



City Council Committee Meeting Agenda

Parks and Trails Advisory Committee

This meeting will be conducted in person at Stanwood City Hall with an option for participants to join by telephone or online as well.

Connection information will be posted on the City Website

<https://www.stanwoodwa.org>

Monday, April 17, 2023, 3:00 PM

1. Call to Order & Roll Call
2. Citizen Comments
3. Approval of March 2023 Meeting Minutes
4. Church Creek Park Critical Areas Study
5. Park/Trail Updates
 - Pickleball construction
 - CCP baseball field improvements
 - Hamilton Park construction
 - Ovenell Park Public Farm proposal
 - Heritage Park Skate Park
6. Committee Member Comments

Zoom Information:

Parks and Trails Advisory Committee

Please click this URL to join:

<https://us02web.zoom.us/j/85751722998?pwd=T25lVXpSMnFXZDZGZEpHQVF6eStSdz09>

Webinar ID: 857 5172 2998

Passcode: 304123

Telephone: (253) 215-8782



**CITY OF STANWOOD
PARKS AND TRAILS ADVISORY COMMITTEE
AGENDA STAFF REPORT**

DATE: April 17, 2023
SUBJECT: PTAC Meeting Agenda Topics
FROM: Carly Ruacho, Parks Planning Manager

Item 4 – Church Creek Park Critical Areas Study

The City has received the critical areas delineation for Church Creek Park. The study was conducted by Confluence Environmental Company who has helped with critical area issues on several other park/trail projects in Stanwood. Three separate wetlands with associated buffers and a fish-bearing stream (Church Creek) were identified on the property. See attached report for more information.



CONFLUENCE

ENVIRONMENTAL COMPANY

Church Creek Park CRITICAL AREAS STUDY

Prepared for:

City of Stanwood
March 2023



Church Creek Park CRITICAL AREAS STUDY

Prepared for:

City of Stanwood Community Development
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March 2023

This report should be cited as:

Confluence (Confluence Environmental Company). 2023. Church Creek Park critical areas study. Prepared for City of Stanwood, Stanwood, Washington, by Confluence, Seattle, Washington.

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Appendix B—Wetland Delineation Methods
Appendix C—Wetland Delineation Data Forms
Appendix D—Wetland Rating Forms
Appendix E—Site Photographs

1.0 INTRODUCTION

Confluence Environmental Company (Confluence) conducted a critical areas study to assist with permitting the renovation of Church Creek Park, located east of downtown Stanwood on tax parcel 32042000301800 at 27116 72nd Avenue NW, Stanwood, Washington (Figure 1). On February 10, 13, and 27, and March 31, 2023, Confluence conducted a site investigation to determine the presence and extent of critical areas on and adjacent to the site. 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. This report discusses the results of the study.

The site encompasses Church Creek Park, which features a playground, ballfield, disc golf course, trail access to Church Creek, and a parking lot. Church Creek is along the eastern edge of the site, and a large field is to the south of the site. Church Creek Park is zoned as POS (parks and open space). The surrounding land is zoned SR 9.6 (single-family residential 9.6), SR 7.0 (single-family residential 7.0), and LI (light industrial) (City of Stanwood 2021a).

According to the WETS table analysis, precipitation in the 3 months prior to the February site visits was normal compared to historical averages (NOAA 2023).

The City of Stanwood (City) is planning to renovate Church Creek Park to increase the recreational and educational opportunities available. While the design is in development, the master plan prepared for the park renovation (City of Stanwood 2021b) identifies the following improvements and additions:

- Improvement of existing trails and paths.
- Renovation of parking lot.
- Creation of new picnic shelter/plaza space.
- Enhancement of existing and creation of new recreational facilities (baseball field and basketball/pickleball courts).
- Creation of outdoor classroom/environmental education space and forest glade recreation area.
- Wetland enhancement and other restoration opportunities, plus installation of park edge plantings.
- Additional creek viewpoints.

The purpose of this report is to help develop the site plan for the park improvements.



Figure 1. Study area

2.0 METHODS

Confluence conducted a critical areas study on the site. 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, Confluence reviewed relevant regulations and GIS databases.

Confluence reviewed Stanwood Municipal Code (SMC) to determine the standard buffer requirements for critical areas in the project vicinity.

Confluence reviewed the GIS databases listed below for the documented presence of wetlands, streams, lakes, or species listed under the Endangered Species Act (ESA) as threatened or endangered on or within 300 feet of the study area. It was necessary to search within 300 feet to determine whether buffers for off-site critical areas encroach onto the site (300 feet is the largest buffer identified in SMC).

- Snohomish County Planning and Development Services (PDS) (Snohomish County 2023)
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS 2023)
- Natural Resources Conservation Service (NRCS) Soil Survey (NRCS 2023a)
- Washington Department of Fish and Wildlife (WDFW) SalmonScape (WDFW 2023a)
- WDFW Priority Habitats and Species (PHS) (WDFW 2023b)
- Washington Department of Natural Resources (WDNR) Water Type GIS (WDNR 2023a)
- WDNR Natural Heritage Program Data Explorer (WDNR 2023b)

Results of the GIS database searches are in Appendix A.

2.2 Site Investigation

On February 10, 13, and 27, and March 31, 2023, Confluence conducted a site investigation to determine the presence or absence of critical areas on or near the property.

2.2.1 Wetlands

Wetland Identification and Delineation

Confluence identified wetlands and delineated 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). 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 on-site, sufficient indicators would be observed at any time of the year, including the driest months, to identify the wetland. Since “normal circumstances,” as defined by the Corps (1987), exist on the site, all 3 criteria must be present for an area to be determined a wetland. A more detailed description of delineation methodology is provided in Appendix B. Wetland delineation data forms completed during the site investigation are provided in Appendix C.

To confirm the presence or absence of a wetland, data were collected from representative test plots within and outside of potential wetlands. The locations of the test plots were based on the presence of visual wetland indicators (e.g., wetland vegetation, evidence of standing water) or were chosen 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). Plots that met all 3 wetland criteria were determined to be wetland plots; plots that did not meet all 3 wetland criteria were determined to be upland plots.

Once the presence of a wetland was confirmed, visual wetland indicators, such as topographic and vegetative shifts, were used to delineate the remainder of the wetland boundary. In areas with a lack of visual wetland indicators (i.e., areas with monoculture vegetation and no clear topographic break), Confluence used soil probes to determine the wetland boundary between test plots. Confluence evaluated the presence or absence of hydric soil and wetland hydrology indicators at soil probe locations to determine whether the area represented by the soil probe was wetland or upland. Soil probe locations and presence or absence of hydric soil and wetland hydrology indicators were recorded using GPS.

Confluence used the PLANTS Database (NRCS 2023b) to provide consistency in scientific naming and the 2020 National Wetland Plant List (Corps 2020) to determine the wetland indicator status of plants.

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

Off-Site Wetland Identification

To assess whether there are possible wetlands with buffers encroaching from adjacent properties, Confluence modified the methods described by the Corps (Corps 1987, 2010). The modified method identified the presence or absence of visual wetland indicators. If hydrophytic vegetation was dominant and visual indicators of wetland hydrology were observed, then hydric soils were assumed to be present.

Wetland Rating

Confluence determined wetland ratings using the Washington State Wetland Rating System for Western Washington (Hruby 2014) to assess the resource value of any wetland identified on the site. This rating system is based on the wetland functions and values, sensitivity to disturbance, rarity, and irreplaceability.

Wetland rating forms are in Appendix D.

2.2.2 *Streams/Shorelines*

The Washington State Code defines the ordinary high water mark (OHWM) as follows: “On all lakes, streams, and tidal water [the OHWM] is that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department” (RCW 90.58.030).

Washington State Department of Ecology has published a guide (Anderson et al. 2016) to interpret the code and provide guidance for field OHWM determinations. Confluence used this guidance to determine the OHWM of Church Creek in the vicinity of the study area.

Confluence identified discrete locations on the right and left banks of the stream to delineate the OHWM. Locations were chosen based on presence of field indicators of OHWM identified in Anderson et al. (2016) and shape of the channel. The location of the OHWMs were marked with ribbon flagging within the study area, and all OHWM locations within the study area were recorded using a differential GPS with sub-meter accuracy.

3.0 RESULTS

3.1 Desktop Analysis

Confluence did not conduct any delineation of the offsite properties and we are relying on publicly available information. USFWS's NWI shows a 0.97-acre freshwater emergent wetland south of the site; whose buffer could extend onto the site (USFWS 2023). If the buffer were to extend onto the site, it would be encompassed by the buffers of wetlands delineated on site, described below in Section 3.3. During the site visit, Confluence observed visual wetland indicators (i.e., standing water and hydrophytic vegetation) in the vicinity of the mapped wetland. USFWS's NWI also identifies 3 freshwater emergent wetlands north of the site, however these 3 wetlands do not exist as there is an existing housing development where these wetlands are mapped. Snohomish County's PDS wetland inventory shows a large riverine wetland that encompasses the reach of Church Creek on the site and extends off-site to the north and south. The County's remote sensing-based wetland model shows 1 additional wetland; located in the northern portion of the site and extends off-site to the north. The remote-sensing based wetland model also shows multiple off-site wetlands to the southeast and northwest of the site (Snohomish County 2023). The wetlands to the northwest do not have buffer buffers that encroach onto the property because 72nd Avenue NW separated the wetland from the property (i.e., an interrupted buffer). The wetland to the southeast is more than 300 feet from the property, therefore its buffer would not encroach onto the property. No wetlands of high conservation value are mapped on or in the vicinity of the site (WDNR 2023b).

Church Creek, a Type F (fish-bearing) perennial stream, flows south through the site (WDFW 2023a). WDNR's Water Typing GIS mapping tool identifies the on-site reach of Church Creek as Type S (shoreline of the state) (WDNR 2023a). Snohomish County shows the reaches of Church Creek to the north and south as Type S, while the on-site reach is identified as fish habitat (Type F) (Snohomish County 2023). The City does not show the on-site reach as within shoreline designation (City of Stanwood 2019). The headwaters of Church Creek are located on the west side of Interstate-5, approximately 4.5 miles northeast of the site. The creek generally flows to the southwest and joins with several tributaries, including Freedom Creek, before flowing through the site and under both State Route 532 and Pioneer Highway and eventually discharging into the Stillaguamish River.

WDFW's SalmonScape (2023a) identifies the documented presence of steelhead trout (*Oncorhynchus mykiss*), cutthroat trout (*O. clarkii*), chum salmon (*O. keta*), presumed presence of bull trout (*Salvelinus confluentus*), and the documented spawning of coho salmon (*O. kisutch*) within the on-site reach of Church Creek. WDFW also identifies the reach as gradient accessible to pink salmon (*O. gorbuscha*) and Chinook salmon (*O. tshawytscha*) (WDFW 2023a). WDFW's PHS system shows the same species identified by SalmonScape (WDFW 2023b). Of the species identified above, the Puget Sound evolutionarily significant unit (ESU) of Chinook salmon, the

Puget Sound distinct population segment (DPS) of steelhead trout, and the Puget Sound DPS of bull trout have protection under the ESA as threatened species. No other priority species or habitats are identified on or in the vicinity of the site (WDFW 2023b).

Soils on the site include Tokul-Winston gravelly loams (25-65% slopes), Pastik silt loam (0-8% slopes), and Bellingham silty clay loam. Of these only Bellingham silty clay loam is identified as hydric (NRCS 2023a).

3.2 Test Plots

During the site investigation, 7 test plots were established. Soil probes were collected to rapidly assess whether an area was upland or wetland. Test plot and soil probe locations are shown on Figure 2. Test plot characteristics are detailed below. Technical terms are explained in Appendix B. Photographs of the site are in Appendix E.

Test-Plot 1 (TP-1) was located in the northeastern portion of the site in an area dominated by western red-cedar (*Thuja plicata*), big leaf maple (*Acer macrophyllum*), salmonberry (*Rubus spectabilis*), piggy-back plant (*Tolmiea menziesii*), and lady fern (*Athyrium filix-femina*). Vegetation within TP-1 passed the Dominance Test and therefore met the wetland vegetation criterion. Soil in the top layer (0-10 inches) was a very dark gray (10YR 3/1) silty sand. Soil in the second layer (10-11 inches) was a very dark grayish brown (10YR 3/2) sand. Soil in the third layer (11-15 inches) was a very dark gray sandy silt loam with 2% yellowish brown (10YR 5/6) redoximorphic concentrations in the matrix. The soils did not meet any hydric soil indicator; therefore, the hydric soil criterion was not met. Two primary hydrology indicators—High Water Table (A2) and Saturation (A3)—were observed. The presence of at least 1 primary or 2 secondary indicators meets the wetland hydrology criterion. The absence of hydric soils when hydrology indicators are present suggests that hydrology is not present for a sufficient duration of time for hydric soil indicators to develop. Since TP-1 did not meet all 3 criteria, the area represented by TP-1 is not a wetland.

TP-3 was located in the northwest corner of the site in an area dominated by western red-cedar. Vegetation within TP-3 passed the Dominance Test and therefore met the wetland vegetation criterion. Soil in the top layer (0-15 inches) was a black (10YR 2/1) silt loam. Soil in the second layer (15-17 + inches) was a light brownish gray (2.5 6/2) with 2% dark yellowish brown (10YR 4/6) redoximorphic concentrations in the matrix. The soils met the Thick Dark Surface (A12) hydric soil indicator; therefore, the hydric soil criterion was met. Three primary hydrology indicators—High Water Table (A2), Saturation (A3), and Sparsely Vegetated Concave Surface (B8)—were observed. The presence of at least 1 primary or 2 secondary indicators meets the wetland hydrology criterion. Since TP-3 met all 3 criteria, the area represented by TP-3 is a wetland, identified as Wetland C.

TP-4 was located in the northwest corner of the site in an area dominated by western red-cedar. Vegetation within TP-4 passed the Dominance Test and therefore met the wetland vegetation criterion. Soil in the top layer (0-6 inches) was a dark brown (10YR 3/3) silt loam. Soil in the second layer (6-10 inches) was a dark yellowish brown (10YR 4/6) silt loam. The soils did not meet any hydric soil indicator; therefore, the hydric soil criterion was not met. No primary or secondary wetland hydrology indicators were observed; therefore, the wetland hydrology criterion was not met. Since TP-4 did not meet all 3 criteria, the area represented by TP-4 is not a wetland. TP-4 represents the upland area adjacent to Wetland C.

TP-8 was located in the central portion of the site east of the parking lot and playground. Vegetation was dominated by western red-cedar, red alder, and creeping buttercup. Vegetation within TP-8 passed the Dominance Test and therefore met the wetland vegetation criterion. Soil in the top layer (0-10 inches) was a very dark brown (10YR 2/2) silt loam. Soil in the second layer (10-13 inches) was a dark grayish brown (10YR 4/2) silt loam with 3% yellowish brown (10YR 5/6) redoximorphic concentrations in the matrix. The soils met the Depleted Matrix (F3) and Depleted Below Dark Surface (A11) hydric soil indicators; therefore, the hydric soil criterion was met. Three primary hydrology indicators—Surface Water (A1), High Water Table (A2), and Saturation (A3)—were observed. The presence of at least 1 primary or 2 secondary indicators meets the wetland hydrology criterion. Since TP-8 met all 3 criteria, the area represented by TP-8 is a wetland, identified as Wetland D.



Figure 2. Location of test plots/soil probes and delineated wetlands

Note: Confluence's field points were not surveyed and therefore are subject to standard GPS error.

TP-9 was located in the central portion of the site immediately north of TP-8 in an area dominated by western red-cedar. No other species were present around TP-9. Vegetation within TP-9 passed the Dominance Test and therefore met the wetland vegetation criterion. Soil in the top layer (0-3 inches) was a dark brown (10YR 3/3) silt loam. Soil in the second layer (3-7 inches) was a dark yellowish brown (10YR 3/4) silt loam. Soil in the third layer (7-13 inches) was a dark yellowish brown (10YR 4/4) silt loam. The soils did not meet any hydric soil indicator; therefore, the hydric soil criterion was not met. No primary or secondary wetland hydrology indicators were observed; therefore, the wetland hydrology criterion was not met. Since TP-9 did not meet all 3 criteria, the area represented by TP-9 is not a wetland. TP-9 represents the upland area adjacent to Wetland D.

TP-10 was located in the central portion of the site near the eastern site boundary. Vegetation was dominated by western red-cedar, salmonberry, hairy bittercress (*Cardamine hirsuta*), and piggyback plant. Vegetation within TP-10 passed the Dominance Test and therefore met the wetland vegetation criterion. Soil in the top layer (0-9 inches) was a very reddish gray (2.5YR 3/1) silt loam with 2% dark yellowish brown (10YR 4/4) redoximorphic concentrations in the matrix and pore linings. Soil in the second layer (9-12 inches) was a dark yellowish brown (10YR 4/6) silt loam. The soils met the Redox Dark Surface (F6) hydric soil indicator; therefore, the hydric soil criterion was met. One primary hydrology indicator—Saturation (A3) was observed. The presence of at least 1 primary or 2 secondary indicators meets the wetland hydrology criterion. Since TP-10 met all 3 criteria, the area represented by TP-10 is a wetland, identified as Wetland E.

TP-11 was located in the central portion of the site near the eastern site boundary just west of TP-10. Vegetation was dominated by western red-cedar. No other species were observed in the direct vicinity of the test plot. Vegetation within TP-11 passed the Dominance Test and therefore met the wetland vegetation criterion. Soil in the top layer (0-4 inches) was a dark brown (10YR 3/3) silt loam. Soil in the second layer (4-12 inches) was a light olive brown (2.5Y 5/3) silt loam. The soils did not meet any hydric soil indicator; therefore, the hydric soil criterion was not met. No primary or secondary wetland hydrology indicators were observed; therefore, the wetland hydrology criterion was not met. Since TP-11 did not meet all 3 criteria, the area represented by TP-11 is not a wetland. TP-11 represents the upland area adjacent to Wetland E.

3.3 Wetlands

TP-3, TP-8, and TP-10 represented areas in the study area that met all 3 wetland criteria. Wetlands identified and delineated on-site are described in detail below, summarized in Table 1, and shown on Figure 2.

Table 1. Wetland summary

Wetland Name	Cowardin Classification ¹	Size (square feet)	Wetland Rating				
			Water Quality	Hydrology	Habitat	Total	Category
Wetland C	PFO	4,407	7	8	3	18	III
Wetland D	PFO	64,344 ²	6	6	5	17	III
Wetland E	PFO	954 ²	5	5	5	15	IV
PFO – palustrine forested							
¹ FGDC 2013							
² The sizes reflect the on-site portions of Wetlands D and E. Both extend off-site to the south.							

3.3.1 Wetland C

Wetland C is located in the northwest corner of Church Creek Park. The wetland is 4,407 square feet. TP-3, described above in Section 3.2, represents Wetland C. The wetland is a small swale within a stand of western red-cedar trees. A footbridge provides access over the wetland unit from 72nd Avenue NW to the central and southern portions of the park. Precipitation and groundwater represent the dominant hydrologic inputs to the wetland.

According to the Cowardin classification system (FGDC 2013), Wetland C is a forested wetland, dominated by western red-cedar. East and north of the footbridge, herbaceous and shrub vegetation in the wetland is very limited. West of the footbridge, the wetland is dominated by English ivy (*Hedera helix*). The boundary of Wetland C was determined by a distinct topographic break, evidence of standing water, and presence of hydric soils. According to the 2014 Wetland Rating System (Hruby 2014), Wetland C was rated as a Category III wetland, with a water quality score of 7, hydrology score of 8, and habitat score of 3.

