



Soundview Consultants LLC

Environmental Assessment • Planning • Land Use Solutions

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Technical Memorandum

To: John Furstenwerth

File Number: 2012.0001

From: Casey Lanier, Soundview Consultants LLC

Date: January 9, 2025

Re: Wetland, Fish, and Wildlife Habitat Assessment Technical Memorandum,
Atonement Church – 6905 172nd Street NE, Arlington, WA 98223

Dear Mr. Furstenwerth,

Soundview Consultants LLC (SVC) conducted a wetland and fish and wildlife habitat assessment of an approximately 4.43-acre property located at 6905 172nd Street Northeast, in the City of Arlington, Washington (Figure 1). The property consists of one parcel in the Southwest $\frac{1}{4}$ of Section 23, Township 31 North, Range 05 East, W.M. (Snohomish County Tax Parcel Number 31052300300900). This assessment was conducted to support the proposed expansion of the church and associated parking lot onsite. SVC investigated the site to evaluate the presence of potentially regulated wetlands, streams, or other fish and wildlife habitat conservation areas on or adjacent to the subject property. This Technical Memorandum documents the results of that assessment, and provides a description of the proposed project and necessary code analysis. Attachment A shows the onsite findings and proposed conditions.

Figure 1. Subject Property Location.



Background Data

Prior to the site investigation, SVC staff conducted background research using the Snohomish County Geographic Information System (GIS) data, Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) and SalmonScape mapping tools, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), Washington Department of Natural Resources (DNR) stream typing map, and Natural Resource Conservation Service (NRCS) soil survey (Attachment B).

Neither the USFWS NWI map (Attachment B1) nor the Snohomish County Critical Areas Inventory map (Attachment B2) identify any potential wetlands onsite. NWI does show a potential linear wetland northwest of the subject property, and the County identifies a potential wetland west of the subject property.

DNR Stream Typing map (Attachment B3), WDFW SalmonScape map (Attachment B4), WDFW PHS map (Attachment B5), NWI, and Snohomish County all identify a potential stream south of the subject property. The County, DNR, and SalmonScape identify the stream as Type F. SalmonScape identifies the presence of coho and fall chum within the channel. Moreover, it indicates that the stream is gradient accessible to Dolly Varden/bull trout, fall chinook, pink, and winter steelhead. PHS indicates a documented occurrence of coho, Dolly Varden/bull trout, and fall chum.

The NRCS soil map (Attachment B6) identifies Everett very gravelly sandy loam, 8 to 15 percent (18), Tokul gravelly medial loam, 15 to 30 percent (74), and Norma loam (39) in the project area. Everett very gravelly sandy loam is listed as non-hydric, Tokul gravelly medial loam is listed as partially hydric, and Norma loam is listed as hydric on the Snohomish County Hydric Soils List (NRCS, 1995). Generally, topography onsite slopes gently from east to west (Attachment B7).

No other wetlands, streams, or fish and wildlife habitat areas are documented within 225 feet of the subject property.

Precipitation

Precipitation data was obtained from the National Oceanic and Atmospheric Administration (NOAA) weather station at the Sea-Tac Airport Station in order to obtain percent of normal precipitation during and preceding the investigation. A summary of data collected is provided in Table 1.

Table 1. Precipitation Summary¹.

Site Visit Date	Day of	Day Before	1 Week Prior	2 Weeks Prior	30 Days Prior (Observed/Normal) ²	Year to Date (Observed/Normal) ³	Percent of Normal (Month/Year) ⁴
12/03/19	Trace	0.00	0.02	0.32	1.73/6.59	5.4/10.65	26/51

1. Precipitation volume provided in inches. Data obtained from NOAA (<http://w2.weather.gov/climate/xmacis.php?wfo=sew>)

2. 30 days prior precipitation includes accumulated precipitation beginning 30 days before the onsite date

3. Year-to-date precipitation is for the water year from October 1st to the onsite date

4. Percent of normal shown for both 30 days prior and year-to-date

The data indicates that precipitation during the December 2019 site visit was below the normal for the past 30 days and the water year with precipitation at approximately 26 and 51 percent of normal. Despite the fact that December is typically a period of increasing precipitation, the 2019 site visit was drier than expected. Such conditions were considered in making professional wetland determinations.

Methods

A formal site investigation was performed by qualified SVC staff in December 2019. The investigation consisted of walk-through surveys of the subject property. Both this site and any accessible areas within 225 feet of this property were assessed for potentially regulated wetlands, streams, and priority habitat and/or species as specified in Arlington Municipal Code (AMC) Title 20.93 (Environmentally Critical Areas).

Wetlands, streams, and select fish and wildlife habitats and species are regulated features per AMC Title 20.93 and subject to restricted uses/activities under the same title. Wetland boundaries were determined in accordance with AMC 20.93.810(a), and as outlined in the U.S. Army Corps of Engineers' (USACE) *Wetlands Delineation Manual* (Environmental Laboratory, 1987) as modified according to the guidelines established in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, Version 2.0* (USACE, 2010) and *Field Indicators of Hydric Soils in the United States* (USDA, 2018). Qualified SVC wetland scientists marked boundaries of any onsite wetlands with orange surveyor's flagging labeled alpha-numerically and tied to 3-foot lath or vegetation along the wetland boundary. Pink surveyor's flagging was labeled alpha-numerically and tied to 3-foot lath or vegetation at formal sampling locations (DP-1 through DP-4) to mark the points where detailed data was collected. Tests pits were excavated at regular intervals inside and outside of the wetland boundaries to further confirm the delineation. Additional test pits were excavated to confirm estimated wetland boundaries and to verify the presence or absence of wetland indicators in various locations throughout the site.

Wetlands were classified using both the hydrogeomorphic (Brinson, 1993) and Cowardin (Cowardin, 1979; Federal Geographic Data Committee, 2013) classification systems. Following classification and assessment, wetlands were rated and categorized using the current *Washington State Wetland Rating System for Western Washington* (Hruby, 2014) and guidelines established in AMC 20.93.800(a).

The fish and wildlife habitat assessment was conducted during the same site visit by qualified fish and wildlife biologist. The experienced biologist made visual observations using stationary and walking survey methods for both aquatic and upland habitats noting any special habitat features and direct and indirect signs of fish and wildlife activity (e.g. nesting, foraging, and migration/movement). Special attention was given to assessing the presence of critical fish and wildlife species and species and habitats of local importance outlined under AMC 20.93.400.

Results

The 4.43-acre subject property is currently utilized for commercial purposes on the majority of the site, with forested areas in the northern and southeastern portions of the site. Vegetation in the forested area in the northern portion of the subject property is dominated by an overstory of red alder (*Alnus rubra*), with an understory of salmonberry (*Rubus spectabilis*), red-osier dogwood (*Cornus alba*), common ladyfern (*Athyrium cyclosorum*), yellow skunk cabbage (*Lysichiton americanus*), and giant horsetail (*Equisetum telmateia*). Native vegetation was generally lacking throughout the developed portion of the site, but typical landscaping ornamentals and lawn grass were present in these areas. The subject property is located in a residential setting and is surrounded by undeveloped lots to the north, northeast, and south, single-family residences to the east, SR-531 to the south, and a large plat development to the west.

The site investigation identified two potentially regulated wetlands (Wetlands A and B) onsite, one likely unregulated drainage ditch onsite, one potentially regulated wetland offsite (Offsite Wetland C), and two potentially regulated streams (Edgecomb Creek and Stream Z) offsite. The identified wetlands contain indicators of wetland hydrology, hydric soils, and a predominance of hydrophytic vegetation according to current wetland delineation methodology.

Wetland A is located in northern portion of the site, extending offsite to the east, and Wetland B is located in the southeastern portion of the site, extending offsite to the east. Offsite Wetland C is located approximately 120 feet west of the subject property. Edgecomb Creek, a Type F stream, was identified offsite south of the subject property, south of SR-531. Stream Z is an old side channel from Edgecomb Creek and is located on the adjacent property to the west. A drainage ditch was also identified onsite, running east to west through Wetland A. The onsite wetlands are depicted on the site plan in Attachment A. Table 1 summarizes the wetlands identified during the site investigation.

There are no other wetlands, streams, and/or fish and wildlife habitat that were observed on or within 225 feet of the project area. The wetland data forms, wetland rating form, and wetland rating maps are provided in Attachments C, D, and E, respectively.

Wetland A

Wetland A is approximately 42,000 square feet (0.96 acres) in size onsite and is located in the northern portion of the site, extending offsite to the east. Hydrology for Wetland A is provided primarily by a seasonally high groundwater table, direct precipitation, and surface sheet flow. Wetland vegetation onsite consists of a forested community dominated by of red alder (*Alnus rubra*), salmonberry (*Rubus spectabilis*), red-osier dogwood (*Cornus alba*), common ladyfern (*Athyrium cyclosorum*), yellow skunk cabbage (*Lysichiton americanus*), and giant horsetail (*Equisetum telmateia*). Soil within Wetland A met hydric soil indicator F1 (Loamy Mucky Mineral). Wetland A is a Palustrine Forested, Saturated wetland (PFOB). Per AMC 20.93.800(a), Wetland A is classified as a Category IV Slope wetland.

Wetland B

Wetland B is approximately 7,350 square feet (0.17 acres) in size onsite and is located in a southwest location, extending offsite to the east. Hydrology for Wetland B is provided primarily by a seasonally high groundwater table, direct precipitation, and surface sheet flow. Wetland vegetation onsite consists of a forested and shrub vegetation community dominated by red alder, Pacific willow (*Salix lasiandra*), Himalayan blackberry (*Rubus armeniacus*), and non-native invasive reed canarygrass (*Phalaris arundinacea*). Soil within Wetland B met hydric soil indicator A11 (Depleted Below Dark Surface). Wetland B is a Palustrine Forested/Scrub-shrub, Seasonally Flooded/Saturated wetland (PFO/SSE). Per AMC 20.93.800(a), Wetland B is classified as a Category III Depressional wetland.

Offsite Wetland C

Offsite Wetland C is approximately 21,823 square feet (0.50 acre) in size and is located approximately 120 feet west of the site. Hydrology for Wetland C is provided by a seasonally-high water table, direct precipitation, surface runoff from adjacent uplands, and flow from a ditch that runs south to north through the wetland. Wetland vegetation is dominated by red alder saplings, salmonberry, and non-native invasive reed canarygrass. Wetland C is a Palustrine Scrub Shrub/Emergent, Seasonally Flooded/Saturated wetland (PSS/EME). Per AMC 20.93.800, Wetland C is considered a Category IV depressional wetland.

Table 1. Wetland Summary.

Wetland	Predominant Wetland Classification / Rating				Wetland Size Onsite	Buffer Width (feet) ^E
	Cowardin ^A	HGM ^B	WSDOE ^C	City of Arlington		
A	PFOB	Slope	IV	IV	~0.96 acres	40
B	PFO/SSE	Depressional	III	III	~0.17 acres	60
C	PSS/EME	Depressional	IV	IV	Offsite	40

Table 1 Notes:

- A. Cowardin et al. (1979) or NWI Class based on vegetation: PFO = Palustrine Forested; SS= Scrub-Shrub; Modifiers for Water Regime: B = Seasonally Saturated, E = Seasonally Flooded / Saturated.
- B. Brinson, M. M. (1993).
- C. Washington State Department of Ecology (WSDOE) current wetland rating system for western Washington (Hruby, 2014).
- D. AMC 20.93.800(a) wetland classification. City of Arlington rating according to Washington State Wetland Rating System for Western Washington (Hruby, 2014).
- E. AMC 20.93.810(a) buffer standards based on proposed moderate impact land use.

Edgecomb Creek

One stream (Edgecomb Creek) was identified approximately 80 feet south of the site. This stream likely originates from wetlands southeast of the site and flows from east to west. The DNR Stream Typing map, the WDFW SalmonScape map, WDFW PHS map, and the Snohomish County Critical Areas map all identify a stream in this general location. The DNR Stream Typing map identifies Edgecomb Creek as a Type F (fish habitat) stream. The WDFW SalmonScape map indicates that the stream is gradient accessible to fall chinook, Varden/bull trout, coho salmon, pink salmon (odd year) and winter steelhead trout. The WDFW PHS map shows coho salmon and Dolly Varden/bull trout utilizing this section of Edgecomb Creek.

Offsite Stream Z

Stream Z, aside channel of Edgecomb Creek, is located on the southern edge of the west-adjacent property, approximately 120 feet southwest of the site. This channel was previously identified and classified for the Centennial Park project to the west of the subject property; the results of this assessment are documented in a report titled *Relict Stream Channel Analysis and Voluntary Mitigation Plan* (SVC, 2019). Upon further review by WDFW and local tribes, a letter titled *RE: Centennial Park-Edgecomb Tributary Channel Habitat*, dated January 27, 2020, determined the channel provides suitable habitat and function to support fish presence although this habitat remains inaccessible due to velocity barriers at the SR 531 crossing. In 2017 the Washington State Department of Transportation (WSDOT) permitted the relocation of a 330-foot segment of Edgewood Creek to the south side of SR 531 in an effort to provide additional fish habitat within the upper and lower reaches of Edgecomb Creek. Following the relocation of Edgecomb Creek a relict stream channel remains and primarily conveys stormwater and intermittent flows for periods following high precipitation.

Drainage Ditch

One drainage ditch was observed along the northern portion of the subject property boundary and appears to have been artificially and intentionally excavated for the purposes of improved drainage. The ditch runs east to west through the northern section of the parcel and through Wetland A. The drainage then continues offsite to the west and onto the City's stormwater system at the intersection of 67th Avenue Northeast and Highland View Drive, as documented in the City's stormwater infrastructure inventory. The ditch was watered (2 inches of depth) during the site investigation and exhibited steep nearly vertical banks with unconsolidated bottoms and skunk cabbage growing within

the banks in some areas. It appears that this drainage has been artificially excavated for the purposes of agricultural run-off drainage and has since has experienced siltation due to said runoff. When considering these observations, it appears this ditch does not exhibit natural bed and bank and thus does not meet the state WAC 222-16-30 definition of a typed water, nor does it meet the stream requirements as defined in AMC 20.93.100, which indicates that streams do not include “*irrigation ditches, canals, stormwater runoff devices or other entirely artificial watercourses unless they are used to convey any stream naturally occurring prior to construction*”. Historic aerials indicate that the site was previously used as agricultural land in the 1950s and 1960s (Soundview Consultants, June. 2019); the ditch is faintly visible in these aerials in the northern portion of the site. Given that the ditches appear to be artificially created, does not have documented salmonid presence, and does not appear to be a relocated stream channel based, the ditch would not likely be regulated.

