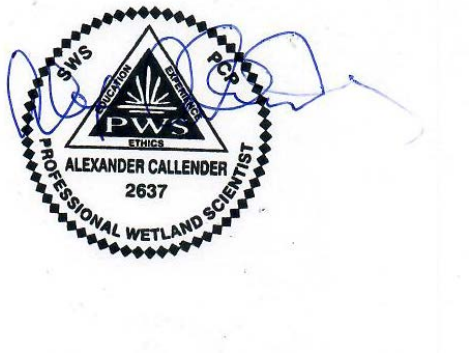
Tenino Land Company Multifamily Residential Project
Wetland Delineation Report and Assessment
Tumwater, WA

Prepared for
Todd Hansen
Tenino Land Company



Land Services Northwest
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Executive Summary

Site Name: TLC Subdivision

Parcel Numbers: 79300001100 / 79300001200

Site Location: 715 Dennis Street SE / 934 Tumwater BLVD SE **Acreage:** 5.86 and 4.63 acres
Legal Descriptions: Section 02 Township 17 Range 2W Quarter NW SE Plat THOMPSONS TO BRIGHTON PARK LL-0605 LT 3 Document004 /413 and Section 02 Township 17 Range 2W Plat THOMPSONS TO BRIGHTON PARK LT 12Document 007/291 & W 30 F OF VAC ST

Project Staff: Alex Callender MS, PWS **Field Survey Conducted:** May 8, 2024, and August 16, 2024

Project Description: The project proposes a 6 lot quad unit multifamily subdivision with roads, sewer, water, utilities, parking and waste facilities.

Findings: On and offsite Wetlands A and B were found during the recon and delineated. Wetland A is found at the northern edge of both lots and Wetland B was discovered onsite and offsite of parcel 79300001200.

These wetlands were discovered during the reconnaissance and delineated on May 8, 2024, for wetland A and August 16, 2024, for Wetland B.

Wetland A was rated as a Category II wetland with an overall score of 20 and a habitat score of 7 (HLH). The applicant is proposing a PUD and will provide a unique proposal using the impact reducing measures found in Table 16.28.170(5): Measures to Minimize Impacts to Wetlands, the applicant can reduce the buffer from the high intensity 150-foot buffer to the moderate use intensity buffer of 110-feet.

Wetland B was rated as a Category III wetland with an overall score of 19 and a habitat score of five (LMM). Using PUD process to rehabilitat the prairie and the impact reducing measures found in Table 16.28.170(5): Measures to Minimize Impacts to Wetlands, the applicant will reduce the buffer from the high intensity 150-foot buffer to the moderate use intensity buffer of 110-feet.

Impacts: The applicant will be reducing the buffers of the wetland by 21,445 sq ft using the PUD process code to reduce the buffer from 150 feet to 110-feet.

The applicant has prepared a rehabilitation plan to satisfy the PUD process. TMC Section 18.36.010.B.3 "*One point: Go significantly beyond the minimum requirements for critical area protections to preserve, enhance, or **rehabilitate** critical areas and buffers in the planned unit development. Both the applicant and the city shall agree upon the location, size, and extent of the additional protection, enhancement, or rehabilitation."*

This project proposes to rehabilitate the prairie and wetland habitat in the vicinity of Wetland A. Native plants will be added in the area where the invasive species are removed to improve screening, food resources, nutrient uptake, and beneficial uses of the water that benefits the area fauna. Three wood duck boxes, three bat boxes, and two Martin houses will be installed in the trees at the edge of Wetland A to enhance wildlife habitat at the site. Improvements also include a one-time removal of a large area of Himalayan blackberry and Scotch broom (invasive plant species) which is offsite but adjacent to the wetland and between the site and the wetland. The applicant proposes a more than 4:1 prairie and wetland rehabilitation to reduction ratio in a plan outlined in Chapter 9 of the report to improve wetland and prairie functions.