3.3.2 Wetland D

Wetland D is located in the central portion of Church Creek Park, east of the parking lot and continues off-site to the south. The on-site portion of the wetland is approximately 64,344 square feet. Based on visual wetland indicators observed in the field, Wetland D continues off-site to the south. TP-8, described above in Section 3.2, represents Wetland D. Precipitation and groundwater represent the dominant hydrologic inputs to the wetland. Several upland hummocks were observed within Wetland D. The eastern portion of the wetland slopes down into the Church Creek ravine. It is important to note that the disc golf course traverses the wetland.

According to the Cowardin classification system (FGDC 2013), Wetland D is a forested wetland, dominated by western red-cedar, red alder, salmonberry, and creeping buttercup. The boundary of Wetland D was determined by evidence of standing water, presence of hydric soils, and a shift in vegetation. According to the 2014 Wetland Rating System (Hruby 2014), Wetland D was rated as a Category III wetland, with a water quality score of 6, hydrology score of 6, and habitat score of 5.

3.3.3 *Wetland E*

Wetland E is located near the eastern site boundary within the Church Creek ravine. The wetland is adjacent to Church Creek, and extends off-site to the south. The on-site portion of the wetland is approximately 954 square feet. Based on visual wetland indicators observed in the field, Wetland E continues off-site to the south. TP-10, described above in Section 3.2, represents Wetland E. Wetland E is located on a slope with a gradient between 10-15%. The wetland receives hydrologic inputs from groundwater and precipitation coming off of the slope.

According to the Cowardin classification system (FGDC 2013), Wetland E is a forested wetland, dominated by western red-cedar. The understory is sparsely vegetated with sporadic sword fern (*Polystichum munitum*) and other herbaceous vegetation concentrated on upland mounds. The boundary of Wetland E was determined by evidence of standing water, presence of hydric soils, and a shift in vegetation. According to the 2014 Wetland Rating System (Hruby 2014), Wetland E was rated as a Category IV wetland, with a water quality score of 5, hydrology score of 5, and habitat score of 5.

3.3.4 *Stormwater Pond*

Confluence observed a stormwater pond on the adjacent parcel to the north. Based on the pond's location near the housing development, evidence of routine maintenance, and the signs along the fence, the feature is a man-made stormwater pond and receives runoff from the adjacent development. As a man-made feature, it would not be considered a wetland and therefore is not subject to critical areas protections.

3.4 *Streams*

Church Creek flows through the eastern portion of the site. As is described in greater detail in Section 3.1, the stream is shown as Type F (fish-bearing) by WDFW (WDFW 2023a,b). However, WDNR (2023a) shows the on-site reach of the stream as Type S (shoreline of the state) and Snohomish County (2023) shows reaches of Church Creek to the north and south as Type S and the on-site reach as fish habitat (Type F). Because the City's shoreline designation maps do not identify the on-site reach of Church Creek as within shoreline jurisdiction, Confluence assumes the appropriate stream typing designation is Type F. Multiple species of salmonids use Church Creek including ESA-listed Chinook salmon (Puget Sound ESU), steelhead trout (Puget Sound DPS), and bull trout (Puget Sound DPS).

The stream flows through the site within a relatively steep ravine. The ravine is densely vegetated with sword fern, salmonberry, and western red-cedar. Numerous pieces of large woody material were observed throughout the on-site reach of the stream. Gravel bars were also present within the stream channel. The OHWM was delineated during the site visit and is shown on Figure 3. The primary indicators used to delineate the OHWM included top of bank, evidence of scour, and a shift from hydrophytic to upland vegetation.

4.0 REGULATORY IMPLICATIONS

According to SMC, the following standard buffers apply:

- Wetland C is a Category III wetland with a low habitat score; therefore, the standard buffer is 75 feet.
- Wetland D is a Category III wetland with a moderate habitat score; therefore, the standard buffer is 125 feet.
- Wetland E is a Category IV wetland; therefore, the standard buffer is 50 feet.
- Church Creek, a Type F stream, has a standard buffer of 100 feet.

Per SMC 17.25.060, wetland buffer widths may be reduced through 2 buffer reduction strategies. One such method is buffer averaging, which allows for the reduction of the buffer width in one portion of the buffer so long as another portion of the buffer is equally increased such that there is no loss in total buffer area. Buffer averaging must meet the criteria provided in SMC 17.125.060(4)(a). Wetland buffer widths can also be reduced by 25 feet if mitigation measures provided in SMC 17.125.060(4)(b) are incorporated into the project design.

Figure 3 shows the wetlands, Church Creek, and their standard buffers. Development within these buffers or within the critical areas themselves requires compliance with SMC 17.125 (Critical Areas – Wetlands – Specific Standards) and SMC 17.130 (Critical Areas – Fish and Wildlife Habitat Conservation Areas – Specific Standards).



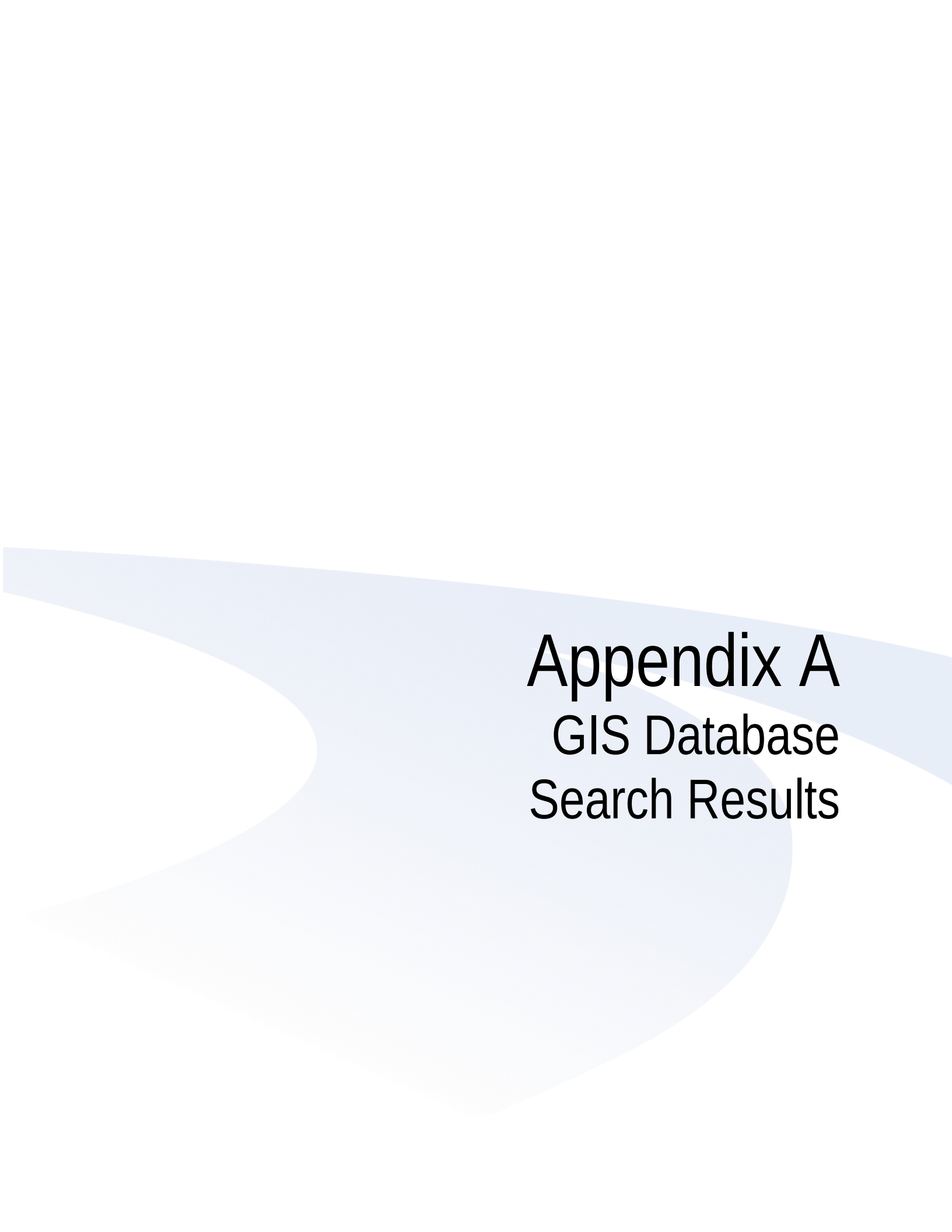
Figure 3. Critical areas and their standard buffers

Note – Confluence's field points were not surveyed and therefore are subject to standard GPS error.

5.0 REFERENCES

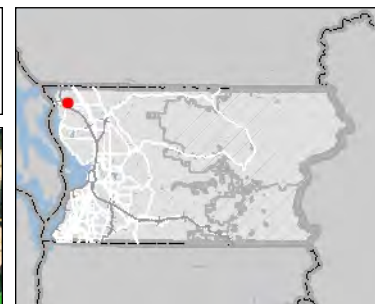
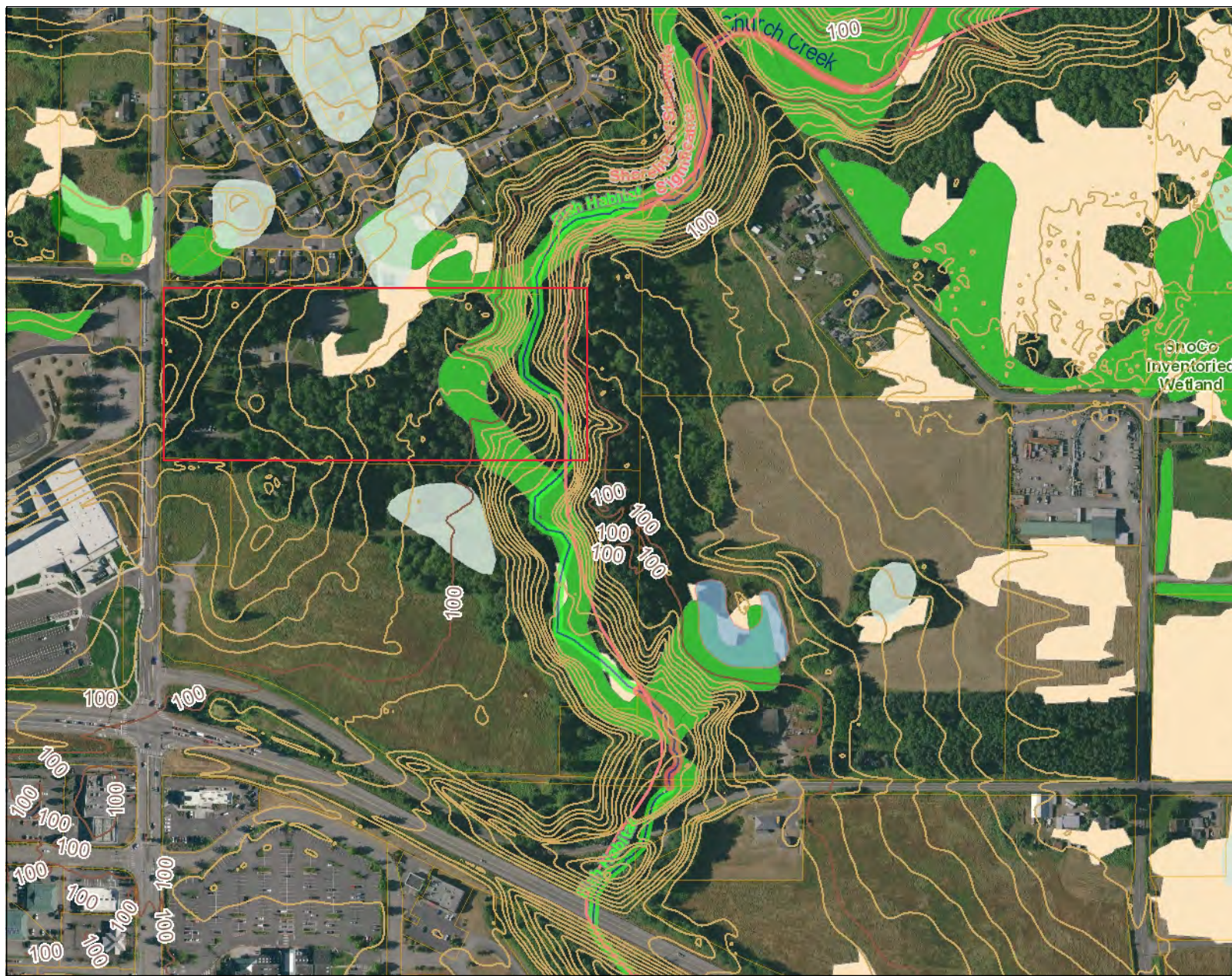
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The background features a large, abstract, light blue shape that resembles a stylized arrow or a swoosh, pointing towards the bottom right. It has a soft, gradient-like appearance.

Appendix A

GIS Database Search Results



Legend

- Snohomish County Tax Parcels
- All Fish Distributions
- Snohomish County Streams**
 - Shoreline of Statewide Significance
 - Fish Habitat
 - Non-fish Habitat Perennial
 - Non-fish Habitat Seasonal
 - Unknown, Untyped
- Snohomish County Water Bodies**
 - Shoreline of Statewide Significance
 - Fish Habitat
 - Non-fish Habitat Perennial
 - Non-fish Habitat Seasonal
 - Unknown, Untyped
- National Wetland Inventory**
 - No Data
 - Estuarine and Marine Deepwater
 - Estuarine and Marine Wetland
 - Freshwater Emergent Wetland
 - Freshwater Forested/Shrub Wetland
 - Freshwater Pond
 - Lake
 - Other
 - Riverine
- Snohomish County Wetland Inventory**
- Tulip Wetlands**
 - Critical
 - High
 - Moderate
- Planning Development and Services Wetland Inventory**
- Remote Sensing-based Wetland Model**

1:4,800



800.0 0 400.0 800.0 Feet

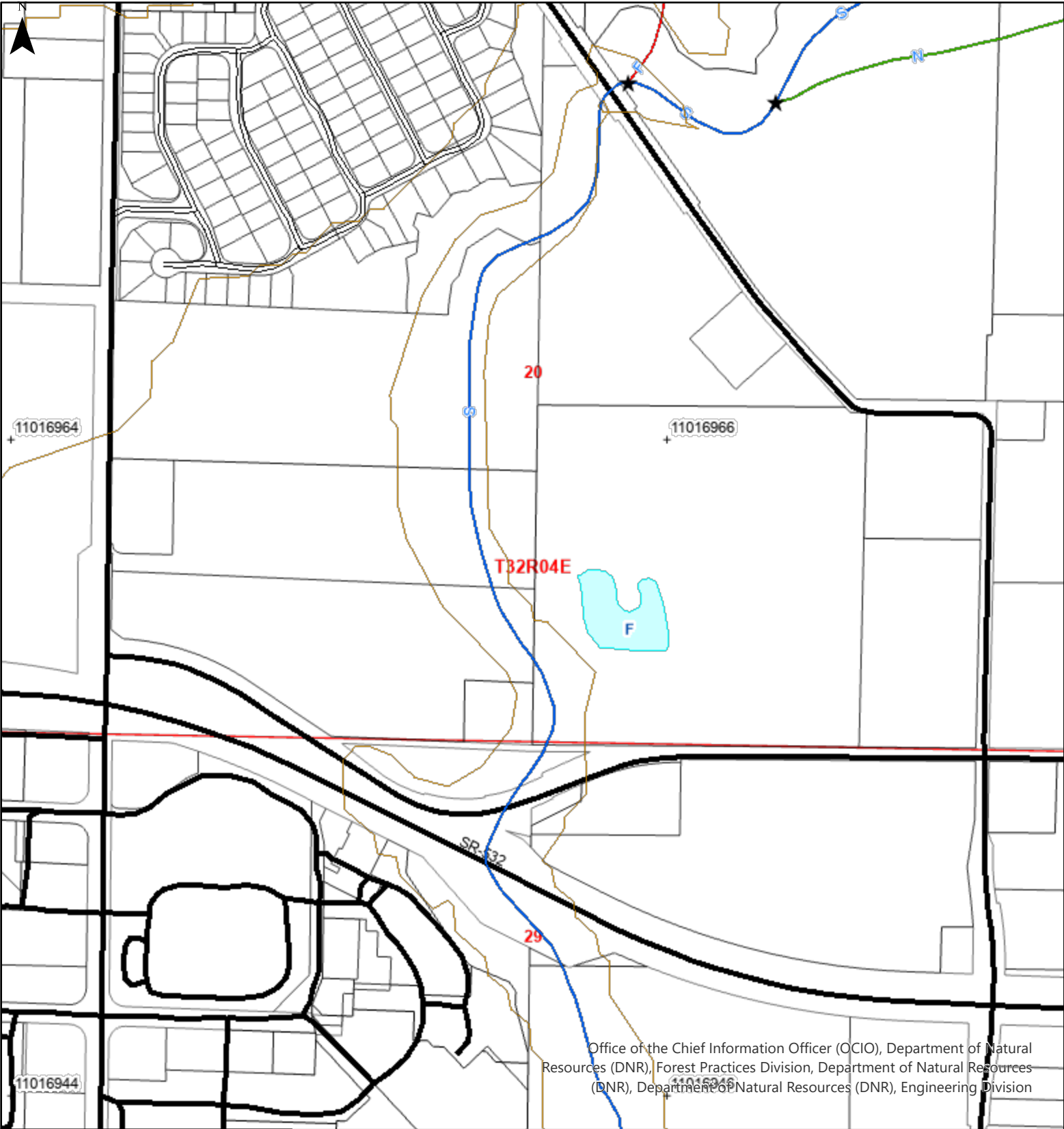
Projection: NAD_1983_StatePlane_Washington_North_FIPS_4601_Feet
Planning and Development Services, Snohomish County

All maps, data, and information set forth herein ("Data"), are for illustrative purposes only and are not to be considered an official citation to, or representation of, the Snohomish County Code. Amendments and updates to the Data, together with other applicable County Code provisions, may apply which are not depicted herein. Snohomish County makes no representation or warranty concerning the content, accuracy, currency, completeness or quality of the Data contained herein and expressly disclaims any warranty of merchantability or fitness for any particular purpose. All persons accessing or otherwise using this Data assume all responsibility for use thereof and agree to hold Snohomish County harmless from and against any damages, loss, claim or liability arising out of any error, defect or omission contained within said Data. Washington State Law, Ch. 42.56 RCW, prohibits state and local agencies from providing access to lists of individuals intended for use for commercial purposes and, thus, no commercial use may be made of any Data comprising lists of individuals contained herein.

Notes

This map was automatically generated using Geocortex Essentials.

