

MOTT MACDONALD, LLC

ANGLE LAKE PARK WATERFRONT IMPROVEMENTS
PROJECT
CRITICAL AREAS REPORT



FARALLON
CONSULTING



Grette Associates
ENVIRONMENTAL CONSULTANTS

MOTT MACDONALD, LLC

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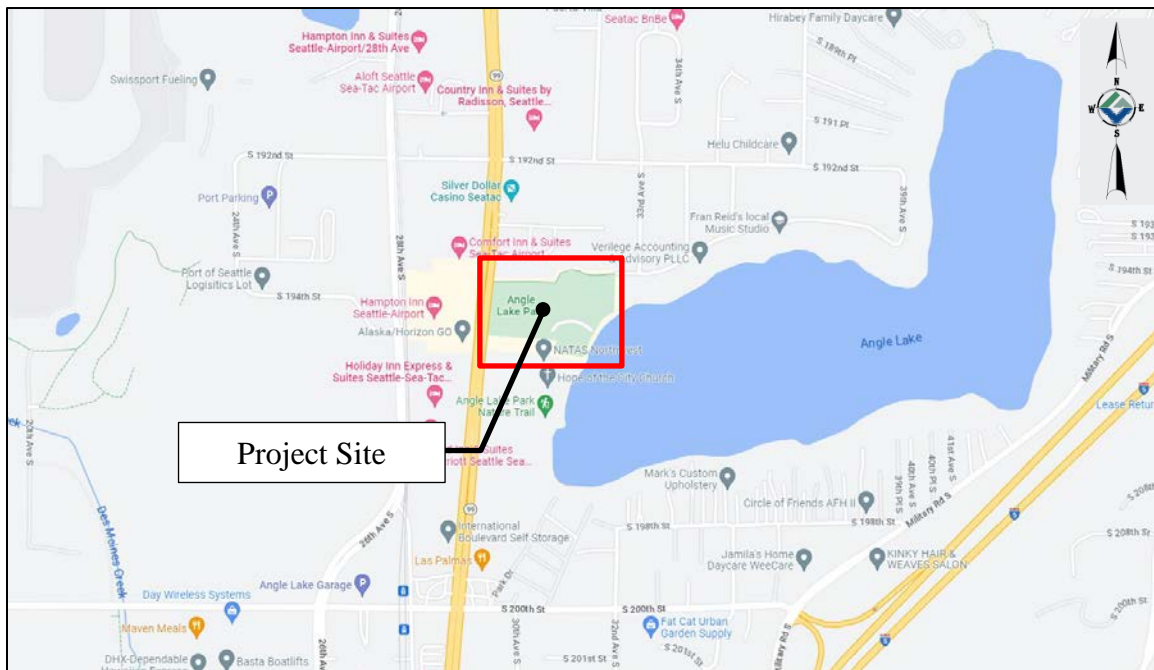
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1 INTRODUCTION

Farallon Consulting, L.L.C. dba Grette Associates (Grette) is under contract with Mott MacDonald, L.L.C. to prepare a critical area report (CAR) that summarizes the wetland reconnaissance performed at Angle Lake Park located at 19408 International Blvd (King County tax parcel 0422049002) in the city of SeaTac (Figure 1). Angle Lake and its associated wetlands are Shorelines of Statewide Significance as defined by the SeaTac Shoreline Master Program (SMP; City of SeaTac 2019). According to Chapter 1.7 of the SMP, they are subject to regulations and policies of both the SMP and the SeaTac Municipal Code (SMC; 2019).

The purpose of this CAR is to document all critical areas that are located within 300 feet of the project site. Additionally, an impact analysis has been completed in Section 8 of this report with regards to requirements in SMC 15.700.110 and Chapter 5.9 of the SMP (City of SeaTac 2019).

Figure 1. Vicinity map



1.1 Project Description

The City of SeaTac (City) is proposing to replace the existing floating dock, connecting pier, gangways, and boat launch and install a new ADA-accessible kayak access float, swim ramp and access swim stairs, and replenish scoured beach material in the nearshore at Angle Lake Park in SeaTac, Washington. The proposed project consists of conducting work below and above the Ordinary High Water Mark (OHWM) for the purpose of replacing select portions of the existing waterfront park facility and installing new components at the park. The replacement and new structures will be designed to make the facility more accessible and improve public safety for swimmers.

Angle Lake Park provides recreational opportunities for the public through swimming, fishing, and boating. The existing floating dock, connecting pier, and boat ramp are beyond their useful life, and are in need of replacement. Further, after two recent fatalities, the City

is committed to improving public safety at the facility. Safety concerns with the existing conditions at the site include:

- The pier and floating docks do not include guardrails;
- The finger float extends into the swimming area, so swimmers waterward of the finger float have to swim around the float to get to water shallow enough to stand in;
- The lower beach area below the concrete stairs has eroded away, resulting in a large step for swimmers to get in and out of the lake;
- There has been significant scour that is starting to undermine the existing concrete stairs. This will eventually cause the stairs to slide further into the lake; and
- There is no ADA access to the lake.

The City proposes to remove the existing floating dock, connecting pier, boat ramp, and associated gangways, and replace them with ADA-accessible, environmentally updated facilities. The proposed fishing pier will be reconfigured to relocate the finger in deeper water at the outer edge of the swim area to allow for increased safety and swimmer and fisher accessibility. The pier will be elevated and will include aluminum guardrails, including sections with lower rails for ADA accessibility.

In the swimming access area, three (3) aluminum access swim stairs with handrails will be added that descend from the concrete stairs into the water. Additional railings and fencing will be installed to focus swimmers to the access stairs. An elevated aluminum ramp with handrails will be constructed at the east end of the concrete stairs, extending approximately 109 feet into the water for ADA access to the swim area.

The boat ramp will be a combination of pre-cast (below OHWM and cast-in-place (CIP; above OHWM)) concrete in the same size and configuration as the existing ramp. Scour protection will be added to the perimeter of the boat ramp to prevent erosion. The concrete abutment and gangway to the boarding floats will be replaced with aluminum floats. The existing boarding floats will not be replaced and will remain in nearly the same configuration as existing.

The proposed project will result in improvements to the aquatic habitat in Angle Lake. Specifically, nineteen (19) creosote-treated timber pile will be removed from the lake, all solid overwater structure, including floats, will be converted to grated elevated structure, and a solid overwater pier that abuts a wetland will be removed and relocated to the uplands. A summary of project components, including their existing and proposed dimensions, is outlined below in Table 1.

Table 1. Summary of Project Components and Proposed Quantities

Task	Qty.	Work Item	Above OHWM		Below OHWM		Total Area (SF)
			Volume (CY)	Area (SF)	Volume (CY)	Area (SF)	
Demolition	4	12"-16" Dia. Creosote Timber Pile (Docks)	-	-	-	4	4
	3	12" Galvanized Steel Piles	-	-	-	3	3
	15	12"-16" Dia. Creosote Timber Dolphin Pile (Connecting Pier)	-	-	-	15	15
	1	Concrete Floating Dock	-	-	-	2165	2165
	1	Concrete Connecting Pier	-	906	-	413	1319
	1	Concrete and Asphalt Boat Ramp and Platform	-	544	-	776	1320
	2	Aluminum Gangways	-	-	-	175	175
	1	Remove Blackberries	-	574	-	261	835
Replacement	20	12.75" Dia. Galv. Steel Pile (Fishing Pier)	-	-	-	20	20
	2	12.75" Dia. Galv. Steel Pile (Boat Ramp)	-	-	-	2	2
	1	Aluminum Fishing Pier	-	80	-	2360	2440
	1	Cast in Place Concrete Boat Ramp and Abutment	-	456	-	-	456
	2	8' x 19' Aluminum Boat Ramp Access Floats	-	49	-	255	304
	1	Precast Concrete Panels	-	-	-	800	800
	1	Articulated Concrete Block Mat	-	49	-	255	304
	1	Riprap	-	-	7	372	379
	1	Bedding Layer*	-	-	80	-	-
New	6	12.75" Dia. Galv. Steel Pile (ADA Swim Ramp)	-	-	-	6	6
	1	Concrete Path	-	525	-	-	525
	1	Kayak Access Float	-	-	-	216	216
	1	ADA Concrete Ramp	18	164	-	-	164
	1	ADA Aluminum Swim Ramp	-	79	-	585	664
	3	Access Swim Stairs	-	-	-	135	135
	1	Beach Replenishment	40	528	275	3691	4270
	1	Vegetative Restoration Area	-	628	-	-	628

The proposed project includes all water-oriented uses for recreation and ADA lake access, and meets requirements of Chapter 5.7.3 of the SMC. All proposed project activities are deemed allowable for the Urban Conservancy Shoreline Environment (Parcel 042204-9002) when obtaining a substantial development permit (SSDP) or Conditional Use Permit (CUP), per SMC Chapter 7.2, Table 4.

2 FEATURE SUMMARY

A Grette Associates Biologist visited Angle Lake Park on March 3, 2023 to conduct an assessment to identify any critical areas within 300 feet of the project site.

Grette Associates collected wetland delineation data and delineated four wetland features (Wetlands A-D; Appendix A) that contained all three wetland criteria defined in the U.S. Army Corps of Engineers (USACE) *Federal Wetland Delineation Manual* (1987), and the

USACE's *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (2010). All four wetlands are associated with Angle Lake. The wetlands were rated according to SeaTac Municipal Code (SMC) 15.700.275(B) and the Washington State Department of Ecology's (Ecology) *Washington State Wetland Rating System for Western WA – 2014 Update* (Hruby 2014). A wetland delineation summary, field datasheets, and wetland rating forms and figures are presented in Appendices B, C and D, respectively. A summary of the delineated wetlands is provided in Table 2.

Table 2. Wetland delineation summary

Feature	Size in Square Feet (Approximate) ¹	Cowardin Class ²	Hydrology Modifier	HGM Class	Wetland Category	Buffer Width ³
A	1,128	LEM/FO/SS	Permanently Flooded and Saturated	Lacustrine Fringe	III	165 ft.
B	1,184	LEM/SS	Permanently Flooded and Saturated	Lacustrine Fringe	III	105 ft.
C	10,374	LAB/FO/SS/EM	Permanently Flooded and Saturated	Lacustrine Fringe	III	165 ft.
D	2,031	LAB/EM	Permanently Flooded	Lacustrine Fringe	III	105 ft.

¹ Size of wetland based on GPS points collected in the field for onsite wetlands and on aerial photography for offsite wetlands

² Classification based on Cowardin et al. (1979).

³ Buffers are based on SMC 15.700.285

Angle Lake and its associated wetlands also meet the definition of Fish and Wildlife Habitat Conservation Areas (FWHCA) according to SMC 15.700.370 as Waters of the State and as a lake that is stocked with game fish (WDFW 2022; WDFW 2023a). Waters of the State are under the jurisdiction of the local Shoreline Master Program, in which buffers are listed for Angle Lake and its associated wetlands according to the shoreline environment designation (City of SeaTac 2019). A summary of the FWHCAs within 300 feet of the project site is provided in Table 3.

Table 3. Fish and Wildlife Habitat Conservation Areas summary

Feature	Size in Square Feet (Approximate) ¹	Buffer Width (Shoreline Master Program) ²	Buffer Width (SMC 15.700.285)
Angle Lake	4,477,968	100 ft. in Urban Conservancy designations; 65 ft. for High Intensity and Shoreline Residential designations	N/A
Wetland A	1,128	N/A	165 ft.
Wetland B	1,184	N/A	105 ft.
Wetland C	10,374	N/A	165 ft.
Wetland D	2,031	N/A	105 ft.

¹ Size of wetlands based on GPS points collected in the field for onsite wetlands and on aerial photography for offsite wetlands; size of Angle Lake found in Washington Department of Fish and Wildlife’s fishing summary of Angle Lake (WDFW 2023a).

² Buffer widths labeled as Shoreline Setbacks in Chapter 5 (City of SeaTac 2019). The locations of the shoreline environment designations are found in Figure 1 of the SMP. Wetlands are not assigned buffers in the SMP.

No other critical areas, including streams or rivers, were identified within 300 feet of Angle Lake Park.

3 BACKGROUND

3.1 Existing Conditions

Angle Lake Park is a 388,990 square-foot city park in SeaTac, WA. Located on the west side of Angle Lake, it provides public access for boaters, swimmers, and anglers. Upland areas include ornamental landscaping, structures including bathrooms and lifeguard shelters, paved nature and access trails, and an open lawn and beach.

3.2 Local Critical Areas Inventory

King County’s public iMap tool was explored to determine if any critical areas were mapped within or near Angle Lake Park (King County 2023). According to iMap, no critical areas are mapped by King County within 300 feet of Angle Lake Park.

3.3 National Wetlands Inventory

The U.S. Fish and Wildlife Service’s National Wetlands Inventory (NWI) was queried to determine if previously-identified wetlands are present within 300 feet of Angle Lake Park (USFWS 2023). According to the NWI Interactive Online Mapper, there is a small lake-fringe aquatic bed wetland south of the park. This wetland and Angle Lake itself are the only aquatic features mapped within 300 feet of the park.

3.4 Sensitive Wildlife and Plants

The Washington Department of Fish and Wildlife’s (WDFW) Priority Habitats and Species (PHS) database on-line mapper was queried to determine if state or federally listed fish and wildlife species occur near the project site (WDFW 2023b). According to the PHS database, the aquatic bed wetland mapped by NWI is the only priority habitat or species within 300 feet of Angle Lake Park.

Additionally, WDFW’s SalmonScape on-line mapper was queried to determine what listed SalmonScape species are identified by WDFW to occur within the project site (WDFW 2023c). According to SalmonScape, no salmonids are mapped within 300 feet of the park.

The Washington Department of Natural Resources’ (WDNR) Rare Plant and Ecosystem mapper was queried to determine if Angle Lake Park is located in an area that contains high quality natural heritage wetlands or occurrences of natural heritage features commonly associated with wetlands (WDNR 2023a). According to WDNR’s mapper, there are no records of rare plants or high-quality native ecosystems occurring on or in the vicinity of the park.

The US Fish and Wildlife Service’s (USFWS) Critical Habitat for Threatened & Endangered Species mapper was queried to determine if any species under the Endangered

Species Act are found in the vicinity of Angle Lake Park (USFWS 2022). According to this mapper, no endangered species or habitat is known to occur in or near the park.

The National Marine Fisheries Service's (NMFS) ESA Critical Habitat Mapper was queried to determine if any endangered species under the jurisdiction of the National Oceanic and Atmospheric Administration (NMFS 2023) inhabits Angle Lake Park. According to the mapper, no marine species or their habitat is known to occur in the vicinity of Angle Lake Park.

3.5 State Water Classification System

The Washington Department of Natural Resources' (WDNR) Forest Practice Application Mapping Tool on-line mapper was queried to identify the water typing of any streams mapped by WDNR (WDNR 2023b). According to WDNR, no streams are mapped in the immediate vicinity of Angle Lake Park.

3.6 Soil Information

According to the Natural Resources Conservation Service's (NRCS) Web Soil Survey (NRCS 2023a), the soils within Angle Lake Park consist of Arents, Alderwood material and those lying under open water. Per the soil report, Arents, Alderwood material is not rated as hydric.

4 METHODS

A Grette Biologist traversed Angle Lake Park and collected data to confirm wetland boundaries. The identified wetlands were delineated according to the procedures described in the USACE's *Federal Wetland Delineation Manual* (1987), and the USACE's *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (2010). Paired data plots and soil test pits were excavated to evaluate wetland and upland conditions. Guidance from the USACE's *Regional Supplement* was used to evaluate the data at each data point.

The boundary of the wetland was established based on changes in vegetation, field indicators of hydric soils, water levels at or below 12 inches, topographic changes, and best professional judgment. Data plots were established in and adjacent to the wetland. The location of the wetland boundary was defined by placement of florescent orange flagging tape and each data plot by the placement of pink flagging tape. The wetland boundary flagging was labeled alpha-numerically (i.e. A-2), where the letter designates the wetland and the number designates the specific flag angle point.

Plants were determined to be more or less associated with wetlands based on their wetland indicator (FAC) status. The percent dominance for each plant strata was determined using the 50-20 Rule, which is the recommended method for selecting dominant species from a plant community in instances where quantitative data are available (USACE 2010). In utilizing this rule, dominants are the most abundant species that individually or collectively account for more than 50 percent of the total coverage of vegetation in the stratum plus any other species that, by itself accounts for at least 20 percent of the total.

4.1 Hydrophytic Vegetation

The U.S. Fish and Wildlife Service (USFWS) and the NWI have established a rating system that has been applied to commonly occurring plant species based on their frequency

of occurrence in wetlands (Table 4). Species indicator status expresses the range in which plants may occur in wetlands and non-wetlands (uplands). Under this system, vegetation is considered hydrophytic when there is an indicator status of facultative (FAC), facultative wetland (FACW), or obligate wetland (OBL) (Table 4). The hydrophytic vegetation criterion for wetland determination is met when *more than* 50 percent of the dominant species in the plant community are FAC or wetter. The USACE's *National Wetland Plant List* (USACE 2020) was used to determine vegetation indicator status.

Table 4. Definitions for USFWS plant indicator status

Plant Indicator Status Category	Indicator Status Abbreviation	Definition (Estimated Probability of Occurrence)
Obligate Upland	UPL	Occur rarely (<1 percent) in wetlands, and almost always (>99 percent) in uplands
Facultative Upland	FACU	Occur sometimes (1 percent to <33 percent) in wetlands, but occur more often (>67 percent to 99 percent) in uplands
Facultative	FAC	Similar likelihood (33 percent to 67 percent) of occurring in both wetlands and uplands
Facultative Wetland	FACW	Occur usually in wetlands (>67 percent to 99 percent), but also occur in uplands (1 percent to 33 percent)
Obligate Wetland	OBL	Occur almost always (>99 percent) in wetlands, but rarely occur in uplands (<1 percent)
Not Listed	NL	Not listed due to insufficient information to determine status

4.2 Wetland Hydrology

Evidence of permanent or periodic inundation (water marks, drift lines, drainage patterns), or soil saturation to the surface for 14 or more consecutive days during the growing season, meets the hydrology criterion. Primary indicators of wetland hydrology include oxidized living root channels in the top 12 inches and hydrogen sulfide, whereas water-stained leaves and geomorphic position are known to be secondary indicators.

4.3 Hydric Soils

Soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper soil horizons are considered hydric soils. Field indicators include histosols, the presence of a histic epipedon, a sulfidic odor, low soil chroma, and gleying. Soil conditions were compared to the Field Indicators of Hydric Soils detailed in the Corps' *Regional Supplement*.

5 PRECIPITATION ANALYSIS

Table 5 presents an analysis of the appropriate NRCS Climate Analysis for Wetlands Tables, or WETS table (NRCS 2023b), for the three months preceding the field investigation. The SEATTLE TACOMA AIRPORT, WA WETS station was used for this table. With a total value of 8, the climate conditions of the site at the time of assessment were drier than normal.

Table 5. WETS precipitation analysis

Preceding Month	WETS Rainfall Percentile (inches)		Measured Rainfall ¹ (inches)	Conditions ²	Condition Value ³	Month Weight	Value
	30%	70%					
February	2.59	4.68	2.36	DRY	1	3	3
January	3.99	6.46	3.09	DRY	1	2	2
December	4.08	6.72	7.55	WET	3	1	3
Sum:							⁴ 8

¹Observed rainfall for the month (NRCS 2022b)

²Dry conditions are below 30% WETS table value, Normal conditions are between 30% and 70% of the WETS table values, Wet conditions are above 70% of the WETS table value.