Existing Nonconforming Use

The subject property is currently developed with a church and associated infrastructure, including six outbuildings, a paved and unpaved, gravel parking lot, utilities, and stormwater infrastructure. A majority of the existing infrastructure is located outside of the identified wetlands and associated buffers. However, portions of the existing gravel and paved parking lot are located within the buffers of Wetlands A and B. A review of historical aerial images from Historicaerials.com show that the church and a gravel parking lot were constructed onsite between 1981 and 1990. A portion of the access drive was paved between 1990 and 2006, the between 2006 and 2011 the access drive was expanded and included parking spots, the remainder of the parking area around the east and north portion of the building consists of gravel. The existing portions of the gravel parking lot within the buffers of Wetlands A and B extend beyond the 25-percent threshold for buffer width reduction/averaging. The existing gravel parking lot has been present within the buffers of Wetlands A and B for approximately 30 years. Per AMC 20.93.100 – Definitions, any use, structure, lot, condition, activity, or any other feature or element of private property or the use of utilization of private property that does not conform to any of the provisions of this code are considered a nonconforming use. As such, the existing paved and gravel parking lot within the wetland buffers onsite are considered nonconforming uses.

Regulatory Considerations

Wetland Buffer Requirements

Based on the wetland classification guidelines in AMC 20.93.800(a) and the WSDOE 2014 wetland rating system, one Category IV slope wetland (Wetland A) and one Category III depressional wetland with a low habitat score (Wetland B) were identified onsite. Additionally, one Category IV depressional wetland (Wetland C) was identified offsite within 225 feet of the site. Per Table 20.93-4, Category III wetlands with low habitat scores are subject to a standard 60-foot buffer. Per Table 20.93-4, Category IV wetlands are subject to a standard 40-foot buffer. Given its distance from the site, Offsite Wetland C is not anticipated to project a buffer onsite. An additional 15-foot building or impervious surface setback is required from the outer wetland buffer edge per AMC 20.93.340.

Stream Buffer Requirements

Edgecomb Creek is considered a Type F water with documented Coho and Chum presence according to the WDFW SalmonScape inventory, which are considered ESA species, and therefore require a standard 150-foot buffer per AMC Table 20.93-3 SalmonScape inventory. However, SR-531 intersects the buffer associated with offsite Edgecomb Creek, entirely interrupting the buffer at the south side of SR 531. Given the presence of this busy roadway between the site and the creek, the buffer

associated with the creek is interrupted, eliminating any potential benefits the subject property could provide. As such, no buffer associated with Edgecomb Creek should be located on the subject property.

Stream Z is considered a Type F water. Per review by WDFW and local Tribes, Coho were observed within the stream, which are considered ESA species, and therefore require a standard 150-foot buffer per AMC Table 20.93-3. However, development on the adjacent property to the west has effectively interrupted the buffer due construction of residential buildings, retaining/privacy wall, and a paved walking trail between Stream Z and the subject property. The buffer is interrupted by development, eliminating any potential benefits the subject property could provide. As such, no buffer associated with Stream Z should be located on the subject site. Additionally, any area of buffer associated with Stream Z that could project onto the subject property, would be insignificant in size and located outside of the area of proposed development.

Proposed Project and Existing Non-Conforming Use

The Applicant proposes to expand the existing church building, pave the existing gravel parking lot and create additional parking area onsite to accommodate increases in the number of people attending church services. The existing church building is located entirely outside of the identified wetlands and associated buffers, and the proposed building expansion will not impact these areas. However, the existing gravel parking lot is located partially within the buffers of Wetlands A and B. Per AMC 20.93.100, the existing gravel parking lot is considered a non-conforming use. Per AMC 20.32.030(f), whenever: (i) there exists a lot with one or more structures on it, and (ii) a change in use that does not involve any enlargement of a structure is proposed for such lot, and (iii) the parking or loading requirements of Chapter 20.72 that would be applicable as the result of the proposed change cannot be satisfied on such lot because there is not sufficient area available on the lot that can practicably be used for parking or loading, then the proposed use shall not be regarded as resulting in an impermissible extension or enlargement of a nonconforming situation. The proposed project will expand the existing church structure outside of the buffers of Wetlands A and B to accommodate increases in the number of people attending church services, which in turn will require increased parking to meet the parking requirements necessary to support the increased church capacity. To accommodate the need for more parking area the applicant proposes to pave the existing gravel parking lot which includes areas within the buffer of Wetland A and B, however the footprint of the parking area within the buffer will not expand, thus there is no increase in non-conformity. In addition to paving the existing gravel parking area, a large area in the western portion of the site is proposed to be converted into a parking lot to support increase in church attendance. The total area of impervious surface onsite will increase, however there will be no increase within the buffer of Wetland A and B. As such, the proposed parking lot in the buffers of Wetlands A and B is considered a permissible allowance of a nonconforming use.

In addition to paving the existing gravel parking area within the buffer, three areas within the buffer of Wetland A are proposed to be restored with native vegetation. Buffer restoration will result in 314 square feet of native trees and shrubs to enhance on site conditions and restore vegetation to an area that has been previously provided little to no buffer functions. These buffer restoration actions are intended to result in a net zero increase of impacts within the buffers of Wetlands A and B from the proposed church development activities. The impervious surface definition in AMC 20.93.100 “Definitions”, does not differentiate between gravel, asphalt, parking lots, or driveways as they all impeded the natural infiltration of stormwater. Therefore, it does not appear that there is an increase in non-conformity. The new parking lot design will need to comply with current stormwater design

for capture, treatment, and dispersion of stormwater generated onsite.

Conclusions

The site investigation identified one Category III wetland (Wetland B) and one Category IV wetland (Wetland A) on the subject property. In addition, one Category IV wetland (Wetland C) was identified offsite to the west, and two Type F streams (Edgecomb Creek and Stream Z) were identified south of the site, south of SR-531 and west of the subject site. Wetlands A and C are subject to standard 40-foot buffers, Wetland B is subject to a standard 60-foot buffer, and Edgecomb Creek and Stream Z are subject to a standard 150-foot buffer. Given its distance from the site, the buffer of Wetland C is not anticipated to project onsite. The buffer of Edgecomb Creek is functionally interrupted by SR-531 prior to reaching the subject property and as such is also not anticipated to project onsite. The buffer of Stream Z is functionally interrupted by the development on the adjacent property west of the site due to residential building and a paved walk way and as such is not anticipated to project onsite. No other wetlands, streams, or other fish and wildlife habitat conservation areas were identified on or within 225 feet of the subject property during the site investigation.

The site investigation was conducted to support expansion of the existing church and associated parking lot on the subject property to support increases in the number of people attending church services. The proposed expansion activities have been designed to avoid impacts to Wetlands A and B and the associated buffers to the greatest extent feasible and direct wetland impacts are avoided entirely. Additionally, expansion of the church building will occur entirely in upland areas, outside of the buffers of Wetlands A and B. However, due to the location of the existing gravel parking lot within the buffers of Wetlands A and B, complete avoidance is not feasible, the footprint to the gravel parking area within the buffer will not be expanded after the area has been paved, additionally 314 square feet of area within the buffer of Wetland A will be restored with a suite of native trees and shrubs. The existing parking lot is considered a non-conforming use as it has been present in the buffers of Wetlands A and B for approximately 30 years. As such, improvement of the gravel parking facilities to meet the parking and loading requirements of AMC Chapter 20.72 is permissible, per AMC 20.32.030(f). To increase parking onsite, the western portion of the site will be developed into a parking lot, this expansion is entirely outside of the buffers of Wetland A and B. The proposed site plan was developed with a no-net loss of buffer function through utilizing existing non-conforming areas, restoration of buffers, and focusing any new development away from critical areas. These actions have been designed to result in a net zero increase of impacts within the buffers of Wetlands A and B when compared to the existing conditions onsite.

If you have any further questions, please contact us at your earliest convenience.

Sincerely,



Casey Lanier
Project Manager and Senior Environmental Scientist

January 9, 2025

Date

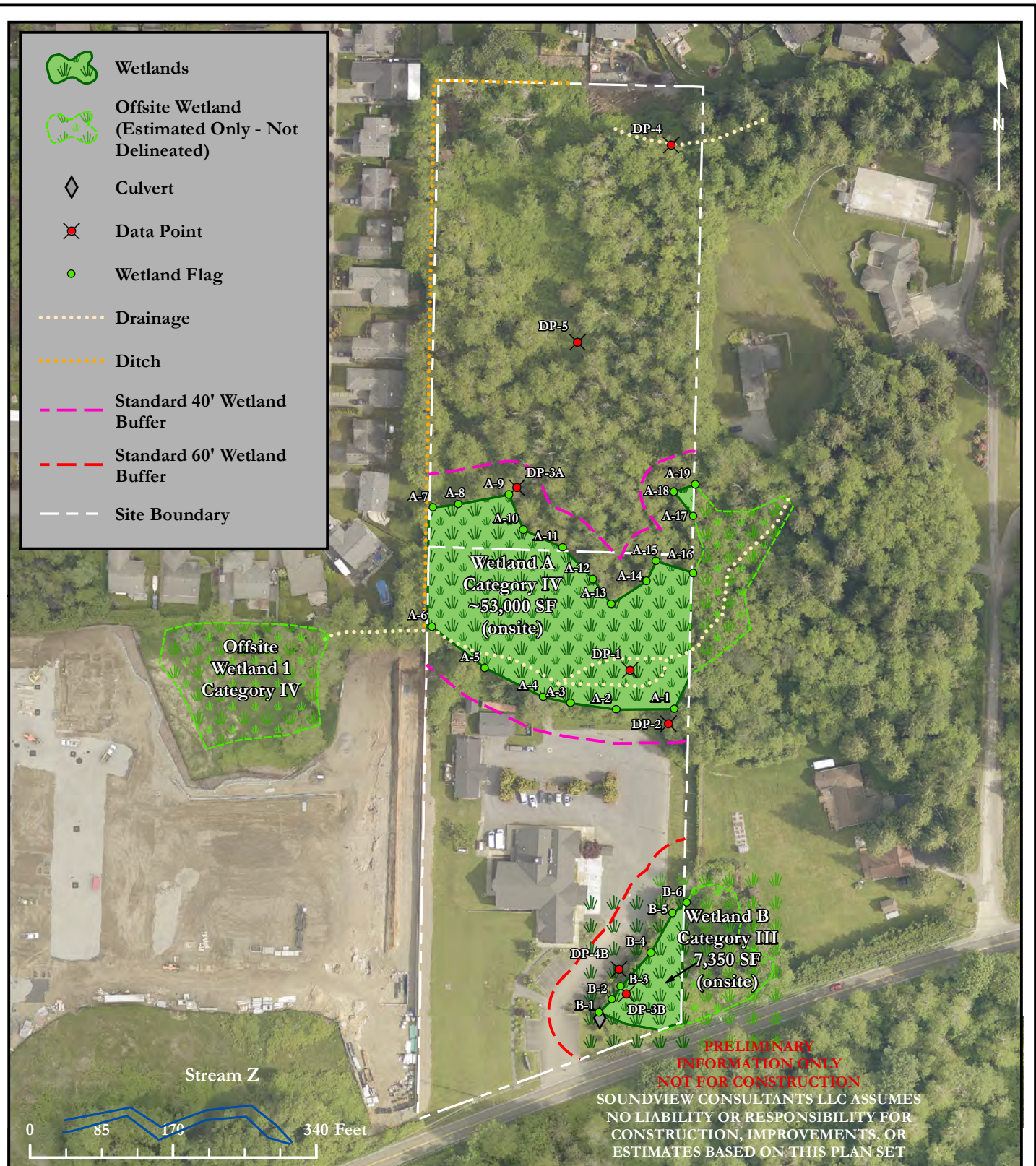
References

- Arlington Municipal Code (AMC). 2022. *Title 20.32 – Nonconforming Situations*. Website: https://library.municode.com/wa/arlington/codes/code_of_ordinances?nodeId=TIT20ZO_CH20.32NOSI. Current through June 28, 2022.
- AMC. 2022. *Title 20.93 – Environmentally Critical Areas*. Website: https://library.municode.com/wa/arlington/codes/code_of_ordinances?nodeId=TIT20ZO_CH20.93ENCRAR. Current through June 28, 2022.
- Brinson, M. M. 1993. *A hydrogeomorphic classification for wetlands, Technical Report WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS*.
- Cowardin, L.M. V. Carter, F. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish & Wildlife Service. Washington D.C.
- Debose, Alfonso and Michael W. Klungland. 1983. Soil Survey of Snohomish County Area, Washington. U.S. Department of Agriculture, Soil Conservation Service in Cooperation with Washington Agricultural Experiment Station.
- Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.
- Hitchcock, C.L. & A. Cronquist, Ed. by D. Giblin, B. Ledger, P. Zika, and R. Olmstead. 2018. *Flora of the Pacific Northwest*, 2nd Edition. U.W Press and Burke Museum. Seattle, Washington.
- Hruby, T. 2014. Washington State Wetland Rating System for Western Washington: 2014 Update. (Publication #14-06-029). Olympia, WA: Washington Department of Ecology.
- Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List: 2016 wetland ratings*. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X
- Munsell® Color. 2000. *Munsell® soil color charts*. New Windsor, New York.
- Natural Resources Conservation Services (NRCS). N.d. *Soil Data Access Hydric Soils List* (Soil Data Access Live). Website: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316620.html.
- Sheldon, D., T. Hruby, P. Johnson, K. Harper, A. McMillan, T. Granger, S. Stanley, and E. Stockdale. 2005. *Wetlands in Washington State - Volume 1: A Synthesis of the Science*. Washington State Department of Ecology. Publication #05-06-006. Olympia, WA. March 2005.
- Soundview Consultants (SVC). 2019. *Relict Stream Channel Analysis and Voluntary Mitigation Plan Technical Memorandum – Centennial Park*. Gig Harbor, Washington. August 29, 2019.
- U.S. Army Corps of Engineers (USACE). 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-13. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Department of Agriculture, NRCS. 2018. *Field Indicators of Hydric Soils in the United States*, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