Forest Practices Activity Map - Application # _____



Office of the Chief Information Officer (OCIO), Department of Natural Resources (DNR), Forest Practices Division, Department of Natural Resources (DNR), Department of Natural Resources (DNR), Engineering Division

Map Symbols	Additional Information	Legal Description
~~~~ Harvest Boundary  --- Road Construction  ~ Stream   RMZ / WMZ Buffers   Rock Pit      Landing   Waste Area   Clumped WRTS/GRTS   Existing Structure	Extreme care was used during the compilation of this map to ensure its accuracy. However, due to changes in data and the need to rely on outside information, the Department of Natural Resources cannot accept responsibility for errors or omissions, and therefore, there are no warranties that accompany this material.	S20 T32.0N R04.0E, S29 T32.0N R04.0E    Approximate Scale : 1:4,800   0200400800  Feet    Date: 2/2/2023  Time: 11:13 AM





# Legend

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



U.S. Fish and Wildlife Service

# National Wetlands Inventory

NWI



U.S. Fish and Wildlife Service, National Standards and Support Team,  
wetlands_team@fws.gov

February 2, 2023

## 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.





**Report Date: 02/02/2023**

**PHS Species/Habitats Overview:**

Occurence Name	Federal Status	State Status	Sensitive Location
Cutthroat	Not Warranted	N/A	No
Dolly Varden/ Bull Trout	N/A	N/A	No
Coho	N/A	N/A	No
Coho	Candidate	N/A	No
Fall Chum	N/A	N/A	No
Steelhead	Threatened	N/A	No
Resident Coastal Cutthroat	N/A	N/A	No
Winter Steelhead	N/A	N/A	No
Freshwater Emergent Wetland	N/A	N/A	No
Freshwater Forested/Shrub Wetland	N/A	N/A	No

PHS Species/Habitats Details:

Cutthroat	
Scientific Name	<i>Oncorhynchus clarki</i>
Priority Area	Occurrence
Site Name	Church Creek
Accuracy	NA
Notes	LLID: 1223515482351, Stock Name: Stillaguamish Coastal Cutthroat, Run: Unspecified, Status: Healthy
Source Record	7340
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Not Warranted
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines



Dolly Varden/ Bull Trout	
Scientific Name	<i>Salvelinus malma/S. confluentus</i>
Priority Area	Occurrence/Migration
Site Name	Church Creek
Accuracy	NA
Notes	LLID: 1223515482351, Fish Name: Bull Trout, Run Time: Unknown or not Applicable, Life History: Unknown
Source Record	42657
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Coho	
Scientific Name	<i>Oncorhynchus kisutch</i>
Priority Area	Breeding Area
Site Name	Church Creek
Accuracy	NA
Notes	LLID: 1223515482351, Fish Name: Coho Salmon, Run Time: Unknown or not Applicable, Life History: Anadromous
Source Record	42654
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Coho	
Scientific Name	<i>Oncorhynchus kisutch</i>
Priority Area	Occurrence
Site Name	Church Creek
Accuracy	NA
Notes	LLID: 1223515482351, Stock Name: Stillaguamish Coho, Run: Unspecified, Status: Healthy
Source Record	3060
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Candidate
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Fall Chum	
Scientific Name	<i>Oncorhynchus keta</i>
Priority Area	Occurrence/Migration
Site Name	Church Creek
Accuracy	NA
Notes	LLID: 1223515482351, Fish Name: Chum Salmon, Run Time: Fall, Life History: Anadromous
Source Record	42651
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Steelhead	
Scientific Name	<i>Oncorhynchus mykiss</i>
Priority Area	Occurrence
Site Name	Church Creek
Accuracy	NA
Notes	LLID: 1223515482351, Stock Name: Stillaguamish Winter Steelhead, Run: Winter, Status: Depressed
Source Record	6091
Source Dataset	SASI
Source Name	Not Given
Source Entity	WDFW Fish Program
Federal Status	Threatened
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Resident Coastal Cutthroat	
Scientific Name	<i>Oncorhynchus clarki</i>
Priority Area	Occurrence/Migration
Site Name	Church Creek
Accuracy	NA
Notes	LLID: 1223515482351, Fish Name: Cutthroat Trout, Run Time: Unknown or not Applicable, Life History: Unknown
Source Record	42648
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines



Winter Steelhead	
Scientific Name	<i>Oncorhynchus mykiss</i>
Priority Area	Occurrence/Migration
Site Name	Church Creek
Accuracy	NA
Notes	LLID: 1223515482351, Fish Name: Steelhead Trout, Run Time: Winter, Life History: Anadromous
Source Record	42660
Source Dataset	SWIFD
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
More Info	<a href="http://wdfw.wa.gov/wlm/diversty/soc/soc.htm">http://wdfw.wa.gov/wlm/diversty/soc/soc.htm</a>
Geometry Type	Lines

Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1C
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

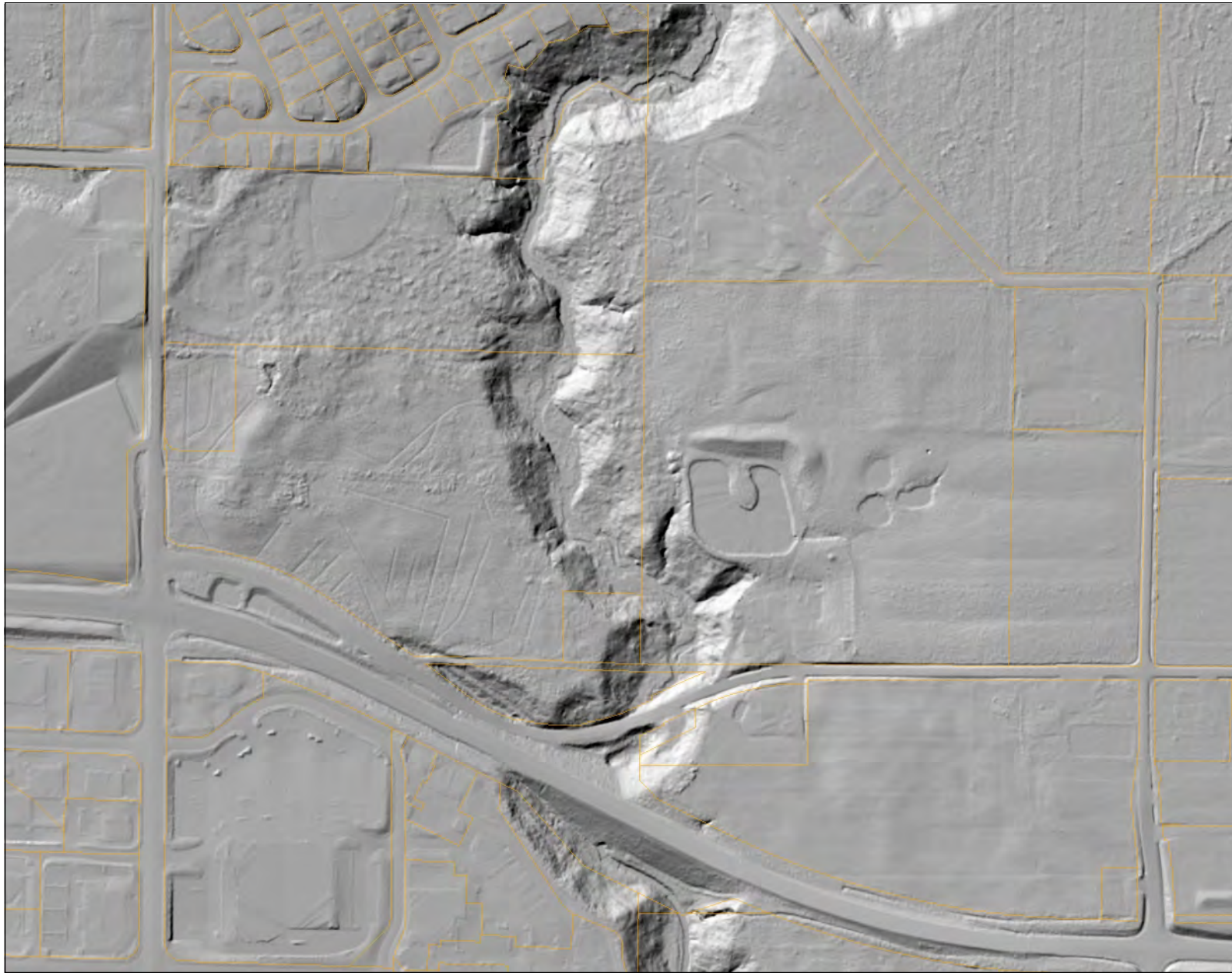
Freshwater Forested/Shrub Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Forested/Shrub Wetland - NWI Code: PFOC
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html">http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html</a>
Geometry Type	Polygons

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necessary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.



## Legend

 Snohomish County Tax Parcels



1:4,800



800.0 0 400.0 800.0 Feet

Projection: NAD_1983_StatePlane_Washington_North_FIPS_4601_Feet  
Planning and Development Services, Snohomish County

All maps, data, and information set forth herein ("Data"), are for illustrative purposes only and are not to be considered an official citation to, or representation of, the Snohomish County Code. Amendments and updates to the Data, together with other applicable County Code provisions, may apply which are not depicted herein. Snohomish County makes no representation or warranty concerning the content, accuracy, currency, completeness or quality of the Data contained herein and expressly disclaims any warranty of merchantability or fitness for any particular purpose. All persons accessing or otherwise using this Data assume all responsibility for use thereof and agree to hold Snohomish County harmless from and against any damages, loss, claim or liability arising out of any error, defect or omission contained within said Data. Washington State Law, Ch. 42.56 RCW, prohibits state and local agencies from providing access to lists of individuals intended for use for commercial purposes and, thus, no commercial use may be made of any Data comprising lists of individuals contained herein.

## Notes

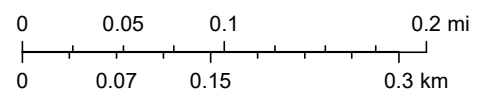
This map was automatically generated using Geocortex Essentials.

# WDFW SalmonScape - all species



February 2, 2023

1:9,028



- Unknown
- Partial Fish Passage Blockage
- Not a barrier
- All SalmonScape Species

Restoration Division of the DFW Habitat Program, Bureau of Land Management, Esri Canada, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA, USGS/NHD, Dale Gombert (WDFW), WDFW



# SalmonScape - Bull Trout



February 2, 2023

1:9,028

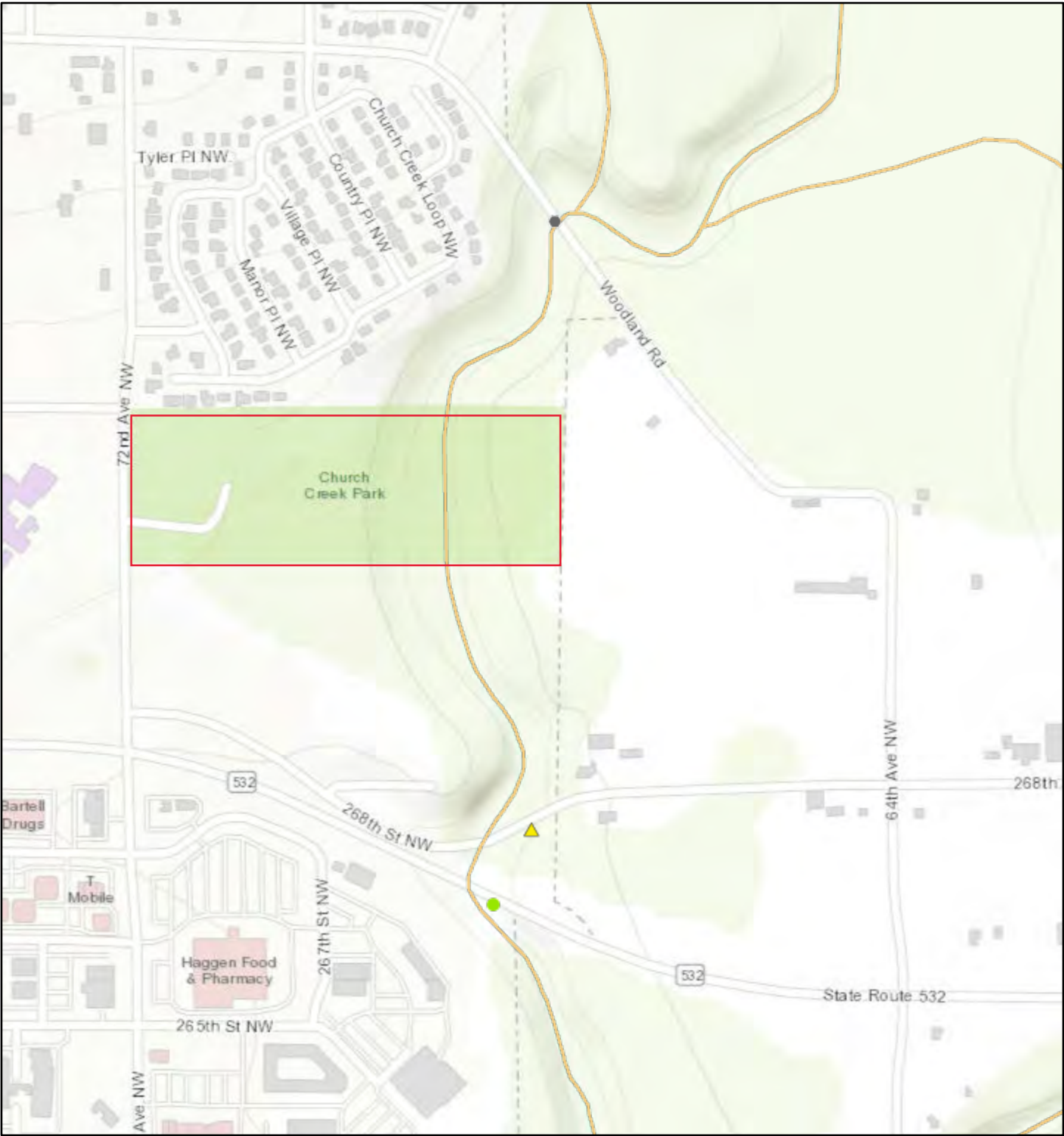
- Unknown
- ▲ Partial Fish Passage Blockage
- Not a barrier

Bull Trout

— Presumed Presence

Restoration Division of the DFW Habitat Program, Bureau of Land Management, Esri Canada, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA, WDFW

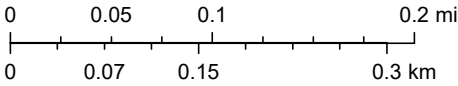
# SalmonScape - Chinook



February 2, 2023

1:9,028

- Unknown
  - Partial Fish Passage Blockage
  - Not a barrier
- Fall Chinook Streams
- Gradient Accessible



Restoration Division of the DFW Habitat Program, Bureau of Land Management, Esri Canada, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA, WDFW

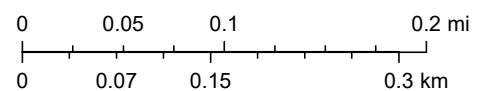
# SalmonScape - chum



February 2, 2023

1:9,028

- Unknown
- ▲ Partial Fish Passage Blockage
- Not a barrier
- Documented Presence
- Gradient Accessible



Restoration Division of the DFW Habitat Program, Bureau of Land Management, Esri Canada, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA, WDFW



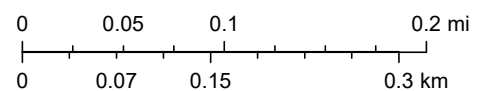
# SalmonScape - Coho



February 2, 2023

1:9,028

- Unknown
  - Partial Fish Passage Blockage
  - Not a barrier
- Coho Streams
- Documented Spawning
  - Gradient Accessible



Restoration Division of the DFW Habitat Program, Bureau of Land Management, Esri Canada, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA, WDFW



# SalmonScape - Pink



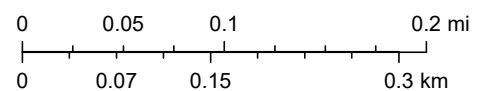
February 2, 2023

1:9,028

- Unknown
- Partial Fish Passage Blockage
- Not a barrier

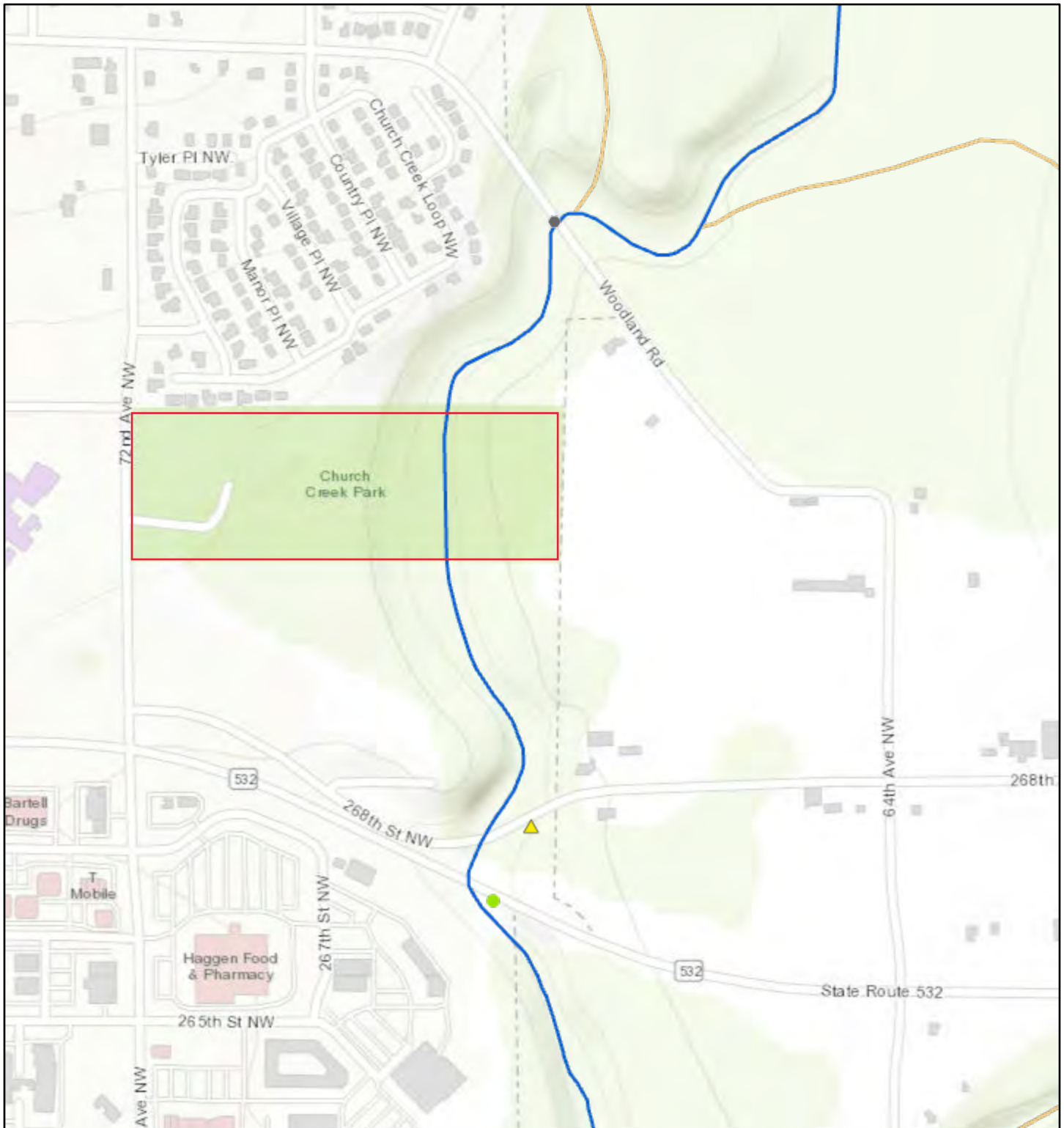
Pink Salmon (Odd Year) Streams

Gradient Accessible



Restoration Division of the DFW Habitat Program, Bureau of Land Management, Esri Canada, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA, WDFW

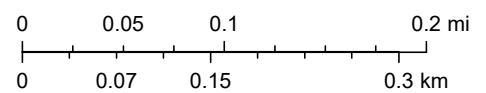
# SalmonScape - Steelhead



February 2, 2023

1:9,028

- Unknown
- ▲ Partial Fish Passage Blockage
- Not a barrier
- Winter Steelhead Streams
  - Documented Presence
  - Gradient Accessible



Restoration Division of the DFW Habitat Program, Bureau of Land Management, Esri Canada, Esri, HERE, Garmin, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA, WDFW



# WA Wetlands of High Conservation Value



2/2/2023, 11:07:13 AM

 Counties

1:9,028  
0 0.05 0.1 0.2 mi  
0 0.07 0.15 0.3 km

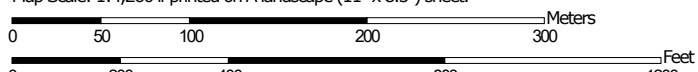
Maxar



# Soil Map—Snohomish County Area, Washington (WSS)



Map Scale: 1:4,260 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



**Natural Resources  
Conservation Service**

Web Soil Survey  
National Cooperative Soil Survey

2/2/2023  
Page 1 of 3



# Soil Map—Snohomish County Area, Washington (WSS)

## 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: Snohomish County Area, Washington

Survey Area Data: Version 24, Sep 8, 2022

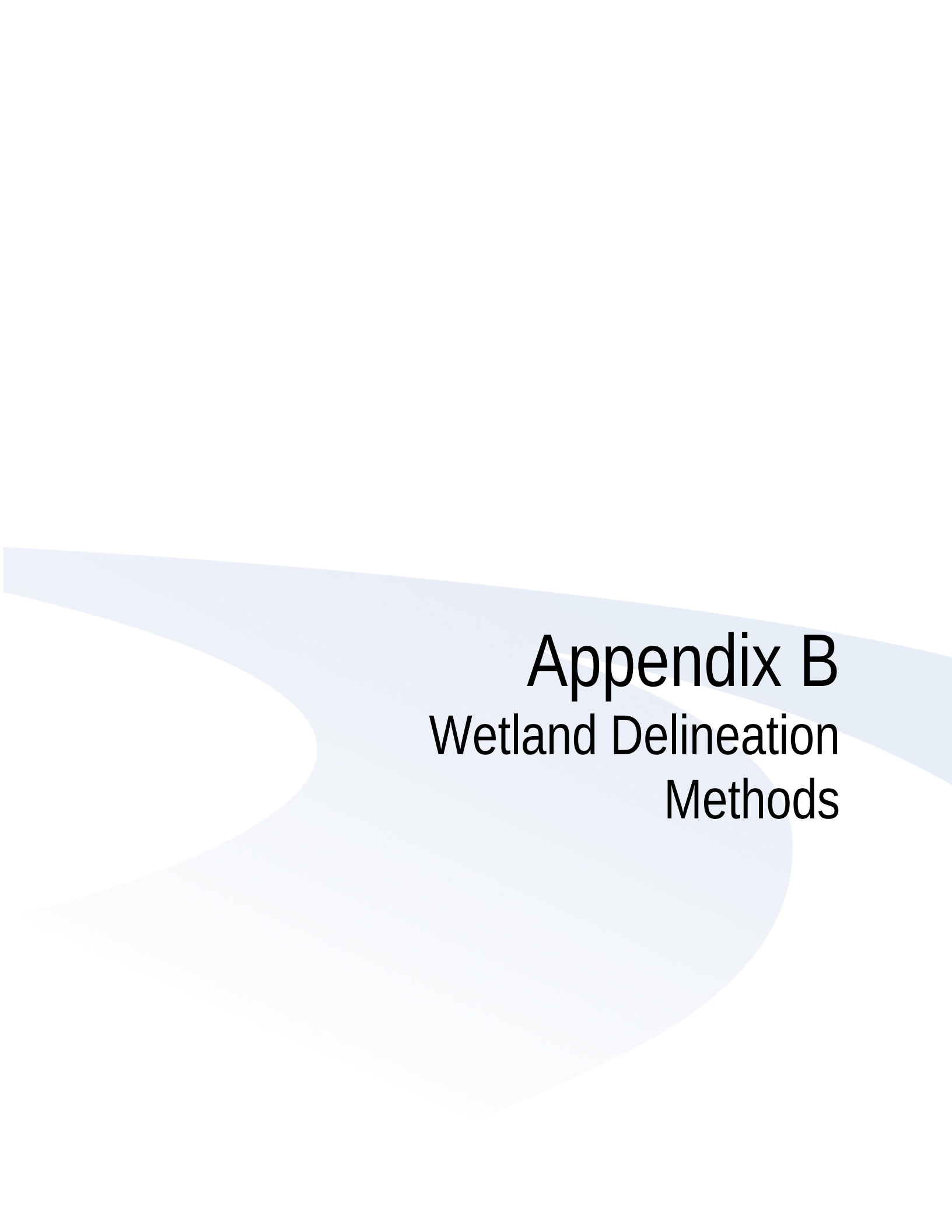
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 2, 2018—Sep 25, 2018

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
7	Bellingham silty clay loam	31.3	45.7%
39	Norma loam	1.1	1.7%
47	Pastik silt loam, 0 to 8 percent slopes	18.3	26.7%
77	Tokul-Winston gravelly loams, 25 to 65 percent slopes	17.7	25.9%
<b>Totals for Area of Interest</b>		<b>68.5</b>	<b>100.0%</b>

An abstract, light blue graphic element that resembles a stylized, flowing shape or a large, soft-edged arrow pointing towards the right. It is positioned in the lower half of the page, behind the text.

# Appendix B

## Wetland Delineation Methods



Church Creek Park Critical Areas Study: Appendix B

CONFLUENCE ENVIRONMENTAL COMPANY  
WETLAND DELINEATION METHODS

Prepared by:

Confluence Environmental Company  
2023

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2.2	Hydric Soils.....	3
2.3	Hydrology .....	4
3.0	REFERENCES.....	5

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 2023) 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 2023). The National Wetland Inventory is also researched to determine if wetlands have previously been identified on the property (USFWS 2023).

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, 4 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  $\geq 5$ , chroma = 1, with or without redoximorphic features
- Value  $\geq 6$ , chroma = 1 or 2, with or without redoximorphic features
- Value of 4 or 5, chroma = 2,  $\geq 2\%$  distinct or prominent redoximorphic features
- Value of 4, chroma = 1,  $\geq 2\%$  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  $\leq 2$ , which starts within 12 inches of the surface and is at least 6 inches thick. Layers above the depleted layer must have a value  $\leq 3$ , and a chroma  $\leq 2$ .
- **A12—Thick Dark Surface.** A soil layer with a depleted matrix, with 60% or more chroma of  $\leq 2$ , which starts 12 inches or more below the soil surface and is at least 6 inches thick. From 0-12 inches, layers must have a value  $\leq 2.5$ , and a chroma  $\leq 1$ . Any remaining layers above the depleted layer must have a value  $\leq 3$ , and a chroma  $\leq 1$ .
- **F3—Depleted Matrix.** A soil layer that has a depleted matrix with 60% or more chroma of  $\leq 2$ , with a thickness of either:
  - 2 inches, if entirely within the upper 6 inches of soil surface, or
  - 6 inches, starting within 10 inches of soil surface.
- **F6—Redox Dark Surface.** A soil layer at least 4 inches thick, entirely within the upper 12 inches of the soil with:
  - matrix value  $\leq 3$ , chroma  $\leq 1$ , and 2% or more distinct or prominent redoximorphic concentrations, or
  - matrix value  $\leq 3$ , chroma  $\leq 2$ , and 5% or more distinct or prominent redoximorphic concentrations.

## 2.3 Hydrology

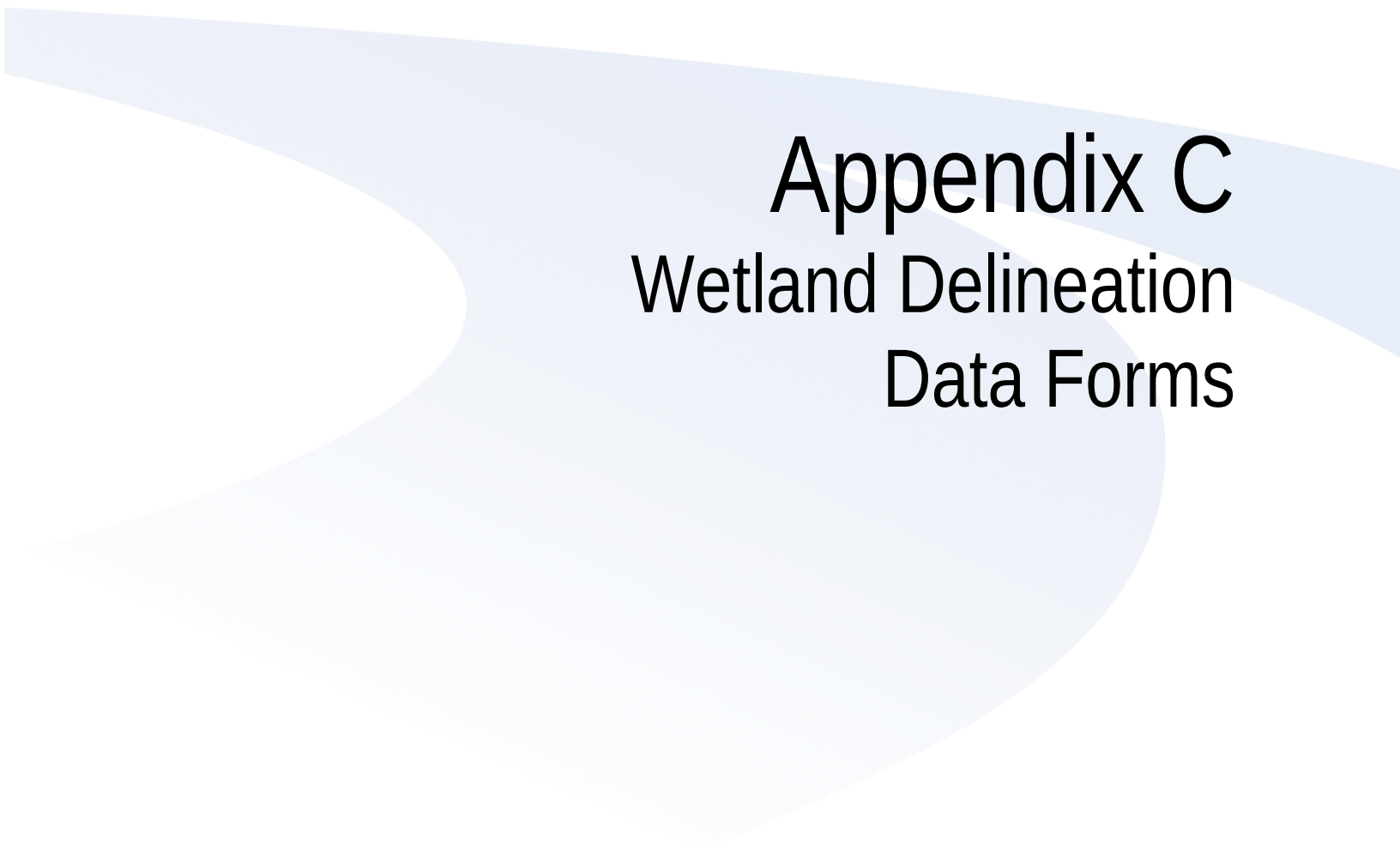
Wetland hydrology is the broadest criterion and has to do with signs of saturation and inundation in the test plot. While hydrophytic vegetation and hydric soils are the result of hydrology, they remain even during the dry season, whereas wetland hydrology can be less apparent or absent during the dry 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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An abstract, light blue graphic element that resembles a stylized, flowing shape or a large, soft-edged arrow pointing towards the right. It is positioned in the lower half of the page, behind the text.

# Appendix C

## Wetland Delineation Data Forms



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

Project/Site: Church Creek Park City/County: Stanwood Sampling Date: 2/10/23  
 Applicant/Owner: City of Stanwood State: WA Sampling Point: TP-1  
 Investigator(s): AHM, NAD Section, Township, Range: S20 T32N R4E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1  
 Subregion (LRR): A Lat: 48.243525 Long: -122.327787 Datum: WGS 84  
 Soil Map Unit Name: Tukul-winston gravelly loam (25-65%) NWI classification: NA  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: <u>TP located adjacent to LB of Church Creek</u>		

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)
1. <u>Western red cedar</u>	<u>30</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>Big Leaf Maple</u>	<u>60</u>	<input checked="" type="checkbox"/>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>90</u> = Total Cover				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 = _____
Sapling/Shrub Stratum (Plot size: <u>5m</u> )				
1. <u>Salmonberry</u>	<u>25</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>25</u> = Total Cover				