³The condition value for a dry, normal, or wet month is 1, 2, or 3, respectively

⁴If the sum is 6-9, the conditions are drier than normal. If the sum is 10-14, conditions are normal. If the sum is 15-18, conditions are wetter than normal.

6 WETLAND RESULTS

6.1 Wetland A

6.1.1 Vegetation

Wetland A is dominated by black cottonwood (*Populus trichocarpa*; FAC), willow (*Salix spp.*; FAC), yellow flag iris (*Iris pseudacorus*; OBL), and soft rush (*Juncus effusus*; FACW; USACE 2020). The vegetation met the dominance test criteria for hydrophytic vegetation (USACE 2010).

6.1.2 Hydrology

Wetland A met several wetland hydrology indicators including a high water table (at 4 inches below ground surface [bgs]), saturation (at 2 inches bgs), and sediment deposits (USACE 2010). In addition, most of the wetland extends into Angle Lake. The hydrologic regimes present at this wetland are permanently flooded and saturated.

6.1.3 Hydric Soils

A shallow restrictive layer (starting at 4 inches bgs) was present at this wetland in the form of either a thick root ball or an erosion control blanket. To ensure this was not simply present in one area, multiple pits were dug several feet apart, however all had a restrictive layer at 4 inches. Despite the shallow restrictive layer, the soils were concluded to be hydric based on the presence of FACW and OBL species and primary wetland hydrology indicators, including a shallow water table and surface water.

6.2 Wetland B

6.2.1 Vegetation

Wetland B is dominated by willow (FAC), soft rush (FACW), and reed canarygrass (*Phalaris arundinacea*; FACW; USACE 2020). The vegetation met the dominance test criteria for hydrophytic vegetation (USACE 2010).

6.2.2 Hydrology

Wetland B met several wetland hydrology indicators, including high water table (8 inches bgs), saturation (6 inches bgs), and drift deposits (USACE 2010). Like Wetland A, much of the wetland extends into Angle Lake. The hydrologic regimes present are also permanently flooded and saturated.

6.2.3 Hydric Soils

The top horizon of the soils in Wetland B (0-5 inches) was a black sandy clay loam (10YR2/1). The second horizon (5-11+ inches) was a dark gray loamy sand matrix (10YR 4/1) with 15% dark yellowish-brown redox concentrations of the matrix (10YR 4/4). Based on the texture of the soil, the colors of the matrix, and the redox concentrations, this layer met the Sandy Redox hydric soil indicator (USACE 2010).

6.3 Wetland C

6.3.1 Vegetation

Wetland C is dominated by black cottonwood (FAC), Douglas spirea (*Spiraea douglasii*; FACW), reed canarygrass (FACW), and soft rush (FACW) (USACE 2020). The vegetation met the dominance test criteria for hydrophytic vegetation (USACE 2010). Additionally, a large patch of aquatic vegetation, likely a species of pond-lily, can be observed on aerial imagery, but it had not yet emerged by the time of the site visit.

6.3.2 Hydrology

Wetland C met several wetland hydrology indicators, including surface water, water marks, sediment deposits, and drift deposits (USACE 2010). Like Wetlands A and B, the hydrologic regimes present are permanently flooded and saturated.

6.3.3 Soils

As this wetland was offsite and on private property, a pit was not dug and soils were not analyzed. However, the soil in permanently flooded areas and the presence of FACW species in saturated environments would suggest that hydric soils are likely in those portions as well.

6.4 Wetland D

6.4.1 Vegetation

During the site visit, herbaceous plants were observed growing in a permanently inundated area. As this wetland is on private property, it was viewed from a distance and the species were not able to be identified down to the species level. However, based on the plant shape, it is likely a species of rush (*Juncus spp.*; FAC; USACE 2020), meeting the dominance test criteria for hydrophytic vegetation (USACE 2010). Similar to Wetland C, aerial imagery also shows that there are aquatic plants, likely a species of pond-lily, emerging in the summer.

6.4.2 Hydrology

Wetland D met the surface water and inundation visible on aerial imagery wetland hydrology indicators (USACE 2010). This wetland is permanently flooded.

6.4.3 Soils

Wetland D is on private property, so a soil pit was unable to be dug. However, as the entire wetland is permanently flooded and supports aquatic bed vegetation, this suggests that soils are hydric.

6.5 Wetland Categorization

To determine the categorization of the wetlands based on function, the wetland classification guidelines in Ecology's wetland rating system (Hruby 2014) were applied. Based on this guidance, the wetlands (A, B, C, D) were given a score for each of the three functions: Water Quality, Hydrology, and Habitat (Table 6).

Table 6. Wetland rating and categorization summary

Feature	Cowardin Class	HGM Class	Water Quality	Hydrology	Habitat	Total	Category
Wetland A	LEM/FO/SS	Lacustrine Fringe	8	5	6	19	III
Wetland B	LEM/SS	Lacustrine Fringe	8	5	5	18	III
Wetland C	LAB/FO/SS/EM	Lacustrine Fringe	8	5	6	19	III
Wetland D	LAB/EM	Lacustrine Fringe	8	5	5	18	III

All four wetlands are associated with Angle Lake, a Water of the State which is regulated by the SMP (City of SeaTac 2019). Per Chapter 4.1 of the SMP, regulations are in addition to the municipal code, and per Chapter 1.7, projects must comply with the zoning code (Title 15 of the SMC) and the SMP (City of SeaTac 2019).

Per Chapter 15.700 of the SMC, wetlands are subject to a buffer to protect the integrity and function of said feature. According to SMC 15.700.285, Category III wetlands with a habitat score of 5 are subject to a 105-foot buffer, and Category III wetlands with a habitat score of 6 are subject to a 165-foot buffer.

7 FISH AND WILDLIFE HABITAT CONSERVATION AREAS

As discussed in Section 2, Angle Lake and its associated wetlands meet the definition of FWHCAs as Waters of the State and as a lake stocked with game fish according to SMC 15.700.370 (City of SeaTac 2019; WDFW 2022; WDFW 2023a). These areas can further be classified as Category 2 habitat, defined in SMC 15.700.370.B since they contain wetlands and their buffers in an area of high intensity land use. The buffers for FWHCAs default to those that apply to the critical areas found within the features.

See Appendix A for the locations of these features and their buffers.

8 IMPACTS

8.1 Wetlands

The only project component that will occur within Wetland A is to remove the steel fence that runs along the property boundary. The fence removal may result in temporary disturbance to the wetland vegetation but ultimately will result in an improvement to conditions for wetland vegetation long-term. Additionally, areas within Wetland A's buffer containing non-native, invasive Himalayan blackberry are proposed to be cleared,

consistent with guidelines outlined in Chapter 4.6 of the SMP. The existing mature cottonwood tree in this area will be retained, and the removal of the invasive blackberry will result in an improvement in buffer conditions for Wetland A.

The pier that connects the boat ramp to the fishing pier currently overhangs Wetland B. The project has been designed to remove the connecting pier and replace it with a path in the uplands, thus removing the impact of overwater coverage and availing aquatic habitat for the wetland. The walkway in the uplands will be installed within Wetland B's buffer, however the existing buffer of Wetland B is currently degraded and contains a mix of concrete walkways, maintained grass lawn, and sand. Therefore, removing the connecting pier from the wetland and replacing it with a walkway in the already-degraded upland buffer will result in an improvement in wetland conditions.

Other project components that are proposed within the lake and its shoreline may also be located within wetland buffers that overlap. BMPs will be closely followed during construction to ensure minimal impacts to the wetlands. Work will be completed from the uplands to avoid the wetlands. Therefore, no permanent impacts to wetlands will occur as a result of this project.

8.2 Shorelines

The proposed project will include work within the lake and its shoreline buffer. Proposed project elements that may result in impacts to the lake and shoreline include:

- Placement of approximately 275 cubic yards (CY) of beach material below the OHWM in Angle Lake for the purpose of restoring the grade to safe conditions for swimmers. This placement of beach material exceeds 25 CY, but is allowed per the SMP Chapter 7.3.3.Q with a CUP, because it is proposed in conjunction with a public water-dependent use;
- Installing new ADA swim ramp with grated walkway connected to existing access platform/stairs and associated steel piles; and
- Adding a 216 square-foot ADA kayak access float near the boat ramp.

These impacts will be offset by:

- Relocating the connecting pier to the uplands so it is no longer shading areas below the OHWM of the lake;
- Replacing the fishing pier with grated materials, and relocating the pier finger to deeper water;
- Removing all existing creosote treated timber pile and replacing with steel pile;
- Adding scour protection (riprap) to the replacement boat ramp to reduce scour and erosion from wave action and recreational boat use; and
- Removing aluminum gangway ramp just north of boat ramp and replacing with grated floats.

The proposed beach fill will not convert aquatic area to upland, it will only restore the elevation of the lakebed at the entry point for swimmers at the base of the concrete stairs. The nearshore area within Angle Lake, where the 275 CY of beach material will be placed, is currently sand and used heavily for public recreation; thus, it does not provide suitable

habitat for aquatic species. No ESA-listed species are known to occur in Angle Lake, and per PHS on the Web, no Priority Habitats and Species do either.

To offset any unforeseen potential impacts of material placement, the City proposes to relocate the overwater pier that connects the boat ramp and the fishing pier to the uplands. This would remove overwater coverage of a wetland (Wetland B) associated with the lake shoreline and allow for increased function. The City will also remove 19 creosote-treated timber piles from the aquatic environment. All proposed overwater coverage will incorporate grated decking to replace existing solid-decked structures, resulting in a net decrease of overwater coverage within the lake.

8.3 No Net Loss Analysis

The Project involves multiple components to replace and install features along the lake, improve ADA access, and increase public accessibility and use of the park. Major components of the Project are described below and how each may result in no net loss of habitat or function:

- Piles: A total of 19 existing creosote timber piles and 3 steel piles will be removed from the lake shoreline. These will be replaced with 22 steel piles associated with the replacement fishing pier and boat ramp. In addition, 6 new steel pile will be installed to support the ADA swim ramp. The replacement and installation of the new piles will be mitigated through the removal of creosote timber piles from the shoreline, resulting in improved water quality and no net loss of shoreline ecological function.
- Connecting Pier and Concrete Path: A new concrete path will be installed in the uplands to replace the existing overwater connecting pier that provides access between the swim area and the boat ramp. The existing connecting pier runs over/adjacent to Wetland B. The new concrete path will occur immediately upland of Wetland B in an area that is currently degraded with concrete paths. The relocation of the connecting path landward into the uplands is intended to offset impacts of the new over- and in-water structures and the placement of beach replenishment material. Relocating the pier to the uplands will avail aquatic area for the wetland vegetation and will serve as mitigation for other in-water components proposed to support ADA needs for this project.
- Fishing Pier: The existing concrete fishing pier and walkways will be removed and replaced with grated ADA accessible walkways. New aluminum walkways with aluminum guardrails will be installed on top of the galvanized steel substructures. The creosote treated timber piles will be replaced with steel. The entire deck surface of all gangways and walkways will be covered with an ADA-compliant fiber-reinforced polymer grating with a minimum 60% open area. Approximately 50% of the entire deck will be functional grating. This proposed component will result in a net decrease in overwater coverage, of both the lake and the associated lake fringe wetland (Wetland B). The grated walkways will allow light penetration into the water in nearshore areas, improving habitat function. The existing finger pier will also be relocated waterward, availing more nearshore habitat. These avoidance and minimization measures for the replacement fishing pier will result in net

positive habitat benefits to the lake, ensuring no net loss of shoreline ecological function.

- Boat Ramp: Components comply with all applicable regulations outlined in the SMP Chapter 6.1 pertaining to boat ramps (considered a “boating facility” per the SMP because it is for public use). This proposed replacement boat ramp meets all regulations per SMP 6.2.3.3; the boat ramp will be installed along the existing ramp’s centerline, matching the existing slope, and will be within the same footprint. A 3-foot-wide band of riprap will be placed along the south side of the replacement ramp for scour protection. The existing ramp currently experiences scour along the south and east sides of the ramp; this riprap scour protection will minimize future maintenance activities and protect adjacent habitat from scour and wave action. Replacement of the boat ramp in its existing footprint and installation of scour protection will prevent further degradation of the areas adjacent to the existing ramp through scour. As such, this Project component will not result in a net loss of shoreline ecological functions.
- Boarding Float Additions: Two (2) 8-foot wide by 19-foot-long boarding floats will be installed along the north side of the concrete boat ramp to replace the existing gangways and a portion of the concrete abutment. The landward float will ground out on the articulated concrete mats of the boat ramp. The boarding floats will be comprised of aluminum tube frames and thick-walled, foam-filled High-Density Polyethylene (EPS HDPE) flotation tubs. The top deck surface of the floats will be fiberglass grated decking meeting ADA requirements and 60-percent net open area requirements. All floats will have approximately 20- to 25-percent functional grating. These floats will not result in impacts to the lake/shoreline environment because they will be installed in an area that is already concrete (boat ramp). Additionally, light will be allowed to penetrate below the floats into the water column due to functional grating. These boarding floats will help to increase both ADA accessibility and safety when using the boat ramp, and are allowable per SMP 7.5.4.BB. Installation of these floats over the concrete boat ramp will not result in a net loss of shoreline ecological functions.
- ADA Swim Ramp: The new ADA swim ramp will consist of a concrete ramp connected to the existing upland concrete path and then to an elevated aluminum ramp walkway extending waterward of the OHWM. The new elevated aluminum ADA ramp with aluminum guardrails will be installed on top of the galvanized steel substructures to create ADA accessible in-water swim access. The entire deck surface of all elevated walkways will be covered with an ADA-compliant fiber-reinforced polymer grating with a minimum 60% open area. Approximately 50% of the entire deck will be functional grating. Some localized excavation may be needed to install piles and connections for the elevated structure. The proposed swim ramp will be slightly elevated off the bottom of the lake to allow further light penetration from the sides, as well as through the functionally grated areas with minimum 60% open area. The proposed location of the swim ramp is an area with sandy substrate that does not provide any aquatic habitat or support vegetation of any kind. As such, this feature will not degrade habitat conditions within the lake and will result in no net-loss of shoreline ecological functions.

- Access Swim Stairs: The new access stairs will be installed in three locations to provide access to the swim area from the existing concrete steps. There has been erosion at the base of the existing concrete steps which has decreased access and safety getting in and out of the water. The new stairs will be made of prefabricated aluminum framing attached over the existing concrete steps. Additional railings and fencing will be installed to direct swimmers to the proposed aluminum stairs. These stairs will result in no net loss of shoreline ecological function, as they will be installed over the top of the existing concrete steps and will land on the placed sand substrate that is currently devoid of vegetation.
- Kayak Access Float: A 12-foot wide by 18-foot-long kayak access float will be installed along the north side of the existing floats at the boat ramp to provide ADA kayak launch access. The float will be connected and supported by the existing piling and will be supported by Polyethylene flotation tubs. The new kayak access float will result in the addition of 216 square feet of overwater coverage, which will be offset by the removal of the overwater connecting pier (413 square feet). As such, installation of the kayak access float will not result in a net loss of shoreline ecological functions.
- Beach Fill Material: The project includes placement of approximately 275 CY of beach material below the OHWM at the base of the existing concrete steps for the purpose of restoring the preexisting grade for safe swimming conditions. The fill will not convert aquatic area to upland, it will only raise the elevation of the lakebed at the entry point for swimmers at the base of the concrete steps. The sand placement in this location is intended to reduce the height to the first concrete step and improve public safety in response to recent incidences. This is necessary due to the amount of sand that has been lost to scour and wave action over time. The area proposed for sand placement is currently composed of sand and gravel substrate and is devoid of aquatic vegetation. Placement of the new sand material will not change the condition of the substrate in this area, and will not result in a net-loss of shoreline ecological functions.

In summary, the proposed components comply with the no net-loss requirements of SMP 5.7.4.D for development in an Urban Conservancy shoreline designation. The Project also aligns with the City's general development standards and permitted uses, outlined in the SMP, Chapter 5.7.5. Ultimately, the goal of the Project is to provide increased public safety at Angle Lake Park and increase accessibility for water-dependent recreation. Part of the project also includes restoration actions, listed above, which align with the management policies set forth in SMP 5.7.3 for Urban Conservancy land use type.

9 REGULATORY CONSIDERATIONS

Critical areas are regulated by agencies at the local, state, and federal levels. At the local level, Angle Lake and its associated wetlands are under the jurisdiction of the SeaTac Shoreline Master Program (2019) as Shorelines of Statewide Significance. According to Chapter 1.7 of the SMP, Shorelines of Statewide Significance are also subject to SeaTac's critical areas ordinance (Chapter 15.700 SMC). When a development setback or buffer in the SMC conflicts with those set in the SMP, the larger setback must be applied (City of SeaTac 2019). In this case, as described in Section 2 of this report, the buffers for the wetlands as required by SMC 15.700.285 are larger than those required by the SMP, so the

buffers will be determined by the SeaTac Municipal Code. As there is no buffer specified in SMC 15.700 for Angle Lake, the buffers required by the SMP will apply. More information on policies and regulations concerning specific projects within the shoreline jurisdiction can be found in Chapters 5-7 in the Shoreline Master Program (City of SeaTac 2019).

At the state level, wetlands are regulated by the Washington State Department of Ecology through the State Water Pollution Control Act (RCW 90.48), as well as the procedures in the State Environmental Policy Act (WAC 197-11). Ecology also administers Section 401 of the federal Clean Water Act for wetlands in the state. The requirement for a Water Quality Certification from Ecology for wetland impacts is triggered by an applicant applying for a federal Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (USACE).

Additionally, WDFW regulates work within state waters to protect fish life under the State's Hydraulic Code (WAC 220-660) through the Hydraulic Project Approval (HPA) program.

At the federal level, impacts (specifically dredging or filling) to wetlands are regulated by the Environmental Protection Agency through the USACE. The USACE administers the federal Clean Water Act (Section 404) for projects involving dredging or filling in Waters of the U.S. (lakes, streams, marine waters, and most non-isolated wetlands).

While it is the regulatory agencies that make the final determination regarding jurisdictional status, project proponents can infer jurisdiction using the guidance provided by each agency or local government. This inference can be used to design a project based on the anticipated regulatory constraints within the project site. However, it is the project proponent's responsibility to contact each potential regulating agency and confirm their regulatory status and requirements.

10 DISCLAIMER

The findings and conclusions documented in this report have been prepared for specific application to this proposed project site. They have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area. Our work was also performed in accordance with the terms and conditions set forth in our proposal. The conclusions and recommendations presented in this report are professional opinions based on an interpretation of information currently available to us and are made within the operation scope, budget, and schedule of this project. No warranty, expressed or implied, is made. In addition, changes in government codes, regulations, or laws may occur. Because of such changes, our observations and conclusions applicable to this site may need to be revised wholly or in part.

Wetland boundaries are based on conditions present at the time of the site visit and considered preliminary until the flagged wetland and/or drainage boundaries are validated by the appropriate jurisdictional agencies. Validation of the boundaries by the regulating agencies provide a certification, typically in writing, that the wetland boundaries verified are the boundaries that will be regulated by the agencies until a specific date or until the regulations are modified. Only the regulating agencies can provide this certification.