Attachment A – Existing and Proposed Conditions

ATONEMENT CHURCH - EXISTING CONDITIONS



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ATONEMENT CHURCH

6905 172ND STREET NE
ARLINGTON, WA 98223

SNOHOMISH COUNTY PARCEL NUMBERS:
31052300300900 & 31052300301900

DATE: 12/15/2021

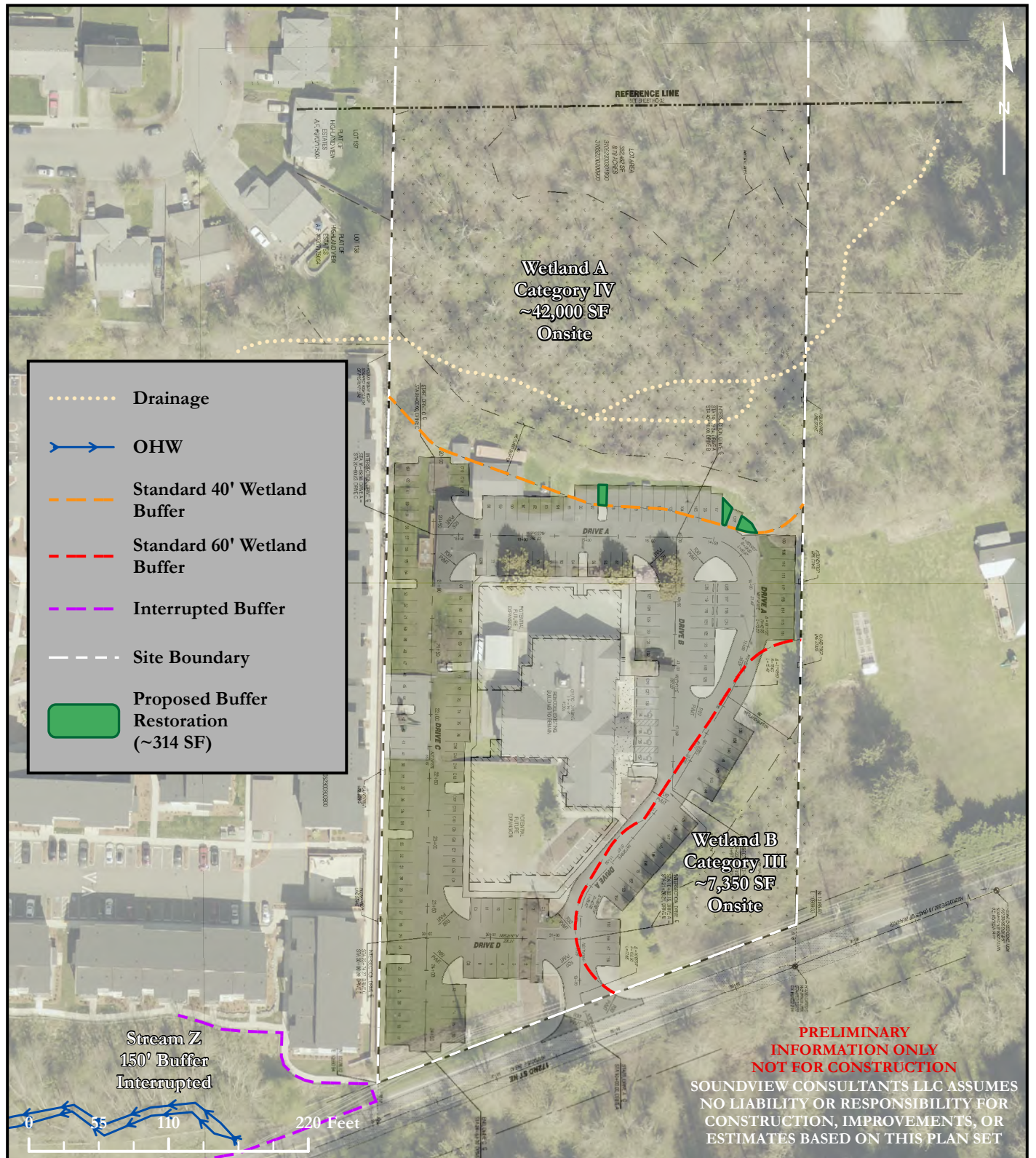
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BY: RJK

SCALE: 1" = 165'

FIGURE NO. 1

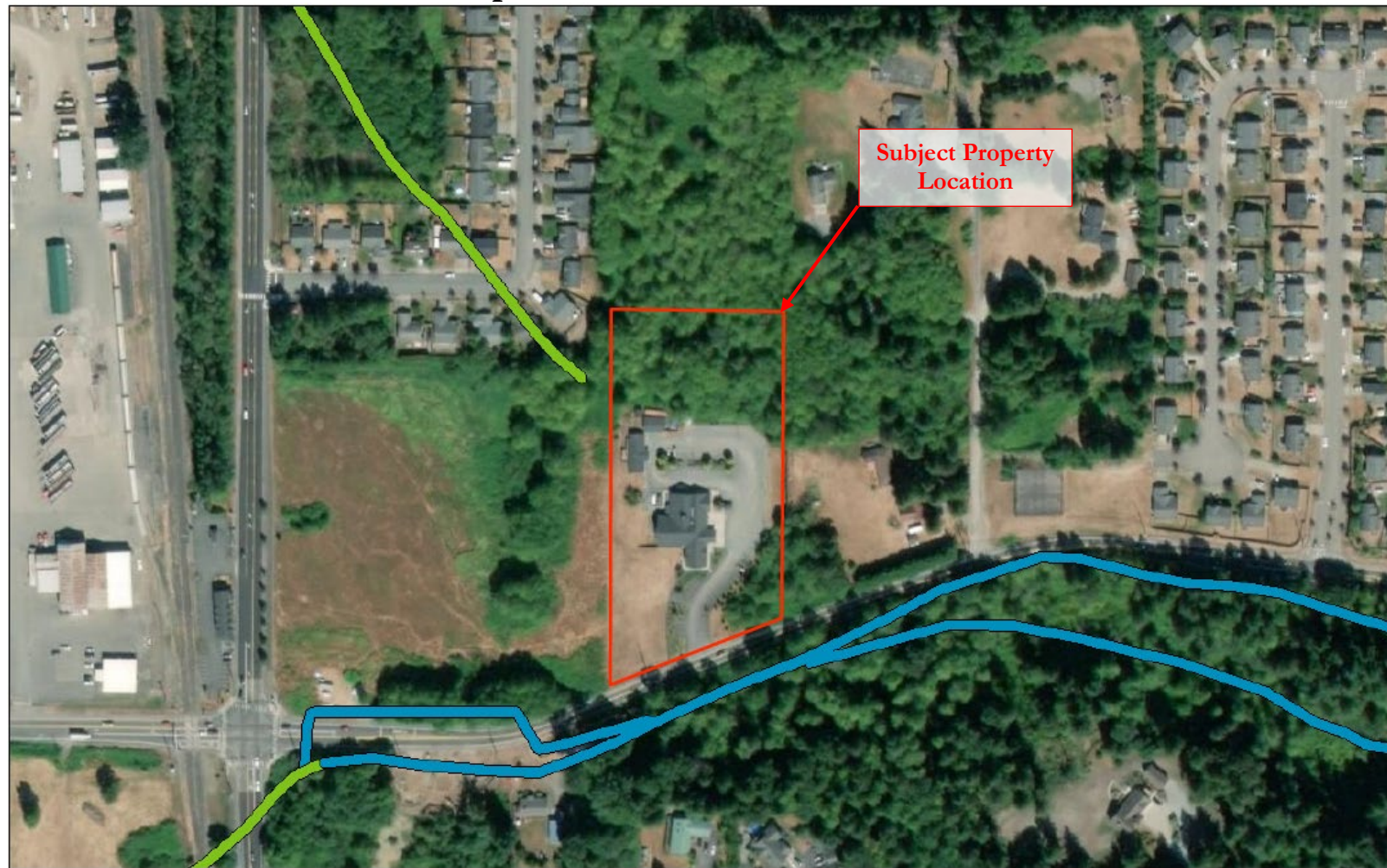
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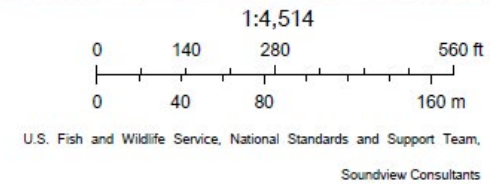
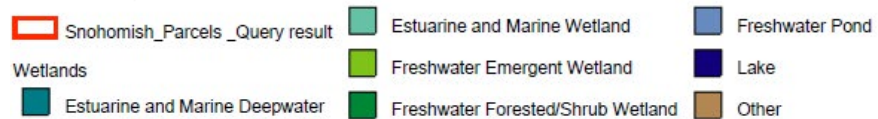
Attachment B – Background Information

This attachment includes a USFWS NWI Map (B1); Snohomish County Critical Areas Map (B2); DNR Stream Typing Map (B3); WDFW SalmonScape Map (B4); WDFW PHS Map (B5); NRCS Soil Survey Map (B6); and Snohomish County Topographic Map (B7).

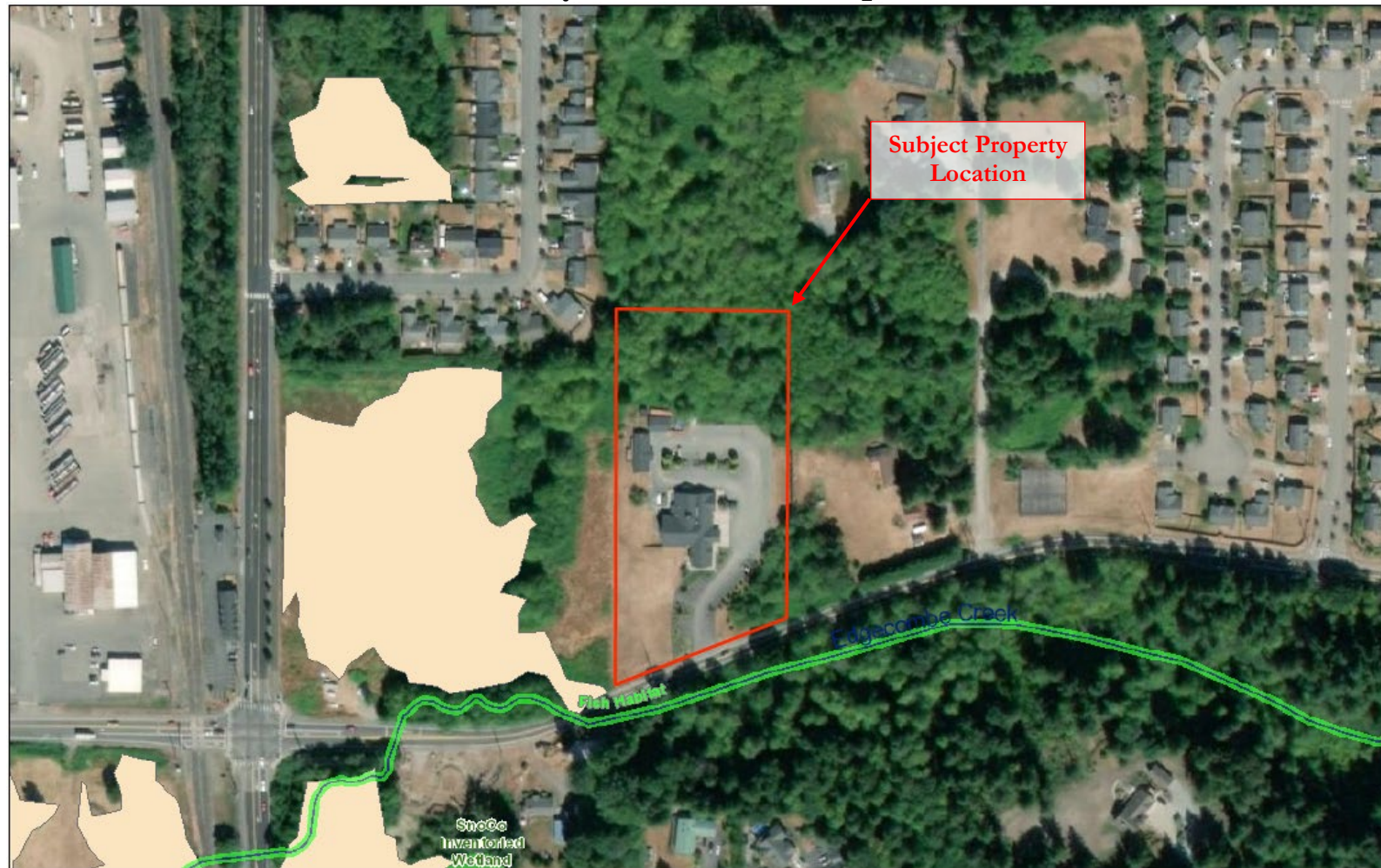
Attachment B1 – USFWS NWI Map



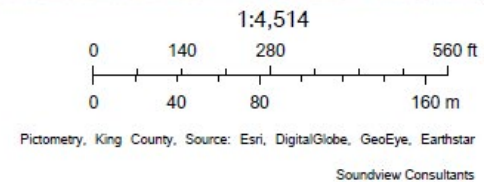
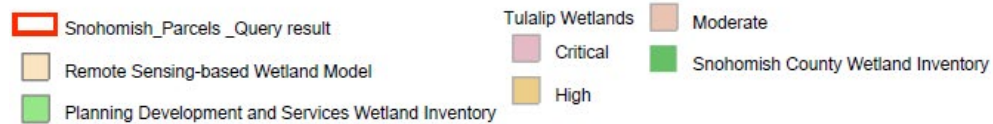
11/15/2019, 8:42:19 AM



Attachment B2 – Snohomish County Critical Areas Map



11/15/2019, 8:49:47 AM



Attachment B3 – DNR Stream Typing Map

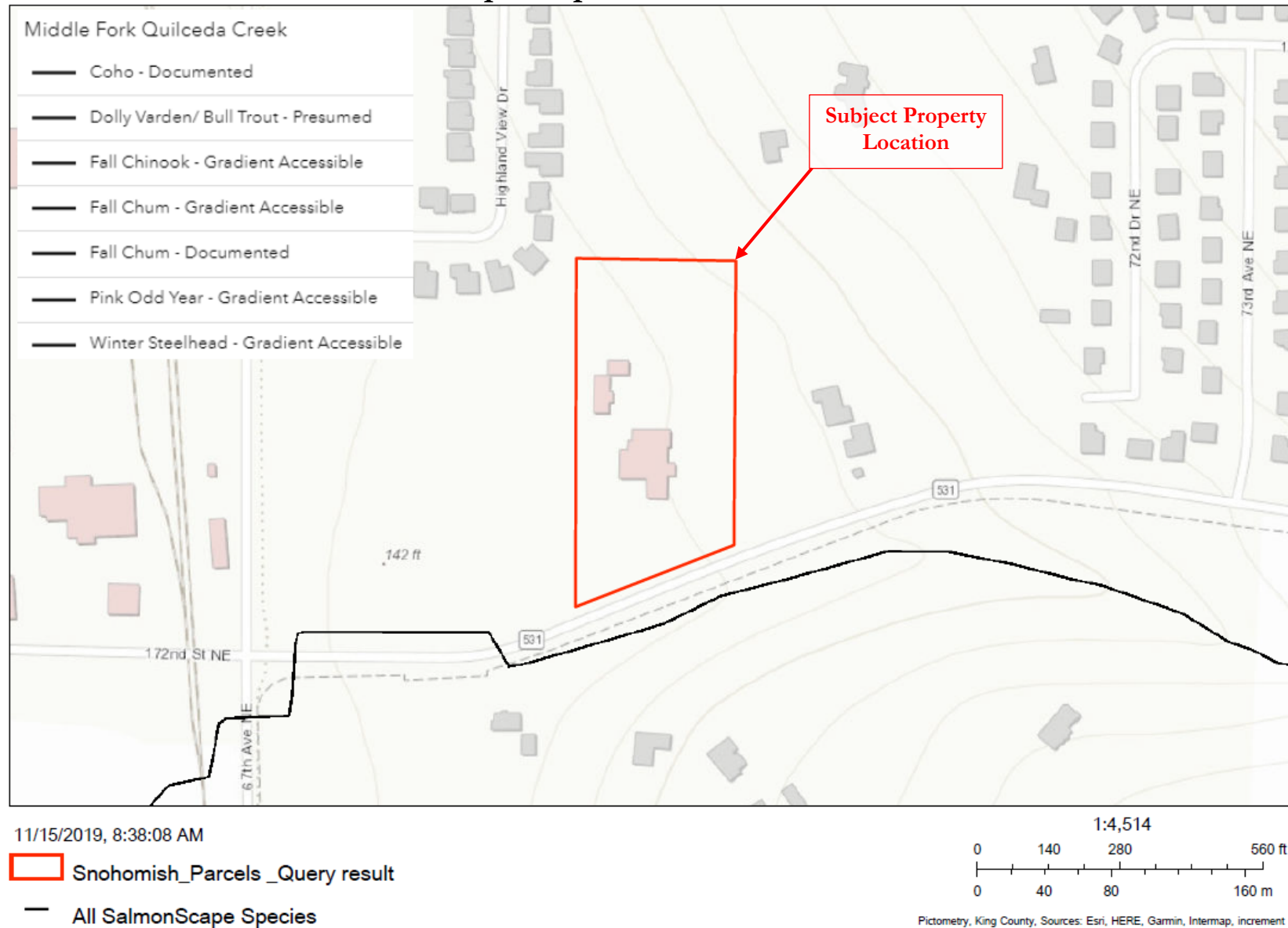


11/15/2019, 8:44:54 AM

 Snohomish_Parcels_Query result — Type F X, non-typed per WAC 222-16
 Streams — Type N, Np, Ns Stream Names
 — Type S — U, unknown