Table of Contents

1.0 INTRODUCTION

This report is the result of a critical areas study of the following parcels (**Figure 1**):

- The 5.86 parcel number 79300001100 at 715 DENNIS ST SE Olympia, WA with the legal description of Section 02 Township 17 Range 2W Quarter NW SE Plat THOMPSONS TO BRIGHTON PARK LL-0605 LT 3 Document004/413

- The 4.63 parcel number 79300001200 at 934 TUMWATER BLVD SE with the legal description of Section 02 Township 17 Range 2W Plat THOMPSONS TO BRIGHTON PARK LT 12Document 007/291 & W 30 F OF VAC ST

The purpose of this report is to 1) identify and describe the wetlands or other critical areas on-site and within 315 ft off-site of the property 2) identify impacts to wetlands or critical areas and their buffers, and 3) apply mitigation/rehabilitation and conservation measures to off-set any critical areas or buffer impacts.

This report was prepared to satisfy the critical areas review process required by the City of Tumwater Title 15 – Environment. The City of Tumwater and possibly other agencies that may evaluate impacts to critical areas from the proposed project will be able to utilize information in this report.

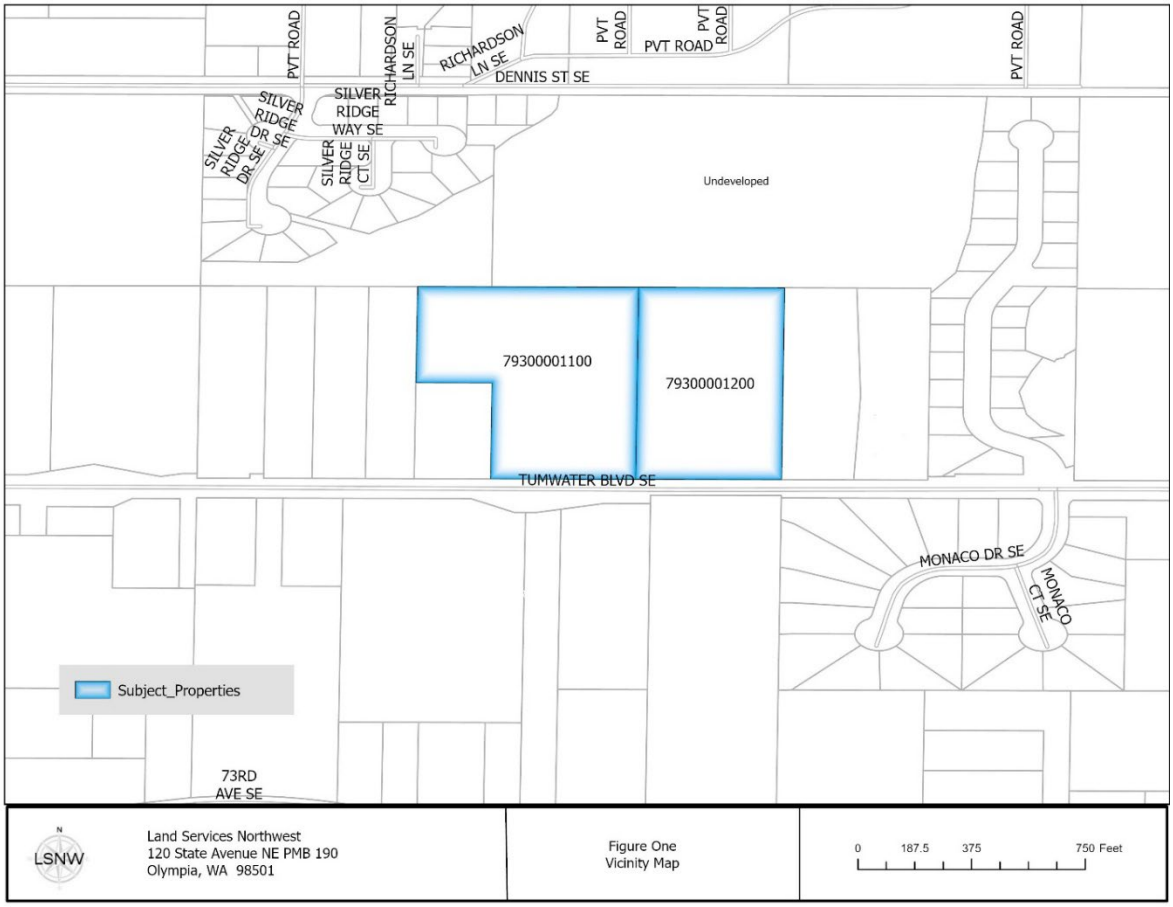


Figure 1-Vicinity Map

2.0 GENERAL DESCRIPTION AND LAND USE

2.1 Historical and Current Land Use

Historically, the parcels are undeveloped with parcel 79300001100 cut and left in pasture with a grove of 20-year-old Douglas fir in the south and Wetland A to the north. Parcel 79300001200 to the east is predominantly forested and undeveloped. There are undeveloped parcels to the north and west and single-family residences to the south, east, and west (**Figure 2**).