Since wetlands are dynamic communities affected by both natural and human activities, changes in wetland boundaries may be expected. Because of such changes, our observations and conclusions applicable to this site may need to be revised wholly or in part.

11 BIOLOGIST QUALIFICATIONS

11.1 Terra Hauser

Terra Hauser is a Biologist with training in wetland science and management. Terra also has experience in wildlife biology and ecological restoration.

Terra has earned a Bachelor of Arts and Sciences degree from Quest University Canada along with a certificate in Wetland Science and Management from the University of Washington.

For a list of representative projects, please contact her at Grette Associates.

11.2 Chad Wallin, PWS – Project Biologist

Chad Wallin is a Biologist with extensive training in wetland science and ecology restoration. Chad also has professional experience in stream and fish restoration, marine monitoring, mitigation monitoring, and fish and wildlife assessments.

Chad has earned a Bachelor of Arts degree in Environmental Studies from the University of Washington along with certificates in ecology restoration and wetland science and management. Chad is also a certified Professional Wetland Scientist through the Society of Wetland Scientists.

For a list of representative projects, please contact him at Grette Associates.

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CRITICAL AREAS REPORT

APPENDIX A: CRITICAL AREAS MAP

LEGEND

WB

APPROX. PROPERTY
BOUNDARY

APPROX. CATEGORY III
WETLAND BOUNDARY

APPROX. WETLAND BUFFER

APPROX. LAKE OHWM

APPROX. LAKE BUFFER

N

E

S

W

Grette Associates LLC

ENVIRONMENTAL CONSULTANTS

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TACOMA, WA 98403

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gretteassociates.com

PROJECT #:

306 044

DESIGNED BY:

TH

CHECKED BY:

CW

DATE:

03/09/2023

CLIENT:

MOTT MACDONALD, LLC

SITE ADDRESS:

KING COUNTY, WA

DRAWING SCALE:

AS DRAWN

ANGLE LAKE PARK CRITICAL AREAS
REPORT

CRITICAL AREAS MAP

SHEET

1




OF




1


MOTT MACDONALD, LLC

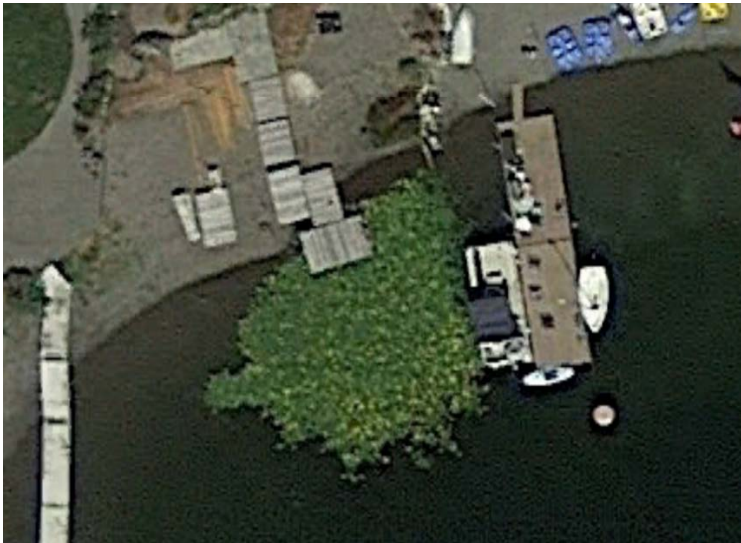
CRITICAL AREAS REPORT

APPENDIX B: WETLAND SUMMARY

WETLAND A SUMMARY		
Approximate Size (sq. ft.):	1,128	
Cowardin Classification ¹ :	LEM/FO/SS	
HGM Classification ² :	Lacustrine Fringe	
Wetland Category ³ :	III	
Wetland Buffer Width ⁴ :	165 ft.	
Sample Plot Total ⁵ :	2	
Hydrophytic Vegetation Present (Y/N)?	Yes	
Hydric Soil Indicator?	<i>Other: Indicated based on water table and hydrophytic vegetation</i>	
Wetland Hydrology Present?	Yes	
Summary of Findings		
Dominant Vegetation:	Dominant vegetation within Wetland A consists of black cottonwood, willow, yellow flag iris, and soft rush.	
Soil Profile:	A shallow restrictive layer (4 inches) prevented a full soil analysis. However, hydric soils are assumed to be present based on a high water table and presence of OBL and FACW species.	
Primary Hydrological Support:	Hydrologic support for Wetland A is primarily provided by Angle Lake, into which part of the wetland extends. A small pipe likely drains groundwater or stormwater through the wetland, but no water from this pipe was flowing during the site visit.	
Wetland Data Plot:		Upland Data Plot:
		
Notes: ¹ Classification based on Cowardin et al. (1979). ² HGM classification based on Brinson, M.M. (1993). ³ Wetland rating was determined based on the guidelines defined in the local municipal code. ⁴ Wetland buffer was determined based on the local municipal code. ⁵ Sample plot total includes the collective amount of wetland and upland samples plots examined to define the wetland boundary.		

WETLAND B SUMMARY		
Approximate Size (sq. ft.):	1,184	
Cowardin Classification ¹ :	LEM/SS	
HGM Classification ² :	Lacustrine Fringe	
Wetland Category ³ :	III	
Wetland Buffer Width ⁴ :	105 ft.	
Sample Plot Total ⁵ :	3	
Hydrophytic Vegetation Present (Y/N)?	Yes	
Hydric Soil Indicator?	<i>Sandy Redox</i>	
Wetland Hydrology Present?	Yes	
Summary of Findings		
Dominant Vegetation:	Dominant vegetation within Wetland B consists of willow, soft rush, and reed canarygrass.	
Soil Profile:	Soils observed within the wetland typically consisted of an upper layer (0-5 inches) of black (10YR2/1) sandy clay loam with a layer (5-11+ inches) of dark gray (10YR 4/1) loamy sand matrix with dark yellowish-brown (10YR 4/4) redox features beneath.	
Primary Hydrological Support:	Hydrologic support for Wetland B is primarily provided by Angle Lake, into which part of the wetland extends.	
Wetland Data Plot:		Upland Data Plots:
		
Notes: ¹ Classification based on Cowardin et al. (1979). ² HGM classification based on Brinson, M.M. (1993). ³ Wetland rating was determined based on the guidelines defined in the local municipal code. ⁴ Wetland buffer was determined based on the local municipal code. ⁵ Sample plot total includes the collective amount of wetland and upland samples plots examined to define the wetland boundary.		

WETLAND C SUMMARY		
Approximate Size (sq. ft.):	10,374	
Cowardin Classification ¹ :	LAB/FO/SS/EM	
HGM Classification ² :	Lacustrine Fringe	
Wetland Category ³ :	III	
Wetland Buffer Width ⁴ :	165 ft.	
Sample Plot Total ⁵ :	0	
Hydrophytic Vegetation Present (Y/N)?	Yes	
Hydric Soil Indicator?	<i>Other: Indicated based on surface water and hydrophytic vegetation</i>	
Wetland Hydrology Present?	Yes	
Summary of Findings		
Dominant Vegetation:	Dominant vegetation within Wetland C consists of black cottonwood, Douglas spirea, reed canarygrass, and soft rush.	
Soil Profile:	Wetland C is located on private property, so a soil pit was not dug. However, hydric soils are assumed based on surface water and the presence of hydrophytic vegetation.	
Primary Hydrological Support:	Hydrologic support for Wetland C is primarily provided by Angle Lake, into which part of the wetland extends.	
Wetland Data Plot:		Upland Data Plot:
N/A		N/A
Notes: ¹ Classification based on Cowardin et al. (1979). ² HGM classification based on Brinson, M.M. (1993). ³ Wetland rating was determined based on the guidelines defined in the local municipal code. ⁴ Wetland buffer was determined based on the local municipal code. ⁵ Sample plot total includes the collective amount of wetland and upland samples plots examined to define the wetland boundary.		

WETLAND D SUMMARY		
Approximate Size (sq. ft.):	2,031	
Cowardin Classification ¹ :	LAB/EM	
HGM Classification ² :	Lacustrine Fringe	
Wetland Category ³ :	III	
Wetland Buffer Width ⁴ :	105 ft.	
Sample Plot Total ⁵ :	0	
Hydrophytic Vegetation Present (Y/N)?	Yes	
Hydric Soil Indicator?	<i>Other: Indicated based on surface water and hydrophytic vegetation</i>	
Wetland Hydrology Present?	Yes	
Summary of Findings		
Dominant Vegetation:	Dominant vegetation within Wetland D consists of a likely rush species and an unidentified aquatic bed species.	
Soil Profile:	Wetland D is located on private property, so a soil pit was not dug. However, hydric soils are assumed based on surface water and the presence of hydrophytic vegetation.	
Primary Hydrological Support:	Hydrologic support for Wetland D is primarily provided by Angle Lake, into which part of the wetland extends.	
Wetland Data Plot:		Upland Data Plot:
N/A		N/A
Notes: ¹ Classification based on Cowardin et al. (1979). ² HGM classification based on Brinson, M.M. (1993). ³ Wetland rating was determined based on the guidelines defined in the local municipal code. ⁴ Wetland buffer was determined based on the local municipal code. ⁵ Sample plot total includes the collective amount of wetland and upland samples plots examined to define the wetland boundary.		

MOTT MACDONALD, LLC

CRITICAL AREAS REPORT

APPENDIX C: WETLAND DATASHEETS

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

Project Site: Angle LL City/County: 1 State: SP Sampling Date: 3/3/23
 Applicant/Owner: SP Sampling Point: SP
 Investigator(s): Slope leading to lake Section, Township, Range: 2
 Landform (hillslope, terrace, etc.): Slope leading to lake Local relief (concave, convex, none): 2
 Subregion (LRR): Lat: _____ Long: _____ NWI classification: _____
 Soil Map Unit Name: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐
 Are "Normal Circumstances" present? Yes ☐ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? (If no, explain in Remarks.)
 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: Dry

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30)
 1. Black cottonwood Absolute % Cover 35% Dominant Species? Y Indicator Status FAC
 2. _____
 3. _____
 4. _____
 50% = 35, 20% = 35 = Total Cover
 Sapling/Shrub Stratum (Plot size: 15)
 1. Willow A1 (willow) 100% Y FAC-OB
 2. Willow A2 - Pac. Ninebark 8% N FACU
 3. Ham. bb 10% N FAC
 4. _____
 5. _____
 50% = 115, 20% = 115 = Total Cover
 Herb Stratum (Plot size: 5)
 1. iris pseudoacris 5% Y OBL
 2. Juncus effusus 5% Y FACU
 3. _____
 4. _____
 5. _____
 6. _____
 7. _____
 8. _____
 9. _____
 10. _____
 11. _____
 50% = 10, 20% = 10 = Total Cover
 Woody Vine Stratum (Plot size: _____)
 1. _____
 2. _____
 50% = _____, 20% = _____
 % Bare Ground in Herb Stratum 90

Dominance Test Worksheet:

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

Prevalence Index worksheet:

Total % Cover of:
 OBL species _____ x1 = _____
 FACW species _____ x2 = _____
 FAC species _____ x3 = _____
 FACU species _____ x4 = _____
 UPL species _____ x5 = _____
 Column Totals: _____ (A) _____ (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0¹
- ☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants¹
- ☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present?

Yes ☒ No ☐

Remarks:

lots of rush just outside of plot

Project Site:

SP1

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	% ¹	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 4/1	100					Sandy clay loam	

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

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

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

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: Roots or erosion controlDepth (inches): 4

Hydric Soils Present?

Yes ☒ No ☐

Remarks:

Extremely thick root wad or erosion control blanket created restrictive layer. Presence of OBL species and extensive wetland hydrology, incl. 4 inch water table in SP1, led me to conclude soils would pass hydric indicators if the rest was accessible.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): 2

Water Table Present? Yes ☒ No ☐ Depth (inches): 4

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 2

Wetland Hydrology Present?

Yes ☒ No ☐

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

Remarks:

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

Project Site: Angle LA City/County: / Sampling Date: 3/3/23
 Applicant/Owner: _____ State: _____ Sampling Point: SP2
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Slope on beach Local relief (concave, convex, none): _____ Slope (%): 5%
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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

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

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

VEGETATION – Use scientific names of plants:

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. <u>cottonwood</u>	<u>25%</u>	<u>Y</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>3</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100%</u> (A/B)
4. _____	_____	_____	_____		
50% = _____, 20% = _____	<u>25</u>	= Total Cover			
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:	
1. <u>Him. bb</u>	<u>80%</u>	<u>Y</u>	<u>FAC</u>	Total % Cover of:	Multiply by:
2. <u>unid. willow</u>	<u>5%</u>	<u>N</u>	<u>FAC-OBL</u>	OBL species _____	x1 = _____
3. _____	_____	_____	_____	FACW species _____	x2 = _____
4. _____	_____	_____	_____	FAC species _____	x3 = _____
5. _____	_____	_____	_____	FACU species _____	x4 = _____
50% = _____, 20% = _____	<u>85</u>	= Total Cover		UPL species _____	x5 = _____
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Column Totals:	_____ (A) _____ (B)
1. <u>reed canarygrass</u>	<u>85%</u>	<u>Y</u>	<u>FACW</u>	Prevalence Index = B/A = _____	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
50% = _____, 20% = _____	<u>85</u>	= Total Cover			
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
% Bare Ground in Herb Stratum _____					

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
☐ 2 – Dominance Test is >50%
☐ 3 – Prevalence Index is ≤3.0¹
☐ 4 – Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
☐ 5 – Wetland Non-Vascular Plants¹
☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present?

Yes ☒ No ☐

Remarks:

Project Site: _____

Sampling Point: **SP2****SOIL**

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 2/1	100					loamy sand	
2-6	10YR 5/1	100					sand	
6-10	10YR 4/1	70	10YR 4/3	30	C	M	silt loam	
10-14	10YR 5/1	100					sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

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

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

Hydric Soils Present?

Yes ☐No ☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

Field Observations:Surface Water Present? Yes ☐ No ☒Water Table Present? Yes ☐ No ☒Saturation Present? (includes capillary fringe) Yes ☐ No ☒

Depth (inches): _____

Depth (inches): _____

Depth (inches): _____

Wetland Hydrology Present?

Yes ☐No ☒

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

Remarks:

Small log near edge of blackberry patch but likely/possible it was moved manually as a bench

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

Project Site: Angle Lake City/County: / Sampling Date: 3/3/23
 Applicant/Owner: _____ State: _____ Sampling Point: SP3
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): lakeside Local relief (concave, convex, none): / Slope (%): 1
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>3</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
Prevalence Index worksheet:					
Total % Cover of:				Multiply by:	
OBL species _____				x1 = _____	
FACW species _____				x2 = _____	
FAC species _____				x3 = _____	
FACU species _____				x4 = _____	
UPL species _____				x5 = _____	
Column Totals: _____ (A)				_____ (B)	
Prevalence Index = B/A = _____					
Hydrophytic Vegetation Indicators:					
<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation					
<input type="checkbox"/> 2 – Dominance Test is >50%					
<input type="checkbox"/> 3 – Prevalence Index is ≤3.0 ¹					
<input type="checkbox"/> 4 – Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)					
<input type="checkbox"/> 5 – Wetland Non-Vascular Plants ¹					
<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)					
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.					
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					

Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>unid. willow (B1)</u>	<u>60%</u>	<u>Y</u>	<u>FAC-OBL</u>
2. <u>spirea</u>	<u>15%</u>	<u>N</u>	<u>FACW</u>
3. <u>unid. shrub (B2)</u>	<u>10%</u>	<u>N</u>	<u>FAC</u>
4. <u>cottonwood</u>	_____	_____	_____
5. _____	_____	_____	_____
50% = _____, 20% = <u>17</u>	<u>85</u>	= Total Cover	
Herb Stratum (Plot size: _____)			
1. <u>Sarcus effusus</u>	<u>40</u>	<u>Y</u>	<u>FACW</u>
2. <u>reed cg</u>	<u>50</u>	<u>Y</u>	<u>FACW</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
50% = _____, 20% = _____	<u>90</u>	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
50% = _____, 20% = _____	_____	= Total Cover	
% Bare Ground in Herb Stratum <u>10</u>			

Remarks:

t: SP2 3

HYDROLOGY

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

Field Observations:

Wetland Hydrology Present? Yes ☒ No ☐

Remarks:

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

Project Site: Angle Lake City/County: / Sampling Date: 3/3/23
 Applicant/Owner: State: Sampling Point: SP 4
 Investigator(s): Section, Township, Range:
 Landform (hillslope, terrace, etc.): Beach Local relief (concave, convex, none): Slope (%): 3
 Subregion (LRR): Lat: Long: Datum:
 Soil Map Unit Name: NWI classification:
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: <u> </u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Total Number of Dominant Species Across All Strata: <u>2</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>	
50% = <u> </u> , 20% = <u> </u>	<u> </u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u> </u>)				
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Prevalence Index worksheet:
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
3. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Total % Cover of:
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>	OBL species <u> </u> x1 = <u> </u>
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	FACW species <u> </u> x2 = <u> </u>
50% = <u> </u> , 20% = <u> </u>	<u> </u>	= Total Cover		FAC species <u> </u> x3 = <u> </u>
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u>und. grass</u>	<u>30%</u>	<u>Y</u>	<u>assume FAC</u>	FACU species <u> </u> x4 = <u> </u>
2. <u>und. for</u>	<u>10%</u>	<u>N</u>	<u>assume FAC</u>	UPL species <u> </u> x5 = <u> </u>
3. <u>und. plantain (Plantago lanceolata)</u>	<u>10%</u>	<u>N</u>	<u>FACU</u>	Column Totals: <u> </u> (A) <u> </u> (B)
4. <u>und. moss</u>	<u>40%</u>	<u>Y</u>	<u>assume FAC</u>	Prevalence Index = B/A = <u> </u>
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Hydrophytic Vegetation Indicators:
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation
8. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 2 – Dominance Test is >50%
9. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 3 – Prevalence Index is ≤3.0 ¹
10. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 4 – Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
11. <u> </u>	<u> </u>	<u> </u>	<u> </u>	<input type="checkbox"/> 5 – Wetland Non-Vascular Plants ¹
50% = <u> </u> , 20% = <u> </u>	<u>90</u>	= Total Cover		<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Woody Vine Stratum (Plot size: <u> </u>)				
1. <u> </u>	<u> </u>	<u> </u>	<u> </u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. <u> </u>	<u> </u>	<u> </u>	<u> </u>	
50% = <u> </u> , 20% = <u> </u>	<u>10%</u>	= Total Cover		
% Bare Ground in Herb Stratum <u> </u>				

Remarks:

Project Site: _____

SOILSampling Point: **SP4****Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 2/2	100					loamy sand	
3-5	10YR 3/1	60	10YR 4/4	40	C	M	loamy sand	
5-15+	10YR 4/1	100					loamy sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

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

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

Hydric Soils Present?Yes ☐No ☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):	_____
Water Table Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Depth (inches):	14
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (inches):	_____

Wetland Hydrology Present?Yes ☐No ☒

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

Remarks:

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

Project Site: Angle Lake City/County: / Sampling Date: 3/3/23
 Applicant/Owner: _____ State: _____ Sampling Point: SP5
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): / Slope (%): 4
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. <u>western redcedar</u>	<u>45</u>	<u>Y</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>3</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>100</u> (A/B)
4. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet:	
1. <u>Viburnum fischeri</u>	<u>10</u>	<u>Y</u>	<u>NL - 30% FAC</u>	Total % Cover of:	Multiply by:
2. <u>Viburnum tinus</u>	<u>5</u>	<u>Y</u>	<u>NL - 25% FAC</u>	OBL species	x1 = _____
3. _____	_____	_____	_____	FACW species	x2 = _____
4. _____	_____	_____	_____	FAC species	x3 = _____
5. _____	_____	_____	_____	FACU species	x4 = _____
50% = _____, 20% = _____	<u>15</u>	= Total Cover		UPL species	x5 = _____
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Column Totals:	_____ (A) _____ (B)
1. _____	_____	_____	_____	Prevalence Index = B/A = _____	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status		
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
50% = _____, 20% = _____	_____	= Total Cover			
% Bare Ground in Herb Stratum <u>100</u>					
Remarks:					

Project Site: _____

SOILSampling Point: SP5**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2	10YR 2/1	100					loamy	
2-10+	10YR 3/2	70					loamy sand	
2-10+	10YR 4/2	30					loamy sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

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

Indicators for Problematic Hydric Soils³:

- | |
|---|
| <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.**Restrictive Layer (if present):**Type: rocks, roots, etc
Depth (inches): 10

Hydric Soils Present?