1:4,514
 0 140 280 560 ft
 0 40 80 160 m
 Pictometry, King County, Source: Esri, DigitalGlobe, GeoEye, Earthstar
 Soundview Consultants

Attachment B4 - WDFW SalmonScape Map



Attachment B5 – WDFW PHS Map



7/15/2020, 3:54:21 PM

● PHS Public Points	PHS Public Polygon Outlines	PHS Public Polygons
— PHS Public Lines	AS MAPPED	AS MAPPED
	Masked	SECTION

1:4,514

0 140 280 560 ft

0 40 80 160 m

WDFW, © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020)



WASHINGTON DEPARTMENT OF FISH AND WILDLIFE PRIORITY HABITATS AND SPECIES REPORT

SOURCE DATASET: PHSPublic
REPORT DATE: 11/15/2019 9.08

Query ID: P191115090732

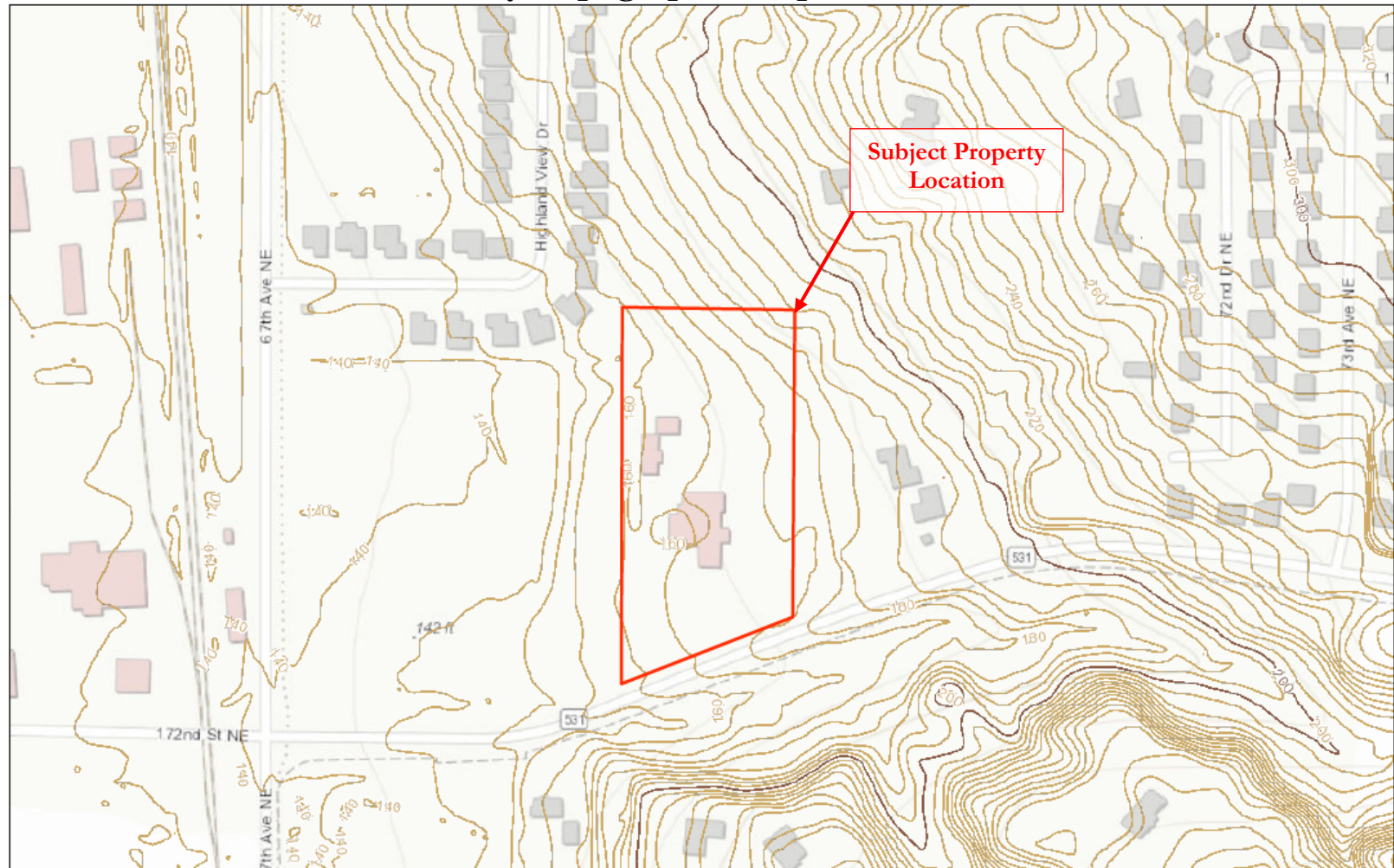
Common Name Scientific Name Notes	Site Name Source Dataset Source Record Source Date	Priority Area Occurrence Type More Information (URL) Mgmt Recommendations	Accuracy	Federal Status State Status PHS Listing Status	Sensitive Data Resolution	Source Entity Geometry Type
Coho Oncorhynchus kisutch	Middle Fork Quilceda Creek SWIFD 33704	Breeding Area Breeding area http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Coho Oncorhynchus kisutch	Middle Fork Quilceda Creek SASI 3080	Occurrence Occurrence http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	Candidate N/A PHS Listed	N AS MAPPED	WDFW Fish Program Lines
Dolly Varden/ Bull Trout Salvelinus malma	Middle Fork Quilceda Creek SWIFD 33706	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines
Fall Chum Oncorhynchus keta	Middle Fork Quilceda Creek SWIFD 33701	Occurrence/Migration Occurrence/migration http://wdfw.wa.gov/wlm/diversty/soc/soc.htm	NA	N/A N/A PHS LISTED	N AS MAPPED	Lines

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.

11/15/2019 9.08

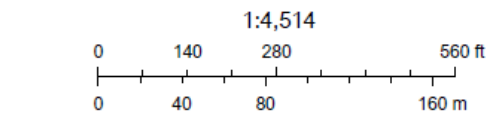
1

Attachment B7 – Snohomish County Topographic Map



11/15/2019, 8:39:45 AM

 Snohomish_Parcels_Query result



Pictometry, King County, Sources: Esri, HERE, Garmin, Intermap, increment

Soundview Consultants

Attachment B7 – NRCS Soil Survey Map



11/15/2019, 8:51:02 AM

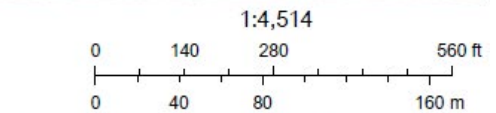
Snohomish_Parcels_Query result

USA Soils Map Units

18: Everett very gravelly sandy loam, 8 to 15 percent slopes

74: Tokul gravelly medial loam, 15 to 30 percent slopes

39: Norma loam



Pictometry, King County, Source: Esri, DigitalGlobe, GeoEye, Earthstar

Soundview Consultants

Attachment C – Data Forms

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

Project/Site: 2012.0001 - Atonement Church City/County: Arlington / Snohomish Sampling Date: 12/03/2019
 Applicant/Owner: Atonement Free Lutheran Church State: WA Sampling Point: DP-1
 Investigator(s): Kyla Caddey, Monica Szarvas Section, Township, Range: 23 / 31N / 05E
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 10
 Subregion (LRR): A2 Lat: 48.153625 Long: -122.13691338 Datum: WGS 84
 Soil Map Unit Name: Tokul gravelly medial loam, 15 to 30 percent slopes NWI classification: N/A

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

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

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present? Yes ☒ No ☐	
Wetland Hydrology Present? Yes ☒ No ☐	
Remarks: All three wetland criteria met. Data collected in Wetland A. Precipitation is significantly below normal for this time of year.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
1. <u>Alnus rubra</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Hydrophytic Vegetation Indicators: ☐ Rapid Test for Hydrophytic Vegetation ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ 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.
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
Sapling/Shrub Stratum (Plot size: 30 ft)				Hydrophytic Vegetation Present? Yes ☒ No ☐
1. <u>Rubus spectabilis</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Lonicera involucrata</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Remarks: Hydrophytic vegetation criteria met through dominance test.
3. <u>Acer circinatum</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
4. <u>Cornus alba</u>	<u>10</u>	<u>No</u>	<u>FACW</u>	
5. <u>Rubus armeniacus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
Herb Stratum (Plot size: 10 ft)				
1. <u>Equisetum telmateia</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>	
2. <u>Lysichiton americanus</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	
3. <u>Athyrium cyclosorum</u>	<u>10</u>	<u>No</u>	<u>FAC</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>	
11. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
Woody Vine Stratum (Plot size: 30 ft)				
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
% Bare Ground in Herb Stratum <u>30</u>				
Remarks:				

SOIL

Sampling Point: DP-1

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0 - 16	2.5Y 2.5/1	100	-	-	-	-	MeLo	Mucky medium 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.)

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

Indicators for Problematic Hydric Soils³:

- ☐ 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: None

Depth (inches): --

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator F1.

HYDROLOGY

Wetland Hydrology Indicators:

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

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| ☒ High Water Table (A2) | ☐ Salt Crust (B11) |
| ☒ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Stunted or Stressed Plants (D1) (LRR A) |
| ☐ Surface Soil Cracks (B6) | ☐ Other (Explain in Remarks) |
| ☐ Inundation Visible on Aerial Imagery (B7) | |
| ☐ 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): None

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

Saturation Present? Yes ☒ No ☐ Depth (inches): 9
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Hydrology criteria met through primary indicators A2 and A3.

Project/Site: 2012.0001 - Atonement Church City/County: Arlington / Snohomish Sampling Date: 12/03/2019
 Applicant/Owner: Atonement Free Lutheran Church State: WA Sampling Point: DP-2
 Investigator(s): Kyla Caddey, Monica Szarvas Section, Township, Range: 23 / 31N / 05E
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 5
 Subregion (LRR): A2 Lat: 48.153453 Long: -122.13672317 Datum: WGS 84
 Soil Map Unit Name: Tokul gravelly medial loam, 15 to 30 percent slopes NWI classification: N/A

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.)

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland?	Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒		
Wetland Hydrology Present?	Yes ☐ No ☒		
Remarks: Not all three wetland criteria met, only hydrophytic vegetation. Data collected south of Wetland A. Precipitation is significantly below normal for this time of year.			

Tree Stratum (Plot size: 30 ft)				Dominance Test worksheet:	
	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u>Alnus rubra</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>4</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
4. _____	<u>15</u>	= Total Cover			
<u>Sapling/Shrub Stratum (Plot size: 30 ft)</u>				Prevalence Index worksheet:	
1. <u>Rubus armeniacus</u>	<u>65</u>	<u>Yes</u>	<u>FAC</u>	<u>Total % Cover of:</u> _____ <u>Multiply by:</u> _____	
2. <u>Salix sitchensis</u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	OBL species _____ x 1 = _____	
3. _____	_____	_____	_____	FACW species _____ x 2 = _____	
4. _____	_____	_____	_____	FAC species _____ x 3 = _____	
5. _____	_____	_____	_____	FACU species _____ x 4 = _____	
	<u>85</u>	= Total Cover		UPL species _____ x 5 = _____	
<u>Herb Stratum (Plot size: 10 ft)</u>				Column Totals: _____ (A) _____ (B)	
1. <u>Phalaris arundinacea</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>	Prevalence Index = B/A = _____	
2. <u>Equisetum arvense</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators:	
3. _____	_____	_____	_____	☐ Rapid Test for Hydrophytic Vegetation	
4. _____	_____	_____	_____	☒ Dominance Test is >50%	
5. _____	_____	_____	_____	☐ Prevalence Index is ≤3.0 ¹	
6. _____	_____	_____	_____	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
7. _____	_____	_____	_____	☐ Wetland Non-Vascular Plants ¹	
8. _____	_____	_____	_____	☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
9. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
10. _____	_____	_____	_____		
11. _____	<u>80</u>	= Total Cover			
<u>Woody Vine Stratum (Plot size: 30 ft)</u>				Hydrophytic Vegetation Present? Yes ☒ No ☐	
1. _____	_____	_____	_____		
2. _____	<u>0</u>	= Total Cover			
% Bare Ground in Herb Stratum <u>20</u>					
Remarks: <u>Hydrophytic vegetation criteria met through dominance test.</u>					

SOIL

Sampling Point: DP-2

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0 - 16	10YR 2/2	100	-	-	-	-	SaLo	Gravelly sandy 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.)

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

Indicators for Problematic Hydric Soils³:

- ☐ 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: None

Depth (inches): --

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil criteria met.

HYDROLOGY

Wetland Hydrology Indicators:

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

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| ☐ High Water Table (A2) | ☐ Salt Crust (B11) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Stunted or Stressed Plants (D1) (LRR A) |
| ☐ Surface Soil Cracks (B6) | ☐ Other (Explain in Remarks) |
| ☐ Inundation Visible on Aerial Imagery (B7) | |
| ☐ 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? Yes ☐ No ☒ Depth (inches): None
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No hydrology criteria met.