Figure 2 - Current Conditions

3.0 METHODOLOGY

3.1 Existing Information Review

Background information on possible wetlands was reviewed prior to field investigations and included the following:

National Wetlands Inventory (NWI) Map, USFWS Shapefile Data (**Appendix B**)

Thurston County Area Soil Survey, Soil Conservation Service (U.S. Department of Agriculture, 1973) National Resource Conservation Service Shapefiles (NRCS Soils Data Mart, 2006) (**Appendix C**)

Thurston County Geodata Wetland Inventory (**Appendix D**)

USGS 7.5 Minute Quadrangle Topographic Maps (**Appendix E**)

Washington Department of Fish and Wildlife Priority Habitats and Species Database (**Appendix G**)

Washington Department of Fish and Wildlife Salmonscape (**Appendix H**)

NOAA NOW Precipitation Data (**Appendix I**)

Washington Department of Natural Resources Natural Heritage Database

United States Hydric Soils List (U.S. Department of Agriculture 1991)

City of Tumwater

3.2 Analysis of Existing Information

The following existing information was reviewed to gain a better understanding of on-site conditions and its position in the landscape.

National Wetland Inventory (NWI) Map

The National Wetland Inventory (NWI) map (**Appendix B**), developed by the U.S. Fish and Wildlife Service (USFWS), shows Palustrine Forested (PFO) and Palustrine Emergent Persistent Seasonally Flooded (PEM1C) wetlands on and within 315 feet of the subject properties.

NRCS Soils Map

The Natural Resources Conservation Service (NRCS) has mapped the site (Appendix C) as containing:

- Norma silt loam
- Indianola loamy sand, 0 to 3 percent slopes and 3 to 15 percent slopes
- Mukilteo muck

Norma silt loam

Map Unit Setting

- *National map unit symbol:* 2ndcc
- *Elevation:* 0 to 1,000 feet
- *Mean annual precipitation:* 35 to 60 inches

- *Mean annual air temperature:* 48 to 52 degrees F
- *Frost-free period:* 150 to 200 days
- *Farmland classification:* Prime farmland if drained

Map Unit Composition

- *Norma, silt loam, and similar soils:* 90 percent
- *Minor components:* 10 percent
- *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Norma, Silt Loam

Setting

- *Landform:* Depressions, drainageways
- *Parent material:* Alluvium

Typical profile

- *H1 - 0 to 8 inches:* silt loam
- *H2 - 8 to 30 inches:* sandy loam
- *H3 - 30 to 60 inches:* sandy loam

Properties and qualities

- *Slope:* 0 to 3 percent
- *Depth to restrictive feature:* More than 80 inches
- *Drainage class:* Poorly drained
- *Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
- *Depth to water table:* About 0 to 12 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* Frequent
- *Available water supply, 0 to 60 inches:* Moderate (about 8.9 inches)

Interpretive groups

- *Land capability classification (irrigated):* None specified
- *Land capability classification (nonirrigated):* 5w
- *Hydrologic Soil Group:* B/D
- *Ecological site:* F002XA007WA - Puget Lowlands Wet Forest
- *Forage suitability group:* Wet Soils (G002XS101WA)
- *Other vegetative classification:* Wet Soils (G002XS101WA)
- ***Hydric soil rating:*** **Yes**

Indianola loamy sand, 5 to 15 percent slopes

Map Unit Setting

- *National map unit symbol:* 2t635
- *Elevation:* 0 to 980 feet
- *Mean annual precipitation:* 30 to 81 inches
- *Mean annual air temperature:* 48 to 50 degrees F
- *Frost-free period:* 170 to 210 days
- *Farmland classification:* Prime farmland if irrigated

Map Unit Composition

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

Description of Indianola

Setting

- *Landform:* Terraces, kames, eskers
- *Landform position (three-dimensional):* Riser
- *Down-slope shape:* Linear
- *Across-slope shape:* Linear
- *Parent material:* Sandy glacial outwash