Yes

☐

No

☒

Remarks:

HYDROLOGY**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches): _____
Water Table Present?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Depth (inches): _____

Wetland Hydrology Present?

Yes

☐

No

☒

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

Remarks:

Wetland C

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

Project/Site: Angle Lake City/County: _____ Sampling Date: _____
 Applicant/Owner: _____ State: _____ Sampling Point: Wetland C
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Lakeside Local relief (concave, convex, none): / Slope (%): 5
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____
 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 <u>✓</u>	No _____	Is the Sampled Area within a Wetland?	Yes <u>✓</u>	No _____
Hydric Soil Present?	Yes _____	No _____			
Wetland Hydrology Present?	Yes _____	No _____			
Remarks: <u>Dry</u>					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>black cottonwood</u>	<u>65</u>	<u>Y</u>	<u>FAC</u>	
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. _____	_____	_____	_____	Prevalence Index worksheet:
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>) 1. <u>Spirea douglasii</u> <u>20</u> <u>Y</u> <u>FACW</u> 2. _____ 3. _____ 4. _____ 5. _____ <u>20</u> = Total Cover				
Herb Stratum (Plot size: <u>5 ft</u>) 1. <u>reed canarygrass</u> <u>20</u> <u>Y</u> <u>FACW</u> 2. <u>Juncus effusus</u> <u>30</u> <u>Y</u> <u>FACW</u> 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 11. _____ <u>50</u> = Total Cover				Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
% Bare Ground in Herb Stratum _____ Remarks: _____				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____

Sampling Point: wetland C

in private
property;
not able
to dig

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input checked="" type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)			
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)			
Field Observations:			
Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>~20 in.</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Water Table Present?	Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>unk.</u>		
Saturation Present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>unk.</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

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

Project/Site: Angle Lake City/County: _____ Sampling Date: 3/3/23
 Applicant/Owner: _____ State: _____ Sampling Point: Wetland D
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Lake Local relief (concave, convex, none): — Slope (%): _____
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: Aquatic bed
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)														
1. _____																		
2. _____																		
3. _____																		
4. _____																		
_____ = Total Cover				Prevalence Index worksheet: <table border="1"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr><td>OBL species _____</td><td>x 1 = _____</td></tr> <tr><td>FACW species _____</td><td>x 2 = _____</td></tr> <tr><td>FAC species _____</td><td>x 3 = _____</td></tr> <tr><td>FACU species _____</td><td>x 4 = _____</td></tr> <tr><td>UPL species _____</td><td>x 5 = _____</td></tr> <tr><td>Column Totals: _____</td><td>(A) _____ (B) _____</td></tr> </tbody> </table> Prevalence Index = B/A = _____	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = _____																	
FAC species _____	x 3 = _____																	
FACU species _____	x 4 = _____																	
UPL species _____	x 5 = _____																	
Column Totals: _____	(A) _____ (B) _____																	
Sapling/Shrub Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ 5 - Wetland Non-Vascular Plants ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. _____																		
2. _____																		
3. _____																		
4. _____																		
5. _____																		
_____ = Total Cover																		
Herb Stratum (Plot size: _____)																		
1. <u>Unknown aquatic plants</u>	<u>100</u>	<u>Y</u>	<u>OBL</u>															
2. <u>Most likely <i>Muhlenbergia polysepala</i></u>																		
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
11. _____																		
_____ = Total Cover																		
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____														
1. _____																		
2. _____																		
_____ = Total Cover																		
% Bare Ground in Herb Stratum _____																		
Remarks: <u>!</u>																		

SOIL

Sampling Point: Wetland D

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

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

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

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|--|
| <input type="checkbox"/> Histosól (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 2 cm Muck (A10) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input checked="" type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Matrix (F3) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Redox Depressions (F8) | |
- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Remarks: Within permanently inundated area. Impossible to dig

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): ~40

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

Saturation Present? Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No

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

Remarks:

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

Project/Site: Wetland E City/County: _____ Sampling Date: 3/3/23
 Applicant/Owner: _____ State: _____ Sampling Point: Wetland E
 Investigator(s): _____ Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Lake Local relief (concave, convex, none): _____ Slope (%): _____
 Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: _____ NWI classification: _____

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

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

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

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u>	(A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>1</u>	(B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u>	(A/B)
4. _____	_____	_____	_____	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:	
1. _____	_____	_____	_____	Total % Cover of:	Multiply by:
2. _____	_____	_____	_____	OBL species _____	x 1 = _____
3. _____	_____	_____	_____	FACW species _____	x 2 = _____
4. _____	_____	_____	_____	FAC species _____	x 3 = _____
5. _____	_____	_____	_____	FACU species _____	x 4 = _____
= Total Cover				UPL species _____	x 5 = _____
Herb Stratum (Plot size: _____)				Column Totals: _____	(A) _____ (B) _____
1. <u>Aquatic herbaceous material</u>	<u>100</u>	<u>Y</u>	<u>FAC+</u>	Prevalence Index = B/A = _____	
2. <u>(most likely Juncus spp.)</u>	_____	_____	_____	Hydrophytic Vegetation Indicators:	
3. _____	_____	_____	_____	___ 1 - Rapid Test for Hydrophytic Vegetation	
4. _____	_____	_____	_____	___ 2 - Dominance Test is >50%	
5. _____	_____	_____	_____	___ 3 - Prevalence Index is ≤3.0 ¹	
6. _____	_____	_____	_____	___ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
7. _____	_____	_____	_____	___ 5 - 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. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No _____	
11. _____	_____	_____	_____		
Woody Vine Stratum (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
= Total Cover					
% Bare Ground in Herb Stratum _____					
Remarks:					

SOIL

Sampling Point: Wetland E

[illegible]

HYDROLOGY

Wetland Hydrology Indicators:			Wetland Hydrology Indicators	
Primary Indicators (minimum of one required; check all that apply)			Secondary Indicators (2 or more required)	
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)		
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)		
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)		
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)		
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)				
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)				
Field Observations:			Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Surface Water Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): ~15		
Water Table Present?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (inches):		
Saturation Present?	Yes <input type="checkbox"/> No <input type="checkbox"/>	Depth (inches):		
(includes capillary fringe)				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				

MOTT MACDONALD, LLC

CRITICAL AREAS REPORT

APPENDIX D: WETLAND RATING FORMS AND FIGURES

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 3/3/2023Rated by Terra Hauser Trained by Ecology? ☒ Yes ☐ No Date of training 10/13/2022HGM Class used for rating Lake Fringe Wetland has multiple HGM classes? ☐ Yes ☒ No**NOTE: Form is not complete with out the figures requested (figures can be combined).**Source of base aerial photo/map Google Earth Pro**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
 X **Category III** - Total score = 16 - 19
 Category IV - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	M	L	M	
Landscape Potential	H	M	L	
Value	H	M	H	Total
Score Based on Ratings	8	5	6	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	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

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	1
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	2
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	6

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 another figure</i>)	S 4.1	
Boundary of area within 150 ft of the wetland (<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 Wetland in Western Washington

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

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

☒ NO - go to 2

☐ YES - the wetland class is **Tidal Fringe** - go to 1.1

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

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

☐ YES - **Freshwater Tidal Fringe**

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

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

☒ NO - go to 3

☐ YES - The wetland class is **Flats**

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

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

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

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

☐ NO - go to 4

☒ YES - The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

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

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

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

☒ NO - go to 5

☐ YES - The wetland class is **Slope**

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

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

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

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

☒ NO - go to 6

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

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

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.*

LAKE FRINGE WETLANDS**Water Quality Functions** - Indicators that the site functions to improve water quality

L 1.0. Does the site have the potential to improve water quality?

L 1.1. Average width of plants along the lakeshore (*use polygons of Cowardin classes*):

Plants are more than 33 ft (10 m) wide	points = 6	3
Plants are more than 16 ft (5 m) wide and < 33 ft	points = 3	
Plants are more than 6 ft (2 m) wide and < 16 ft	points = 1	
Plants are less than 6 ft wide	points = 0	

L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. *These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.*

Cover of herbaceous plants is > 90% of the vegetated area	points = 6	3
Cover of herbaceous plants is > $\frac{2}{3}$ of the vegetated area	points = 4	
<input type="checkbox"/> Cover of herbaceous plants is > $\frac{1}{3}$ of the vegetated area	points = 3	
<input checked="" type="checkbox"/> Other plants that are not aquatic bed > $\frac{2}{3}$ unit	points = 3	
Other plants that are not aquatic bed in > $\frac{1}{3}$ vegetated area	points = 1	
Aquatic bed plants and open water cover > $\frac{2}{3}$ of the unit	points = 0	

Total for L 1

Add the points in the boxes above

6**Rating of Site Potential** If score is: ☐ 8 - 12 = H ☒ 4 - 7 = M ☐ 0 - 3 = L *Record the rating on the first page*

L 2.0. Does the landscape have the potential to support the water quality function of the site?

L 2.1. Is the lake used by power boats?	Yes = 1 No = 0	1
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?	Yes = 1 No = 0	1
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil?	Yes = 1 No = 0	0
Total for L 2	Add the points in the boxes above	2

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

L 3.0. Is the water quality improvement provided by the site valuable to society?

L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?	Yes = 1 No = 0	1
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)?	Yes = 1 No = 0	1
L 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 lake or basin in which the unit is found.</i>	Yes = 2 No = 0	2
Total for L 3	Add the points in the boxes above	4

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

Wetland name or number Wetland A

LAKE FRINGE WETLANDS**Hydrologic Functions** - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?

L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore (**do not** include Aquatic bed): *Choose the highest scoring description that matches conditions in the wetland.*

- | | | |
|---|------------|---|
| <input type="checkbox"/> > ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide | points = 6 | 4 |
| <input checked="" type="checkbox"/> > ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide | points = 4 | |
| <input type="checkbox"/> > ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide | points = 4 | |
| Plants are at least 6 ft (2 m) wide (any type except Aquatic bed) | points = 2 | |
| Plants are less than 6 ft (2 m) wide (any type except Aquatic bed) | points = 0 | |

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

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

L 5.1. Is the lake used by power boats with more than 10 hp? Yes = 1 No = 0 1

L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance? Yes = 1 No = 0 0

Total for L 5 Add the points in the boxes above 1

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

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

L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.

- | | | |
|---|------------|---|
| There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit | points = 2 | 1 |
| <input checked="" type="checkbox"/> There are nature trails or other paths and recreational activities within 25 ft of OHWM | points = 1 | |
| <input type="checkbox"/> Other resources that could be impacted by erosion | points = 1 | |
| There are no resources that can be impacted by erosion along the shores of the unit | points = 0 | |

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

In regards to H 3.1, Angle Lake Park is listed in the SeaTac Shoreline Master Program as an important habitat and restoration site.

These questions apply to wetlands of all HGM classes.**HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat**H 1.0. Does the site have the potential to provide habitat?**

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

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

H 1.2. Hydroperiods

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

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

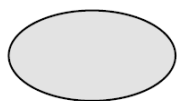
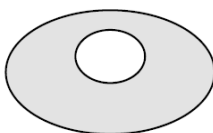
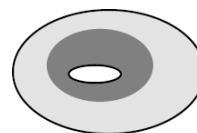
H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft². *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*

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

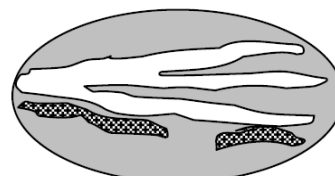
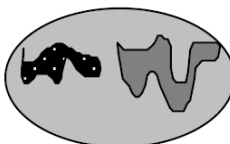
H 1.4. Interspersion of habitats

Decide from the diagrams below whether 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**

3

All three diagrams
in this row are
HIGH = 3 points



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>		1
<input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long)		
<input type="checkbox"/> Standing snags (dbh > 4 in) within the wetland		
<input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) 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)		
<input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)		
<input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)		
<input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)		
Total for H 1		11

Add the points in the boxes above

11

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

H 2.0. Does the landscape have the potential to support the habitat function of the site?		
H 2.1 Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). Calculate: 0 % undisturbed habitat + (1.13 % moderate & low intensity land uses / 2) = 0.565%		
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: 5.77 % undisturbed habitat + (2.48 % moderate & low intensity land uses / 2) = 7.01%		
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	0	
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 1km Polygon is high intensity points = 0		
Total for H 2		-2

Add the points in the boxes above

-2

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

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

Wetland name or number Wetland A

Rating of Value If Score is: ☒ **2 = H** ☐ **1 = M** ☐ **0 = L**

Record the rating on the first page

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:

<http://wdfw.wa.gov/conservation/phs/list/>

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

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

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

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
SC 1.0. Estuarine Wetlands Does the wetland meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input checked="" type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt <input type="checkbox"/> Yes - Go to SC 1.1 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> 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? <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25) <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or ungrazed or un-mowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <input type="checkbox"/> Yes = Category I <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Yes - Go to SC 2.2 <input type="checkbox"/> No - Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <input type="checkbox"/> Yes = Category I <input checked="" type="checkbox"/> No = Not 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 <input type="checkbox"/> Yes - Contact WNHP/WDNR and to SC 2.4 <input type="checkbox"/> No = Not 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? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not 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? <input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> 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	

Wetland name or number Wetland A

in Table 4 provide more than 30% of the cover under the canopy?

☐ Yes = **Is a Category I bog**

☒ No = **Is not a bog**

<p>SC 4.0. Forested Wetlands</p> <p>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></p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> Yes = Category I <input checked="" type="checkbox"/> No = Not a forested wetland for this section</p>	
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> 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>)</p> <p><input type="checkbox"/> Yes - Go to SC 5.1 <input checked="" type="checkbox"/> No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 ac (4350 ft²)</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II</p>	
<p>SC 6.0. Interdunal Wetlands</p> <p>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></p> <p>In practical terms that means the following geographic areas:</p> <p><input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103</p> <p><input type="checkbox"/> Grayland-Westport: Lands west of SR 105</p> <p><input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109</p> <p><input type="checkbox"/> Yes - Go to SC 6.1 <input checked="" type="checkbox"/> No = Not an interdunal wetland for rating</p> <p>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)?</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p><input type="checkbox"/> Yes = Category II <input type="checkbox"/> No - Go to SC 6.3</p> <p>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?</p> <p><input type="checkbox"/> Yes = Category III <input type="checkbox"/> No = Category IV</p>	
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B Date of site visit: 3/3/2023Rated by Terra Hauser Trained by Ecology? ☒ Yes ☐ No Date of training 10/13/2022HGM Class used for rating Lake Fringe Wetland has multiple HGM classes? ☐ Yes ☒ No**NOTE: Form is not complete with out the figures requested (figures can be combined).**Source of base aerial photo/map Google Earth Pro**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
 X **Category III** - Total score = 16 - 19
 Category IV - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	M	L	L	
Landscape Potential	H	M	L	
Value	H	M	H	Total
Score Based on Ratings	8	5	5	18

Score for each function based on three ratings
(order of ratings is not important)

9 = H, H, H

8 = H, H, M

7 = H, H, L

7 = H, M, M

6 = H, M, L

6 = M, M, M

5 = H, L, L

5 = M, M, L

4 = M, L, L

3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

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	7
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	8
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	9
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	10
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	6

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 another figure</i>)	S 4.1	
Boundary of area within 150 ft of the wetland (<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 Wetland in Western Washington

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

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

☒ NO - go to 2

☐ YES - the wetland class is **Tidal Fringe** - go to 1.1

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

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

☐ YES - **Freshwater Tidal Fringe**

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

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

☒ NO - go to 3

☐ YES - The wetland class is **Flats**

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

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

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

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

☐ NO - go to 4

☒ YES - The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

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

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

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

☒ NO - go to 5

☐ YES - The wetland class is **Slope**

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

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

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

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

☒ NO - go to 6

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

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

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.*

LAKE FRINGE WETLANDS**Water Quality Functions** - Indicators that the site functions to improve water quality

L 1.0. Does the site have the potential to improve water quality?

L 1.1. Average width of plants along the lakeshore (*use polygons of Cowardin classes*):

Plants are more than 33 ft (10 m) wide	points = 6	1
Plants are more than 16 ft (5 m) wide and < 33 ft	points = 3	
Plants are more than 6 ft (2 m) wide and < 16 ft	points = 1	
Plants are less than 6 ft wide	points = 0	

L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. *These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.*

Cover of herbaceous plants is > 90% of the vegetated area	points = 6	3
Cover of herbaceous plants is > $\frac{2}{3}$ of the vegetated area	points = 4	
<input checked="" type="checkbox"/> Cover of herbaceous plants is > $\frac{1}{3}$ of the vegetated area	points = 3	
<input type="checkbox"/> Other plants that are not aquatic bed > $\frac{2}{3}$ unit	points = 3	
Other plants that are not aquatic bed in > $\frac{1}{3}$ vegetated area	points = 1	
Aquatic bed plants and open water cover > $\frac{2}{3}$ of the unit	points = 0	

Total for L 1

Add the points in the boxes above

4**Rating of Site Potential** If score is: ☐ 8 - 12 = H ☒ 4 - 7 = M ☐ 0 - 3 = L Record the rating on the first page

L 2.0. Does the landscape have the potential to support the water quality function of the site?

L 2.1. Is the lake used by power boats? Yes = 1 No = 0 1

L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants? Yes = 1 No = 0 1

L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil? Yes = 1 No = 0 0

Total for L 2

Add the points in the boxes above

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

L 3.0. Is the water quality improvement provided by the site valuable to society?

L 3.1. Is the lake on the 303(d) list of degraded aquatic resources? Yes = 1 No = 0 1

L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)? Yes = 1 No = 0 1

L 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 lake or basin in which the unit is found. Yes = 2 No = 0 2

Total for L 3

Add the points in the boxes above

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

Wetland name or number Wetland B

LAKE FRINGE WETLANDS**Hydrologic Functions** - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?