Herb Stratum (Plot size: <u>1m</u> )				
1. <u>Piggyback Plant</u>	<u>10</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>Lady fern</u>	<u>15</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
<u>25</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>5m</u> )				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>70</u>				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
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		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR 3/1	100					silty sand	
10-14	10YR 3/2	100					sand	
14-15+	10YR 3/1	98	10YR 5/6	2	C	M	sandy silt loam	

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

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

Indicators for Problematic Hydric Soils³:

- |                                                            |                                                                   |
|------------------------------------------------------------|-------------------------------------------------------------------|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

## HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes ☒ No _____ Depth (inches): 10"

Saturation Present? Yes ☒ No _____ Depth (inches): 0"

(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No _____

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

Remarks:

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

Project/Site: Church Creek Park City/County: Stanwood Sampling Date: 3/31/23  
 Applicant/Owner: City of Stanwood State: WA Sampling Point: TP-3  
 Investigator(s): NAD Section, Township, Range: S20 T32N R9E  
 Landform (hillslope, terrace, etc.): — Local relief (concave, convex, none): concave Slope (%): 0  
 Subregion (LRR): A Lat: 48.24276439 Long: -122.32969468 Datum: NAD83  
 Soil Map Unit Name: Bellingham silty clay 10am NWI classification: 1A  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation —, Soil —, or Hydrology — significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation —, Soil —, or Hydrology — naturally problematic? (If needed, explain any answers in Remarks.)

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

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
1. <u>western red cedar</u>	<u>80</u>	<input checked="" type="checkbox"/>	<u>FAC</u>		
2. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
3. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
4. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
= Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>—</u> Multiply by: <u>—</u> OBL species <u>—</u> x 1 = <u>—</u> FACW species <u>—</u> x 2 = <u>—</u> FAC species <u>—</u> x 3 = <u>—</u> FACU species <u>—</u> x 4 = <u>—</u> UPL species <u>—</u> x 5 = <u>—</u> Column Totals: <u>—</u> (A) <u>—</u> (B) Prevalence Index = B/A = <u>—</u>	
Sapling/Shrub Stratum (Plot size: <u>5m</u> )	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
2. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
3. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
= Total Cover					
Herb Stratum (Plot size: <u>1m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
1. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
2. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
3. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
4. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
5. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
6. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
7. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
8. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
9. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
10. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
= Total Cover					
Woody Vine Stratum (Plot size: <u>5m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
1. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
2. <u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>		
= Total Cover					
% Bare Ground in Herb Stratum <u>—</u>					
Remarks: <u>no shrubs or herbaceous veg. observed</u>					



## 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		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-15	10YR 2/1	100				silt loam	
15-17	2.5Y 6/2	98	10YR 4/6	2	C	M	silt loam

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

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

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

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

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: _____

## HYDROLOGY

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes ☒ No ☐ Depth (inches): 1

Water Table Present? Yes ☒ No ☐ Depth (inches): 5"

Saturation Present? Yes ☒ No ☐ Depth (inches): 0"

(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks: standing water w/in ~2 ft of TP



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

Project/Site: Church Creek Park City/County: Stanwood Sampling Date: 3/31/23  
 Applicant/Owner: City of Stanwood State: WA Sampling Point: TP-4  
 Investigator(s): NAD Section, Township, Range: C20 T32N R7E  
 Landform (hillslope, terrace, etc.): — Local relief (concave, convex, none): CONCAVE Slope (%): 2-5%  
 Subregion (LRR): A Lat: 48.24280374 Long: -122.32962321 Datum: WGS 84  
 Soil Map Unit Name: Bellingham silty clay 10am NWI classification: WA  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation —, Soil —, or Hydrology — significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation —, Soil —, or Hydrology — naturally problematic? (If needed, explain any answers in Remarks.)

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

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>western red cedar</u>	<u>100</u>	<input checked="" type="checkbox"/>	<u>PAC</u>	
2. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
3. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
4. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
<b>Sapling/Shrub Stratum (Plot size: <u>5m</u>)</b> <u>100</u> = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: <u>—</u> Multiply by: <u>—</u> OBL species <u>—</u> x 1 = <u>—</u> FACW species <u>—</u> x 2 = <u>—</u> FAC species <u>—</u> x 3 = <u>—</u> FACU species <u>—</u> x 4 = <u>—</u> UPL species <u>—</u> x 5 = <u>—</u> Column Totals: <u>—</u> (A) <u>—</u> (B) Prevalence Index = B/A = <u>—</u>
1. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
2. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
3. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
4. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
<b>Herb Stratum (Plot size: <u>1m</u>)</b> <u>—</u> = Total Cover				<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
2. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
3. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
4. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
<b>Woody Vine Stratum (Plot size: <u>5m</u>)</b> <u>—</u> = Total Cover				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
2. <u>—</u>	<u>—</u>	<input type="checkbox"/>	<u>—</u>	
<b>% Bare Ground in Herb Stratum</b> <u>100</u> = Total Cover				
Remarks: <u>TP located in WRC stand</u>				

Sampling Point: TP-4

HYDROLOGYUS Army Corps of Engineers

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

Project/Site: Church Creek Park City/County: Stanwood Sampling Date: 2/13/23  
 Applicant/Owner: City of Stanwood State: WA Sampling Point: TP-8  
 Investigator(s): AHM, NAD Section, Township, Range: S20 T32 N R4E  
 Landform (hillslope, terrace, etc.): — Local relief (concave, convex, none): Concave Slope (%): 0-1  
 Subregion (LRR): A Lat: 48.241969 Long: -122.327941 Datum: WGS 84  
 Soil Map Unit Name: Pastik silt 10 am (0-8 y. slope) NWI classification: NA  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Western red cedar</u>	<u>20</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. <u>red alder</u>	<u>50</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. <u>—</u>				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
4. <u>—</u>				Prevalence Index worksheet:
<u>70</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>5m</u> )				
1. <u>—</u>				
2. <u>—</u>				
<u>—</u> = Total Cover				Total % Cover of: <u>—</u> Multiply by: <u>—</u>
Herb Stratum (Plot size: <u>1m</u> )				OBL species <u>—</u> x 1 = <u>—</u>
1. <u>creeping Interscup</u>	<u>60</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	FACW species <u>—</u> x 2 = <u>—</u>
2. <u>poa sp.</u>	<u>10</u>		<u>FAC</u>	FAC species <u>—</u> x 3 = <u>—</u>
3. <u>—</u>				FACU species <u>—</u> x 4 = <u>—</u>
4. <u>—</u>				UPL species <u>—</u> x 5 = <u>—</u>
5. <u>—</u>				Column Totals: <u>—</u> (A) <u>—</u> (B)
6. <u>—</u>				Prevalence Index = B/A = <u>—</u>
7. <u>—</u>				Hydrophytic Vegetation Indicators:
8. <u>—</u>				
9. <u>—</u>				
10. <u>—</u>				
11. <u>—</u>				
<u>70</u> = Total Cover				1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/>
Woody Vine Stratum (Plot size: <u>5m</u> )				2 - Dominance Test is >50% <input checked="" type="checkbox"/>
1. <u>—</u>				3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/>
2. <u>—</u>				4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/>
<u>30</u> = Total Cover				5 - Wetland Non-Vascular Plants ¹ <input type="checkbox"/>
% Bare Ground in Herb Stratum <u>30</u>				Problematic Hydrophytic Vegetation ¹ (Explain) <input type="checkbox"/>
Remarks:				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>



## SOIL

Sampling Point: TP-8

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-10	10YR 2/2	100					silt loam	
10-13 ⁺	10YR 4/2	97	10YR 5/6	3	C	M	silt loam	

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

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

Indicators for Problematic Hydric Soils³:

- |                                                                       |                                                                   |                                                           |
|-----------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------|
| <input type="checkbox"/> Histosol (A1)                                | <input type="checkbox"/> Sandy Redox (S5)                         | <input type="checkbox"/> 2 cm Muck (A10)                  |
| <input type="checkbox"/> Histic Epipedon (A2)                         | <input type="checkbox"/> Stripped Matrix (S6)                     | <input type="checkbox"/> Red Parent Material (TF2)        |
| <input type="checkbox"/> Black Histic (A3)                            | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                        | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 | <input type="checkbox"/> Other (Explain in Remarks)       |
| <input checked="" type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Depleted Matrix (F3)          |                                                           |
| <input type="checkbox"/> Thick Dark Surface (A12)                     | <input type="checkbox"/> Redox Dark Surface (F6)                  |                                                           |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)                     | <input type="checkbox"/> Depleted Dark Surface (F7)               |                                                           |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                     | <input type="checkbox"/> Redox Depressions (F8)                   |                                                           |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

## HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 0.1"Water Table Present? Yes ☒ No ☐ Depth (inches): 8"Saturation Present? Yes ☒ No ☐ Depth (inches): 0"Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:



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

Project/Site: Church Creek Park City/County: Stanwood Sampling Date: 2/11/23  
 Applicant/Owner: City of Stanwood State: WA Sampling Point: TP-9  
 Investigator(s): AHM, NAD Section, Township, Range: S20 T32N R4E  
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): none Slope (%): 012  
 Subregion (LRR): A Lat: 48.242121 Long: -122.327975 Datum: WGS84  
 Soil Map Unit Name: partic silt loam (0-8% clay) NWI classification: NA  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)  
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____  
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) <b>Prevalence Index worksheet:</b> 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 = _____ <b>Hydrophytic Vegetation Indicators:</b> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 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.
1. <u>western red cedar</u>	<u>100</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>100</u> = Total Cover				
<b>Sapling/Shrub Stratum (Plot size: <u>5m</u>)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
<b>Herb Stratum (Plot size: <u>1m</u>)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
<b>Woody Vine Stratum (Plot size: <u>5m</u>)</b>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>100</u>				
Remarks: <u>TP located under stand of WRC</u> <u>- surrounding area is evenly vegetated</u>				

## SOIL

Sampling Point: TP-9

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10 YR 3/3	100					Silt 10 am	some organic
3-7	10 YR 3/4	100					Silt 10 am	
7-13	10 YR 4/4	100					Silt 10 am	

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

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

Indicators for Problematic Hydric Soils³:

- |                                                            |                                                                   |                                                           |
|------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------|
| <input type="checkbox"/> Histosol (A1)                     | <input type="checkbox"/> Sandy Redox (S5)                         | <input type="checkbox"/> 2 cm Muck (A10)                  |
| <input type="checkbox"/> Histic Epipedon (A2)              | <input type="checkbox"/> Stripped Matrix (S6)                     | <input type="checkbox"/> Red Parent Material (TF2)        |