Typical profile

- *Oi - 0 to 1 inches:* slightly decomposed plant material
- *A - 1 to 6 inches:* loamy sand
- *Bw1 - 6 to 17 inches:* loamy sand
- *Bw2 - 17 to 27 inches:* sand
- *BC - 27 to 37 inches:* sand
- *C - 37 to 60 inches:* sand

Properties and qualities

- *Slope:* 5 to 15 percent
- *Depth to restrictive feature:* More than 80 inches
- *Drainage class:* Somewhat excessively drained
- *Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 99.90 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Available water supply, 0 to 60 inches:* Low (about 3.9 inches)

Interpretive groups

- *Land capability classification (irrigated):* 4e
- *Land capability classification (nonirrigated):* 4s
- *Hydrologic Soil Group:* A
- *Ecological site:* F002XA004WA - Puget Lowlands Forest
- *Forage suitability group:* Droughty Soils (G002XS401WA), Droughty Soils (G002XN402WA)
- *Other vegetative classification:* Droughty Soils (G002XS401WA), Droughty Soils (G002XN402WA)
- ***Hydric soil rating:*** **No**

Mukilteo muck, drained

Map Unit Setting

- *National map unit symbol:* 2ndc5
- *Elevation:* 0 to 1,000 feet
- *Mean annual precipitation:* 40 to 70 inches
- *Mean annual air temperature:* 48 to 52 degrees F
- *Frost-free period:* 150 to 250 days
- *Farmland classification:* Prime farmland if drained

Map Unit Composition

- *Mukilteo, drained, and similar soils:* 90 percent
- *Minor components:* 10 percent
- *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Mukilteo, Drained

Setting

- *Landform:* Depressions
- *Parent material:* Herbaceous organic material

Typical profile

- *Oa - 0 to 6 inches:* muck
- *Oe2 - 6 to 60 inches:* mucky peat

Properties and qualities

- *Slope:* 0 to 2 percent
- *Depth to restrictive feature:* More than 80 inches
- *Drainage class:* Very poorly drained
- *Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
- *Depth to water table:* About 0 to 24 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Available water supply, 0 to 60 inches:* Very high (about 26.9 inches)

Interpretive groups

- *Land capability classification (irrigated):* None specified
- *Land capability classification (nonirrigated):* 5w
- *Hydrologic Soil Group:* B/D
- *Ecological site:* R002XA003WA - Puget Lowlands Bogs and Fens
- *Forage suitability group:* Seasonally Wet Soils (G002XS201WA)
- *Other vegetative classification:* Seasonally Wet Soils (G002XS201WA)
- ***Hydric soil rating:*** **Yes**

Minor Components

Shalcar

- *Percent of map unit:* 5 percent
- *Landform:* Depressions
- *Other vegetative classification:* Wet Soils (G002XS101WA)
- *Hydric soil rating:* Yes

Mukilteo, undrained

- *Percent of map unit:* 5 percent
- *Landform:* Depressions
- *Other vegetative classification:* Wet Soils (G002XS101WA)
- *Hydric soil rating:* Yes

Thurston County Geodata Wetland Inventory

The Thurston County Geodata website has a mapping tool that depicts various critical areas such as streams and wetlands. This site shows a large Palustrine Forested and Scrub Shrub and Palustrine Emergent wetlands on and within 305 feet of the subject properties. (**Appendix D**).

USGS 7.5 Minute Topo Map

The USGS has topographical maps that depict natural and artificial features on the landscape including wetlands. This map shows does not show any features on site or within 300 feet of the site (**Appendix E**).

WADNR Forest Practices Stream Type Map

The Washington State Department of Natural Resources has a map that shows Wetlands, Streams and Lakes and their stream type for the purpose of Forest Practices according to WAC 222-16-3 **(Appendix F)**. This map shows a wetland on and within 315 feet of the subject properties.

WDFW Priority Habitats and Species Inventory and Salmonscape Inventory

The Department of Fish and Wildlife maintains an inventory of priority habitats and species information (**Appendix G**). This database shows the Big brown bat, Townsend's big-eared bat and Yuma myotis occurring within 330 ft. These bats may use the many snags in the wetland as borrows for torpur or to hunt macroinvertebrates as they emerge from the wetland. The WDFW Salmonscape shows a seasonal stream far offsite to the west, but it does not show any fish use.