L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore (**do not** include Aquatic bed): *Choose the highest scoring description that matches conditions in the wetland.*

- | | | |
|---|------------|---|
| <input type="checkbox"/> > ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide | points = 6 | 4 |
| <input checked="" type="checkbox"/> > ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide | points = 4 | |
| <input type="checkbox"/> > ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide | points = 4 | |
| Plants are at least 6 ft (2 m) wide (any type except Aquatic bed) | points = 2 | |
| Plants are less than 6 ft (2 m) wide (any type except Aquatic bed) | points = 0 | |

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

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

L 5.1. Is the lake used by power boats with more than 10 hp? Yes = 1 No = 0 1

L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance? Yes = 1 No = 0 0

Total for L 5 Add the points in the boxes above 1

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

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

L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.

- | | | |
|---|------------|---|
| There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit | points = 2 | 1 |
| <input checked="" type="checkbox"/> There are nature trails or other paths and recreational activities within 25 ft of OHWM | points = 1 | |
| <input type="checkbox"/> Other resources that could be impacted by erosion | points = 1 | |
| There are no resources that can be impacted by erosion along the shores of the unit | points = 0 | |

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

In regards to L 6.1, there are two docks abutting the wetland. However, there are no buildings. In regards to H 3.1, Angle Lake Park is listed in the SeaTac Shoreline Master Program as an important habitat and restoration site.

These questions apply to wetlands of all HGM classes.**HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat**H 1.0. Does the site have the potential to provide habitat?**

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

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

H 1.2. Hydroperiods

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

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

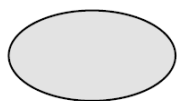
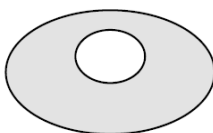
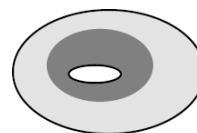
H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft². *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*

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

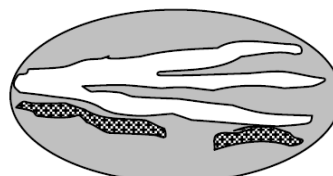
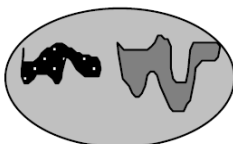
H 1.4. Interspersion of habitats

Decide from the diagrams below whether 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 = 3 points



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>		0
<input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long)		
<input type="checkbox"/> Standing snags (dbh > 4 in) within the wetland		
<input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) 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)		
<input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)		
<input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)		
<input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)		
Total for H 1		5
Rating of Site Potential If Score is: <input type="checkbox"/> 15 - 18 = H <input type="checkbox"/> 7 - 14 = M <input checked="" type="checkbox"/> 0 - 6 = L Record the rating on the first page		

H 2.0. Does the landscape have the potential to support the habitat function of the site?		
H 2.1 Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). Calculate: 0 % undisturbed habitat + (1.13 % moderate & low intensity land uses / 2) = 0.565%		
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: 6.47 % undisturbed habitat + (2.57 % moderate & low intensity land uses / 2) = 7.755%		
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		0
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 1km Polygon is high intensity points = 0		-2
Total for H 2		-2
Rating of Landscape Potential If Score is: <input type="checkbox"/> 4 - 6 = H <input type="checkbox"/> 1 - 3 = M <input checked="" type="checkbox"/> < 1 = L Record the rating on the first page		

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

Wetland name or number Wetland B

Rating of Value If Score is: ☒ **2 = H** ☐ **1 = M** ☐ **0 = L**

Record the rating on the first page

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:

<http://wdfw.wa.gov/conservation/phs/list/>

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

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

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

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
SC 1.0. Estuarine Wetlands Does the wetland meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt <input type="checkbox"/> Yes - Go to SC 1.1 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> 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? <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25) <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <input type="checkbox"/> Yes = Category I <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Yes - Go to SC 2.2 <input type="checkbox"/> No - Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <input type="checkbox"/> Yes = Category I <input checked="" type="checkbox"/> No = Not 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/wnhpnwetlands.pdf <input type="checkbox"/> Yes - Contact WNHP/WDNR and to SC 2.4 <input type="checkbox"/> No = Not 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? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not 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? <input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> 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	

Wetland name or number Wetland B

in Table 4 provide more than 30% of the cover under the canopy?

☐ Yes = **Is a Category I bog**

☐ No = **Is not a bog**

<p>SC 4.0. Forested Wetlands</p> <p>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></p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> Yes = Category I <input checked="" type="checkbox"/> No = Not a forested wetland for this section</p>	
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> 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>)</p> <p><input type="checkbox"/> Yes - Go to SC 5.1 <input checked="" type="checkbox"/> No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 ac (4350 ft²)</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II</p>	
<p>SC 6.0. Interdunal Wetlands</p> <p>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></p> <p>In practical terms that means the following geographic areas:</p> <p><input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103</p> <p><input type="checkbox"/> Grayland-Westport: Lands west of SR 105</p> <p><input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109</p> <p><input type="checkbox"/> Yes - Go to SC 6.1 <input checked="" type="checkbox"/> No = Not an interdunal wetland for rating</p> <p>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)?</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p><input type="checkbox"/> Yes = Category II <input type="checkbox"/> No - Go to SC 6.3</p> <p>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?</p> <p><input type="checkbox"/> Yes = Category III <input type="checkbox"/> No = Category IV</p>	
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland C Date of site visit: 3/3/2023Rated by Terra Hauser Trained by Ecology? ☒ Yes ☐ No Date of training 10/13/2022HGM Class used for rating Lake Fringe Wetland has multiple HGM classes? ☐ Yes ☒ No**NOTE: Form is not complete with out the figures requested (figures can be combined).**Source of base aerial photo/map Google Earth Pro**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
 X **Category III** - Total score = 16 - 19
 Category IV - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	M	L	M	
Landscape Potential	H	M	L	
Value	H	M	H	Total
Score Based on Ratings	8	5	6	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	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

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	11
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	12
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	13
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	14
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	6

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 another figure</i>)	S 4.1	
Boundary of area within 150 ft of the wetland (<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 Wetland in Western Washington

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

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

☒ NO - go to 2

☐ YES - the wetland class is **Tidal Fringe** - go to 1.1

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

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

☐ YES - **Freshwater Tidal Fringe**

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

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

☒ NO - go to 3

☐ YES - The wetland class is **Flats**

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

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

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

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

☐ NO - go to 4

☒ YES - The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

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

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

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

☒ NO - go to 5

☐ YES - The wetland class is **Slope**

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

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

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

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

☒ NO - go to 6

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

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

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.*

LAKE FRINGE WETLANDS**Water Quality Functions** - Indicators that the site functions to improve water quality

L 1.0. Does the site have the potential to improve water quality?

L 1.1. Average width of plants along the lakeshore (*use polygons of Cowardin classes*):

Plants are more than 33 ft (10 m) wide	points = 6	6
Plants are more than 16 ft (5 m) wide and < 33 ft	points = 3	
Plants are more than 6 ft (2 m) wide and < 16 ft	points = 1	
Plants are less than 6 ft wide	points = 0	

L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. *These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.*

Cover of herbaceous plants is > 90% of the vegetated area	points = 6	1
Cover of herbaceous plants is > $\frac{2}{3}$ of the vegetated area	points = 4	
<input type="checkbox"/> Cover of herbaceous plants is > $\frac{1}{3}$ of the vegetated area	points = 3	
<input type="checkbox"/> Other plants that are not aquatic bed > $\frac{2}{3}$ unit	points = 3	
Other plants that are not aquatic bed in > $\frac{1}{3}$ vegetated area	points = 1	
Aquatic bed plants and open water cover > $\frac{2}{3}$ of the unit	points = 0	

Total for L 1

Add the points in the boxes above

7**Rating of Site Potential** If score is: ☐ 8 - 12 = H ☒ 4 - 7 = M ☐ 0 - 3 = L Record the rating on the first page

L 2.0. Does the landscape have the potential to support the water quality function of the site?

L 2.1. Is the lake used by power boats? Yes = 1 No = 0 1

L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants? Yes = 1 No = 0 1

L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil? Yes = 1 No = 0 0

Total for L 2

Add the points in the boxes above

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

L 3.0. Is the water quality improvement provided by the site valuable to society?

L 3.1. Is the lake on the 303(d) list of degraded aquatic resources? Yes = 1 No = 0 1

L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)? Yes = 1 No = 0 1

L 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 lake or basin in which the unit is found.* Yes = 2 No = 0 2

Total for L 3

Add the points in the boxes above

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

Wetland name or number Wetland C

LAKE FRINGE WETLANDS**Hydrologic Functions** - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?

L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore (**do not** include Aquatic bed): *Choose the highest scoring description that matches conditions in the wetland.*

- | | | |
|---|------------|---|
| <input type="checkbox"/> > ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide | points = 6 | 4 |
| <input checked="" type="checkbox"/> > ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide | points = 4 | |
| <input type="checkbox"/> > ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide | points = 4 | |
| Plants are at least 6 ft (2 m) wide (any type except Aquatic bed) | points = 2 | |
| Plants are less than 6 ft (2 m) wide (any type except Aquatic bed) | points = 0 | |

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

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

L 5.1. Is the lake used by power boats with more than 10 hp? Yes = 1 No = 0 1

L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance? Yes = 1 No = 0 0

Total for L 5 Add the points in the boxes above 1

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

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

L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.

- | | | |
|---|------------|---|
| There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit | points = 2 | 1 |
| <input checked="" type="checkbox"/> There are nature trails or other paths and recreational activities within 25 ft of OHWM | points = 1 | |
| <input type="checkbox"/> Other resources that could be impacted by erosion | points = 1 | |
| There are no resources that can be impacted by erosion along the shores of the unit | points = 0 | |

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

In regards to H 3.1, the SeaTac Shoreline Management Program names Angle Lake as an important habitat and restoration site.

These questions apply to wetlands of all HGM classes.**HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat**H 1.0. Does the site have the potential to provide habitat?**

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

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

H 1.2. Hydroperiods

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

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

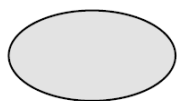
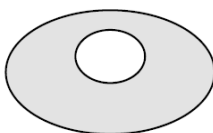
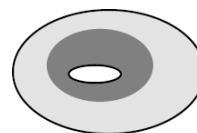
H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft². *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*

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

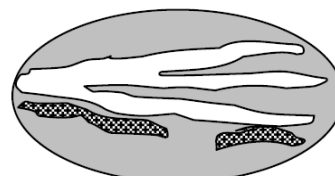
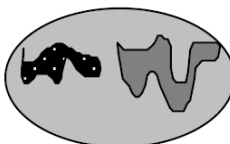
H 1.4. Interspersion of habitats

Decide from the diagrams below whether 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**

3

All three diagrams
in this row are
HIGH = 3 points



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>		1
<input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long) <input type="checkbox"/> Standing snags (dbh > 4 in) within the wetland <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) 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) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>) <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)		
Total for H 1 Add the points in the boxes above		
Rating of Site Potential If Score is: <input type="checkbox"/> 15 - 18 = H <input checked="" type="checkbox"/> 7 - 14 = M <input type="checkbox"/> 0 - 6 = L Record the rating on the first page		

H 2.0. Does the landscape have the potential to support the habitat function of the site?		
H 2.1 Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). Calculate: 0 % undisturbed habitat + (1.13 % moderate & low intensity land uses / 2) = 0.565%		0
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		
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. Calculate: 7.67 % undisturbed habitat + (2.63 % moderate & low intensity land uses / 2) = 8.985%		
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		
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 1km Polygon is high intensity points = 0		
Total for H 2 Add the points in the boxes above		-2
Rating of Landscape Potential If Score is: <input type="checkbox"/> 4 - 6 = H <input type="checkbox"/> 1 - 3 = M <input checked="" type="checkbox"/> < 1 = L Record the rating on the first page		

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

Wetland name or number Wetland C

Rating of Value If Score is: ☒ **2 = H** ☐ **1 = M** ☐ **0 = L**

Record the rating on the first page

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:

<http://wdfw.wa.gov/conservation/phs/list/>

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

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

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

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
SC 1.0. Estuarine Wetlands Does the wetland meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt <input type="checkbox"/> Yes - Go to SC 1.1 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> 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? <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25) <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <input type="checkbox"/> Yes = Category I <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Yes - Go to SC 2.2 <input type="checkbox"/> No - Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <input type="checkbox"/> Yes = Category I <input checked="" type="checkbox"/> No = Not 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 <input type="checkbox"/> Yes - Contact WNHP/WDNR and to SC 2.4 <input type="checkbox"/> No = Not 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? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not 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? <input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> 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	

Wetland name or number Wetland C

in Table 4 provide more than 30% of the cover under the canopy?

☐ Yes = **Is a Category I bog**

☐ No = **Is not a bog**

<p>SC 4.0. Forested Wetlands</p> <p>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></p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> Yes = Category I <input checked="" type="checkbox"/> No = Not a forested wetland for this section</p>	
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> 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>)</p> <p><input type="checkbox"/> Yes - Go to SC 5.1 <input checked="" type="checkbox"/> No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 ac (4350 ft²)</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II</p>	
<p>SC 6.0. Interdunal Wetlands</p> <p>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></p> <p>In practical terms that means the following geographic areas:</p> <p><input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103</p> <p><input type="checkbox"/> Grayland-Westport: Lands west of SR 105</p> <p><input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109</p> <p><input type="checkbox"/> Yes - Go to SC 6.1 <input checked="" type="checkbox"/> No = Not an interdunal wetland for rating</p> <p>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)?</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p><input type="checkbox"/> Yes = Category II <input type="checkbox"/> No - Go to SC 6.3</p> <p>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?</p> <p><input type="checkbox"/> Yes = Category III <input type="checkbox"/> No = Category IV</p>	
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland D Date of site visit: 3/3/2023Rated by Terra Hauser Trained by Ecology? ☒ Yes ☐ No Date of training 10/13/2022HGM Class used for rating Lake Fringe Wetland has multiple HGM classes? ☐ Yes ☒ No**NOTE: Form is not complete with out the figures requested (figures can be combined).**Source of base aerial photo/map Google Earth Pro**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
 X **Category III** - Total score = 16 - 19
 Category IV - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	M	L	L	
Landscape Potential	H	M	L	
Value	H	M	H	Total
Score Based on Ratings	8	5	5	18

Score for each function based on three ratings
(order of ratings is not important)

9 = H, H, H

8 = H, H, M

7 = H, H, L

7 = H, M, M

6 = H, M, L

6 = M, M, M

5 = H, L, L

5 = M, M, L

4 = M, L, L

3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	X

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	15
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	16
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	17
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	18
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	6

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 another figure</i>)	S 4.1	
Boundary of area within 150 ft of the wetland (<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 Wetland in Western Washington

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

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

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

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

- ☐ NO - **Saltwater Tidal Fringe (Estuarine)** ☐ YES - **Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands.
If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

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

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

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

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

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

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

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

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

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

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

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

- ☒ NO - go to 6 ☐ YES - The wetland class is **Riverine**

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

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.*

LAKE FRINGE WETLANDS**Water Quality Functions** - Indicators that the site functions to improve water quality

L 1.0. Does the site have the potential to improve water quality?

L 1.1. Average width of plants along the lakeshore (*use polygons of Cowardin classes*):

Plants are more than 33 ft (10 m) wide	points = 6	6
Plants are more than 16 ft (5 m) wide and < 33 ft	points = 3	
Plants are more than 6 ft (2 m) wide and < 16 ft	points = 1	
Plants are less than 6 ft wide	points = 0	

L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. *These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.*

Cover of herbaceous plants is > 90% of the vegetated area	points = 6	0
Cover of herbaceous plants is > $\frac{2}{3}$ of the vegetated area	points = 4	
<input type="checkbox"/> Cover of herbaceous plants is > $\frac{1}{3}$ of the vegetated area	points = 3	
<input type="checkbox"/> Other plants that are not aquatic bed > $\frac{2}{3}$ unit	points = 3	
Other plants that are not aquatic bed in > $\frac{1}{3}$ vegetated area	points = 1	
Aquatic bed plants and open water cover > $\frac{2}{3}$ of the unit	points = 0	

Total for L 1

Add the points in the boxes above

6**Rating of Site Potential** If score is: ☐ 8 - 12 = H ☒ 4 - 7 = M ☐ 0 - 3 = L Record the rating on the first page

L 2.0. Does the landscape have the potential to support the water quality function of the site?

L 2.1. Is the lake used by power boats?	Yes = 1 No = 0	1
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?	Yes = 1 No = 0	1
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil?	Yes = 1 No = 0	0
Total for L 2	Add the points in the boxes above	2

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

L 3.0. Is the water quality improvement provided by the site valuable to society?

L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?	Yes = 1 No = 0	1
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)?	Yes = 1 No = 0	1
L 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 lake or basin in which the unit is found.</i>	Yes = 2 No = 0	2
Total for L 3	Add the points in the boxes above	4

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

Wetland name or number Wetland D

LAKE FRINGE WETLANDS**Hydrologic Functions** - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?

L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore
(**do not** include Aquatic bed): *Choose the highest scoring description that matches conditions in the wetland.*

- | | | |
|--|------------|---|
| <input type="checkbox"/> > ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide | points = 6 | 2 |
| <input type="checkbox"/> > ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide | points = 4 | |
| <input type="checkbox"/> > ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide | points = 4 | |
| Plants are at least 6 ft (2 m) wide (any type except Aquatic bed) | points = 2 | |
| Plants are less than 6 ft (2 m) wide (any type except Aquatic bed) | points = 0 | |

Rating of Site Potential If score is: ☐ 6 = M ☒ 0 - 5 = L

Record the rating on the first page

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

L 5.1. Is the lake used by power boats with more than 10 hp? Yes = 1 No = 0 1

L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance? Yes = 1 No = 0 0

Total for L 5 Add the points in the boxes above 1

Rating of Landscape Potential If score is: ☐ 2 = H ☒ 1 = M ☐ 0 = L

Record the rating on the first page

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

L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.

- | | | |
|---|------------|---|
| There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit | points = 2 | 1 |
| <input checked="" type="checkbox"/> There are nature trails or other paths and recreational activities within 25 ft of OHWM | points = 1 | |
| <input type="checkbox"/> Other resources that could be impacted by erosion | points = 1 | |
| There are no resources that can be impacted by erosion along the shores of the unit | points = 0 | |

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

Record the rating on the first page

NOTES and FIELD OBSERVATIONS:

In regards to L 6.1, the docks adjacent to the wetland are assumed to be recreational activities. In regards to H 3.1, the SeaTac Shoreline Management Program names Angle Lake as an important habitat and restoration site.