| <input type="checkbox"/> Black Histic (A3)                 | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Hydrogen Sulfide (A4)             | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                 | <input type="checkbox"/> Other (Explain in Remarks)       |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3)                     |                                                           |
| <input type="checkbox"/> Thick Dark Surface (A12)          | <input type="checkbox"/> Redox Dark Surface (F6)                  |                                                           |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)          | <input type="checkbox"/> Depleted Dark Surface (F7)               |                                                           |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)          | <input type="checkbox"/> Redox Depressions (F8)                   |                                                           |

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

Soils moist, not saturated

## HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____Water Table Present? Yes _____ No ☒ Depth (inches): _____Saturation Present? Yes _____ No ☒ Depth (inches): _____  
(includes capillary fringe)Wetland Hydrology Present? Yes _____ No ☒

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

Remarks:

no indicators observed

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

Project/Site: Church Creek Park City/County: Stanwood Sampling Date: 2/13/23  
 Applicant/Owner: City of Stanwood State: WA Sampling Point: TP-10  
 Investigator(s): AKM, WAD Section, Township, Range: S20 T32N R4E  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 15-20  
 Subregion (LRR): A Lat: 48.24168699 Long: -122.32633604 Datum: NAD 83  
 Soil Map Unit Name: TOKUL - unton gravelly loams (20-80%) NWI classification: R1A  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10m</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
1. <u>Western red cedar</u>	<u>80</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<b>Sapling/Shrub Stratum (Plot size: <u>5m</u>)</b> 1. <u>Salmonberry</u> <u>10</u> <input checked="" type="checkbox"/> <u>FAC</u> 2. _____ 3. _____ 4. _____ 5. _____ <u>80</u> = Total Cover				<b>Prevalence Index worksheet:</b> 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 = _____
<b>Herb Stratum (Plot size: <u>1m</u>)</b> 1. <u>Sword fern</u> <u>5</u> <u>FACW</u> 2. <u>Herb robert</u> <u>3</u> <u>FAC</u> 3. <u>Biggy back plant</u> <u>10</u> <input checked="" type="checkbox"/> <u>FAC</u> 4. <u>Hairy bittercress</u> <u>10</u> <input checked="" type="checkbox"/> <u>FACW</u> 5. <u>Lady fern</u> <u>2</u> <u>FAC</u> 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ <u>30</u> = Total Cover				
<b>Woody Vine Stratum (Plot size: <u>5m</u>)</b> 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>70</u>				
Remarks:				



## SOIL

Sampling Point: TP-10

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

Depth (inches)	Matrix		Redox Features		Type ¹	Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%				
0-9	2.5YR 3/1	98	10YR 4/4	2	C	MR	silt loam	
9-12	10YR 4/6	100					silt loam	

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

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

Indicators for Problematic Hydric Soils³:

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

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

Restrictive Layer (if present):

Type: _____  
Depth (inches): _____Hydric Soil Present? Yes ☒ No ☐

Remarks:

## HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____  
 Water Table Present? Yes ☐ No ☒ Depth (inches): _____  
 Saturation Present? Yes ☒ No ☐ Depth (inches): 0"  
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

standing water ~ 5 ft from test plot



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

Project/Site: Church Creek PK City/County: Stanwood Sampling Date: 2/13/23  
 Applicant/Owner: City of Stanwood State: WA Sampling Point: TP-11  
 Investigator(s): AHM, NAD Section, Township, Range: S20 T32N R4E  
 Landform (hillslope, terrace, etc.): hill slope Local relief (concave, convex, none): Concave Slope (%): 15-20  
 Subregion (LRR): A Lat: 48.24167359 Long: -122.32659128 Datum: WGS84  
 Soil Map Unit Name: TOKUL-Winston gravelly loam (25-65%) NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐  
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

## VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>10M</u> )	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B) <b>Prevalence Index worksheet:</b> 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 = _____
1. <u>Western red cedar</u>	<u>100</u>	<input checked="" type="checkbox"/>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<b>Sapling/Shrub Stratum (Plot size: <u>5M</u>)</b> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
<b>Herb Stratum (Plot size: <u>1M</u>)</b> 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ _____ = Total Cover				
<b>Woody Vine Stratum (Plot size: <u>5M</u>)</b> 1. _____ 2. _____ _____ = Total Cover				
<b>% Bare Ground in Herb Stratum <u>100</u></b> _____ = Total Cover				
<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 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.				
<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Remarks:				

Sampling Point: TP-11

## HYDROLOGY

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

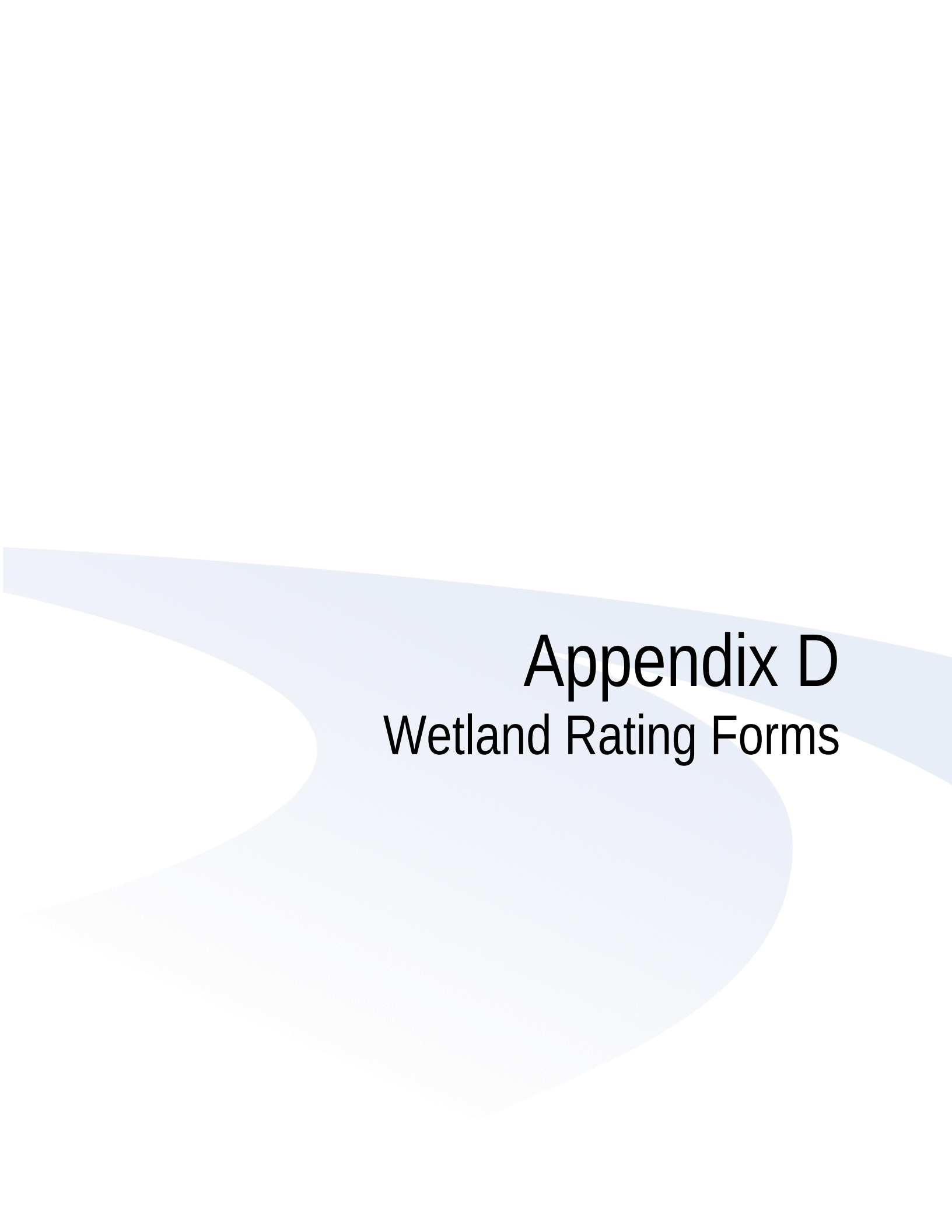
- Secondary Indicators (2 or more required)

- Field Observations:**

Wetland Hydrology Present? Yes _____ No ✓

Remarks:

no indicators observed

An abstract, light blue graphic element that resembles a stylized, flowing shape or a large, soft-edged arrow pointing towards the right. It is positioned in the lower half of the page, behind the text.

# Appendix D

## Wetland Rating Forms

Wetland name or number C

## RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland C Date of site visit: 03/31/2023  
Rated by N. Dietsch Trained by Ecology? X Yes    No Date of training March 2021  
HGM Class used for rating Depressional Wetland has multiple HGM classes?    Y X N

**NOTE: Form is not complete without the figures requested** (*figures can be combined*).

Source of base aerial photo/map ArcGIS World Imagery: ESRI, Maxar, Earthstar Geographics

**OVERALL WETLAND CATEGORY** III (based on functions X or special characteristics   )

### 1. Category of wetland based on FUNCTIONS

   Category I – Total score = 23 - 27  
   Category II – Total score = 20 - 22  
X 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)	<b>TOTAL</b>
Score Based on Ratings	7	8	3	18

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	None



Wetland name or number C

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

### Riverine Wetlands

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

### Lake Fringe Wetlands

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

### Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of <b>dense</b> trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of <b>dense, rigid</b> trees, shrubs, and herbaceous plants ( <i>can be added to figure above</i> )	S 4.1	
Boundary of 150 ft buffer ( <i>can be added to another figure</i> )	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

## HGM Classification of Wetlands in Western Washington

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

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

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

☐ **NO** – go to 2

**YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

☐ **NO** – **Saltwater Tidal Fringe (Estuarine)**

**YES** – **Freshwater Tidal Fringe**

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

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

☐ **NO** – go to 3

**YES** – The wetland class is **Flats**

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

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

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

☐ **NO** – go to 4

**YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

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

☐ **NO** – go to 5

**YES** – The wetland class is **Slope**

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

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

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

Wetland name or number C

**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 C

<b>DEPRESSIONAL AND FLATS WETLANDS</b>		
<b>Water Quality Functions - Indicators that the site functions to improve water quality</b>		
<b>D 1.0. Does the site have the potential to improve water quality?</b>		
<b>D 1.1. Characteristics of surface water outflows from the wetland:</b> 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	3	
<b>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</b>	0	
<b>D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</b> Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > 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	0	
<b>D 1.4. Characteristics of seasonal ponding or inundation:</b> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > 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	4	
<b>Total for D 1</b>	Add the points in the boxes above	7

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

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

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

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

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



Wetland name or number C

### 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 | 4 |
| Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet | points = 2 |   |
| Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch           | points = 1 |   |
| Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing       | points = 0 |   |

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*

- |                                                                          |            |   |
|--------------------------------------------------------------------------|------------|---|
| Marks of ponding are 3 ft or more above the surface or bottom of outlet  | points = 7 | 3 |
| Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet | points = 5 |   |
| 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 |   |

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 | 3 |
| The area of the basin is 10 to 100 times the area of the unit     | points = 3 |   |
| The area of the basin is more than 100 times the area of the unit | points = 0 |   |
| Entire wetland is in the Flats class                              | points = 5 |   |

Total for D 4

Add the points in the boxes above

10

**Rating of Site Potential** If score is: 12-16 = H X 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: X = 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):                      |            | 2 |
| • 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. <i>Explain why</i> _____ | points = 0 |   |
| There are no problems with flooding downstream of the wetland.                                                                                                                                   | points = 0 |   |

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?

Yes = 2 No = 0

0

Total for D 6

Add the points in the boxes above

2

**Rating of Value** If score is: X 2-4 = H 1 = M 0 = L

Record the rating on the first page

Wetland name or number C

**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.*

- |                                                                                                                                                                               |                                  |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed                                                                                                                                          | 4 structures or more: points = 4 | 0 |
| <input type="checkbox"/> Emergent                                                                                                                                             | 3 structures: points = 2         |   |
| <input type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover)                                                                                                    | 2 structures: points = 1         |   |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover)                                                                                             | 1 structure: points = 0          |   |
| <i>If the unit has a Forested class, check if:</i>                                                                                                                            |                                  |   |
| <input type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon |                                  |   |

**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*).

- |                                                                                              |                                     |                 |
|----------------------------------------------------------------------------------------------|-------------------------------------|-----------------|
| <input type="checkbox"/> Permanently flooded or inundated                                    | 4 or more types present: points = 3 | 1               |
| <input checked="" type="checkbox"/> Seasonally flooded or inundated                          | 3 types present: points = 2         |                 |
| <input type="checkbox"/> Occasionally flooded or inundated                                   | 2 types present: points = 1         |                 |
| <input checked="" type="checkbox"/> Saturated only                                           | 1 type present: points = 0          |                 |
| <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland |                                     |                 |
| <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland           |                                     |                 |