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

Project/Site: 2012.0001 - Atonement Church City/County: Arlington / Snohomish Sampling Date: 12/03/2019
 Applicant/Owner: Atonement Free Lutheran Church State: WA Sampling Point: DP-3
 Investigator(s): Monica Szarvas, Kyla Caddey Section, Township, Range: 23 / 31N / 05E
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 5
 Subregion (LRR): A2 Lat: 48.152569 Long: -122.13690598 Datum: WGS 84
 Soil Map Unit Name: Norma loam NWI classification: N/A

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

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

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☒ No ☐
Remarks: All three wetland criteria met. Data collected in Wetland B. Precipitation is significantly below normal for this time of year.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>) 1. <u>Thuja plicata</u> 2. <u>Alnus rubra</u> 3. <u>Salix lasiandra</u> 4. <u> </u> <u>50</u> = Total Cover Sapling/Shrub Stratum (Plot size: <u>30 ft</u>) 1. <u>Rubus spectabilis</u> 2. <u>Rubus armeniacus</u> 3. <u> </u> 4. <u> </u> 5. <u> </u> <u>55</u> = Total Cover Herb Stratum (Plot size: <u>10 ft</u>) 1. <u>Phalaris arundinacea</u> 2. <u> </u> 3. <u> </u> 4. <u> </u> 5. <u> </u> 6. <u> </u> 7. <u> </u> 8. <u> </u> 9. <u> </u> 10. <u> </u> 11. <u> </u> <u>70</u> = Total Cover Woody Vine Stratum (Plot size: <u>30 ft</u>) 1. <u> </u> 2. <u> </u> <u>0</u> = Total Cover % Bare Ground in Herb Stratum <u>30</u>	Absolute % Cover <u>20</u> <u>20</u> <u>10</u> <u> </u> <u>50</u> <u>40</u> <u>15</u> <u> </u> <u> </u> <u> </u> <u>55</u> <u>70</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u>70</u> <u>0</u>	Dominant Species? Yes Yes Yes <u> </u> <u> </u> Yes Yes <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Indicator Status <u>FAC</u> <u>FAC</u> <u>FACW</u> <u> </u> <u> </u> <u>FAC</u> <u>FAC</u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u> <u> </u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B) Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u> Hydrophytic Vegetation Indicators: ☐ Rapid Test for Hydrophytic Vegetation ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Wetland Non-Vascular Plants ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
---	--	---	--	--

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: **Hydrophytic vegetation criteria met through dominance test.**

SOIL

Sampling Point: DP-3

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

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0 - 11	10YR 3/2	100	-	-	-	-	SaLo	Gravelly sandy loam
11 - 16	10Y 4/1	90	10YR 4/6	10	C	M	LoSa	Gravelly sandy 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.)

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

Indicators for Problematic Hydric Soils³:

- ☐ 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: None

Depth (inches): --

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Hydric soil criteria met through indicator A11.

HYDROLOGY

Wetland Hydrology Indicators:

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

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| ☒ High Water Table (A2) | ☐ Salt Crust (B11) |
| ☒ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Stunted or Stressed Plants (D1) (LRR A) |
| ☐ Surface Soil Cracks (B6) | ☐ Other (Explain in Remarks) |
| ☐ Inundation Visible on Aerial Imagery (B7) | |
| ☐ 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): None

Water Table Present? Yes ☒ No ☐ Depth (inches): 7

Saturation Present? Yes ☒ No ☐ Depth (inches): 4
(includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

Hydrology criteria met through primary indicators A2 and A3.

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

Project/Site: 2012.0001 - Atonement Church City/County: Arlington / Snohomish Sampling Date: 12/03/2019
 Applicant/Owner: Atonement Free Lutheran Church State: WA Sampling Point: DP-4
 Investigator(s): Kyla Caddey, Monica Szarvas Section, Township, Range: 23 / 31N / 05E
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 5
 Subregion (LRR): A2 Lat: 48.152648 Long: -122.13694318 Datum: WGS 84
 Soil Map Unit Name: Norma loam NWI classification: N/A

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

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

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

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

Hydrophytic Vegetation Present? Yes ☒ No ☐	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present? Yes ☐ No ☒	
Wetland Hydrology Present? Yes ☐ No ☒	
Remarks: <u>Not all three wetland criteria met, only hydrophytic vegetation. Data collected north of Wetland B. Precipitation is significantly below normal for this time of year.</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Thuja plicata</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	
2. <u>Salix lasiandra</u>	<u>10</u>	<u>Yes</u>	<u>FACW</u>	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Prevalence Index worksheet:
<u>50</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: 30 ft)				Total % Cover of: <u> </u> Multiply by: <u> </u>
1. <u>Rubus spectabilis</u>	<u>15</u>	<u>Yes</u>	<u>FAC</u>	OBL species <u> </u> x 1 = <u> </u>
2. <u>Rubus armeniacus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u> </u> x 2 = <u> </u>
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	FAC species <u> </u> x 3 = <u> </u>
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	FACU species <u> </u> x 4 = <u> </u>
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	UPL species <u> </u> x 5 = <u> </u>
<u>25</u> = Total Cover				Column Totals: <u> </u> (A) <u> </u> (B)
Herb Stratum (Plot size: 10 ft)				Prevalence Index = B/A = <u> </u>
1. <u>Mowed lawn*</u>	<u>90</u>	<u>Yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: ☐ Rapid Test for Hydrophytic Vegetation ☒ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ 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.
2. <u>Phalaris arundinacea</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
3. <u>Ranunculus repens</u>	<u>2</u>	<u>No</u>	<u>FAC</u>	
4. <u>Taraxacum officinale</u>	<u>1</u>	<u>No</u>	<u>FACU</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>	
11. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u>98</u> = Total Cover				Hydrophytic Vegetation Present? Yes ☒ No ☐
Woody Vine Stratum (Plot size: 30 ft)				
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>2</u>				

Remarks: Hydrophytic vegetation criteria met through dominance test.
*Could not be identified to species, assumed FAC for scoring purposes.

SOIL

Sampling Point: DP-4

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 - 7	10YR 3/2	100	-	-	-	-	SaLo	Gravelly sandy loam
7 - 14	7.5YR 3/3	100	-	-	-	-	SaLo	Very gravelly sandy 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.)

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

Indicators for Problematic Hydric Soils³:

- ☐ 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: None

Depth (inches): --

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No hydric soil criteria met.

HYDROLOGY

Wetland Hydrology Indicators:

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

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) |
| ☐ High Water Table (A2) | ☐ Salt Crust (B11) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) | ☐ Presence of Reduced Iron (C4) |
| ☐ Algal Mat or Crust (B4) | ☐ Recent Iron Reduction in Tilled Soils (C6) |
| ☐ Iron Deposits (B5) | ☐ Stunted or Stressed Plants (D1) (LRR A) |
| ☐ Surface Soil Cracks (B6) | ☐ Other (Explain in Remarks) |
| ☐ Inundation Visible on Aerial Imagery (B7) | |
| ☐ 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): None

Water Table Present? Yes ☐ No ☒ Depth (inches): None

Saturation Present? Yes ☐ No ☒ Depth (inches): None
(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

No hydrology criteria met.

Attachment D – Wetland Rating Form

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): A Date of site visit: 12/03/19
Rated by Kyla Caddey, Monica Szarvas Trained by Ecology? ☒ Yes ☐ No Date of training _____
HGM Class used for rating Slope Wetland has multiple HGM classes? ☐ Y ☒ N

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

Source of base aerial photo/map ESRI ArcGIS

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

1. Category of wetland based on FUNCTIONS

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
Circle the appropriate ratings				
Site Potential	L	L	L	
Landscape Potential	L	M	L	
Value	H	M	L	TOTAL
Score Based on Ratings	5	5	3	13

**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	N/A

Wetland name or number A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

- ☐ NO – **Saltwater Tidal Fringe (Estuarine)** ☐ YES – **Freshwater Tidal Fringe**

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number A

☐ NO – go to 6

☐ YES – The wetland class is **Riverine**

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

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

☐ NO – go to 7

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

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

☐ NO – go to 8

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

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

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

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

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

Wetland name or number A

SLOPE WETLANDS

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

S 1.0. Does the site have the potential to improve water quality?		
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> Slope is 1% or less points = 3 Slope is > 1%-2% points = 2 Slope is > 2%-5% points = 1 Slope is greater than 5% points = 0		0
S 1.2. <u>The soil 2 in below the surface (or duff layer)</u> is true clay or true organic (<i>use NRCS definitions</i>): Yes = 3 No = 0		0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: 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 (>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 points = 6 Dense, uncut, herbaceous plants > ½ of area points = 3 Dense, woody, plants > ½ of area points = 2 Dense, uncut, herbaceous plants > ¼ of area points = 1 Does not meet any of the criteria above for plants points = 0		2
Total for S 1 Add the points in the boxes above		2

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

Record the rating on the first page

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

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

Record the rating on the first page

S 3.0. Is the water quality improvement provided by the site valuable to society?	
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? Yes = 1 No = 0	1
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> Yes = 1 No = 0	1
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> Yes = 2 No = 0	2
Total for S 3 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 A

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

1

Rating of Landscape Potential If score is: X 1 = M ___ 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

1

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

1

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

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

Wetland name or number A

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

- | | |
|---|----------------------------------|
| ☐ Aquatic bed | 4 structures or more: points = 4 |
| ☐ Emergent | 3 structures: points = 2 |
| ☐ Scrub-shrub (areas where shrubs have > 30% cover) | 2 structures: points = 1 |
| ☒ Forested (areas where trees have > 30% cover) | 1 structure: points = 0 |

If the unit has a Forested class, check if:

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

0

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

- | | |
|--|-------------------------------------|
| ☐ Permanently flooded or inundated | 4 or more types present: points = 3 |
| ☐ Seasonally flooded or inundated | 3 types present: points = 2 |
| ☐ Occasionally flooded or inundated | 2 types present: points = 1 |
| ☒ Saturated only | 1 type present: points = 0 |

☐ Permanently flowing stream or river in, or adjacent to, the wetland

☐ Seasonally flowing stream in, or adjacent to, the wetland

☐ **Lake Fringe wetland**

2 points

☐ **Freshwater tidal wetland**

2 points

0

H 1.3. Richness of plant species

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

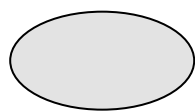
*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

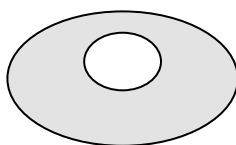
1

H 1.4. Interspersion of habitats

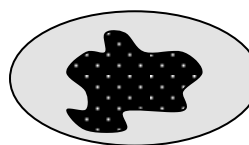
Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



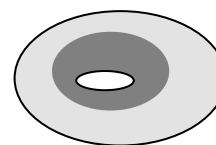
None = 0 points



Low = 1 point

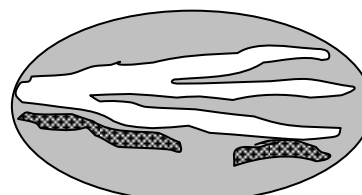
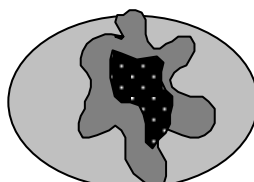
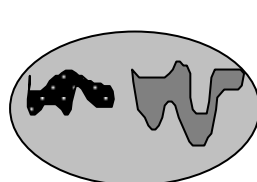


Moderate = 2 points



0

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



Wetland name or number A

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> ☒ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ☒ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>) ☐ 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>) ☐ 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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?		
H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). Calculate: <u>0.77</u> % undisturbed habitat + [(% moderate and low intensity land uses) <u>2.71</u> / 2] = <u>2.125</u> % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0		0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. Calculate: <u>2.19</u> % undisturbed habitat + [(% moderate and low intensity land uses) <u>36.39</u> / 2] = <u>20.385</u> % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0		2
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0		-2
Total for H 2	Add the points in the boxes above	0

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> 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

Wetland name or number A

WDFW Priority Habitats

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

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

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

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>	
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes –Go to SC 1.1 ☒ No= Not an estuarine wetland	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = Category I ☐ No - Go to SC 1.2	
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 = Category I ☐ No = Category II	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes – Go to SC 2.2 ☒ No – Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = Category I ☒ No = Not a WHCV SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes – Contact WNHP/WDNR and go to SC 2.4 ☒ No = Not a WHCV SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = Category I ☒ No = Not a WHCV	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes – Go to SC 3.3 ☒ No – Go to SC 3.2 SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes – Go to SC 3.3 ☒ No = Is not a bog SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = Is a Category I bog ☐ No – Go to SC 3.4 NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = Is a Category I bog ☐ No = Is not a bog	

Wetland name or number A

SC 4.0. Forested Wetlands 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> — Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). ☐ Yes = Category I ☒ No = Not a forested wetland for this section	
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>) ☐ Yes – Go to SC 5.1 ☒ No = Not a wetland in a coastal lagoon SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland is larger than $\frac{1}{10}$ ac (4350 ft²) ☐ Yes = Category I ☐ No = Category II	
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <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 SC 6.1 ☒ No = not an interdunal wetland for rating SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? ☐ Yes = Category I ☐ No – Go to SC 6.2 SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? ☐ Yes = Category II ☐ No – Go to SC 6.3 SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? ☐ Yes = Category III ☐ No = Category IV	
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	

Wetland name or number A

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Wetland name or number B

RATING SUMMARY – Western Washington

Name of wetland (or ID #): B Date of site visit: 12/03/19
Rated by Kyla Caddey, Monica Szarvas Trained by Ecology? ☒ Yes ☐ No Date of training _____
HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Y ☒ N

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

Source of base aerial photo/map ESRI ArcGIS

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

1. Category of wetland based on FUNCTIONS

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
Circle the appropriate ratings				
Site Potential	M	L	L	
Landscape Potential	H	H	L	
Value	H	H	M	TOTAL
Score Based on Ratings	8	7	4	19

**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	N/A

Wetland name or number B

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number B

☒ 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 B

DEPRESSIONAL AND FLATS WETLANDS	
Water Quality Functions - Indicators that the site functions to improve water quality	
D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions). Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	3
D 1.4. Characteristics of seasonal ponding or inundation: <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
Total for D 1	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

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

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?	Yes = 1 No = 0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?	Yes = 1 No = 0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the basin in which the unit is found)?	Yes = 2 No = 0
Total for D 3	4

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

NOTES and FIELD OBSERVATIONS:

Wetland name or number B

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 | 2 |
| 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 | 0 |
| 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 | 0 |
| 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 2

Rating of Site Potential If score is: 12-16 = H 6-11 = M X 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 3 = H 1 or 2 = M 0 = L

Record the rating on the first page

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

D 6.1. The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.