These questions apply to wetlands of all HGM classes.**HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat**H 1.0. Does the site have the potential to provide habitat?**

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

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

H 1.2. Hydroperiods

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

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

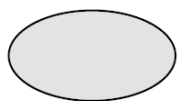
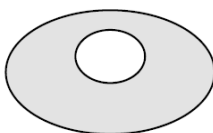
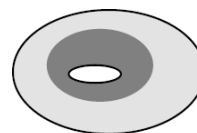
H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft². *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*

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

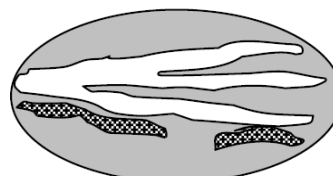
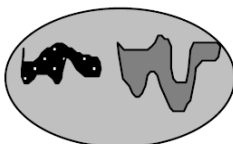
H 1.4. Interspersion of habitats

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

**None = 0 points****Low = 1 point****Moderate = 2 points**

0

All three diagrams
in this row are
HIGH = 3 points



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>		0
<input type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long)		
<input type="checkbox"/> Standing snags (dbh > 4 in) within the wetland		
<input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) 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)		
<input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)		
<input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)		
<input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)		
Total for H 1		2

Add the points in the boxes above

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

H 2.0. Does the landscape have the potential to support the habitat function of the site?		
H 2.1 Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). Calculate: 0 % undisturbed habitat + (0 % moderate & low intensity land uses / 2) = 0%		
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: 6.38 % undisturbed habitat + (2.47 % moderate & low intensity land uses / 2) = 7.615%		
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	0	
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 1km Polygon is high intensity points = 0		
Total for H 2		-2

Add the points in the boxes above

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

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

Wetland name or number Wetland D

Rating of Value If Score is: ☒ **2 = H** ☐ **1 = M** ☐ **0 = L**

Record the rating on the first page

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:

<http://wdfw.wa.gov/conservation/phs/list/>

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

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

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

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
SC 1.0. Estuarine Wetlands Does the wetland meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt <input type="checkbox"/> Yes - Go to SC 1.1 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> 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? <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25) <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. <input type="checkbox"/> Yes = Category I <input type="checkbox"/> 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? <input checked="" type="checkbox"/> Yes - Go to SC 2.2 <input type="checkbox"/> No - Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? <input type="checkbox"/> Yes = Category I <input checked="" type="checkbox"/> No = Not 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 <input type="checkbox"/> Yes - Contact WNHP/WDNR and to SC 2.4 <input type="checkbox"/> No = Not 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? <input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Not 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? <input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes - Go to SC 3.3 <input checked="" type="checkbox"/> 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? <input type="checkbox"/> Yes = Is a Category I bog <input type="checkbox"/> 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	

Wetland name or number Wetland D

in Table 4 provide more than 30% of the cover under the canopy?

☐ Yes = **Is a Category I bog**

☐ No = **Is not a bog**

<p>SC 4.0. Forested Wetlands</p> <p>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></p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> Yes = Category I <input checked="" type="checkbox"/> No = Not a forested wetland for this section</p>	
<p>SC 5.0. Wetlands in Coastal Lagoons</p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> 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</p> <p><input type="checkbox"/> 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>)</p> <p><input type="checkbox"/> Yes - Go to SC 5.1 <input checked="" type="checkbox"/> No = Not a wetland in a coastal lagoon</p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 ac (4350 ft²)</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No = Category II</p>	
<p>SC 6.0. Interdunal Wetlands</p> <p>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></p> <p>In practical terms that means the following geographic areas:</p> <p><input type="checkbox"/> Long Beach Peninsula: Lands west of SR 103</p> <p><input type="checkbox"/> Grayland-Westport: Lands west of SR 105</p> <p><input type="checkbox"/> Ocean Shores-Copalis: Lands west of SR 115 and SR 109</p> <p><input type="checkbox"/> Yes - Go to SC 6.1 <input checked="" type="checkbox"/> No = Not an interdunal wetland for rating</p> <p>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)?</p> <p><input type="checkbox"/> Yes = Category I <input type="checkbox"/> No - Go to SC 6.2</p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p><input type="checkbox"/> Yes = Category II <input type="checkbox"/> No - Go to SC 6.3</p> <p>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?</p> <p><input type="checkbox"/> Yes = Category III <input type="checkbox"/> No = Category IV</p>	
<p>Category of wetland based on Special Characteristics</p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	



Figure 1: Cowardin classes of Wetland A



Figure 2: Plant cover of trees, shrubs, and herbaceous material in Wetland A



Figure 3: Areas within 150 feet of Wetland A

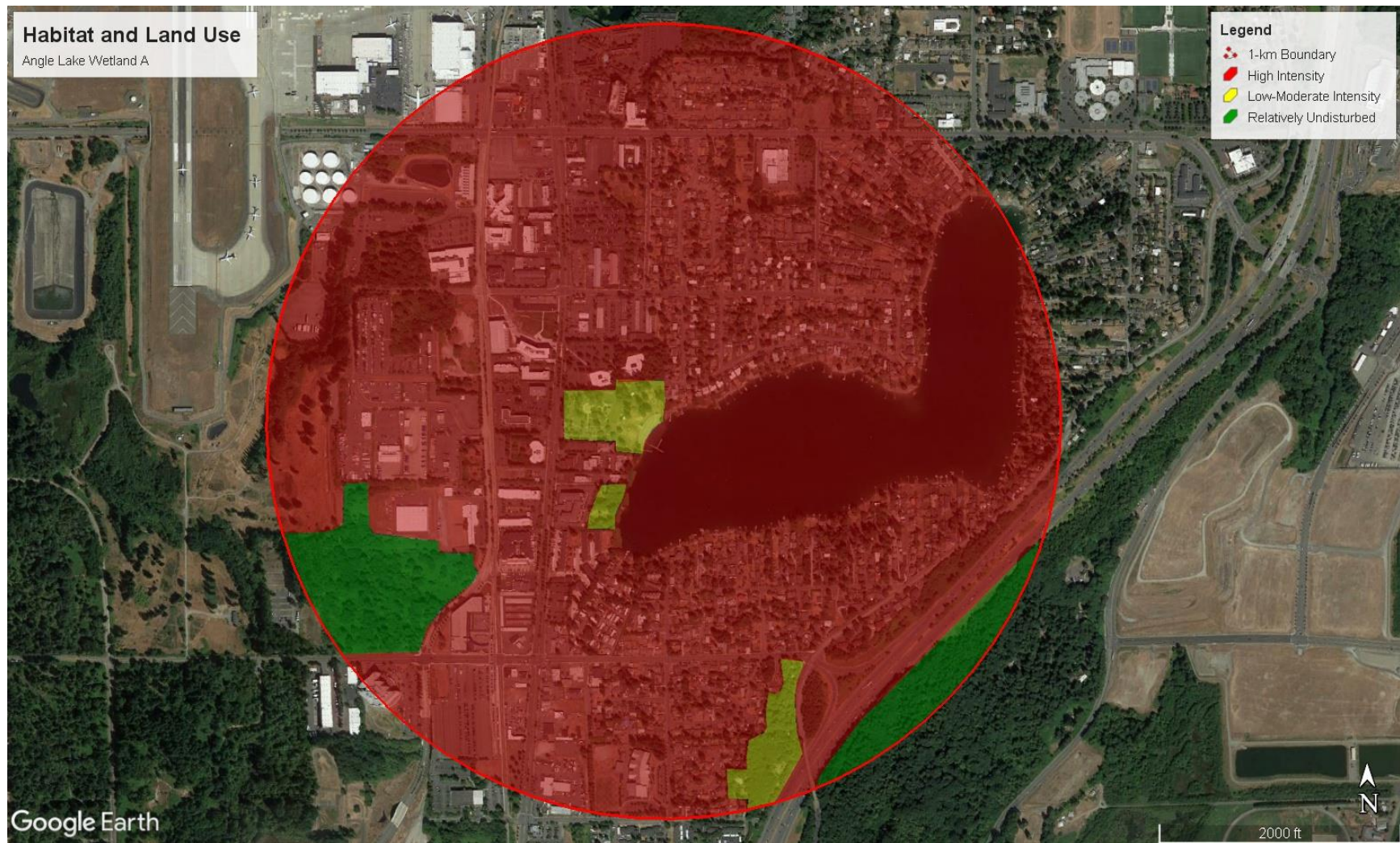
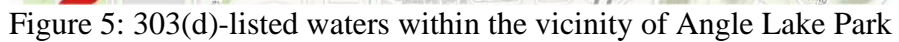


Figure 4: Land use in areas within 1 kilometer of Wetland A



Project Name	Project Type	Project Status	Parameters	Webpage Report
Upper Yakima River Watershed DDT and TSS TMDL	TMDL Project	Approved	DDT, Dieldrin, TSS	https://www.fortress.wa.gov/ecy/publications/SummaryPages/0210047.html
Puyallup River Bacteria TMDL	TMDL Project	Approved	Bacteria	https://www.fortress.wa.gov/ecy/publications/summarypages/1110040.html
Upper White River Watershed Sediment and Temp TMDL	TMDL Project	Approved	Temperature, TSS	https://www.fortress.wa.gov/ecy/publications/summarypages/0310032.html
Puyallup River Multiparameter TMDL	TMDL Project	Approved	BOD5, Ammonia-N, Chlorine, Dissolved Oxygen	https://www.fortress.wa.gov/ecy/publications/summarypages/94e36.html
Fenwick Lake Total Phosphorus TMDL	TMDL Project	Approved	Total Phosphorus	https://www.fortress.wa.gov/ecy/publications/summarypages/9310203.html
Lake Sawyer Total Phosphorus TMDL	TMDL Project	Approved	Total Phosphorus	https://www.fortress.wa.gov/ecy/publications/summarypages/9310201.html
Upper Naches Watershed Temperature TMDL	TMDL Project	Approved	Temperature	https://www.fortress.wa.gov/ecy/publications/summarypages/0803036.html
Soos Creek Subbasin Multiparameter TMDL	TMDL Project	In Development	Temperature, Dissolved Oxygen, Aquatic Habitat	https://www.fortress.wa.gov/ecy/publications/summarypages/1110046.html
Lower White River pH TMDL	TMDL Project	In Development	pH	https://www.fortress.wa.gov/ecy/publications/summarypages/1110047.html
Green River Temperature Watershed TMDL	TMDL Project	Approved	Temperature	https://www.fortress.wa.gov/ecy/publications/summarypages/1110047.html
Newaukum Creek Temperature TMDL	TMDL Project	Approved	Temperature	https://www.fortress.wa.gov/ecy/publications/summarypages/1110047.html
Yakima River Basin Toxics TMDL	TMDL Project	In Development	Chlorinated Pesticides, PCB, TSS, Turbidity	https://www.fortress.wa.gov/ecy/publications/summarypages/1003018.html
Duwamish Waterway Ammonia-N TMDL	TMDL Project	Approved	Ammonia-N	https://www.fortress.wa.gov/ecy/publications/summarypages/9210204.html
Upper Yakima River Tributaries Temperature TMDL	TMDL Project	Approved	Temperature	https://www.fortress.wa.gov/ecy/publications/SummaryPages/1410037.html
Newaukum Creek Bacteria STI	STI Project	In Development	Bacteria	https://www.fortress.wa.gov/ecy/publications/SummaryPages/1410037.html
Puget Sound Nutrient Source Reduction Project	Other	In Development	Dissolved Oxygen, Dissolved Inorganic Nitrogen, Total Organic Carbon	https://www.fortress.wa.gov/ecy/publications/SummaryPages/1410037.html

Figure 6: TMDL projects in the subwatershed of Angle Lake Park



Figure 7: Cowardin classes of Wetland B



Figure 8: Plant cover of trees, shrubs, and herbaceous material within Wetland B



Figure 9: Areas within 150 feet of Wetland B

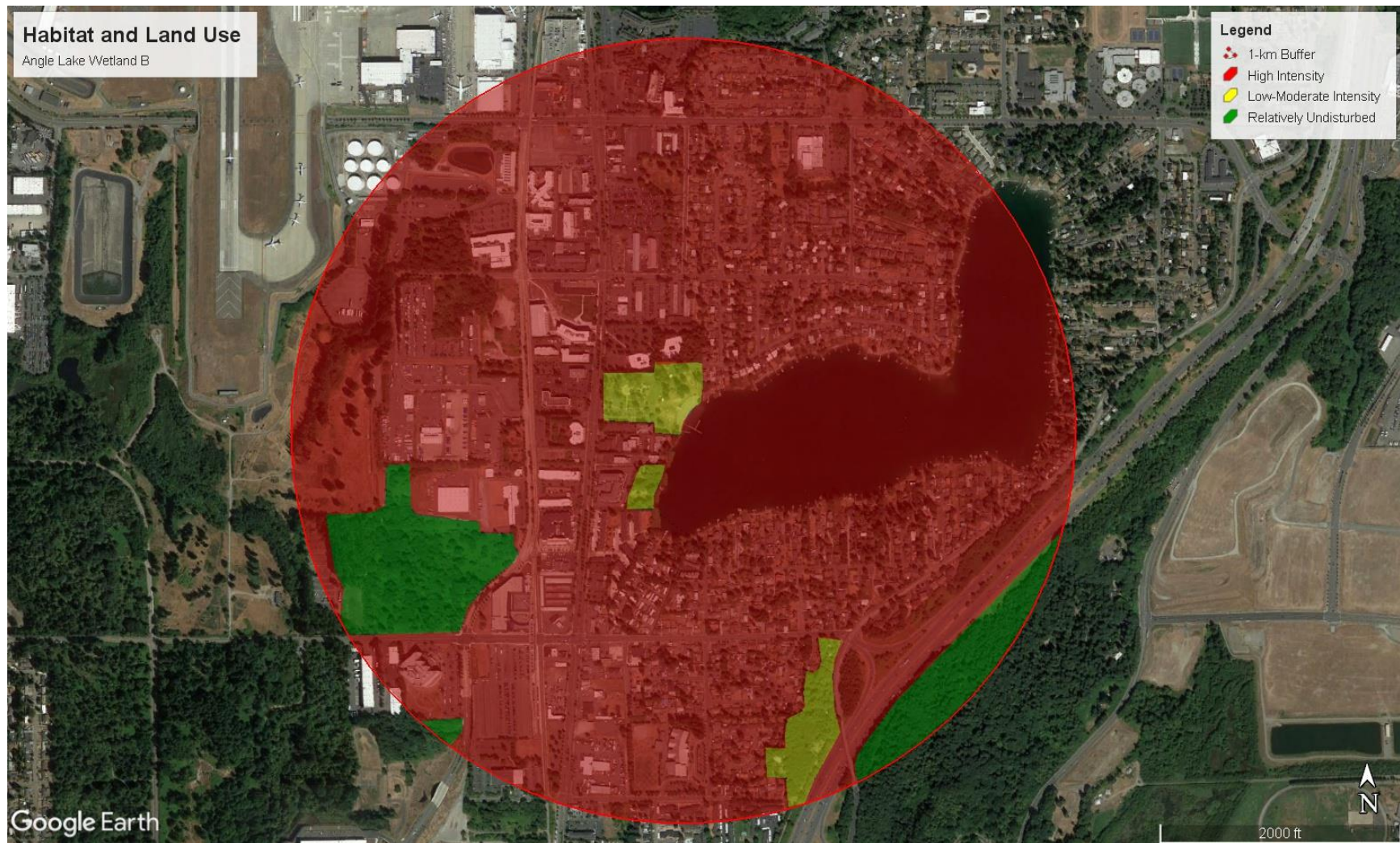


Figure 10: Land use within 1 kilometer of Wetland B



Figure 11: Cowardin classes in Wetland C



Figure 12: Plant cover of trees, shrubs, and herbaceous material within Wetland C. This does not include the aquatic bed class.



Figure 13: Areas within 150 feet of Wetland C

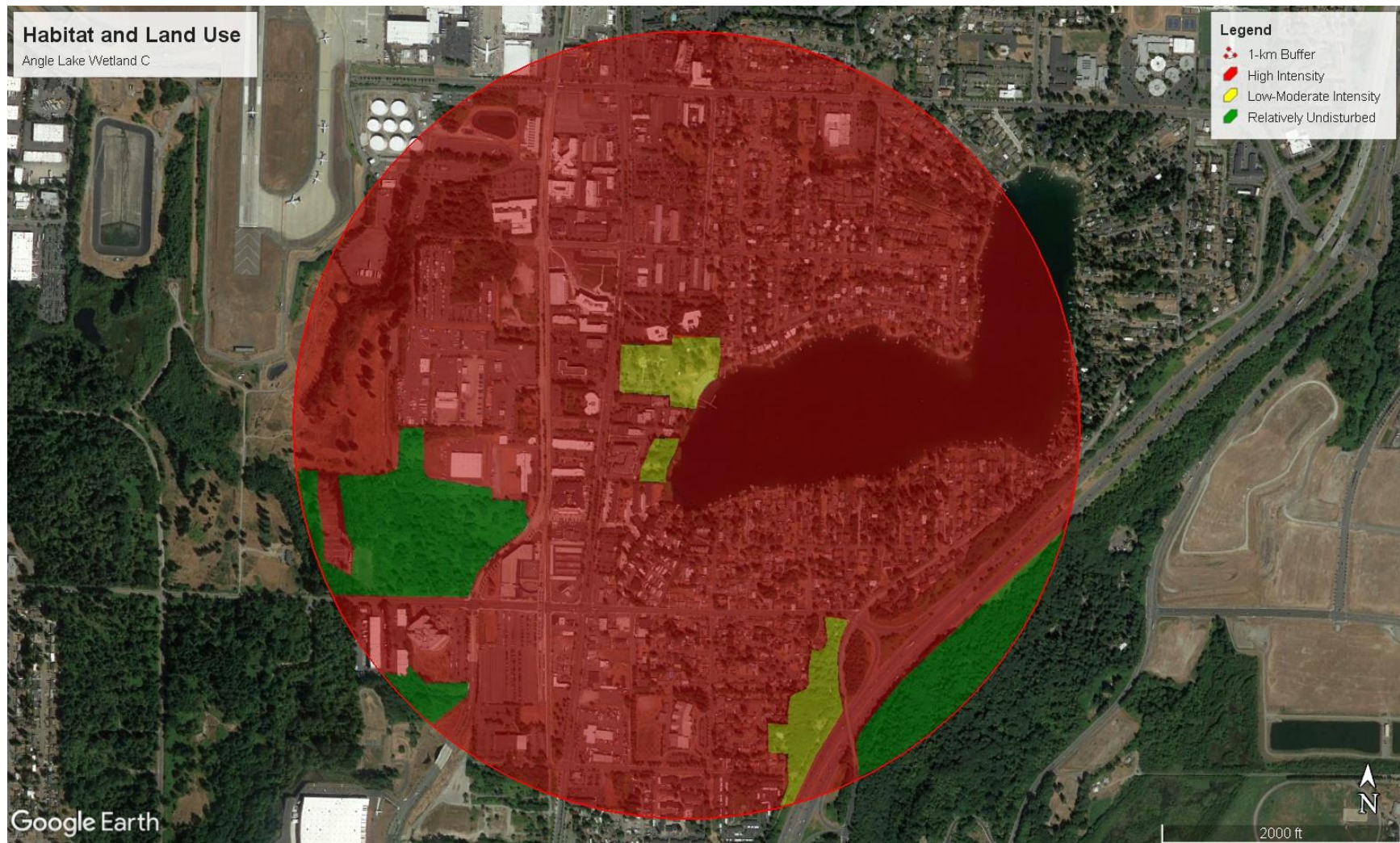


Figure 14: Land use within 1 kilometer of Wetland C



Figure 15: Cowardin classes of Wetland D



Figure 16: Plant cover of trees, shrubs, and herbaceous material within Wetland D. This does not include the aquatic bed class.