| <input type="checkbox"/> <b>Lake Fringe wetland</b>                                          |                                     | <b>2 points</b> |
| <input type="checkbox"/> <b>Freshwater tidal wetland</b>                                     |                                     | <b>2 points</b> |

**H 1.3. Richness of plant species**

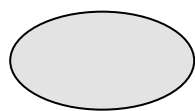
Count the number of plant species in the wetland that cover at least 10 ft².

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

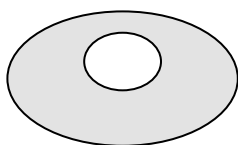
- |                              |            |   |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 0 |
| 5 - 19 species               | points = 1 |   |
| < 5 species                  | points = 0 |   |

**H 1.4. Interspersion of habitats**

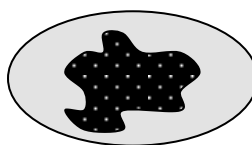
Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



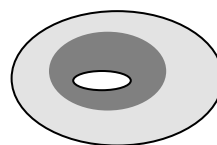
**None** = 0 points



**Low** = 1 point

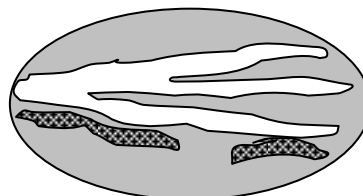
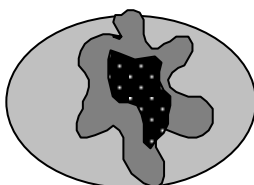
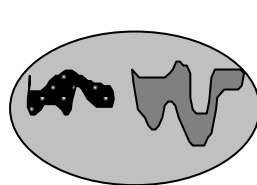


**Moderate** = 2 points



0

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



Wetland name or number C

<b>H 1.5. Special habitat features:</b> Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). <input type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present ( <i>cut shrubs or trees that have not yet weathered where wood is exposed</i> ) <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated ( <i>structures for egg-laying by amphibians</i> ) <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants ( <i>see H 1.1 for list of strata</i> )		2
Total for H 1	Add the points in the boxes above	3

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

Record the rating on the first page

<b>H 2.0. Does the landscape have the potential to support the habitat functions of the site?</b>		
<b>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>).</b> <i>Calculate:</i> % undisturbed habitat <u>    </u> + [(% moderate and low intensity land uses)/2] <u>    </u> = <u>8</u> % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon Undisturbed = 8% of 1 km polygon points = 3 20-33% of 1 km Polygon Low/Moderate = 0% points = 2 10-19% of 1 km Polygon 8 + 0/2 = 8% points = 1 < 10% of 1 km Polygon points = 0		0
<b>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.</b> <i>Calculate:</i> % undisturbed habitat <u>    </u> + [(% moderate and low intensity land uses)/2] <u>    </u> = <u>26.5</u> % Undisturbed habitat > 50% of Polygon Undisturbed = 22% of 1 km polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches Low/Moderate = 9% points = 2 Undisturbed habitat 10-50% and > 3 patches 22 + 9/2 = 26.5% points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0		1
<b>H 2.3. Land use intensity in 1 km Polygon: If</b> > 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	0

**Rating of Landscape Potential** If score is: 4-6 = H 1-3 = M X < 1 = L

Record the rating on the first page

<b>H 3.0. Is the habitat provided by the site valuable to society?</b>		
<b>H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? <i>Choose only the highest score that applies to the wetland being rated.</i></b> 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		0

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

Record the rating on the first page

## WDFW Priority Habitats

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

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

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

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



Wetland name or number C

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
<b>SC 1.0. Estuarine wetlands</b> Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt	
Yes – Go to SC 1.1      No = <b>Not an estuarine wetland</b>	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?	Cat. I
Yes = <b>Category I</b> No - Go to SC 1.2	
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 <i>Spartina</i> , see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	Cat. I   Cat. II
Yes = <b>Category I</b> No = <b>Category II</b>	
<b>SC 2.0. Wetlands of High Conservation Value (WHCV)</b> SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value?	Cat. I
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 = <b>Category I</b> No = <b>Not a WHCV</b>	
SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? <a href="http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf">http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf</a>	
Yes – <b>Contact WNHP/WDNR and go to SC 2.4</b> No = <b>Not a WHCV</b>	
SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website?	
Yes = <b>Category I</b> No = <b>Not a WHCV</b>	
<b>SC 3.0. Bogs</b> Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i>	
SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile?	
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 = <b>Is not a bog</b>	
SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4?	
Yes = <b>Is a Category I bog</b> No – Go to SC 3.4	
<b>NOTE:</b> If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog.	
SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy?	Cat. I
Yes = <b>Is a Category I bog</b> No = <b>Is not a bog</b>	

Wetland name or number     C    

<b>SC 4.0. Forested Wetlands</b>   Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <b><i>If you answer YES you will still need to rate the wetland based on its functions.</i></b>       — <b>Old-growth forests</b> (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.     — <b>Mature forests</b> (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).       Yes = <b>Category I</b>    <b>NO</b> = Not a forested wetland for this section	<b>Cat. I</b>
<b>SC 5.0. Wetlands in Coastal Lagoons</b>   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 (&gt; 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)       Yes – Go to <b>SC 5.1</b>    <b>NO</b> = Not a wetland in a coastal lagoon   <b>SC 5.1.</b> Does the wetland meet all of the following three conditions?       — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).     — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland.     — The wetland is larger than 1/10 ac (4350 ft²)       Yes = <b>Category I</b>    <b>NO</b> = <b>Category II</b>	<b>Cat. I</b>   <b>Cat. II</b>
<b>SC 6.0. Interdunal Wetlands</b>   Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <b><i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i></b>   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 <b>SC 6.1</b>    <b>NO</b> = not an interdunal wetland for rating   <b>SC 6.1.</b> 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)?  <span style="float: right;">Yes = <b>Category I</b>    No – Go to <b>SC 6.2</b></span>   <b>SC 6.2.</b> Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?  <span style="float: right;">Yes = <b>Category II</b>    No – Go to <b>SC 6.3</b></span>   <b>SC 6.3.</b> 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?  <span style="float: right;">Yes = <b>Category III</b>    No = <b>Category IV</b></span>	<b>Cat I</b>   <b>Cat. II</b>   <b>Cat. III</b>   <b>Cat. IV</b>
<b>Category of wetland based on Special Characteristics</b>   If you answered No for all types, enter "Not Applicable" on Summary Form	Not applicable

Wetland name or number C

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Figure 1



Path: J:\C_Stam\001125\001125_030_Church Creek Park Local Areas Study\GIS\ChurchCreek_CAS\ChurchCreek_CAS.aprx, User: Natalie.Diehl, Date



-  Wetland C
-  Cowardin Class: Forested

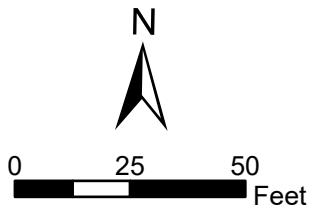




Figure 2

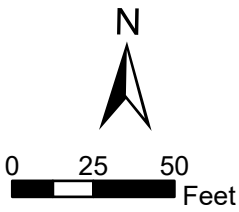


Path: J:\C_Stanwood_001125\001125_030_Stanwood_Creek Park Critical Areas Study\GIS\ChurchCreek_CAS\Users\atalie.Dietsch, Date



-  Wetland C 150 ft Buffer
- Wetland C Hydroperiod
  -  Saturated
  -  Seasonally Inundated

Note: Wetland has no outlet





Path: J:\C Stanwood_001125\001125.030_Church Creek Park Critical Areas Study\GIS\ChurchCreek_CAS.aprx User: Natalie.Dietsch, Date

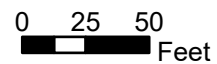
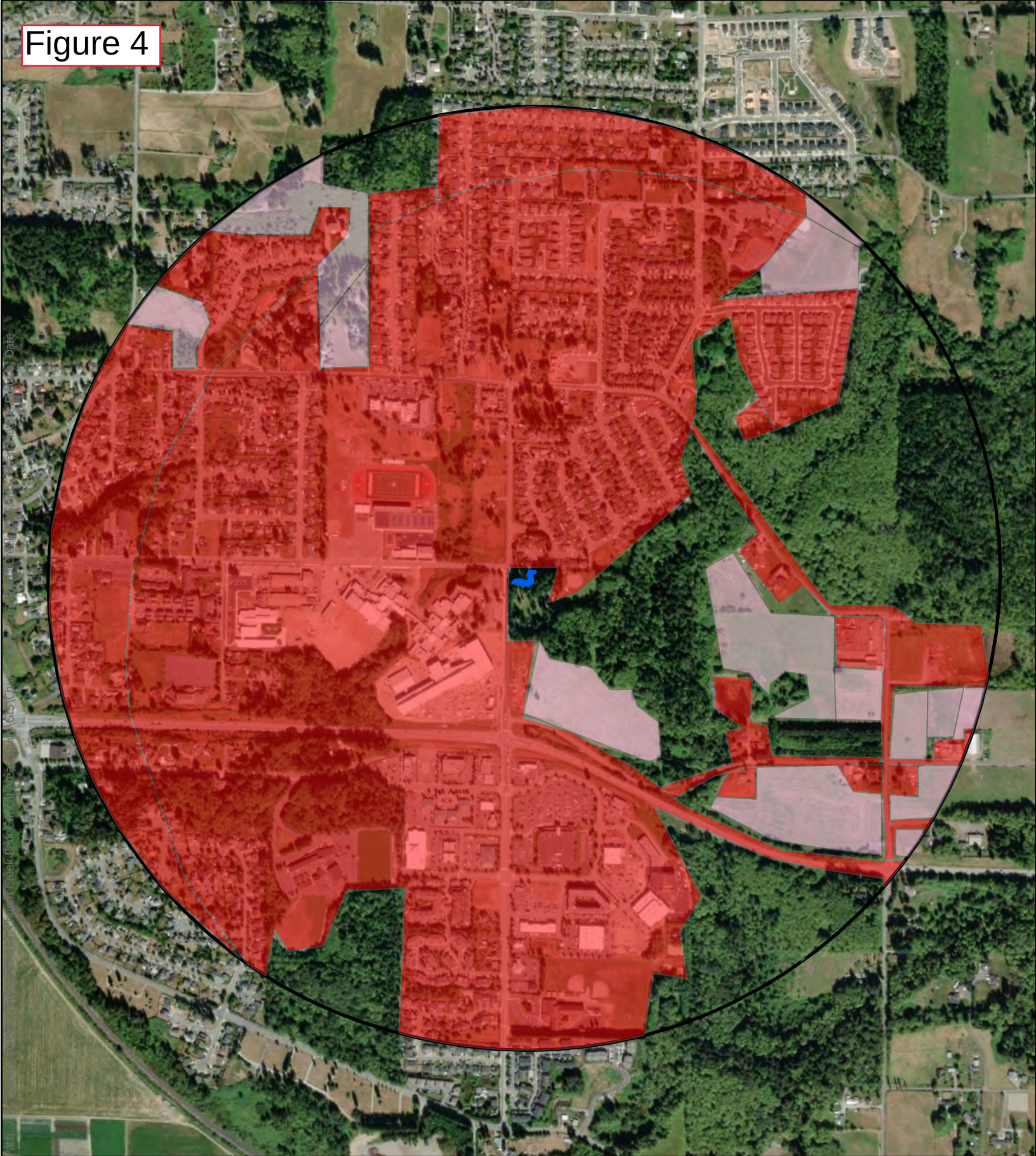




Figure 4



**CONFLUENCE**  
ENVIRONMENTAL COMPANY

 Wetland C

 Wetland C 1 km Buffer

Land Use Intensity

 High Intensity

 Moderate Intensity



0 400 800  
Feet

Note: Unshaded areas within the 1 km polygon are relatively undisturbed



# Figure 5 - 303(d) List



## Assessed Water/Sediment

### Water

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

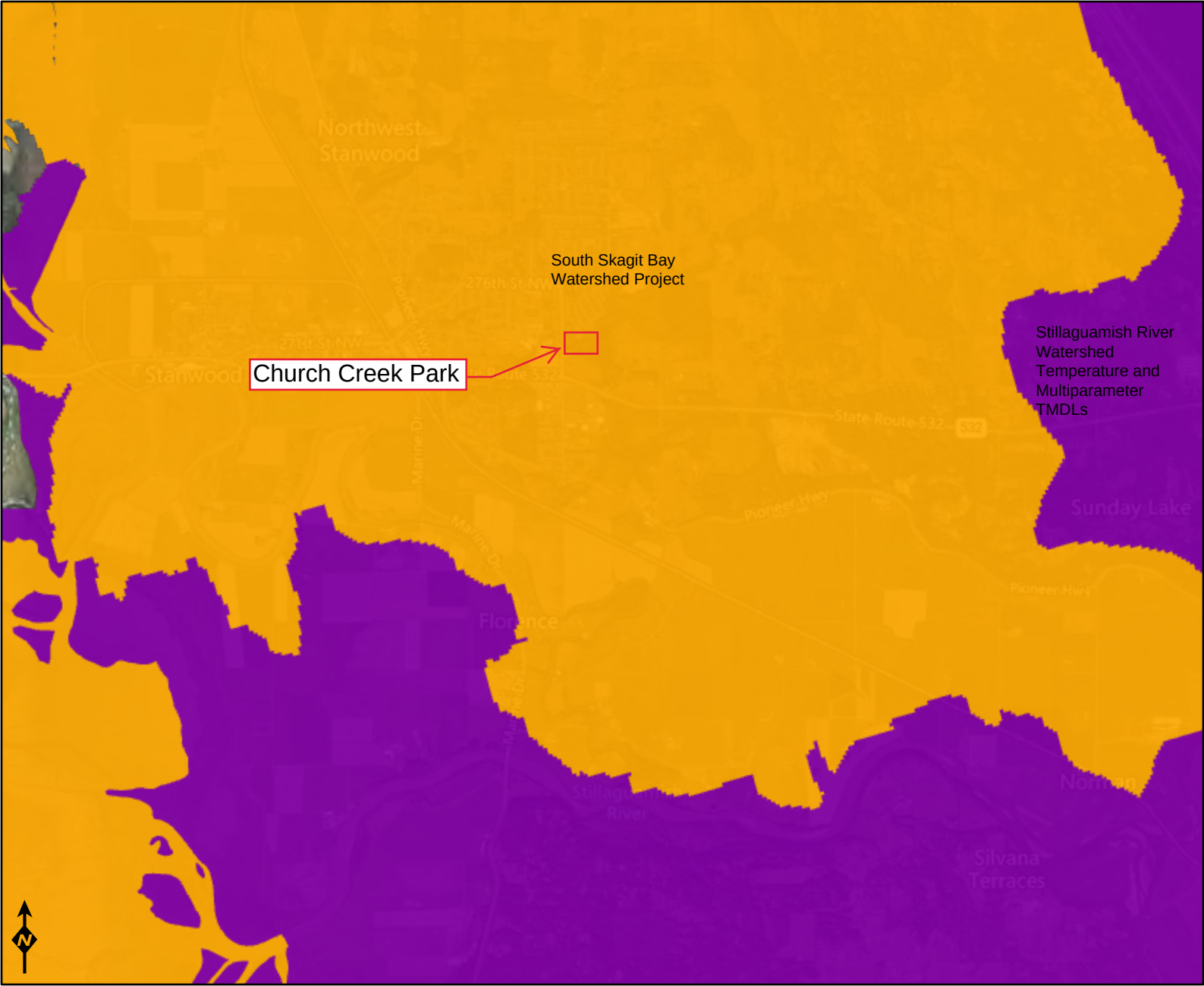
### Sediment

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



Figure 6

WQA TMDLs



**WQ Improvement Projects**  
Approved  
In Development

Wetland name or number D

## RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland D Date of site visit: 02/13/2023  
Rated by N. Dietsch, A. Michniak Trained by Ecology? X Yes ___ No ___ Date of training March 2021  
HGM Class used for rating Depressional Wetland has multiple HGM classes? ___ Y X N

**NOTE: Form is not complete without the figures requested (figures can be combined).**

Source of base aerial photo/map ArcGIS World Imagery: ESRI, Maxar, Earthstar Geographics

**OVERALL WETLAND CATEGORY** III (based on functions X or special characteristics ___)

### 1. Category of wetland based on FUNCTIONS

___ **Category I** – Total score = 23 - 27  
___ **Category II** – Total score = 20 - 22  
X **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	<b>TOTAL</b>
Score Based on Ratings	6	6	5	17

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 D

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

### Riverine Wetlands

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

### Lake Fringe Wetlands

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

### Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of <b>dense</b> trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of <b>dense, rigid</b> trees, shrubs, and herbaceous plants ( <i>can be added to figure above</i> )	S 4.1	
Boundary of 150 ft buffer ( <i>can be added to another figure</i> )	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

## HGM Classification of Wetlands in Western Washington

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

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

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

☐ **NO** – go to 2

**YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

☐ **NO** – **Saltwater Tidal Fringe (Estuarine)**

**YES** – **Freshwater Tidal Fringe**

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

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

☐ **NO** – go to 3

**YES** – The wetland class is **Flats**

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

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

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

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

☐ **NO** – go to 4

**YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

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

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

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

**NO** – go to 5

**YES** – The wetland class is **Slope**

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

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

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

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



Wetland name or number D

**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 D

<b>DEPRESSIONAL AND FLATS WETLANDS</b>		
<b>Water Quality Functions - Indicators that the site functions to improve water quality</b>		
<b>D 1.0. Does the site have the potential to improve water quality?</b>		
<b>D 1.1. Characteristics of surface water outflows from the wetland:</b> 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	3	
<b>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</b>	0	
<b>D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</b> Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > 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	3	
<b>D 1.4. Characteristics of seasonal ponding or inundation:</b> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > 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	
<b>Total for D 1</b>	Add the points in the boxes above	8

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

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

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

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

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

Wetland name or number D

### 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. <u>Characteristics of surface water outflows from the wetland:</u> 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 outlet points = 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		4
D 4.2. <u>Depth of storage during wet periods:</u> <i>Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.</i> 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. <u>Contribution of the wetland to storage in the watershed:</u> <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i> 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		3
Total for D 4		10

Add the points in the boxes above

**Rating of Site Potential** If score is: 12-16 = H X 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		0
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		0
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		0
Total for D 5		0

Add the points in the boxes above

**Rating of Landscape Potential** If score is: 3 = H 1 or 2 = M X 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. <u>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.</u> 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. <i>Explain why</i> _____ 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		2

Add the points in the boxes above

**Rating of Value** If score is: X 2-4 = H 1 = M 0 = L

Record the rating on the first page

Wetland name or number  D

**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.*

- |                                                                                   |                                  |   |