- | | | |
|---|------------|---|
| The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): | | 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. Explain why _____ | 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 B

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

- | | |
|---|----------------------------------|
| ☐ Aquatic bed | 4 structures or more: points = 4 |
| ☐ Emergent | 3 structures: points = 2 |
| ☒ Scrub-shrub (areas where shrubs have > 30% cover) | 2 structures: points = 1 |
| ☒ Forested (areas where trees have > 30% cover) | 1 structure: points = 0 |

If the unit has a Forested class, check if:

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

1

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

- | | |
|---|-------------------------------------|
| ☐ Permanently flooded or inundated | 4 or more types present: points = 3 |
| ☒ Seasonally flooded or inundated | 3 types present: points = 2 |
| ☐ Occasionally flooded or inundated | 2 types present: points = 1 |
| ☒ Saturated only | 1 type present: points = 0 |

☐ Permanently flowing stream or river in, or adjacent to, the wetland

☐ Seasonally flowing stream in, or adjacent to, the wetland

☐ **Lake Fringe wetland**

2 points

☐ **Freshwater tidal wetland**

2 points

1

H 1.3. Richness of plant species

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

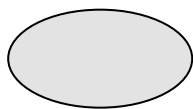
*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

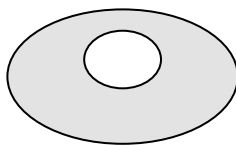
1

H 1.4. Interspersion of habitats

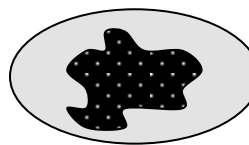
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



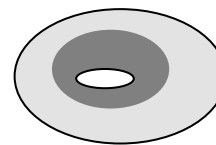
None = 0 points



Low = 1 point

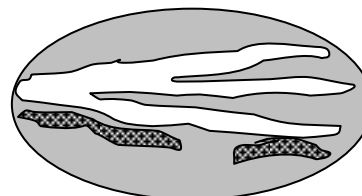
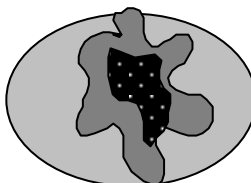
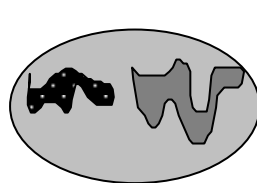


Moderate = 2 points



1

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



Wetland name or number B

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> ☒ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ☒ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>) ☐ 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>) ☐ 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	6

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

Record the rating on the first page

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

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

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

Record the rating on the first page

Wetland name or number B

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 B

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>	
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes –Go to SC 1.1 ☒ No= Not an estuarine wetland	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = Category I ☐ No - Go to SC 1.2	
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 = Category I ☐ No = Category II	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes – Go to SC 2.2 ☒ No – Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = Category I ☒ No = Not a WHCV SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes – Contact WNHP/WDNR and go to SC 2.4 ☒ No = Not a WHCV SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = Category I ☒ No = Not a WHCV	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes – Go to SC 3.3 ☒ No – Go to SC 3.2 SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes – Go to SC 3.3 ☒ No = Is not a bog SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = Is a Category I bog ☐ No – Go to SC 3.4 NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = Is a Category I bog ☐ No = Is not a bog	

Wetland name or number B

SC 4.0. Forested Wetlands 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> — Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). ☐ Yes = Category I ☒ No = Not a forested wetland for this section	
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>) ☐ Yes – Go to SC 5.1 ☒ No = Not a wetland in a coastal lagoon SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland. — The wetland is larger than $\frac{1}{10}$ ac (4350 ft²) ☐ Yes = Category I ☐ No = Category II	
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <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 SC 6.1 ☒ No = not an interdunal wetland for rating SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? ☐ Yes = Category I ☐ No – Go to SC 6.2 SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? ☐ Yes = Category II ☐ No – Go to SC 6.3 SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? ☐ Yes = Category III ☐ No = Category IV	
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	

Wetland name or number B

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Wetland name or number C

RATING SUMMARY – Western Washington

Name of wetland (or ID #): C Date of site visit: 10/12/18

Rated by Erin Harker, Jon Pickett Trained by Ecology? ☒ Yes No Date of training

HGM Class used for rating Depressional Wetland has multiple HGM classes? Y ☒ N

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

Source of base aerial photo/map

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

1. Category of wetland based on FUNCTIONS

Category I – Total score = 23 - 27

Category II – Total score = 20 - 22

Category III – Total score = 16 - 19

✕ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
Circle the appropriate ratings				
Site Potential	M	L	L	
Landscape Potential	M	M	L	
Value	H	M	L	TOTAL
Score Based on Ratings	7	5	3	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

$$4 = \text{M.L.L}$$

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	N/A

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

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number 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

DEPRESSIONAL AND FLATS WETLANDS	
Water Quality Functions - Indicators that the site functions to improve water quality	
D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	1
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions). Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	3
D 1.4. Characteristics of seasonal ponding or inundation: <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
Total for D 1	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

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

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?	Yes = 1 No = 0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?	Yes = 1 No = 0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the basin in which the unit is found)?	Yes = 2 No = 0
Total for D 3	4

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

NOTES and FIELD OBSERVATIONS:

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

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

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

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

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

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

Add the points in the boxes above

3

Rating of Site Potential If score is: 12-16 = H 6-11 = M X 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

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

2

Rating of Landscape Potential If score is: 3 = H X 1 or 2 = M 0 = L

Record the rating on the first page

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

D 6.1. The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.

The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):

• Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2

• Surface flooding problems are in a sub-basin farther down-gradient. points = 1

Flooding from groundwater is an issue in the sub-basin. points = 1

The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. Explain why Wetland discharges into ditch points = 0

There are no problems with flooding downstream of the wetland. points = 0

1

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

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

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

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

1

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

- | | |
|---|-------------------------------------|
| ☐ Permanently flooded or inundated | 4 or more types present: points = 3 |
| ☒ Seasonally flooded or inundated | 3 types present: points = 2 |
| ☐ Occasionally flooded or inundated | 2 types present: points = 1 |
| ☒ Saturated only | 1 type present: points = 0 |
- ☐ Permanently flowing stream or river in, or adjacent to, the wetland
- ☐ Seasonally flowing stream in, or adjacent to, the wetland
- ☐ **Lake Fringe wetland** **2 points**
- ☐ **Freshwater tidal wetland** **2 points**

1

H 1.3. Richness of plant species

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

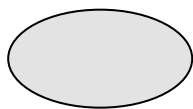
*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

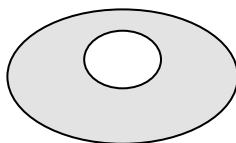
1

H 1.4. Interspersion of habitats

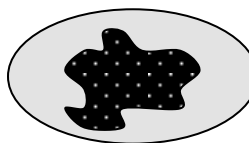
Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



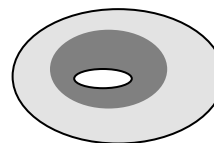
None = 0 points



Low = 1 point

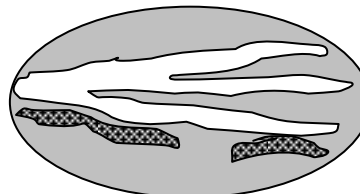
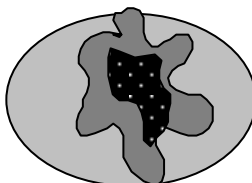
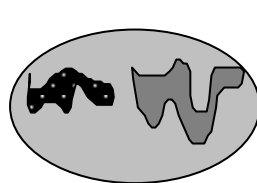


Moderate = 2 points



0

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



Wetland name or number C

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> ☐ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ☒ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>) ☐ 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>) ☐ 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	4

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

Record the rating on the first page

H 2.0. Does the landscape have the potential to support the habitat functions of the site?		
H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). Calculate: 0.00 % undisturbed habitat + [(% moderate and low intensity land uses) 2.71 /2] = 1.355 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0		0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. Calculate: 2.19 % undisturbed habitat + [(% moderate and low intensity land uses) 36.39 /2] = 20.385 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0		2
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0		-2
Total for H 2	Add the points in the boxes above	0

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? Choose <i>only the highest score that applies to the wetland being rated</i>. 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 X 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>	
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes –Go to SC 1.1 ☒ No= Not an estuarine wetland	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = Category I ☐ No - Go to SC 1.2	
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 = Category I ☐ No = Category II	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes – Go to SC 2.2 ☒ No – Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = Category I ☒ No = Not a WHCV SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes – Contact WNHP/WDNR and go to SC 2.4 ☒ No = Not a WHCV SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = Category I ☒ No = Not a WHCV	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes – Go to SC 3.3 ☒ No – Go to SC 3.2 SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes – Go to SC 3.3 ☒ No = Is not a bog SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = Is a Category I bog ☐ No – Go to SC 3.4 NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = Is a Category I bog ☐ No = Is not a bog	

Wetland name or number C

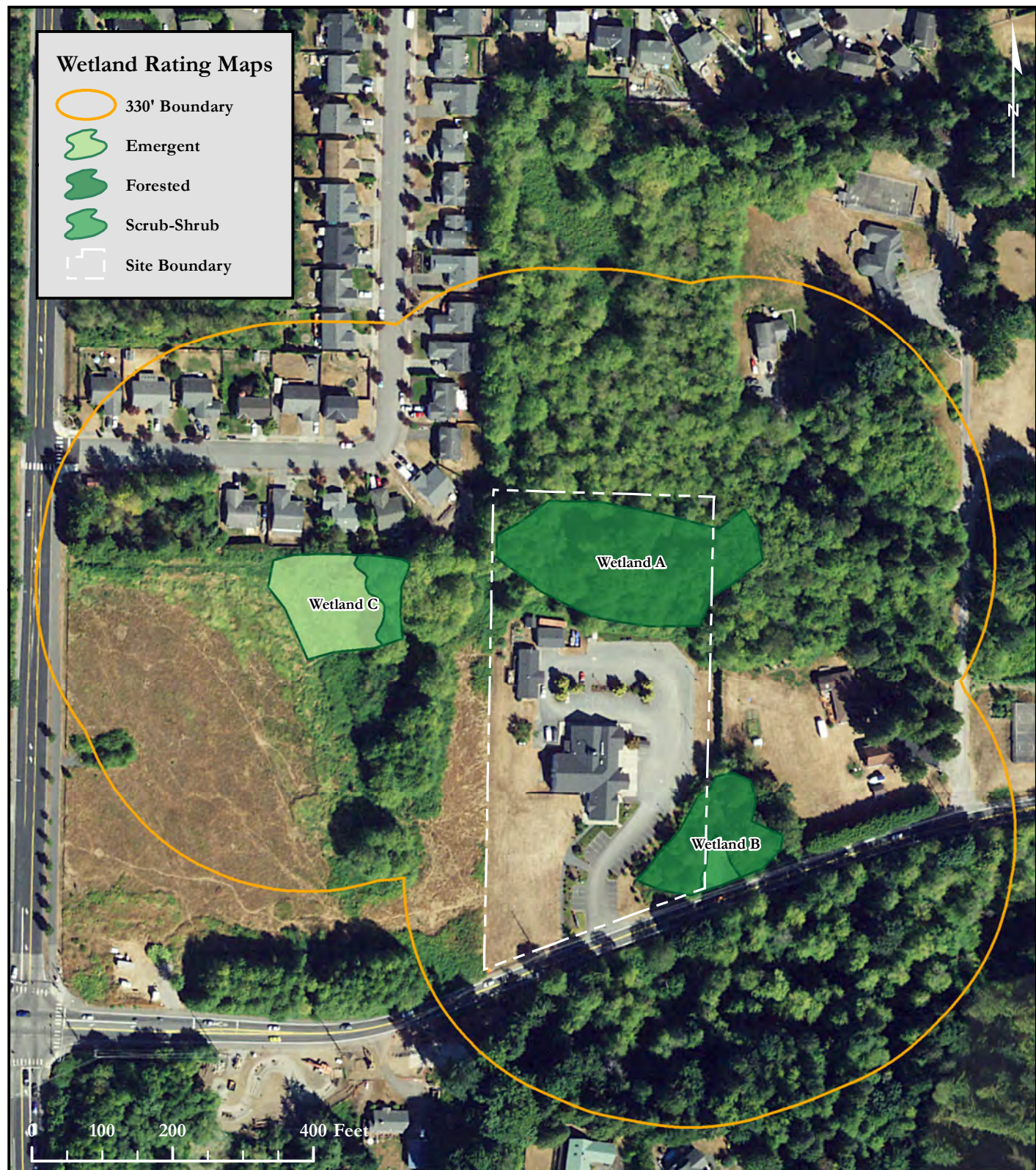
SC 4.0. Forested Wetlands Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate the wetland based on its functions.</i> — Old-growth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

Wetland name or number C

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Attachment E – Wetland Rating Maps