Figure 17: Areas within 150 feet of Wetland D

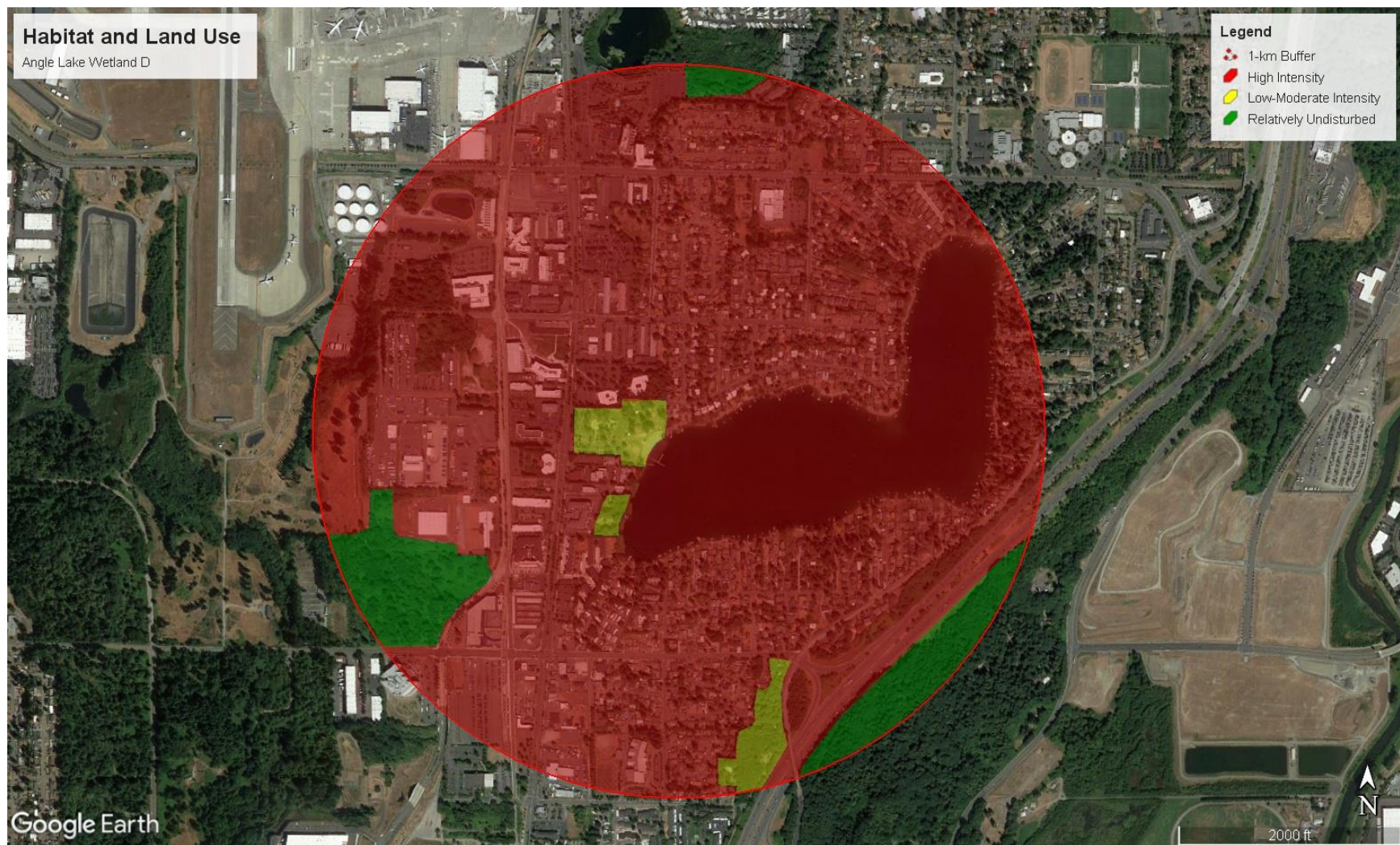


Figure 18: Land use within 1 kilometer of Wetland D

MOTT MACDONALD, LLC





CRITICAL AREAS REPORT

APPENDIX E: QUERIED DATABASE FIGURES








Angle Lake



Legend

-  Potential landslide hazard areas (2016, see explanation--->)
-  Erosion hazard (1990 SAO)
-  Seismic hazard (1990 SAO)
-  Coal mine hazard (1990 SAO)

Stream (1990 SAO)

-  class 1
-  class 2 perennial
-  class 2 salmonid
-  class 3
-  unclassified
-  Wetland (1990 SAO)
-  Sensitive area notice on title

King County, EagleView Technologies, Inc.

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Date: 2/28/2023

Notes:



King County



U.S. Fish and Wildlife Service

National Wetlands Inventory

Angle Lake



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

February 28, 2023

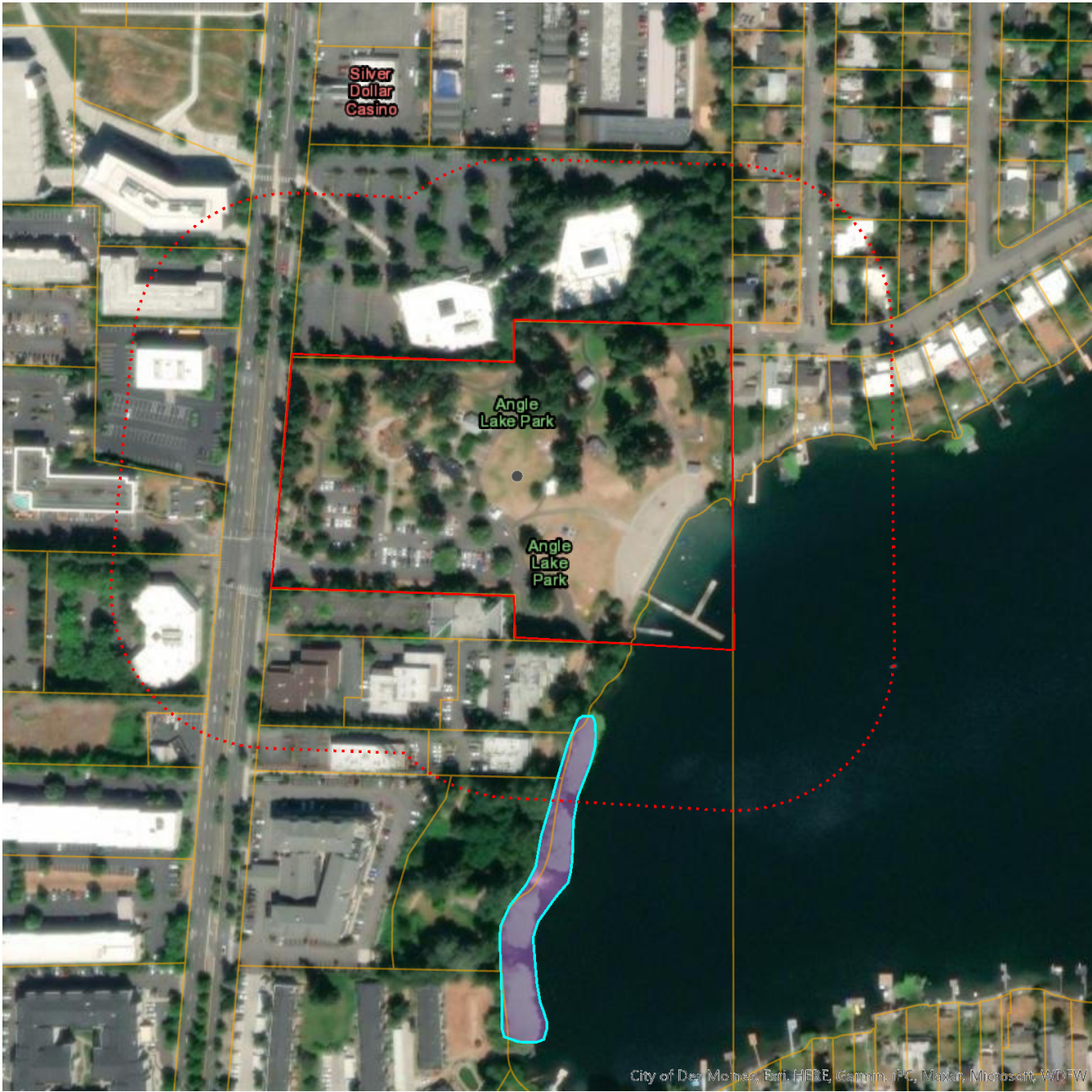
Wetlands

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

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



Priority Habitats and Species on the Web



Buffer radius: 300 Feet

Report Date: 02/28/2023

PHS Species/Habitats Overview:

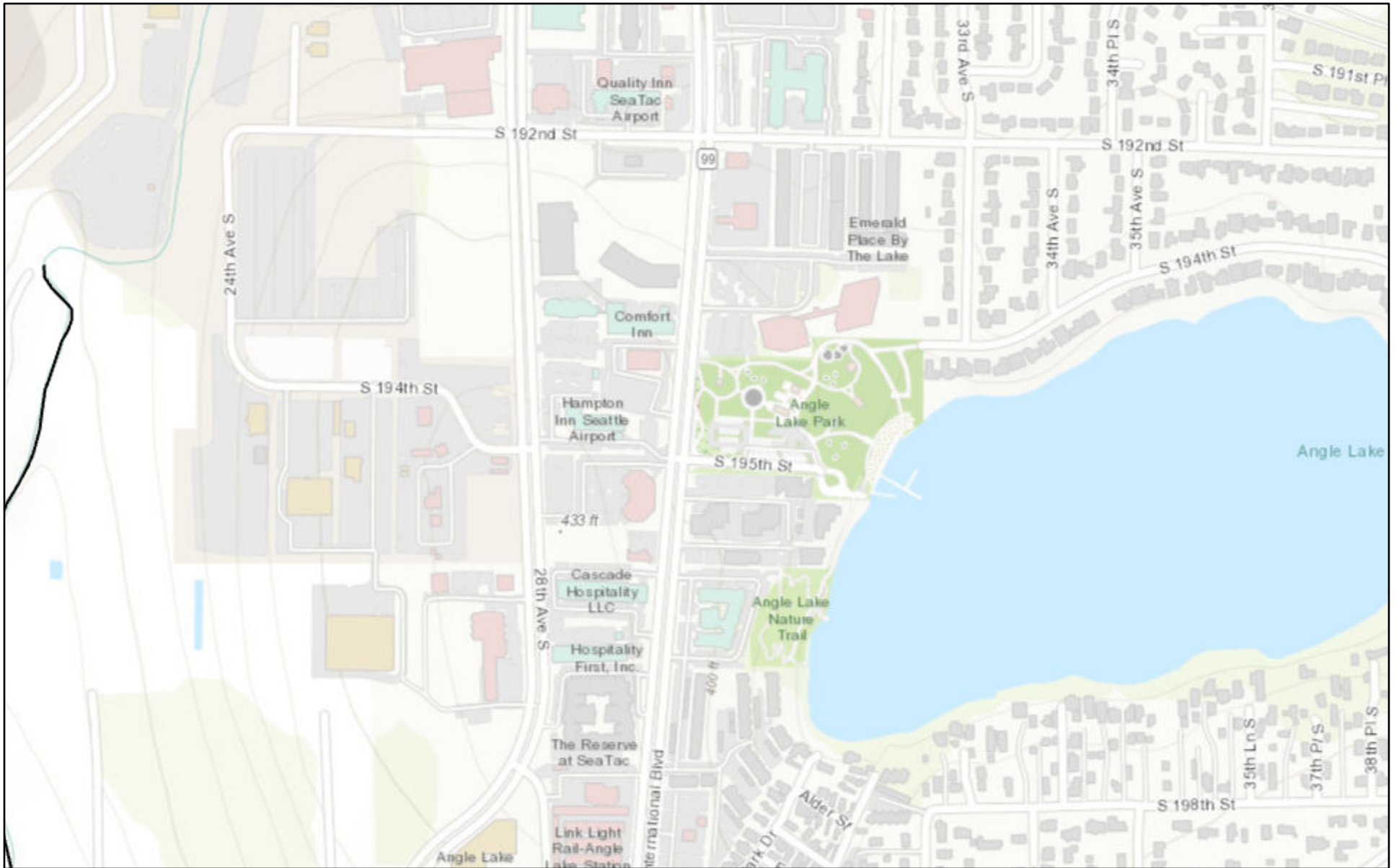
Occurence Name	Federal Status	State Status	Sensitive Location
Lake	N/A	N/A	No

PHS Species/Habitats Details:

Lake	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Lake - NWI Code: L2ABH
Source Dataset	NWIIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	http://www.ecy.wa.gov/programs/sea/wetlands/bas/index.html
Geometry Type	Polygons

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

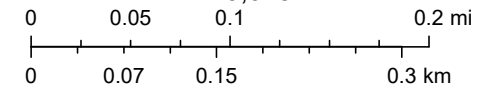
Angle Lake



February 28, 2023

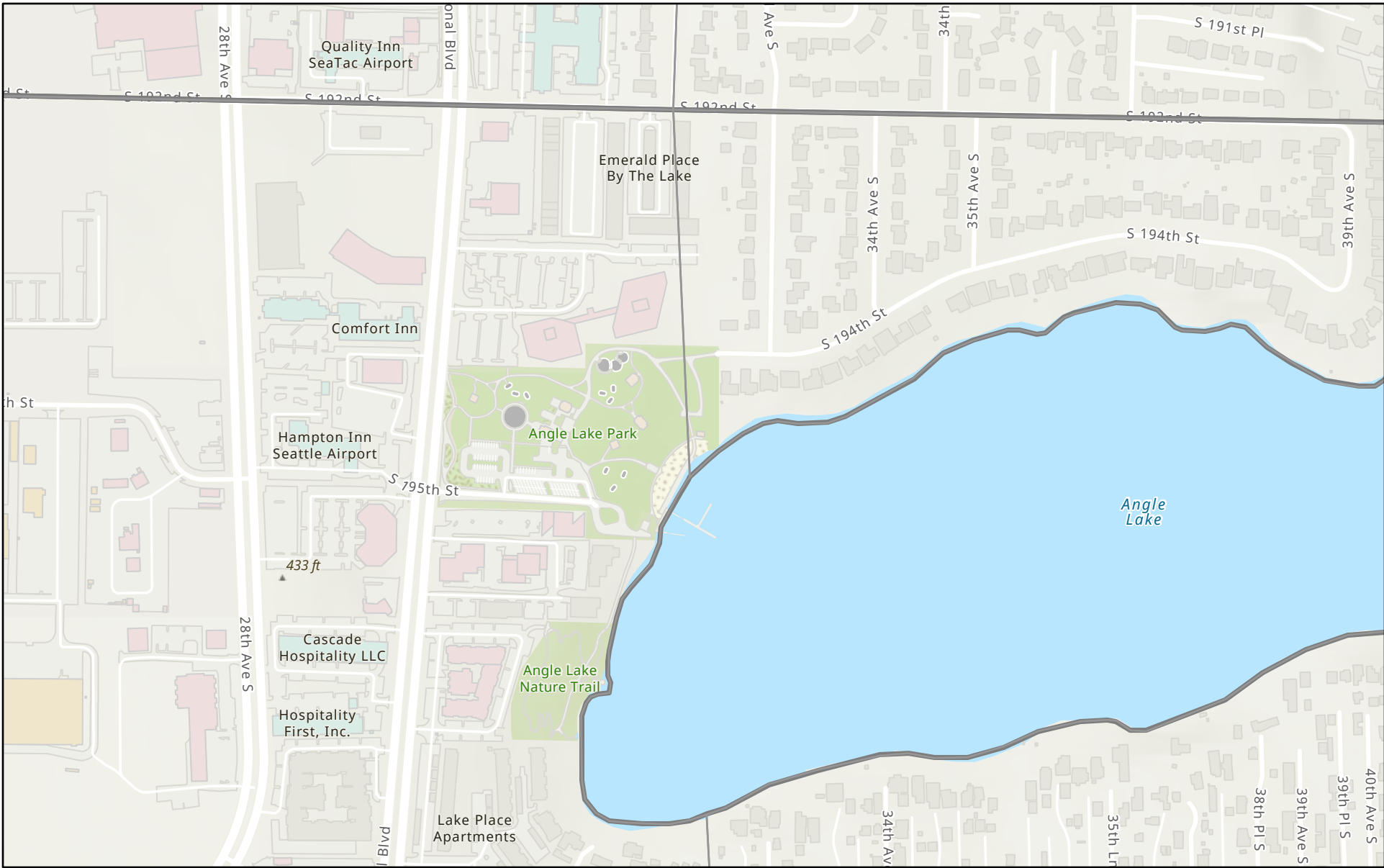
— All SalmonScape Species

1:9,028



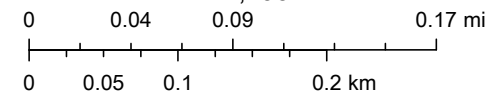
Restoration Division of the DFW Habitat Program, City of Des Moines, WA,
City of SeaTac, County of King, Bureau of Land Management, Esri Canada,

WNHP Rare Plant and Ecosystem Locations



February 28, 2023

1:7,495

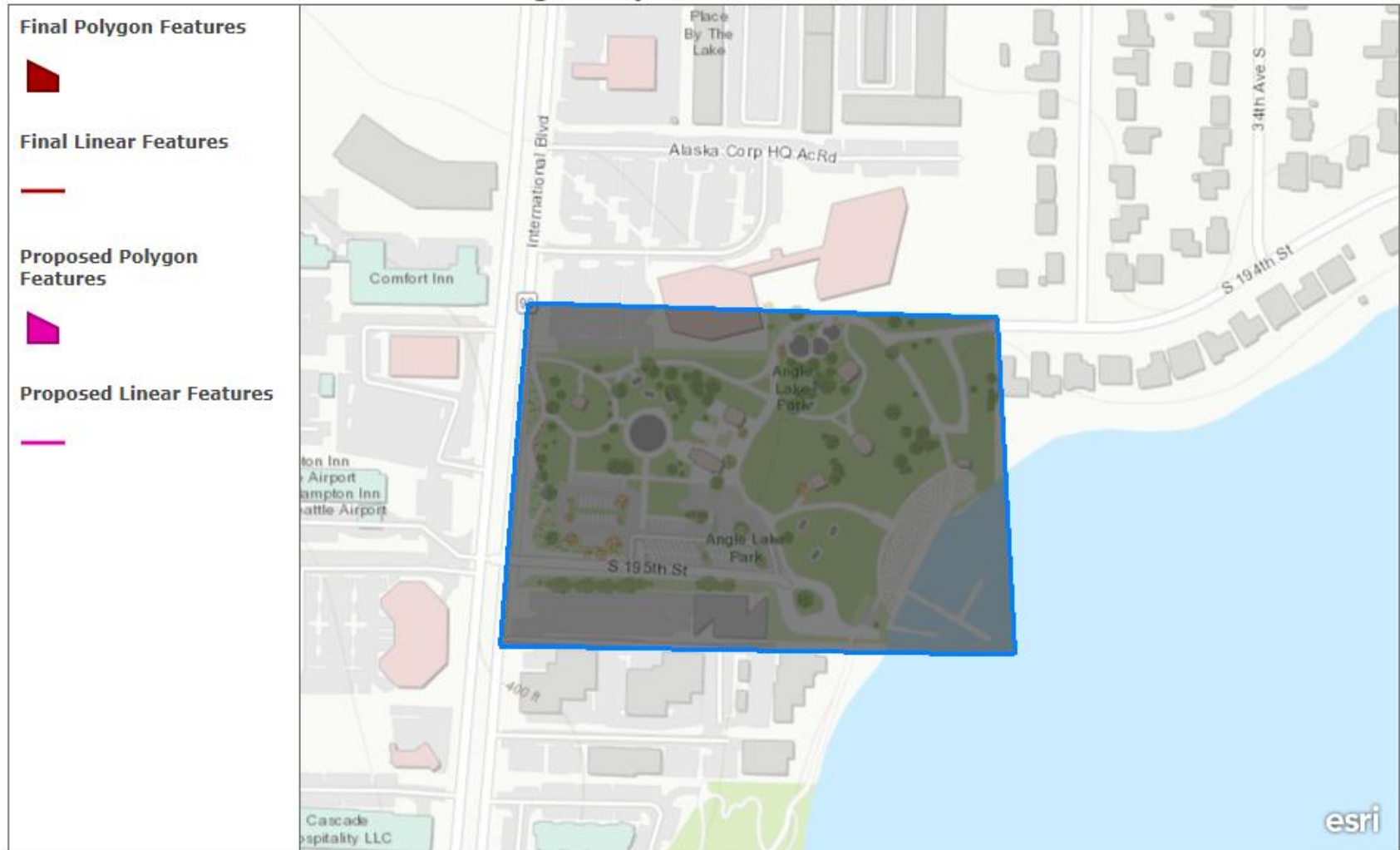


Esri Community Maps Contributors, City of Des Moines, WA, City of SeaTac, King County, WA State Parks GIS, © OpenStreetMap, Microsoft, Esri, HERE,

WNHP Plant & Ecosystem Map Viewer

KNOWN PLANT AND ECOSYSTEM LOCATIONS REFLECT KNOWN OCCURRENCE LOCATIONS BUT MAY NOT REFLECT ALL OCCURRENCES OF RARE PLANTS OR ECOSYSTEMS.