|-----------------------------------------------------------------------------------|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed                                              | 4 structures or more: points = 4 | 0 |
| <input type="checkbox"/> Emergent                                                 | 3 structures: points = 2         |   |
| <input type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover)        | 2 structures: points = 1         |   |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) | 1 structure: points = 0          |   |

*If the unit has a Forested class, check if:*

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

**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*).

- |                                                                                              |                                     |   |
|----------------------------------------------------------------------------------------------|-------------------------------------|---|
| <input type="checkbox"/> Permanently flooded or inundated                                    | 4 or more types present: points = 3 | 1 |
| <input checked="" type="checkbox"/> Seasonally flooded or inundated                          | 3 types present: points = 2         |   |
| <input type="checkbox"/> Occasionally flooded or inundated                                   | 2 types present: points = 1         |   |
| <input checked="" type="checkbox"/> Saturated only                                           | 1 type present: points = 0          |   |
| <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland |                                     |   |
| <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland           |                                     |   |
| <input type="checkbox"/> Lake Fringe wetland                                                 | <b>2 points</b>                     |   |
| <input type="checkbox"/> Freshwater tidal wetland                                            | <b>2 points</b>                     |   |

**H 1.3. Richness of plant species**

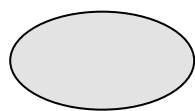
Count the number of plant species in the wetland that cover at least 10 ft².

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

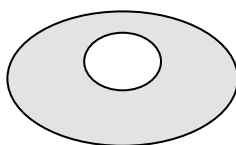
- |                              |            |   |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species               | points = 1 |   |
| < 5 species                  | points = 0 |   |

**H 1.4. Interspersion of habitats**

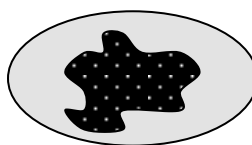
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



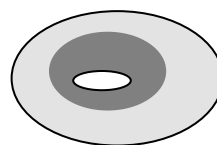
**None** = 0 points



**Low** = 1 point

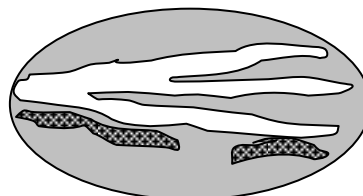
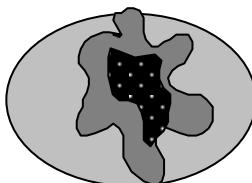
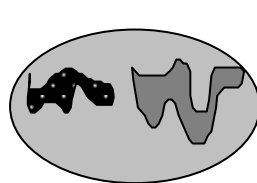


**Moderate** = 2 points



0

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





Wetland name or number     D    

H 1.5. Special habitat features:   Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>   <u>  X  </u> Large, downed, woody debris within the wetland (&gt; 4 in diameter and 6 ft long).   <u>      </u> Standing snags (dbh &gt; 4 in) within the wetland   <u>      </u> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)   <u>      </u> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt; 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)   <u>      </u> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)   <u>      </u> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)	1
Total for H 1	3

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

[illegible]

**Rating of Landscape Potential** If score is: 4-6 = H 1-3 = M X < 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? <i>Choose only the highest score that applies to the wetland being rated.</i>		2
Site meets ANY of the following criteria:	points = 2	
<input checked="" type="checkbox"/> — It has 3 or more priority habitats within 100 m (see next page)		
<input type="checkbox"/> — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)		
<input type="checkbox"/> — It is mapped as a location for an individual WDFW priority species		
<input type="checkbox"/> — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources		
<input type="checkbox"/> — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan		
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	

**Rating of Value** If score is:  $\bar{X}$  2 = H 1 = M 0 = L *Record the rating on the first page*

## WDFW Priority Habitats

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

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

- **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha ) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- X — **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*).
- X — **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 D

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
<b>SC 1.0. Estuarine wetlands</b> Does the wetland meet the following criteria for Estuarine wetlands? — 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?	Cat. I
Yes = Category I      No - Go to SC 1.2	
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 <i>Spartina</i> , see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	Cat. I          Cat. II
Yes = Category I      No = Category II	
<b>SC 2.0. Wetlands of High Conservation Value (WHCV)</b> SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value?	Cat. I
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?	No = Not a WHCV
Yes = Category I	
SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? <a href="http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf">http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf</a>	No = Not a WHCV
Yes – Contact WNHP/WDNR and go to SC 2.4	
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?	No = Not a WHCV
Yes = Category I	
<b>SC 3.0. Bogs</b> Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i>	
SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile?	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
<b>NOTE:</b> If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog.	
SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed 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

<b>SC 4.0. Forested Wetlands</b> Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate the wetland based on its functions.</i> — <b>Old-growth forests</b> (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — <b>Mature forests</b> (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).             Yes = <b>Category I</b>    No = <b>Not a forested wetland for this section</b>		<b>Cat. I</b>
<b>SC 5.0. Wetlands in Coastal Lagoons</b> 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 ( <i>needs to be measured near the bottom</i> )             Yes – Go to <b>SC 5.1</b>    No = <b>Not a wetland in a coastal lagoon</b>		<b>Cat. I</b>
<b>SC 5.1. Does the wetland meet all of the following three conditions?</b> — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland is larger than 1/10 ac (4350 ft ² )             Yes = <b>Category I</b>    No = <b>Category II</b>		<b>Cat. II</b>
<b>SC 6.0. Interdunal Wetlands</b> Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i> 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 <b>SC 6.1</b>    No = <b>not an interdunal wetland for rating</b>		<b>Cat I</b>
<b>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?</b>             Yes = <b>Category I</b>    No – Go to <b>SC 6.2</b>		<b>Cat. II</b>
<b>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</b>             Yes = <b>Category II</b>    No – Go to <b>SC 6.3</b>		<b>Cat. III</b>
<b>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?</b>             Yes = <b>Category III</b>    No = <b>Category IV</b>		<b>Cat. IV</b>
<b>Category of wetland based on Special Characteristics</b> If you answered No for all types, enter "Not Applicable" on Summary Form		Not applicable



Wetland name or number   D  

*This page left blank intentionally*

Figure 1



Path: J:\C_Stamwood_00\1125\00\1125_030_Church Creek Park Critical Areas Study\GIS\ChurchCreek_CAS\ChurchCreek_CAS.mxd / 1125_030_Church Creek Park Critical Areas Study\GIS\ChurchCreek_CAS\ChurchCreek_CAS.mxd / 1125_030_Church Creek Park Critical Areas Study\GIS\ChurchCreek_CAS\ChurchCreek_CAS.mxd / 1125_030_Church Creek Park Critical Areas Study\GIS\ChurchCreek_CAS\ChurchCreek_CAS.mxd



Cowardin Class  
Forested

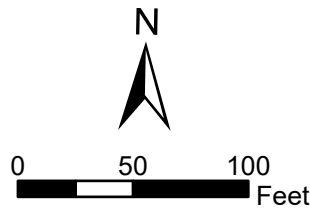




Figure 2

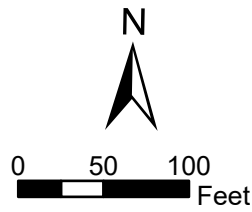


Path: J:\C:\Stanwood_0001125\0001125_000_Church Creek\Mark Critical Areas Study\GIS\ChurchCreek_CAS.aprx, User: audrey.michniak, Date



-  Wetland D Buffer 150 ft Wetland D Hydroperiod
-  Church Creek OHWM
-  Seasonally Pounded
-  Saturated

Note: Wetland has no outlet





**Figure 3**

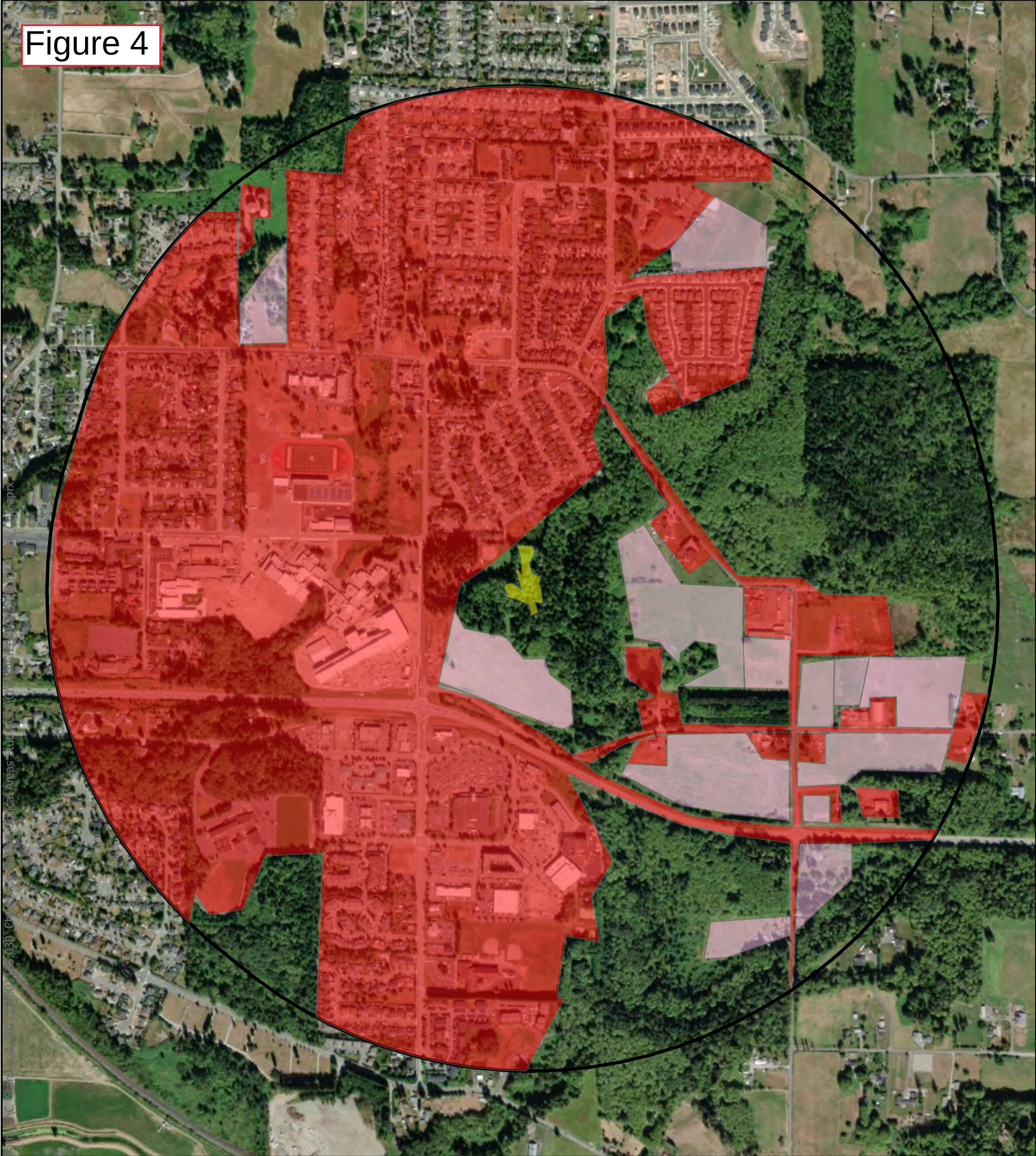
This figure is an aerial photograph of Church Creek Park. A large, irregular green-shaded area covers the majority of the park's central and upper portions, likely representing a specific land use or management zone. Within this green area, on the right side, there is a prominent yellow-shaded region shaped like a five-pointed star. The surrounding landscape includes dense green trees, a baseball field visible in the upper left, and a parking lot with several cars in the lower left. The image is oriented horizontally on the page.



A horizontal scale bar with a black background. It has white tick marks at 0, 50, and 100. The word "Feet" is written in black at the right end of the bar.



Figure 4



**CONFLUENCE**  
ENVIRONMENTAL COMPANY

 Wetland D

 Wetland D Buffer 1km

Land Use Intensity

 High Intensity

 Moderate Intensity

Note: Unshaded areas within the 1 km polygon are relatively undisturbed



0 400 800  
Feet



# Figure 5 - 303(d) List



## Assessed Water/Sediment

### Water

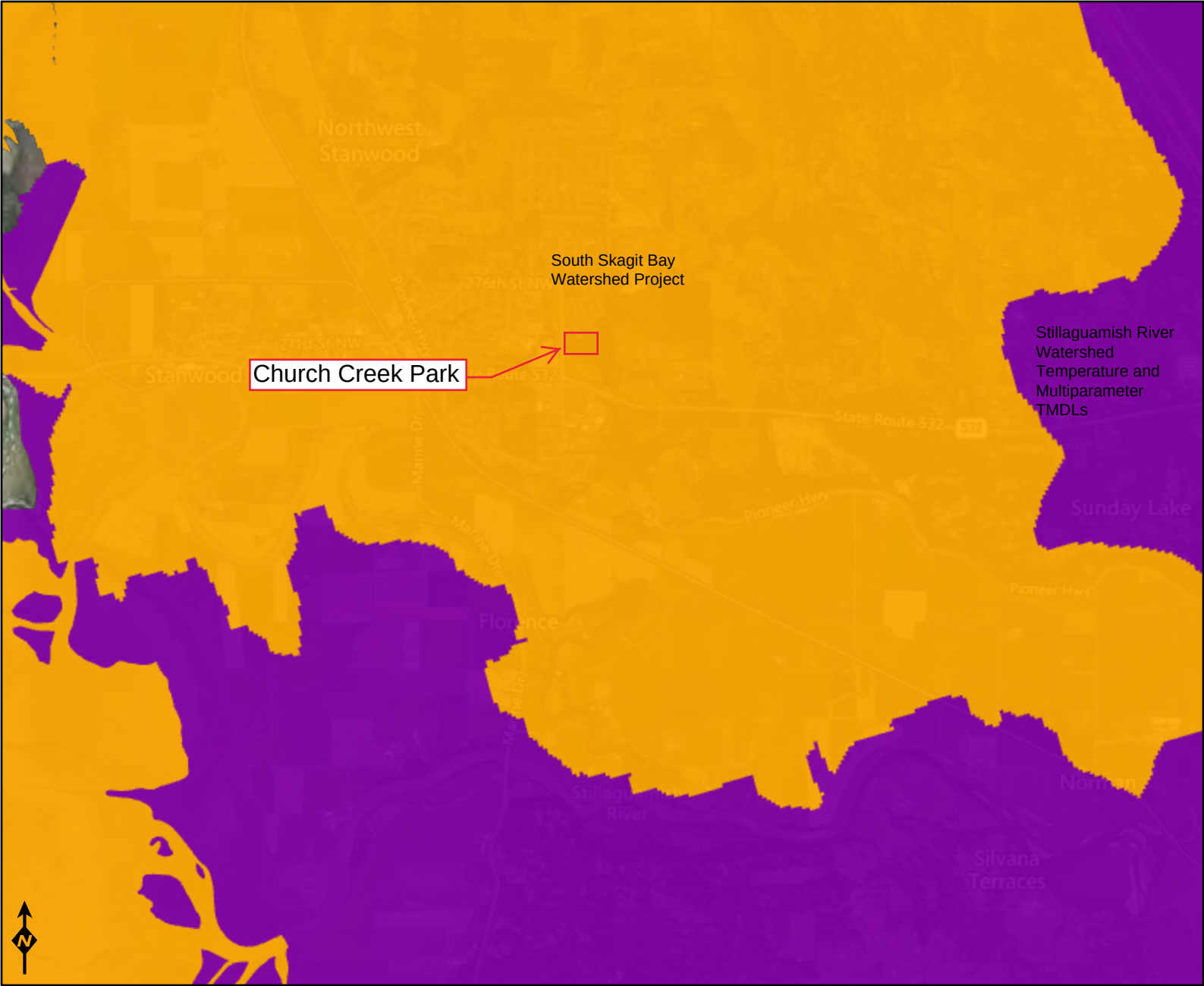
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

### Sediment

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

Figure 6

WQA TMDLs



**WQ Improvement Projects**  
Approved  
In Development

Wetland name or number E

## RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland E Date of site visit: 02/13/2023  
Rated by N. Dietsch, A. Michniak Trained by Ecology? X Yes    No Date of training March 2021  
HGM Class used for rating Slope Wetland has multiple HGM classes?    Y X N

**NOTE: Form is not complete without the figures requested** (*figures can be combined*).

Source of base aerial photo/map ArcGIS World Imagery: ESRI, Maxar, Earthstar Geographics

**OVERALL WETLAND CATEGORY** IV (based on functions X or special characteristics   )

### 1. Category of wetland based on FUNCTIONS

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
Circle the appropriate ratings				
Site Potential	H M <u>L</u>	H M <u>L</u>	H M <u>L</u>	
Landscape Potential	H M <u>L</u>	H M <u>L</u>	H M <u>L</u>	
Value	<u>H</u> M L	<u>H</u> M L	<u>H</u> M L	<b>TOTAL</b>
Score Based on Ratings	5	5	5	15

**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 E

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

### Depressional Wetlands

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

### Riverine Wetlands

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

### Lake Fringe Wetlands

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

### Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	2
Plant cover of <b>dense</b> trees, shrubs, and herbaceous plants	S 1.3	2
Plant cover of <b>dense, rigid</b> trees, shrubs, and herbaceous plants ( <i>can be added to figure above</i> )	S 4.1	2
Boundary of 150 ft buffer ( <i>can be added to another figure</i> )	S 2.1, S 5.1	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	3
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	4
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	5

## 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     E    

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 E

### **SLOPE WETLANDS**

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

<b>S 1.0. Does the site have the potential to improve water quality?</b>		
<b>S 1.1. Characteristics of the average slope of the wetland: (<i>a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance</i>)</b> Slope is 1% or less <span style="float: right;">points = 3</span> Slope is > 1%-2% <span style="float: right;">points = 2</span> Slope is > 2%-5% <span style="float: right;">points = 1</span> Slope is greater than 5% <span style="float: right;">points = 0</span>		0
<b>S 1.2. The soil <u>2</u> in below the surface (or duff layer) is true clay or true organic (<i>use NRCS definitions</i>):</b> Yes = 3 No = 0		0
<b>S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants:</b> Choose the points appropriate for the description that best fits the plants in the wetland. <i>Dense means you have trouble seeing the soil surface (&gt;75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.</i> Dense, uncut, herbaceous plants > 90% of the wetland area <span style="float: right;">points = 6</span> Dense, uncut, herbaceous plants > ½ of area <span style="float: right;">points = 3</span> Dense, woody, plants > ½ of area <span style="float: right;">points = 2</span> Dense, uncut, herbaceous plants > ¼ of area <span style="float: right;">points = 1</span> Does not meet any of the criteria above for plants <span style="float: right;">points = 0</span>		0
<b>Total for S 1</b> <span style="float: right;">Add the points in the boxes above</span>		0

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

*Record the rating on the first page*

<b>S 2.0. Does the landscape have the potential to support the water quality function of the site?</b>	
<b>S 2.1. Is &gt; 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?</b> Yes = 1 No = 0	0
<b>S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1?</b> Other sources _____ Yes = 1 No = 0	0
<b>Total for S 2</b> <span style="float: right;">Add the points in the boxes above</span>	0

**Rating of Landscape Potential** If score is: 1-2 = M X 0 = L

*Record the rating on the first page*

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

