high range around the average.

Note:	If sum is		Condition value:	
	6 - 9	then prior period has been drier than normal	Dry (D)	= 1
	10 - 14	then period has been normal	Normal (N)	= 2
	15 - 18	then period has been wetter than normal	Wet (W)	= 3

Conclusions: Drier than normal precipitation conditions were present prior to the September 12, 2023 site visit.

Daily Precipitation for 10 Days Preceding Fieldwork, Renton, Washington

To determine if light, moderate, or heavy precipitation occurred in the 10 days prior to field work, the 10-day total is compared to 1/3 of the monthly average precipitation for the month evaluated (NRCS 2023a).

Daily precipitation data preceding the September 12, 2023 field visit for Renton Municipal AP, Washington.

Date (20XX)	Daily Precipitation (inches)[a]
September 11	T
September 10	0.00
September 9	0.00
September 8	0.00
September 7	0.00
September 6	0.00
September 5	0.00
September 4	0.00
September 3	0.01
September 2	0.00
Sum	**0.01**

[a] NRCS 2023a

"T" values indicate a trace value was recorded.

Conclusions: Light precipitation was recorded in the ten days preceding field work.

Attachment A
Plan Sheet of Existing Wetland and Sampling Point Locations

King County
Department of Permitting
and Environmental Review

Residential Site and Storm Plan

Ref: KCC 21a.12.030

Max. Impervious Surface Allowed	156,816 SF * 20% = 31,363 SF (20%)
Max. Bldg. Height Allowed	40'–0"

Ref: KCC 21a.12.170

Min. Blg. Setback From Street	30'–0"
Min. Garage Setback From Street	20'–0"
Min. Blg. Setback From Interior	10'–0"

Permit Center validation:

- ○ Zoning
- ○ Site Review Not Applicable

Validated Signature _____

Login Initials _____ Date: _____

Engineering / Drainage Approval

Signature: _____

Date: _____

Critical Areas Approval

Signature: _____

Date: _____

Clearing / Grading Approval

Signature: _____

Date: _____

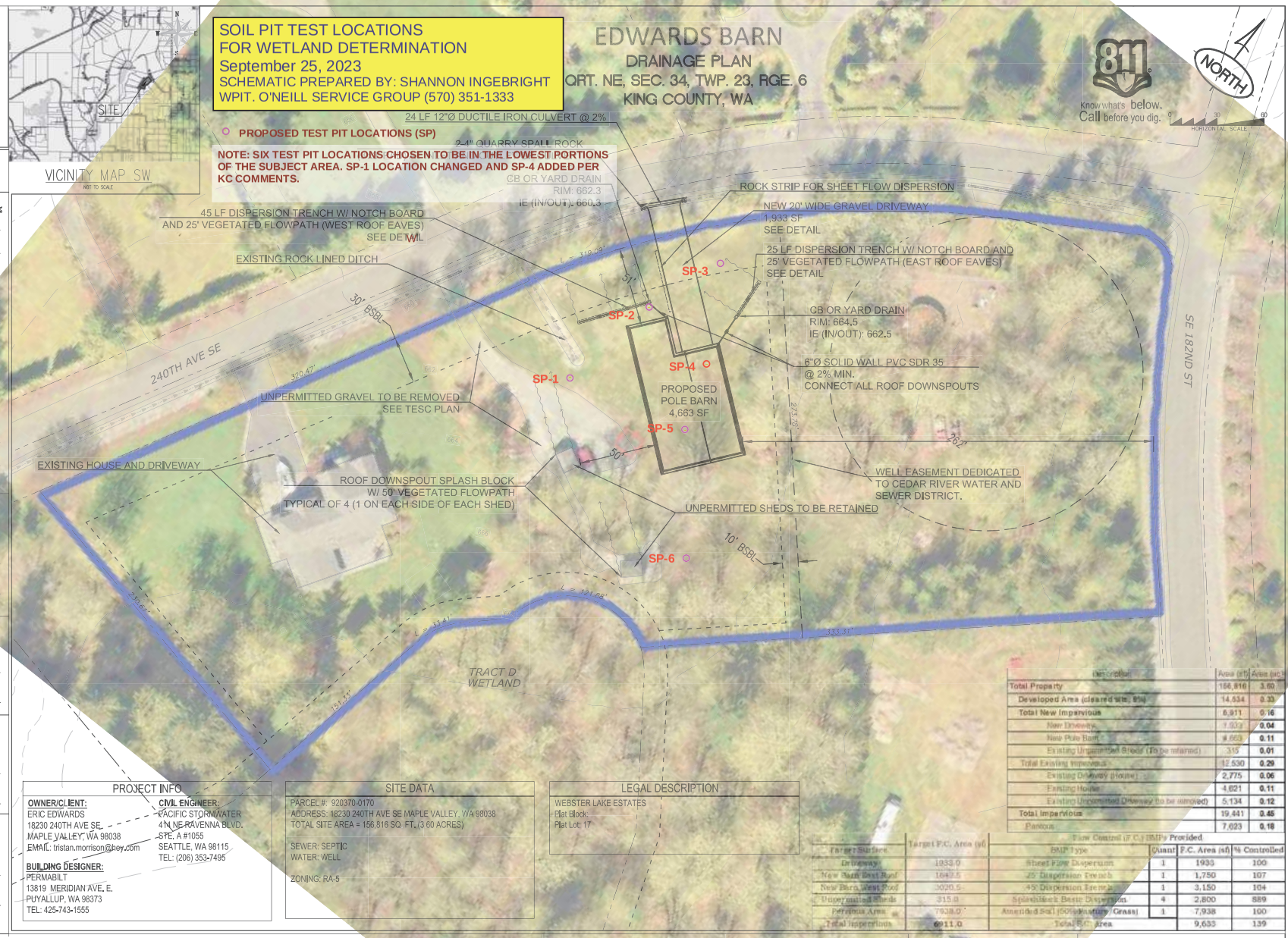
Fire Approval

Signature: _____

Date: _____

SOIL PIT TEST LOCATIONS
FOR WETLAND DETERMINATION
September 25, 2023
SCHEMATIC PREPARED BY: SHANNON INGEBRIGHT
WPIT. O'NEILL SERVICE GROUP (570) 351-1333

EDWARDS BARN
DRAINAGE PLAN
QRT. NE, SEC. 34, TWP. 23, RGE. 6
KING COUNTY, WA



Description	Area (sf)	Area (ac)
Total Property	156,816	3.60
Developed Area (cleared site, 8%)	14,634	0.33
Total New Impervious	6,911	0.16
New Driveway	1,933	0.04
New Pole Barn	4,663	0.11
Existing Unpermitted Sheds (To be retained)	315	0.01
Total Existing Impervious	12,530	0.29
Existing Driveway (House)	2,775	0.06
Existing House	4,021	0.11
Existing Unpermitted Driveway (to be removed)	5,134	0.12
Total Impervious	19,441	0.45
Pervious	7,023	0.18

Target Surface	Target F.C. Area (sf)
Driveway	1933.0
New Barn East Roof	1647.5
New Barn West Roof	3026.5
Unpermitted Sheds	315.0
Pervious Area	7938.0
Total Impervious	6911.0

Flow Control (F.C.) BMPs Provided

BMP Type	Quant	F.C. Area (sf)	% Controlled
Sheet Flow Dispersion	1	1935	100
25' Dispersion Trench	1	1,750	107
45' Dispersion Trench	1	3,150	104
Splashblock Basic Dispersion	4	2,800	889
Amended Soil (500 Basin / Grass)	1	7,938	100
Total F.C. area		9,635	139

PROJECT INFO

OWNER/CLIENT:
ERIC EDWARDS
18230 240TH AVE SE.
MAPLE VALLEY, WA 98038
EMAIL: tristan.morrison@hey.com

BUILDING DESIGNER:
PERMABILT
13819 MERIDIAN AVE. E.
PUYALLUP, WA 98373
TEL: 425-743-1555

CIVIL ENGINEER:
PACIFIC STORMWATER
414 NE RAVENNA BLVD.
STE. A #1055
SEATTLE, WA 98115
TEL: (206) 353-7495

SITE DATA

PARCEL #: 9206700-0170
ADDRESS: 18230 240TH AVE SE MAPLE VALLEY, WA 98038
TOTAL SITE AREA = 156,816 SQ. FT. (3.60 ACRES)

SEWER: SEPTIC
WATER: WELL

ZONING: RA-5

LEGAL DESCRIPTION

WEBSTER LAKE ESTATES
Plat Block:
Plat Lot: 17

Permit Number: TBD Parcel Number: 9206700-0170 Applicant Name: ERIC EDWARDS Site Address: 18230 240TH AVE SE, MAPLE VALLEY, WA 98038 Engineering Scale: 1" = 60' Sheet C1 of 6

O'Neill Service Group

Attachment B
Wetland Determination Data Forms

CONFLUENCE
ENVIRONMENTAL COMPANY