Critical Habitat for Threatened & Endangered Species [USFWS]



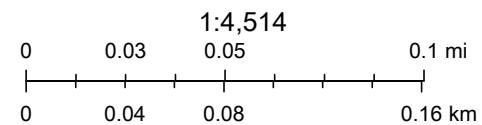
A specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

City of Des Moines, WA, City of SeaTac, County of King, Bureau of Land Management, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA

NMFS ESA Critical Habitat Mapper

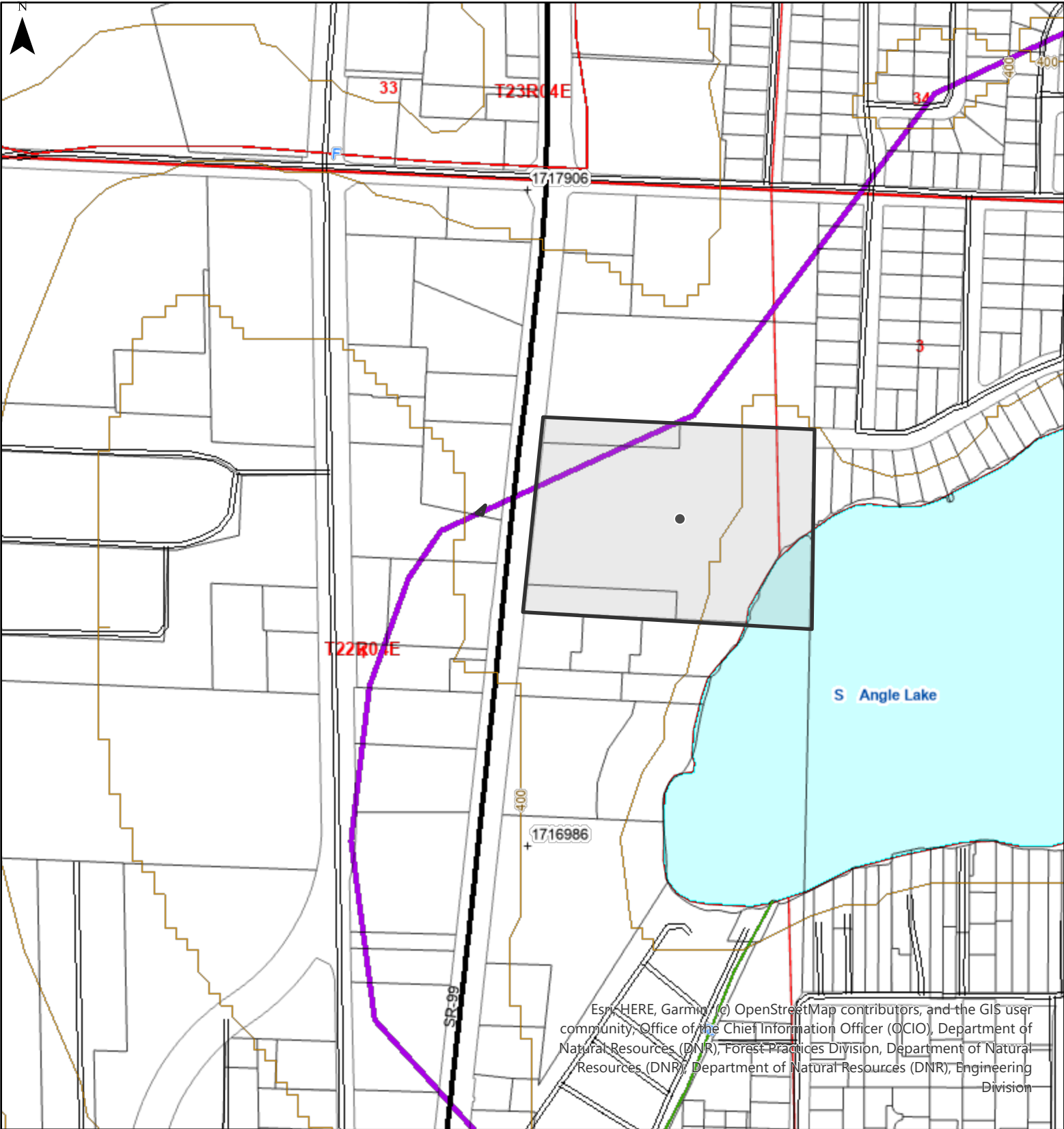


2/28/2023, 11:53:57 AM



NOAA National Marine Fisheries Service, Maxar

Forest Practices Activity Map - Application # _____



Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community, Office of the Chief Information Officer (OCIO), Department of Natural Resources (DNR), Forest Practices Division, Department of Natural Resources (DNR), Department of Natural Resources (DNR), Engineering Division

Map Symbols

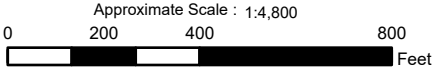
- | | |
|-------------------------|----------------------|
| ~ ~ ~ Harvest Boundary | ☉ Landing |
| - - - Road Construction | ▽ Waste Area |
| ~ ~ ~ Stream | 🌲 Clumped WRTS/GRTS |
| ▨ RMZ / WMZ Buffers | 🏠 Existing Structure |
| ✂ Rock Pit | |

Additional Information

Extreme care was used during the compilation of this map to ensure its accuracy. However, due to changes in data and the need to rely on outside information, the Department of Natural Resources cannot accept responsibility for errors or omissions, and therefore, there are no warranties that accompany this material.
































Legal Description

S33 T23.0N R04.0E, S34 T23.0N R04.0E, S03 T22.0N R04.0E, S04 T22.0N R04.0E



Date: 2/28/2023 Time: 12:01 PM

Legend

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



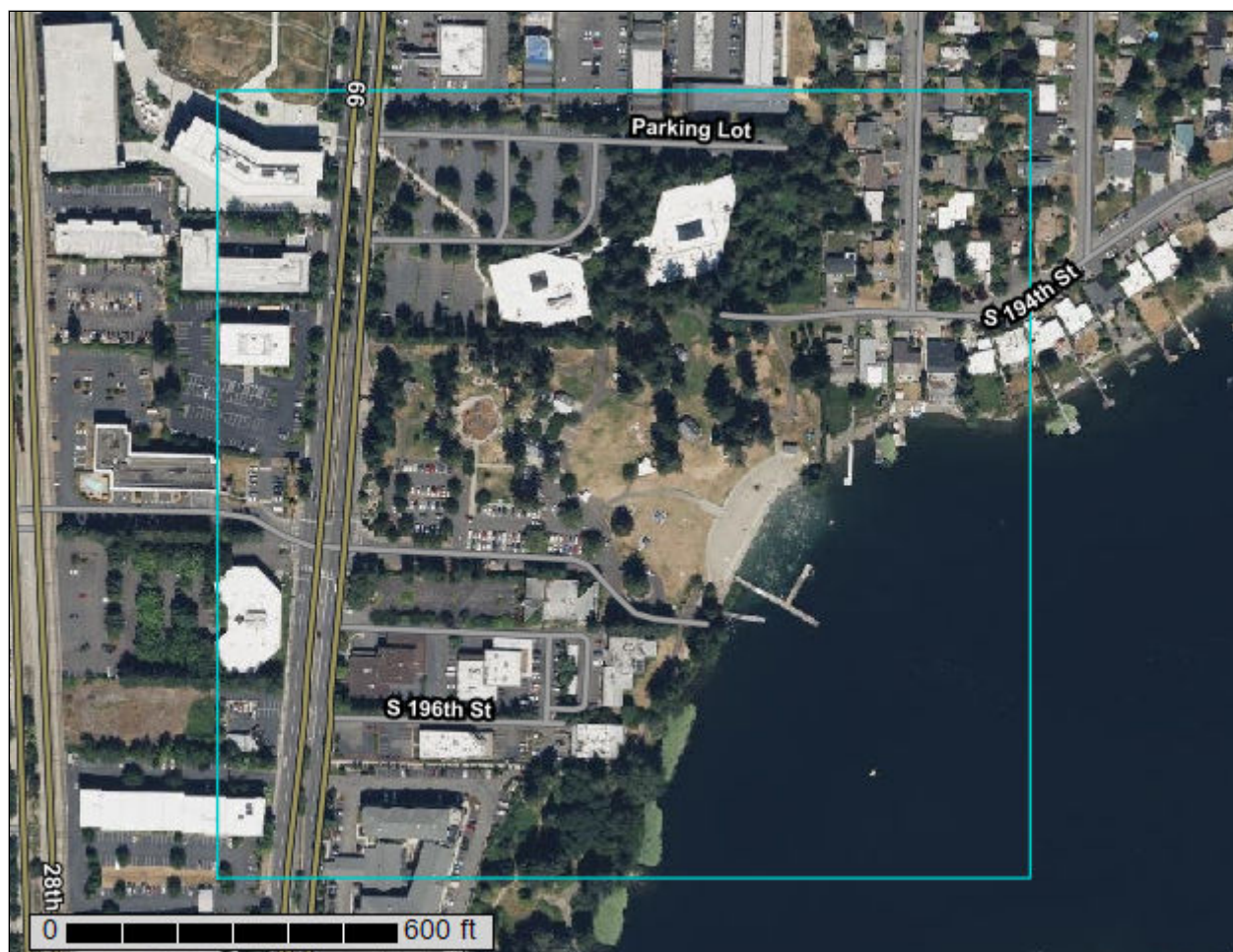
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for **King County Area, Washington**



Preface

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

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

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

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

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

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

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How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

Custom Soil Resource Report

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

Soil Map

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

Custom Soil Resource Report Soil Map



Map Scale: 1:3,670 if printed on A landscape (11" x 8.5") sheet.

0 50 100 200 300 Meters


0 150 300 600 900 Feet

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

Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot


 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: King County Area, Washington
Survey Area Data: Version 18, Sep 8, 2022

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

Date(s) aerial images were photographed: Jul 31, 2022—Aug 8, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
989	Urban land, 5 to 20 percent slopes	5.9	12.1%
3055	Urban land-Alderwood complex, 0 to 5 percent slopes	0.2	0.5%
AmC	Arents, Alderwood material, 6 to 15 percent slopes	31.8	65.8%
W	Water	10.4	21.6%
Totals for Area of Interest		48.2	100.0%

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

King County Area, Washington

989—Urban land, 5 to 20 percent slopes

Map Unit Setting

National map unit symbol: 2xtb6

Elevation: 20 to 540 feet

Mean annual precipitation: 30 to 40 inches

Mean annual air temperature: 48 to 52 degrees F

Frost-free period: 180 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 90 percent

Minor components: 10 percent

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

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydric soil rating: No

Minor Components

Alderwood

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope, crest

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: F002XA004WA - Puget Lowlands Forest

Hydric soil rating: No

Anthraltic xerorthents

Percent of map unit: 5 percent

Landform: Hills

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Nose slope, side slope, crest

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: F002XA004WA - Puget Lowlands Forest

Hydric soil rating: No

3055—Urban land-Alderwood complex, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2xtbc

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Elevation: 20 to 540 feet
Mean annual precipitation: 30 to 40 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 180 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 60 percent
Alderwood and similar soils: 15 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Description of Alderwood

Setting

Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Glacial drift and/or glacial outwash over dense glaciomarine deposits

Typical profile

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

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: About 18 to 35 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: F002XA004WA - Puget Lowlands Forest
Hydric soil rating: No

Minor Components

Everett

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F002XA004WA - Puget Lowlands Forest
Hydric soil rating: No

Mckenna

Percent of map unit: 10 percent
Landform: Drainageways
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F002XA007WA - Puget Lowlands Wet Forest
Hydric soil rating: Yes

Kitsap

Percent of map unit: 5 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F002XA004WA - Puget Lowlands Forest
Hydric soil rating: No

AmC—Arents, Alderwood material, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: 1hmsq
Elevation: 50 to 660 feet
Mean annual precipitation: 35 to 60 inches
Mean annual air temperature: 50 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Arents, alderwood material, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arents, Alderwood Material

Setting

Landform: Till plains
Parent material: Basal till

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Typical profile

H1 - 0 to 26 inches: gravelly sandy loam

H2 - 26 to 60 inches: very gravelly sandy loam

Properties and qualities

Slope: 6 to 15 percent

Depth to restrictive feature: 20 to 40 inches to densic material

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 16 to 36 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4s

Hydrologic Soil Group: B/D

Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent

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

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Rating by Map Unit (Angle Lake)

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

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Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

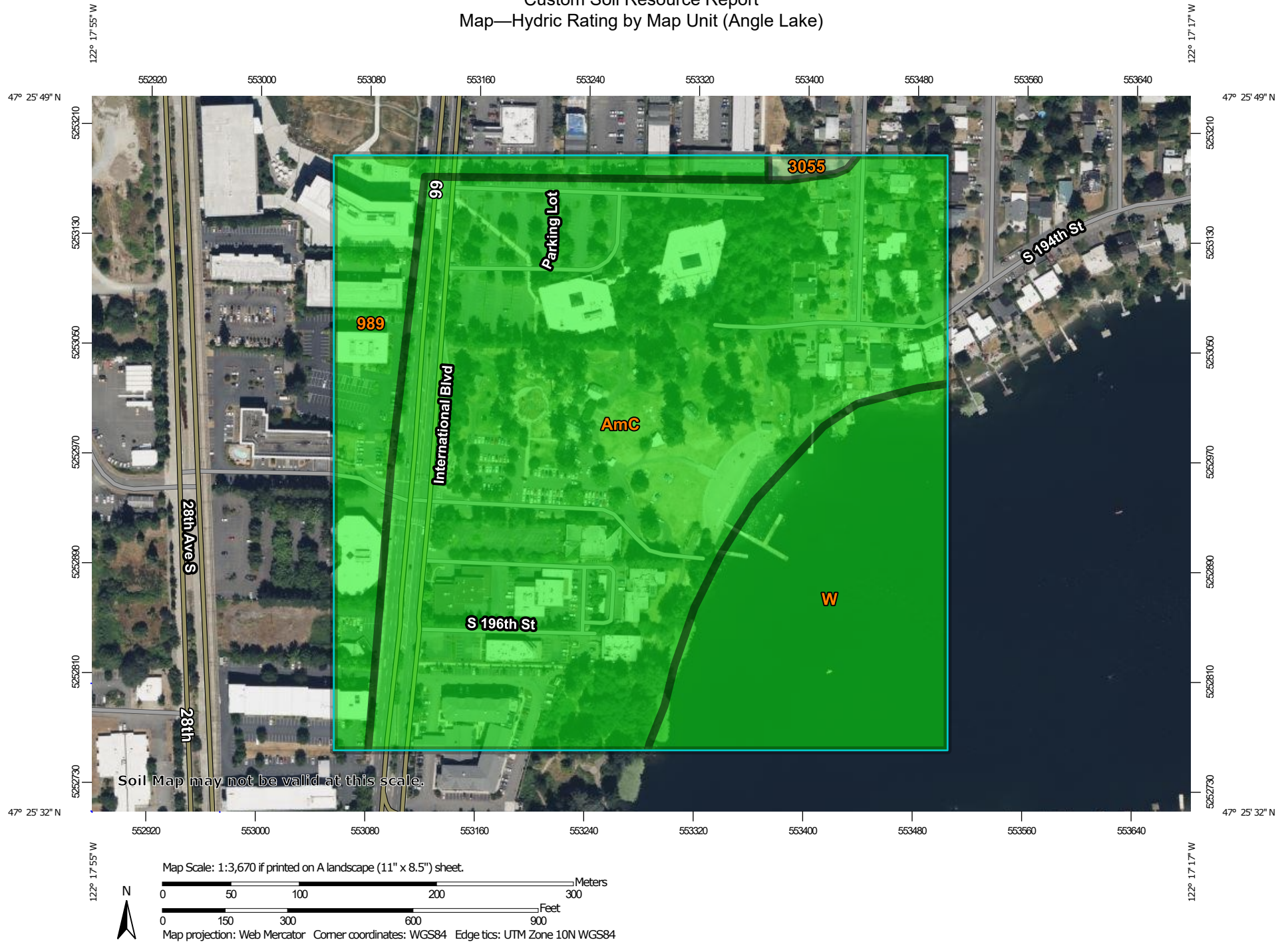
Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.


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Map—Hydric Rating by Map Unit (Angle Lake)









MAP LEGEND

Area of Interest (AOI)







 Area of Interest (AOI)

Soils







Soil Rating Polygons

 Hydric (100%)
 Hydric (66 to 99%)
 Hydric (33 to 65%)
 Hydric (1 to 32%)
 Not Hydric (0%)
 Not rated or not available


Soil Rating Lines

 Hydric (100%)
 Hydric (66 to 99%)
 Hydric (33 to 65%)
 Hydric (1 to 32%)
 Not Hydric (0%)
 Not rated or not available






Soil Rating Points

 Hydric (100%)
 Hydric (66 to 99%)
 Hydric (33 to 65%)
 Hydric (1 to 32%)
 Not Hydric (0%)
 Not rated or not available


Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: King County Area, Washington
 Survey Area Data: Version 18, Sep 8, 2022

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

Date(s) aerial images were photographed: Jul 31, 2022—Aug 8, 2022

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

Table—Hydric Rating by Map Unit (Angle Lake)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
989	Urban land, 5 to 20 percent slopes	0	5.9	12.1%
3055	Urban land-Alderwood complex, 0 to 5 percent slopes	10	0.2	0.5%
AmC	Arents, Alderwood material, 6 to 15 percent slopes	0	31.8	65.8%
W	Water	0	10.4	21.6%
Totals for Area of Interest			48.2	100.0%

Rating Options—Hydric Rating by Map Unit (Angle Lake)*Aggregation Method:* Percent Present*Component Percent Cutoff:* None Specified*Tie-break Rule:* Lower

References

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