ATONEMENT CHURCH - COWARDIN MAP



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ATONEMENT CHURCH

6905 172ND STREET NE
ARLINGTON, WA 98223

SNOHOMISH COUNTY PARCEL NUMBER:
31052300300900

DATE: 7/9/2020

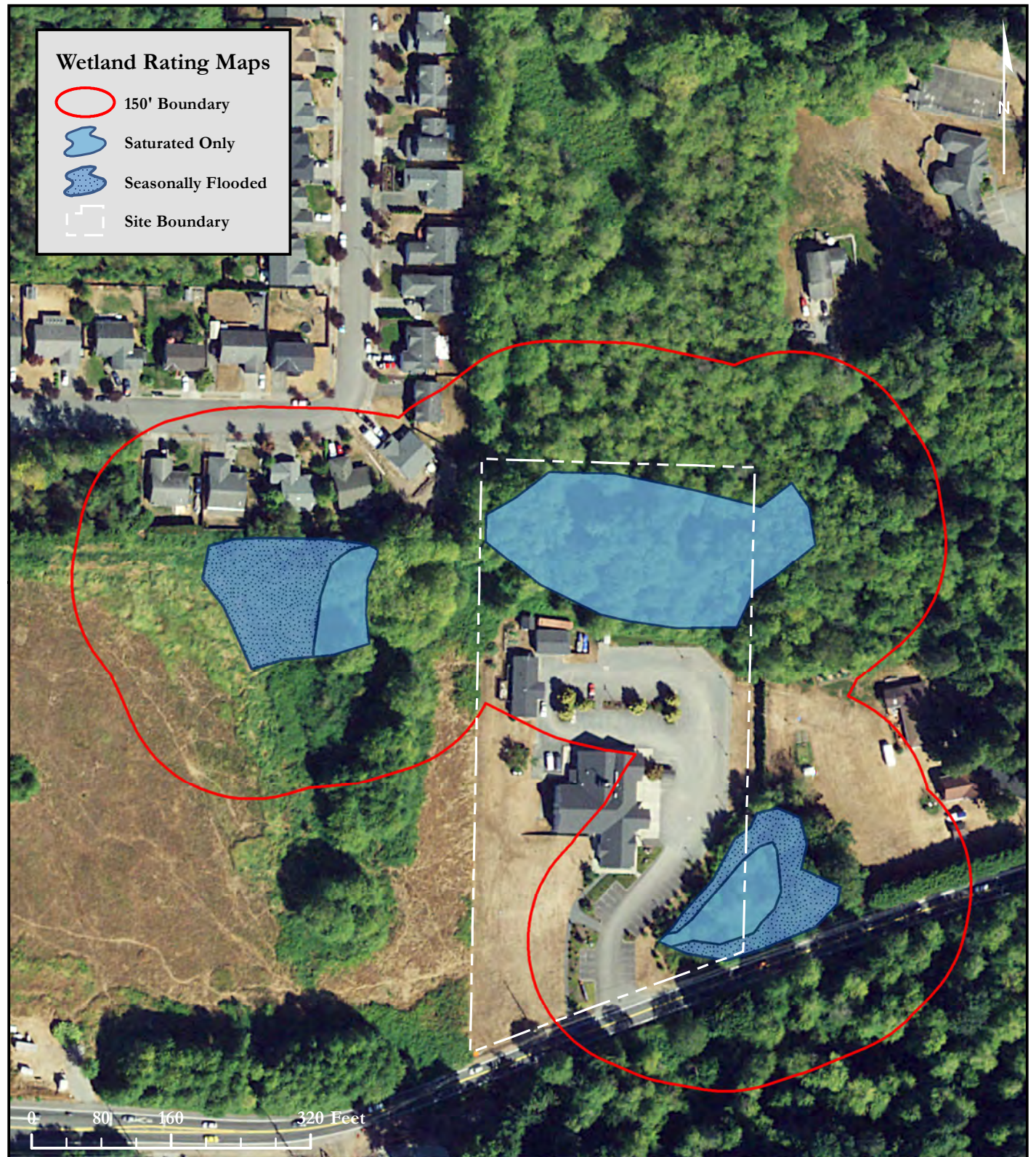
JOB: 2012.0001

BY: RJK

SCALE: 1" = 200'

FIGURE NO. 1 of 5

ATONEMENT CHURCH - HYDROPERIOD MAP



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SNOHOMISH COUNTY PARCEL NUMBER:
31052300300900

DATE: 7/9/2020

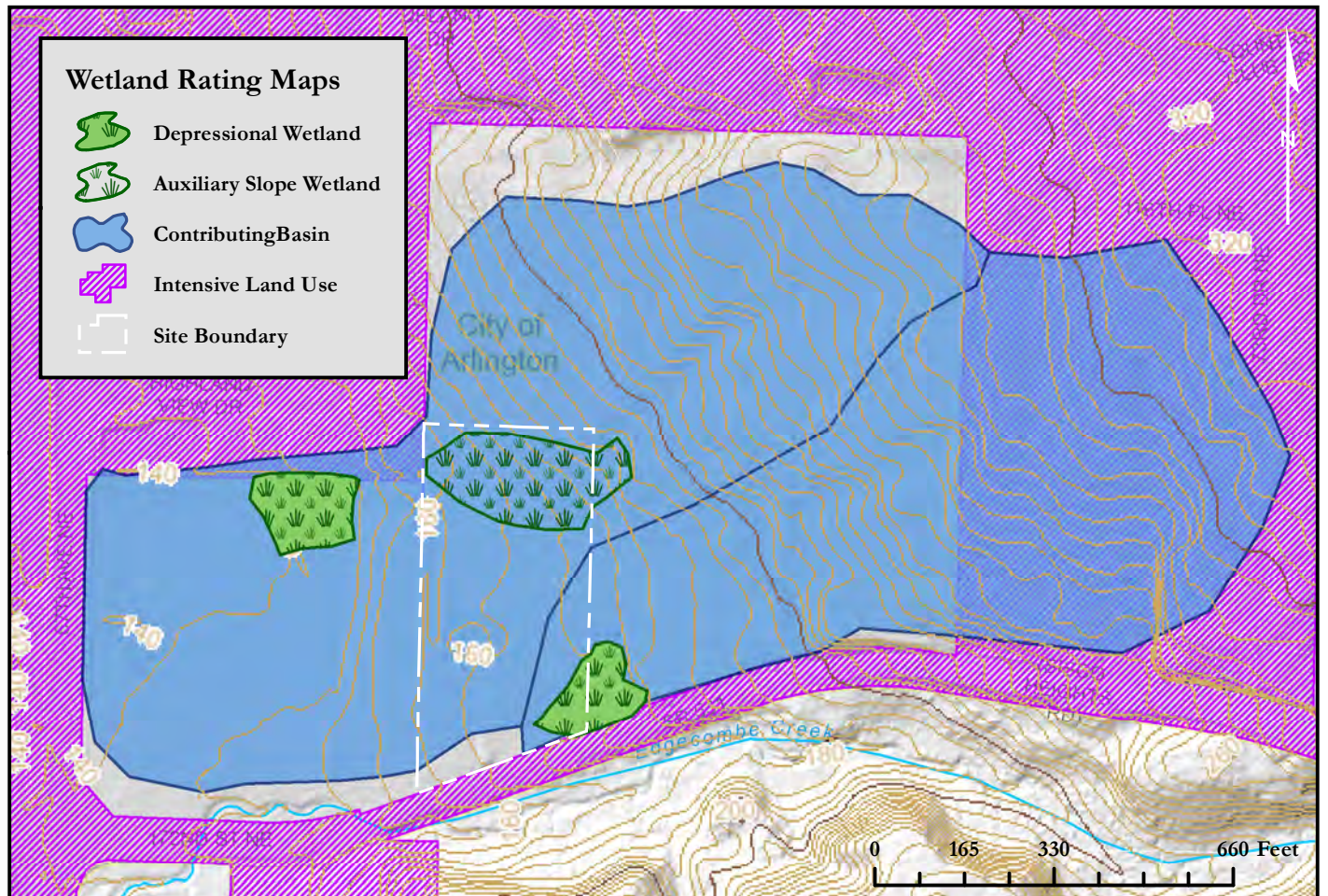
JOB: 2012.0001

BY: RJK

SCALE: 1" = 160'

FIGURE NO. 2 of 5

ATONEMENT CHURCH - CONTRIBUTING BASIN MAP



D.4		
D.4.3		
	Area of Contributing Basin (SF)	679,110
	Area of Wetland B (SF)	19,358
	Percent of Wetland B within Contributing Basin	2.850%
	Area of Intensive Human Land Uses (SF)	366,000
	Percent of Intensive Human Land Use within Contributing Basin for Wetland B	54%
	Area of Contributing Basin (SF)	945,678
	Area of Wetland C (SF)	23,002
	Percent of Wetland C within Contributing Basin	2.432%
	Area of Intensive Human Land Uses (SF)	20,453
	Percent of Intensive Human Land Use within Contributing Basin for Wetland C	2%



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ATONEMENT CHURCH

6905 172ND STREET NE
 ARLINGTON, WA 98223

SNOHOMISH COUNTY PARCEL NUMBER:
 31052300300900

DATE: 7/9/2020

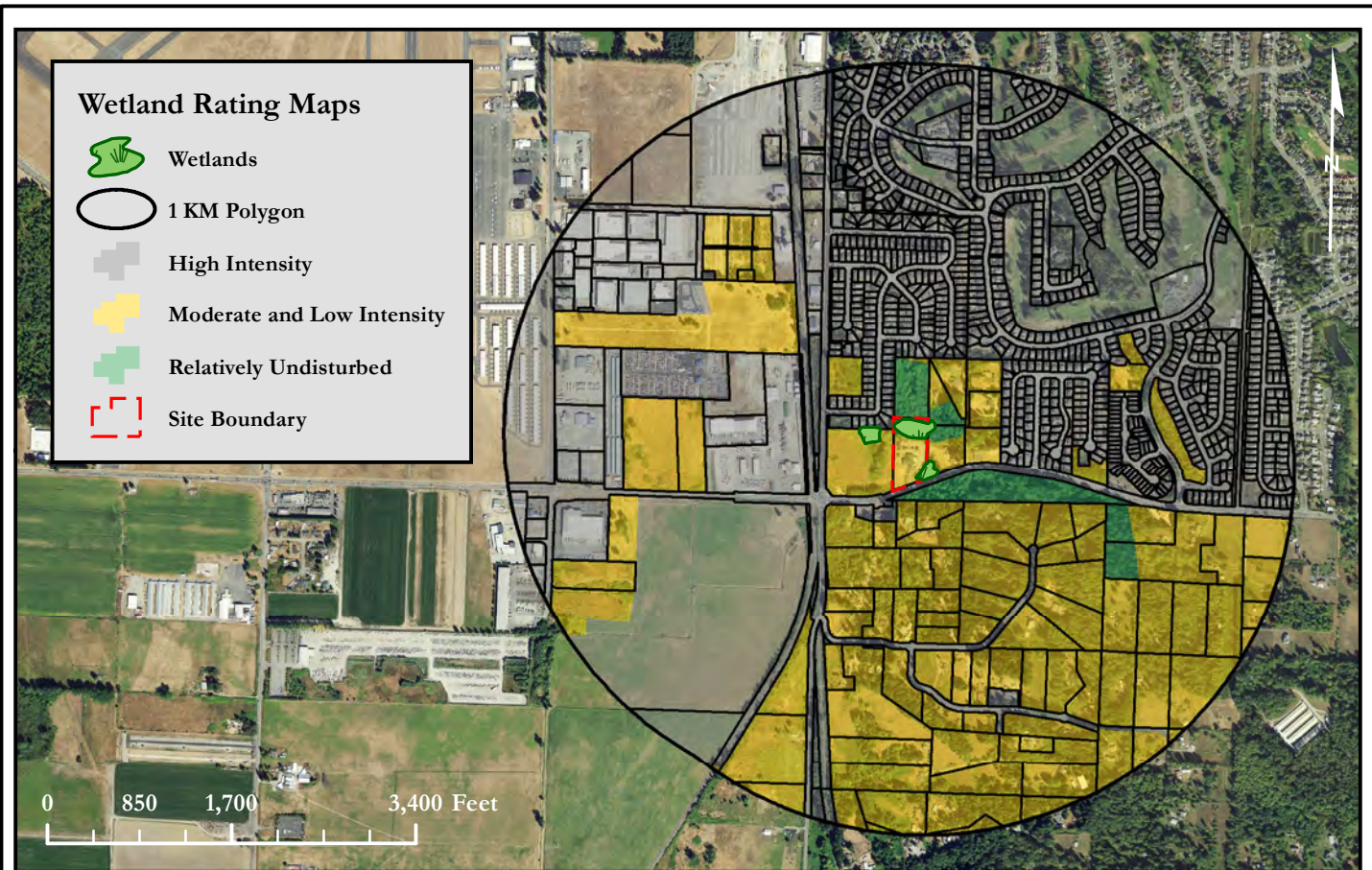
JOB: 2012.0001

BY: RJK

SCALE: 1" = 330'

FIGURE NO. 3 of 5

ATONEMENT CHURCH - HABITAT MAP



H.2		
H.2.1 Wetland A		
	Abutting Undisturbed Habitat	0.77%
	Abutting Moderate & Low Intensity Land Uses	2.71%
	Accessible Habitat	2.12%
H.2.1 Wetlands B & C		
	Abutting Undisturbed Habitat	0.00%
	Abutting Moderate & Low Intensity Land Uses	2.71%
	Accessible Habitat	1.35%
H.2.2		
	Undisturbed Habitat	2.19%
	Moderate & Low Intensity Land Uses	36.39%
	Undisturbed Habitat in 1 KM Polygon	20.39%
H.2.3		
	High Intensity Land Use in 1 KM Polygon	61.42%



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DATE: 7/9/2020

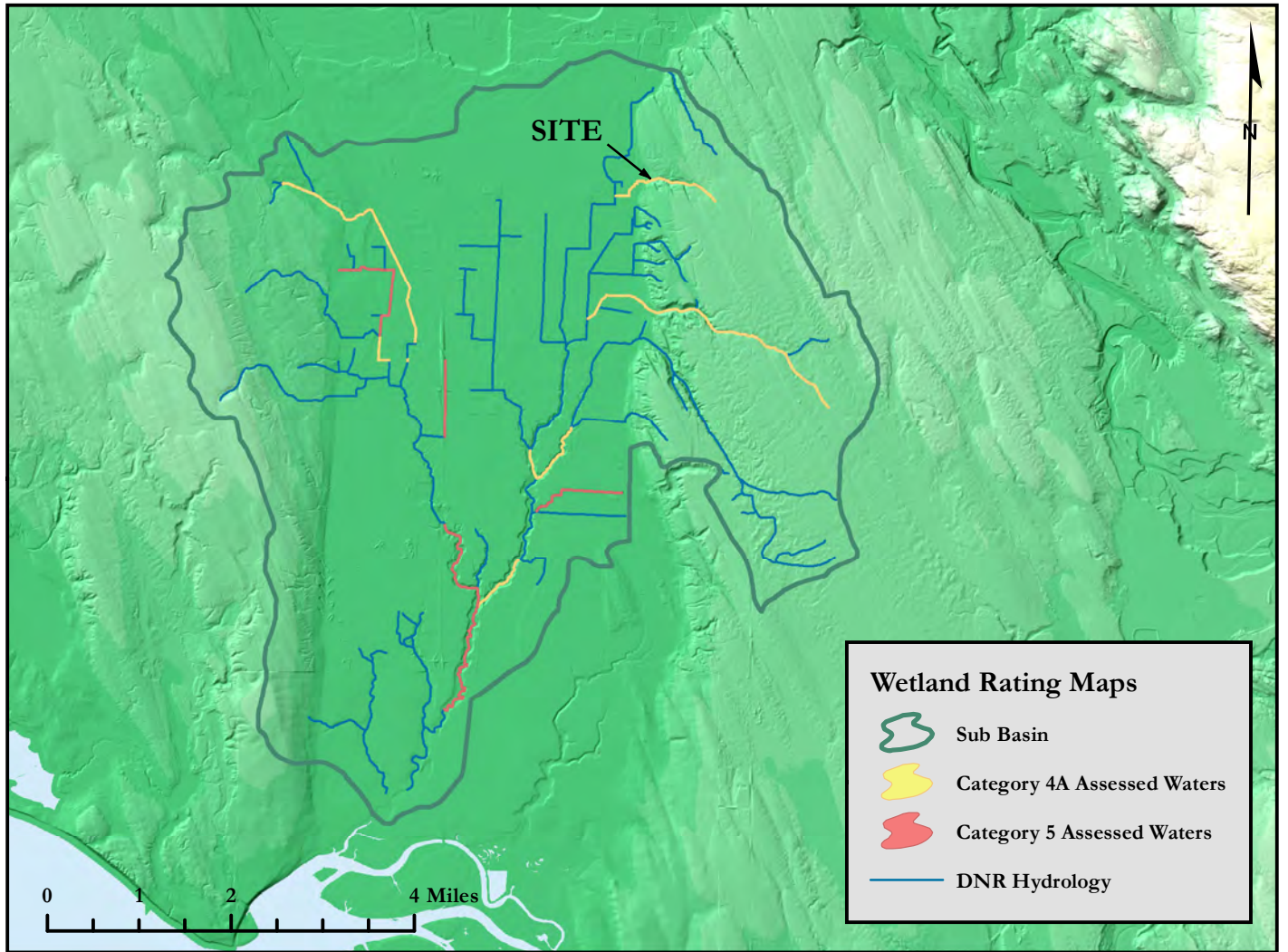
JOB: 2012.0001

BY: RJK

SCALE: 1" = 1,700'