**Rating of Value** If score is: X 2-4 = H 1 = M 0 = L

*Record the rating on the first page*



Wetland name or number E

## SLOPE WETLANDS

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

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

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually  $> 1/8$  in), or dense enough, to remain erect during surface flows.*

Dense, uncut, **rigid** plants cover > 90% of the area of the wetland

points = 1

All other conditions

points = 0

0

**Rating of Site Potential** If score is: 1 = M X 0 = L

*Record the rating on the first page*

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

S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0

Yes = 1   No = 0

0

**Rating of Landscape Potential** If score is: **1 = M** **X 0 = L**

*Record the rating on the first page*

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

S 6.1. Distance to the nearest areas downstream that have flooding problems:

The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) _____ points

points = 2

Surface flooding problems are in a sub-basin farther down-gradient

points = 1

No flooding problems anywhere downstream

points = 0

2

S 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 S 6

Add the points in the boxes above

2

**Rating of Value** If score is:  $\times$  2-4 = H    1 = M    0 = L

*Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland name or number E

**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.*

- |                                                                                   |                                  |   |
|-----------------------------------------------------------------------------------|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed                                              | 4 structures or more: points = 4 | 0 |
| <input type="checkbox"/> Emergent                                                 | 3 structures: points = 2         |   |
| <input type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover)        | 2 structures: points = 1         |   |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover) | 1 structure: points = 0          |   |

*If the unit has a Forested class, check if:*

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

**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*).

- |                                                            |                                     |   |
|------------------------------------------------------------|-------------------------------------|---|
| <input type="checkbox"/> Permanently flooded or inundated  | 4 or more types present: points = 3 | 0 |
| <input type="checkbox"/> Seasonally flooded or inundated   | 3 types present: points = 2         |   |
| <input type="checkbox"/> Occasionally flooded or inundated | 2 types present: points = 1         |   |
| <input checked="" type="checkbox"/> 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**

**H 1.3. Richness of plant species**

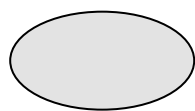
Count the number of plant species in the wetland that cover at least 10 ft².

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

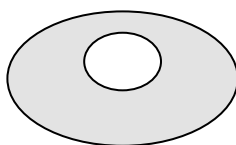
- |                              |            |   |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species               | points = 1 |   |
| < 5 species                  | points = 0 |   |

**H 1.4. Interspersion of habitats**

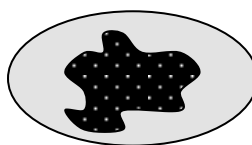
Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



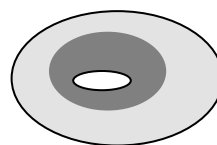
**None** = 0 points



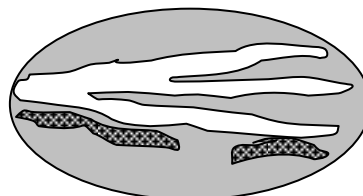
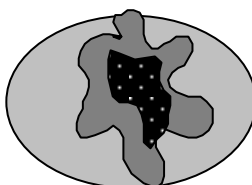
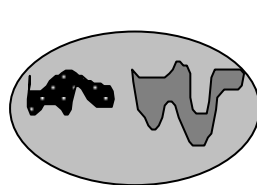
**Low** = 1 point



**Moderate** = 2 points



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



0

Wetland name or number E

<b>H 1.5. Special habitat features:</b> Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i> <input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). <input type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present ( <i>cut shrubs or trees that have not yet weathered where wood is exposed</i> ) <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated ( <i>structures for egg-laying by amphibians</i> ) <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants ( <i>see H 1.1 for list of strata</i> )		1
Total for H 1	Add the points in the boxes above	2

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

Record the rating on the first page

<b>H 2.0. Does the landscape have the potential to support the habitat functions of the site?</b>		
<b>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>).</b> <i>Calculate:</i> % undisturbed habitat <u>    </u> + [(% moderate and low intensity land uses)/2] <u>    </u> = <u>12.5</u> % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon                      8 acres accessible habitat = 5% of 1km poly                      points = 3 20-33% of 1 km Polygon                              15%/2 = 7.5 moderate and low intensity land use                      points = 2 10-19% of 1 km Polygon                              5% + 7.5 % = 12.5                                                              points = 1 < 10% of 1 km Polygon                                                                                                              points = 0		1
<b>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.</b> <i>Calculate:</i> % undisturbed habitat <u>    </u> + [(% moderate and low intensity land uses)/2] <u>    </u> = <u>32.5</u> % Undisturbed habitat > 50% of Polygon                      200 acres undisturbed in 1 km = 25% of 1km poly                      points = 3 Undisturbed habitat 10-50% and in 1-3 patches                      25%+(15/2)=32.5%                      points = 2 Undisturbed habitat 10-50% and > 3 patches                      25%+(15/2)=32.5%                      points = 1 Undisturbed habitat < 10% of 1 km Polygon                                                                                                              points = 0		1
<b>H 2.3. Land use intensity in 1 km Polygon: If</b> > 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	0

**Rating of Landscape Potential** If score is: 4-6 = H 1-3 = M X < 1 = L

Record the rating on the first page

<b>H 3.0. Is the habitat provided by the site valuable to society?</b>		
<b>H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? <i>Choose only the highest score that applies to the wetland being rated.</i></b> Site meets ANY of the following criteria:                      points = 2 <input checked="" type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page) <input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) <input type="checkbox"/> It is mapped as a location for an individual WDFW priority species <input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources <input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m                      points = 1 Site does not meet any of the criteria above                      points = 0		2

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

Record the rating on the first page

## WDFW Priority Habitats

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

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

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

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



Wetland name or number ^E_____

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
<b>SC 1.0. Estuarine wetlands</b> Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt                      Yes –Go to <b>SC 1.1</b> <u>No</u> = 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 = <b>Category I</b> <u>No</u> - Go to <b>SC 1.2</b>	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 <i>Spartina</i> , see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.                      Yes = <b>Category I</b> <u>No</u> = <b>Category II</b>	Cat. I      Cat. II
<b>SC 2.0. Wetlands of High Conservation Value (WHCV)</b> SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? <u>Yes</u> – Go to <b>SC 2.2</b> No – Go to <b>SC 2.3</b> SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?                      Yes = <b>Category I</b> <u>No</u> = <b>Not a WHCV</b> SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? <a href="http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf">http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf</a> Yes – <b>Contact WNHP/WDNR and go to SC 2.4</b> <u>No</u> = <b>Not a WHCV</b> SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website?                      Yes = <b>Category I</b> <u>No</u> = <b>Not a WHCV</b>	Cat. I
<b>SC 3.0. Bogs</b> Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile?                      Yes – Go to <b>SC 3.3</b> <u>No</u> – Go to <b>SC 3.2</b> SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond?                      Yes – Go to <b>SC 3.3</b> <u>No</u> = <b>Is not a bog</b> SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4?                      Yes = <b>Is a Category I bog</b> <u>No</u> – Go to <b>SC 3.4</b> <b>NOTE:</b> If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy?                      Yes = <b>Is a Category I bog</b> <u>No</u> = <b>Is not a bog</b>	Cat. I

Wetland name or number       E      

<b>SC 4.0. Forested Wetlands</b>   Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <b><i>If you answer YES you will still need to rate the wetland based on its functions.</i></b>       — <b>Old-growth forests</b> (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.     — <b>Mature forests</b> (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).       Yes = <b>Category I</b>    <input checked="" type="radio"/> <b>No</b> = <b>Not a forested wetland for this section</b>	<b>Cat. I</b>
<b>SC 5.0. Wetlands in Coastal Lagoons</b>   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 (&gt; 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)       Yes – Go to <b>SC 5.1</b>    <input checked="" type="radio"/> <b>No</b> = <b>Not a wetland in a coastal lagoon</b>   <b>SC 5.1. Does the wetland meet all of the following three conditions?</b>       — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).     — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland.     — The wetland is larger than 1/10 ac (4350 ft²)       Yes = <b>Category I</b>    <input checked="" type="radio"/> <b>No</b> = <b>Category II</b>	<b>Cat. I</b>   <b>Cat. II</b>
<b>SC 6.0. Interdunal Wetlands</b>   Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <b><i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i></b>   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 <b>SC 6.1</b>    <input checked="" type="radio"/> <b>No</b> = <b>not an interdunal wetland for rating</b>   <b>SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?</b>  <span style="float: right;">Yes = <b>Category I</b>    <input checked="" type="radio"/> <b>No</b> – Go to <b>SC 6.2</b></span>   <b>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</b>  <span style="float: right;">Yes = <b>Category II</b>    <input checked="" type="radio"/> <b>No</b> – Go to <b>SC 6.3</b></span>   <b>SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?</b>  <span style="float: right;">Yes = <b>Category III</b>    <input checked="" type="radio"/> <b>No</b> = <b>Category IV</b></span>	<b>Cat I</b>   <b>Cat. II</b>   <b>Cat. III</b>   <b>Cat. IV</b>
<b>Category of wetland based on Special Characteristics</b>   If you answered No for all types, enter "Not Applicable" on Summary Form	Not applicable

Wetland name or number ^E_____

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Figure 1



Path: J:\C_Stairwood_001125\001125_030_Church Creek Park Critical Areas Study\GIS\ChurchCreek_CAS.aprx User: Natalie.Dietsch, Date



Cowardin Class  
 Forested

Note: Wetland does not meet vegetation criteria provided in question S 1.3.  
Dense, rigid plants do not cover >90% of the wetland (re: question S 4.1).

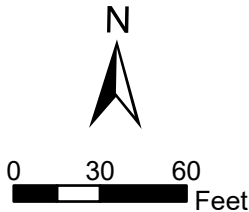




Figure 2



- Wetland E Buffer 150 ft
- Wetland E Hydrology
  - Saturated Only
- Church Creek OHWM

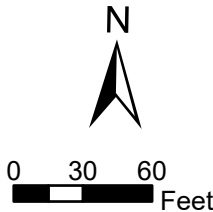
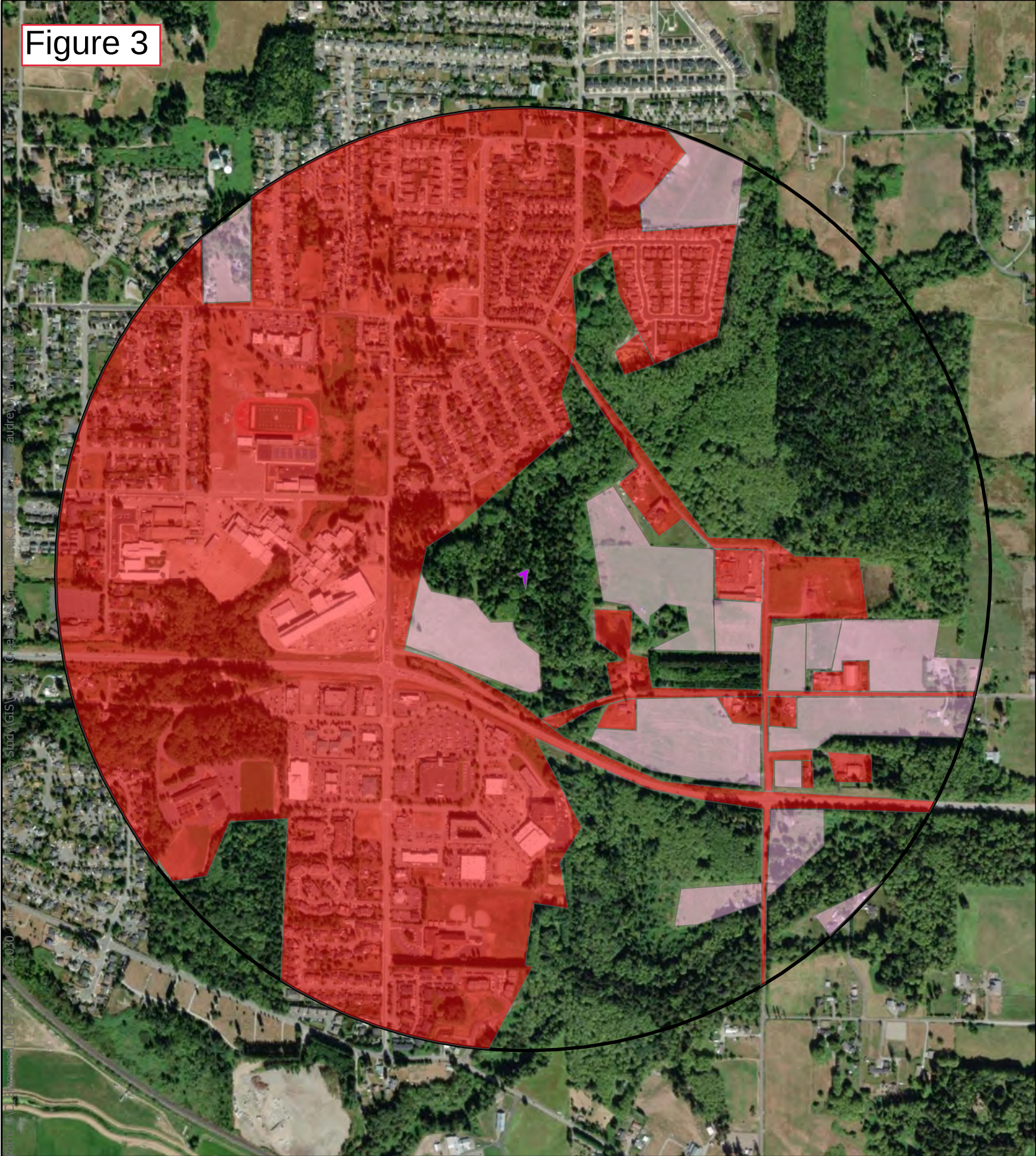


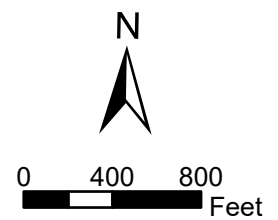


Figure 3



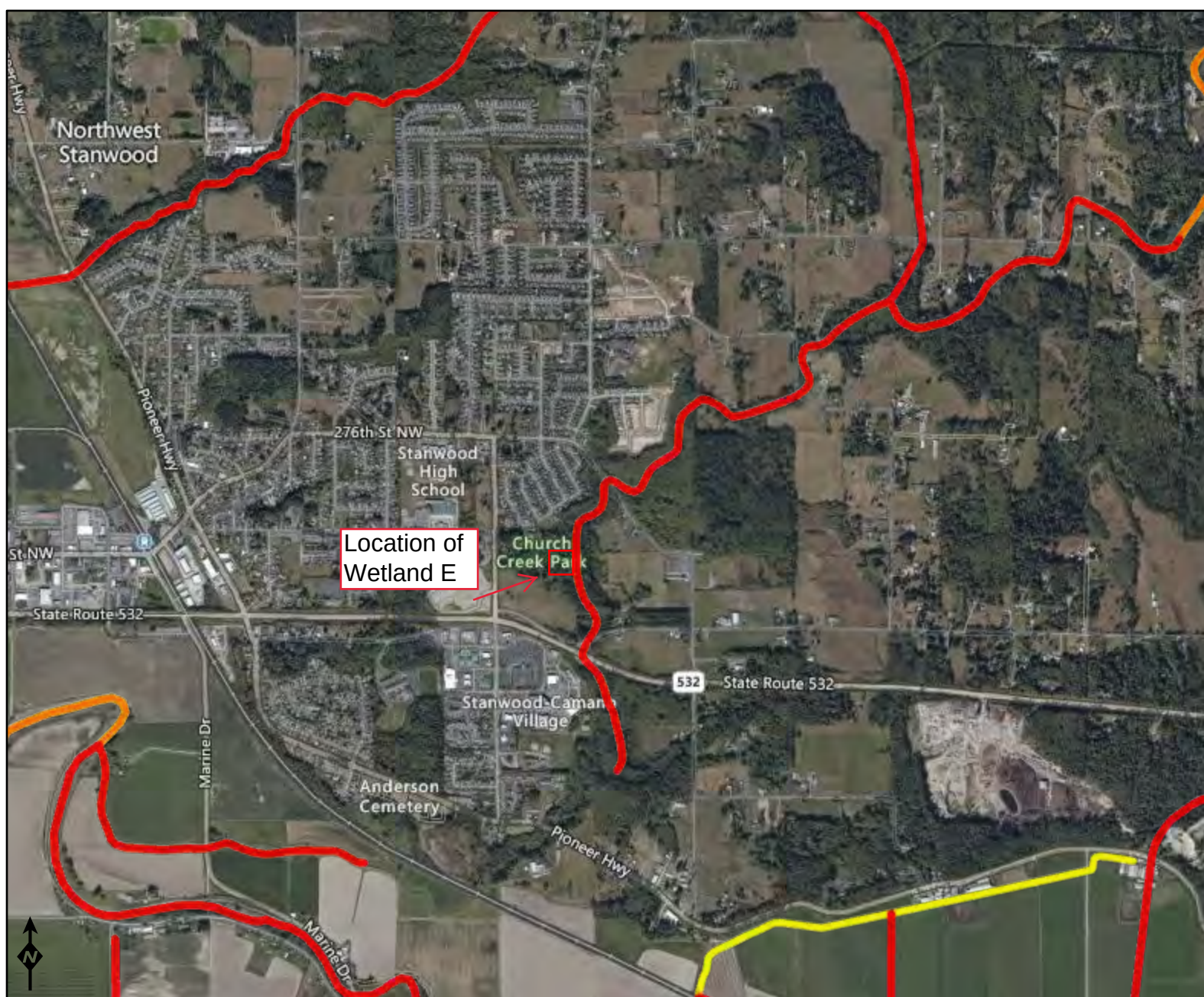
- |                                                                                                          |                                                                                                        |
|----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
|  Wetland E            | Land Use Intensity                                                                                     |
|  Wetland E Buffer 1km |  High Intensity     |
|                                                                                                          |  Moderate Intensity |

Note: Unshaded areas within the 1 km polygon are relatively undisturbed





# Figure 4 - 303(d) List



## Assessed Water/Sediment

### Water

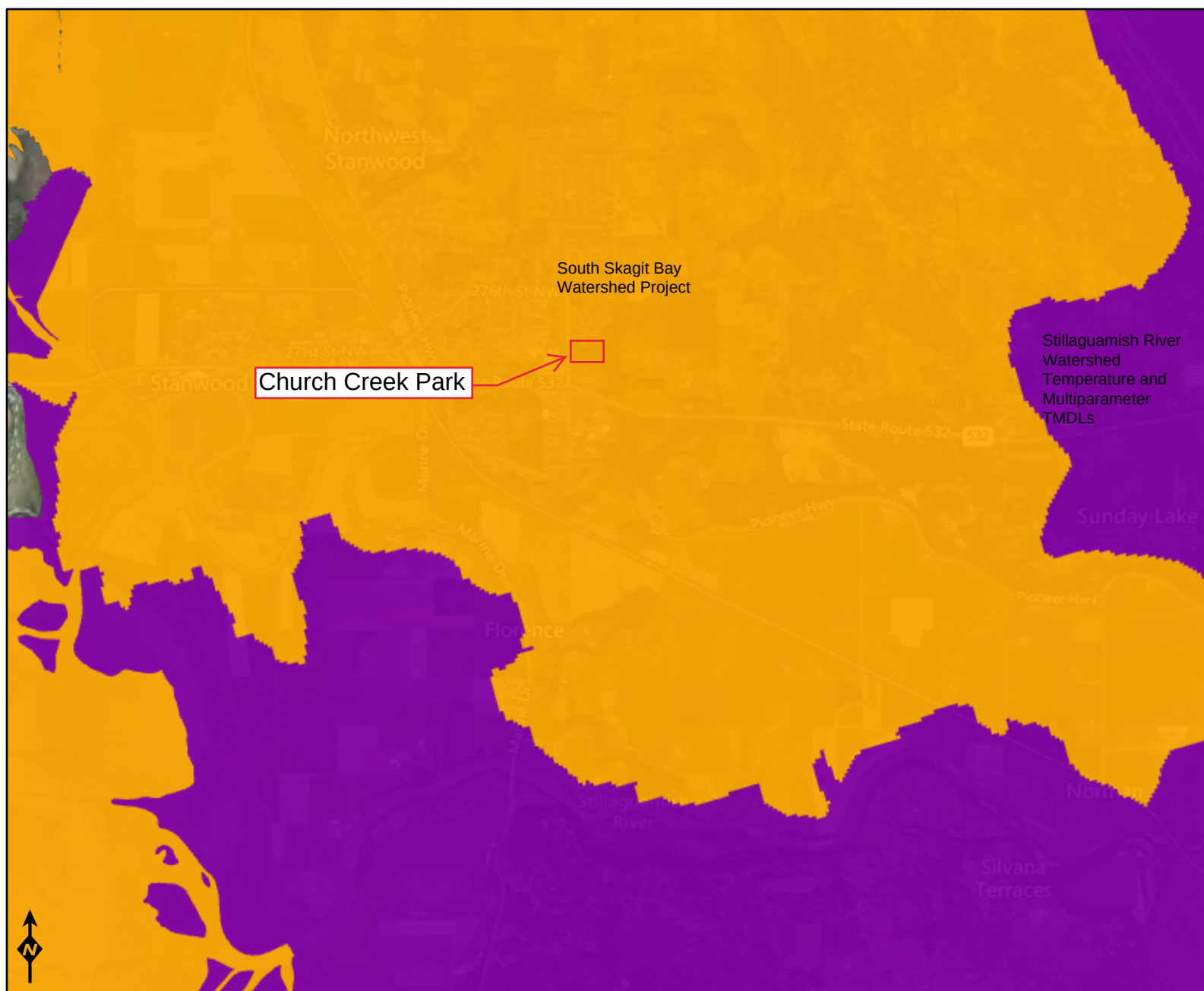
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

### Sediment

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

Figure 5 - 303(d) List

# WQA TMDLs



## WQ Improvement Projects

- Approved
- In Development



An abstract, light blue graphic element that resembles a stylized, flowing shape or a large, soft-edged arrow pointing towards the right. It is positioned in the lower half of the page, behind the text.

# Appendix E

## Site Photographs



Photo 1. Soil profile at TP-1



Photo 2. Soil profile at TP-3





Photo 3. Soil profile of TP-4



Photo 4. Soil profile of TP-8





Photo 5. Soil profile of TP-9



Photo 6. Soil profile of TP-10





Photo 7. View facing west from TP-11



Photo 8. View of man-made stormwater feature located north of site





Photo 9. View of Wetland C, facing northeast



Photo 10. View of Wetland C, facing west





Photo 11. View of Wetland D, facing west



Photo 12. View of Wetland D, facing north





Photo 13. View of Wetland E, facing east



Photo 14. Church Creek, facing south. Numerous pieces of wood were observed within the stream.