FIGURE NO. 4 of 5

ATONEMENT CHURCH - 303d MAP



LISTING ID	CATEGORY	PARAMETER	MEDIA	WATERBODY	WATERBODY TYPE
47512 5		Dissolved Oxygen	Water	UNNAMED CREEK (TRIB TO QUILCEDA CREEK, W.F.)	Rivers/Streams
45266 4A		Bacteria	Water	QUILCEDA CREEK, W.F.	Rivers/Streams
7299 5		Dissolved Oxygen	Water	QUILCEDA CREEK, W.F.	Rivers/Streams
47492 5		Dissolved Oxygen	Water	UNNAMED CREEK (TRIB TO QUILCEDA CREEK)	Rivers/Streams
46286 4A		Bacteria	Water	QUILCEDA CREEK	Rivers/Streams
7307 4A		Bacteria	Water	QUILCEDA CREEK, M.F.	Rivers/Streams
71215 5		pH	Water	QUILCEDA CREEK, W.F.	Rivers/Streams
71213 5		pH	Water	QUILCEDA CREEK, W.F.	Rivers/Streams
7306 4A		Bacteria	Water	QUILCEDA CREEK	Rivers/Streams
7304 4A		Bacteria	Water	QUILCEDA CREEK	Rivers/Streams
71212 5		pH	Water	UNNAMED CREEK (TRIB TO QUILCEDA CREEK, W.F.)	Rivers/Streams
71221 5		pH	Water	UNNAMED DITCH (TRIB TO QUILCEDA CREEK, W.F.)	Rivers/Streams
7305 4A		Bacteria	Water	QUILCEDA CREEK	Rivers/Streams
7302 5		Dissolved Oxygen	Water	QUILCEDA CREEK	Rivers/Streams
47506 5		Dissolved Oxygen	Water	UNNAMED DITCH (TRIB TO QUILCEDA CREEK, W.F.)	Rivers/Streams
7298 4A		Bacteria	Water	QUILCEDA CREEK, M.F.	Rivers/Streams
47502 5		Dissolved Oxygen	Water	QUILCEDA CREEK, W.F.	Rivers/Streams
9806 4A		Bacteria	Water	QUILCEDA CREEK, M.F.	Rivers/Streams
74184 4A		Bacteria	Water	QUILCEDA CREEK, W.F.	Rivers/Streams


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ATONEMENT CHURCH

6905 172ND STREET NE
ARLINGTON, WA 98223

SNOHOMISH COUNTY PARCEL NUMBER:
31052300300900

DATE: 7/9/2020

JOB: 2012.0001

BY: RJK

SCALE: 1" = 2 mi

FIGURE NO. 5 of 5

Attachment F – WDFW Stream Channel Letter



State of Washington
Department of Fish and Wildlife

16018 Mill Creek Boulevard • Mill Creek, Washington 98012 • (425) 775-1311 FAX (425) 338-1066

27 January 2020

City of Arlington
Department of Community & Economic Development
Attn: Marc Hayes, Director
Nova Heaton, Development Services Manager
238 N Olympic Avenue
Arlington, WA 98223

RE: Centennial Park—Edgecomb Creek Tributary Channel Habitat

Dear Mr. Hayes and Ms. Heaton,

The Washington Department of Fish and Wildlife (WDFW) appreciates the opportunity to submit comments on projects that may impact species and habitats throughout Washington State. WDFW submits the following comments regarding the proposed Edgecomb Creek Project. WDFW has determined that the relic channel of Edgecomb Creek is a jurisdictional water of the state and has habitat and function supportive of fish life.

In 2017, WDFW permitted a project by the Washington Department of Transportation (WSDOT) to relocate approximately 330 feet of Edgecomb Creek to the south of SR 531 in order to increase habitat quality and prevent the need for multiple stream crossings under SR 531. The upper Edgecomb Creek crossing (WDFW Site ID 991059) was considered a fish passage barrier due to the slope of the channel and velocity of the water the crossing created during expected salmon migration times. The lower Edgecomb Creek crossing (Site ID 991058) was considered a barrier only due to the velocity of the water the crossing created during expected migration times. Both crossings fell under the Federal Supreme Court decision ([Click for link](#)) requiring the State of Washington to remove or correct fish passage barriers, and were considered high priority due to the amount and quality of upstream habitat made available by their removal or correction. Project proponents chose to plug the upper culvert (991059) and reconstruct the channel on the south side of SR531, thereby reducing velocities through the lower culvert (991058) to the point that it no longer created a barrier to fish migration.

Spawning ground surveys performed by WDFW documented significant coho salmon and lamprey spawning in the newly created portion of Edgecomb Creek as well as the relic channel of Edgecomb Creek before, during, and after project completion. Further

observations documented juvenile coho use of the relic channel during high flow events in the mainstem of Edgecomb Creek and demonstrates the importance of refugia habitat which was part of the design and intent of the WSDOT project. Additionally, the relic channel was left in place to convey natural flow and stormwater from a small stream connected to a wetland upslope. The entire system up to, and including the wetland, has potential fish use for winter steelhead, chum salmon, cutthroat trout, and resident trout as it meets the physical criteria for fish use of having a scour-line width of more than 2 feet and less than 16% slope (For an explanation of how WDFW assesses this see: [WDFW Publication 00061](#)).

WDFW appreciates the opportunity to provide comment and the difficulties in determining fish presence and jurisdiction associated with the proposed project. The determination of jurisdictional waters of the state is consistent with WAC 220-660-030(153) and fish habitat as defined in WAC 220-660-030(51). The presence of natural flowing waters of the state and the presence of fish life in these waters has been well documented. WDFW looks forward to working with project proponents to ensure their work avoids impacts to fish life and habitat.

Sincerely,



Bob Warinner
Acting Region 4 Habitat Program Manager

CC: Kirk Lakey – Assistant Regional Habitat Program Manager
Jamie Bails – Habitat Biologist
Cade Roler – Fish and Wildlife Biologist
Bob Penhale – Department of Ecology
Derek Marks – Tulalip Tribes – Timber Fish & Wildlife Manager

Attachment G — Qualifications

All field inspections, jurisdictional wetland boundary delineations, habitat assessments, and supporting documentation, including this *Wetland and Fish and Wildlife Habitat Assessment Technical Memorandum* was prepared for **John Furstenwerth**, were prepared by, or under the direction of, Ben Wright and Casey Lanier of SVC. In addition, site inspections were performed by Kyla Caddey and Monica Szarvas. Report preparation was completed by Jacob Layman. Additional project oversight and quality assurance/quality control was completed by Morgan Kentch.

Ben Wright

Principal

Professional Experience: 20 years

Ben Wright is a Principal, Senior Fisheries Biologist, and Fluvial Geomorphologist with 20 years of professional experience. Ben has a background in lake ecology, stream ecology, fisheries biology, water quality, and climate science. Ben currently works on permitting, design, construction guidance, and monitoring of several stream and wetland mitigation projects across western Washington. Ben has 13 years of experience providing technical assistance for infrastructure project development and aquatic resource management for federal agencies. This technical experience included providing oversight and design guidance on several restoration projects involving large woody debris installations, native riparian plantings, and stream channel relocations. Ben's scientific background also includes 10 years of working on long-term ecological monitoring programs related to lakes, streams, water quality and climate and additional experience in fish population assessments, utilizing genetic analysis, spawning escapement, and movement studies. Ben's documentation experience includes preparing reports for Endangered Species Act and NEPA requirements, water quality monitoring plans, and fisheries management plans.

Education: Bachelor of Science in Genetics and Cell Biology with an emphasis in aquatic ecology from Washington State University; Fisheries Management graduate certificate from Oregon State University. *Professional Trainings:* 40-hour wetland delineation training for the Western Mountains, Valleys, & Coast and Arid West Regional Supplements; River Sediment Dynamics from River Restoration Northwest; Using the Revised 2014 Wetland Rating System for Western Washington, How to Determine the Ordinary High Water Mark, Navigating SEPA, How to Conduct a Forage Fish Survey and Puget Sound Coastal Processes, Shoreline Modifications and Beach Restoration from the Washington State Department of Ecology. *Qualified Author and Scientist Lists:* Pierce County Qualified Wetland Specialist, Pierce County Qualified Fisheries Biologist

Casey Lanier

Project Manager and Environmental

Professional Experience: 11 years

Casey has a background in hydrology, riparian ecology, fisheries, and data collection and telemetry. He currently works as a project manager supporting single family and small commercial development projects navigating the permitting and critical areas review process. He also performs and leads small teams in wetland, stream, and shoreline delineations as well as fish and wildlife habitat assessments. His noteworthy experiences include construction monitoring and support for large stream relocation projects as well as wetland restoration and

mitigation projects, time-series hydrologic data analysis for regulatory compliance and team lead for fish recovery and exclusion projects.

Education: Bachelor of Science in Environmental Science from California State University Monterey Bay), Graduate Level Course Work in Fisheries and Wildlife Management from Oregon State University. *Professional Trainings:* Washington Department of Ecology Wetland Rating Manual, Determining the Ordinary High Water Mark, How to Conduct a Forage Fish Survey, 40-hour wetland delineation training utilizing the US Army Corps of Engineers Wetland Delineation Manual (Western Mtns, Valleys, & Coast and Arid West Regional Supplement) *Qualified Author and Scientist Lists:* Pierce County Qualified Wetland Scientist.

Kyla Caddey, PWS, Certified Ecologist

Senior Environmental Scientist

Professional Experience: 7 years

Kyla Caddey is a Senior Environmental Scientist with a diverse background in stream and wetland ecology, wildlife ecology and conservation, wildlife and natural resource assessments and monitoring, and riparian habitat restoration at various public and private entities. Kyla has field experience performing in-depth studies in both the Pacific Northwest and Central American ecosystems which included various environmental science research and statistical analysis. Kyla has advanced expertise in federal- and state-listed endangered, threatened, and sensitive species surveys and assessment of aquatic and terrestrial systems throughout the Puget Sound region. She has completed hundreds of wetland delineations and has extensive knowledge and interest in hydric soil identification. As the senior writer, she provides informed project oversight and performs final quality assurance / quality control on various types of scientific reports for agency submittal, including: Biological Assessments/Evaluations; Wetland, Shoreline, and Fish and Wildlife Habitat Assessments; Mitigation Plans, and Mitigation Monitoring Reports. She currently performs wetland, stream, and shoreline delineations and fish and wildlife habitat assessments; prepares scientific reports; and provides environmental permitting and regulatory compliance assistance to support a wide range of commercial, industrial, and multi-family residential land use projects.

Kyla earned a Bachelor of Science degree in Environmental Science and Resource Management from the University of Washington, Seattle with a focus in Wildlife Conservation and a minor in Quantitative Science. She has also completed additional coursework in Comprehensive Bird Biology from Cornell University. Ms. Caddey is a Certified Professional Wetland Scientist (PWS # 3479) through the Society of Wetland Scientists and Certified Ecologist through the Ecological Society of America. She has received 40-hour wetland delineation training (Western Mtns, Valleys, & Coast and Arid West Regional Supplement), is a Pierce County Qualified Wetland Specialist and Wildlife Biologist and is a USFWS-approved Mazama pocket gopher survey biologist. Kyla has been formally trained through the Washington State Department of Ecology, Coastal Training Program, and the Washington Native Plant Society in winter twig and grass, sedge, and rush identification for Western WA; Using the Credit-Debit Method in Estimating Wetland Mitigation Needs; How to Determine the Ordinary High Water Mark; Using Field Indicators for Hydric Soils; How to Administer Development Permits in Washington Shorelines; Puget Sound Coastal Processes; and Forage Fish Survey Techniques. Additionally, she has received formal training in preparing WSDOT Biological Assessments.

Jacob Layman

Environmental Scientist
Professional Experience: 15+ Years

Jake Layman is an Environmental Scientist with a varied background in fisheries biology, water quality, lake and stream ecology, wildlife biology, aquatic invertebrate biology and off-channel habitat monitoring. Jake has over 15 years of experience at the federal and state level conducting ecological monitoring surveys throughout eastern and western Washington. He has experience working with the National Park Service conducting environmental compliance monitoring on park construction and infrastructure maintenance projects, and federal highways projects, as well as environmental spill response and recovery monitoring. Jake has additional experience in fish passage and screening assessments and associated long-term monitoring projects for both the Washington Department of Fish and Wildlife and the Bureau of Reclamation.

Jake earned a Bachelor of Science degree in Biology, with an Ecology specialization, and a Bachelor of Arts degree in Geography, with a Natural Resource Management specialization, from Central Washington University. In addition, Jake also has a Minor in Environmental Studies and a Certificate in Geographic Information Systems (GIS) and Cartography from Central Washington University. Jake's expertise includes endangered species monitoring, lake limnology assessments, water chemistry profiles, and laboratory management, as well as terrestrial and aquatic amphibian identification monitoring. Jake also has experience in fish population assessments, stream typing, spawning escapement, environmental disaster recovery, and amphibian toxicology research.

Morgan Kentch

Environmental Scientist
Professional Experience: 5 years

Morgan Kentch is an Environmental Scientist with a background in marine and freshwater ecology, wildlife and natural resource assessments, and monitoring wetland and riparian habitat restoration sites in the Pacific Northwest. Morgan has field experience conducting wetland, stream, and shoreline delineations and fish and wildlife habitat assessments in Washington State. She currently assists with performing wetland, stream, and shoreline delineations and fish and wildlife habitat assessments, conducting environmental code analysis, and preparing and/or providing final quality assurance/control for various types of scientific reports and permits for agency submittal.

Morgan earned her Bachelor of Science degree in Biology with Marine Emphasis from Western Washington University, Bellingham. There she received extensive, hands-on experience working in lab and field settings, conducting scientific background research, and performing statistical analyses. She has also received 40-hour wetland delineation training (Western Mountains, Valleys, and Coast and Arid West Regional Supplements) and has received formal training through the Washington State Department of Ecology and Coastal Training Program in Using the 2014 Wetland Rating System and How to Determine the Ordinary High Water Mark.