NOAA NOW Precipitation Data

NOAA maintains a database that graphs the current precipitation against the wettest, driest, and normal accumulations of record **(Appendix H)**. This data shows that the precipitation since October 1, 2024, has been much drier than average. This is measured at the nearby Olympia Airport which is southwest of the subject property.

3.3 Field Investigation

Determination Guidelines

Land Services Northwest based its wetland identification and delineation upon the 1987 Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the regional specificity found in Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE, 2010). Generally, as outlined in the manuals, wetlands are distinguished from other landforms by three criteria: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology.

General Field Guidelines

Plant species were identified according to the taxonomy in *Flora of the Pacific Northwest* (Hitchcock and Cronquist, 1973), and the wetland status of plant species was assigned according to*: The National Wetland Plant List: 2016* (Lichvar, 2016). Wetland classes were determined by the U.S. Fish and Wildlife Service's system of wetland classification (FGDC, 2013). The wetland determination was based mainly on soils, vegetation, and hydrology characteristics indicative of wetland conditions.

The Corps Manual and Supplement describes soil, vegetation, and hydrological indicators of wetlands. A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper par (National Technical Committee for Hydric Soils, 1994). Anaerobic conditions cause redoximorphic features to develop, which can be evidenced through the observation of mottling or gleying in the soil. Soils are hydric if they match the indicators in the supplement or meet the technical definition.

A soils evaluation was performed to determine if the area contained hydric soils. Additional test plots were sampled to gage possible wetland indicators and characteristics. Soils are normally excavated to 18 inches or more below the surface within a test pit to evaluate soil characteristics and hydrological conditions in both wetland and upland areas. Soil chroma (color) is evaluated using the *Munsell Color Chart* (Munsell Color, 1988).

The COE describe a wetland rating system for plants. Each species is assigned a probability of occurrence within wetlands, which is referred to as its wetland status. The wetland plant indicator system is as follows:

Table 1 Indicator Status Ratings

Indicator Status	Abrv.	Definitions - Short Version (ERDC/CRREL TN-12-1)
Obligate	OBL	Almost always occur in wetlands.
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands.
Facultative	FAC	Occur in wetlands and nonwetlands.
Facultative Upland	FACU	Usually occur in non-wetlands, but may occur in wetlands.
Upland	UPL	Almost never occur in wetlands.
		(USACE, 2016)

In general, under the Federal methodology, more than 50 percent of the predominant plant species within a test plot must be rated FAC or wetter (i.e., FACW, OBL) to satisfy the wetland criteria for hydrophytic vegetation. Dominant species are those when ranked comprise 50% of the total or those that have a percent cover greater or equal to 20 percent within the test plot. Only dominant plant species were considered in the data analysis.

If wetland hydrology, including pooling, ponding, and soil saturation, is not clearly evident, hydrological conditions may be observed through surface or soil indicators. Indicators of hydrological conditions include drainage patterns, drift lines, sediment deposition, watermarks, historic records, visual observation of saturated soils, and visual observation of inundation.

3.4 Wetland Study

Field Survey

A wetland reconnaissance was performed on May 8, 2024, and August 16, 2024, to identify wetlands present on the subject property. Observations were made of the general plant communities, wildlife habitats, and the locations of potential streams and wetland areas. Present and past land-use practices were also noted, as were significant geological and hydrological features.

Once likely wetland areas were located, the Routine Onsite Determination Method was used to identify the presence of wetland parameters and to delineate the outer edge of the wetlands using the procedures outlined in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987). The Routine Onsite Determination Method was used in areas that maintained normal circumstances, were not significantly disturbed, and were not potential problem areas. A formal wetland delineation was performed on May 8, 2024, and August 16, 2024, to document off-site wetlands and to identify and map off-site wetlands within 315 feet of the subject property as we are able.

Test pits were dug on May 8, 2024, and August 16, 2024 (**Figure 3**) to develop a better understanding of soil profiles onsite. Soils were excavated to 18 inches or more below the surface within a test pit to evaluate soil characteristics and hydrological conditions throughout the site. Soil chroma (color) is evaluated using the *Munsell Color Chart* (Munsell Color, 1988). The result was entered in wetland data sheets **(Appendix I).**

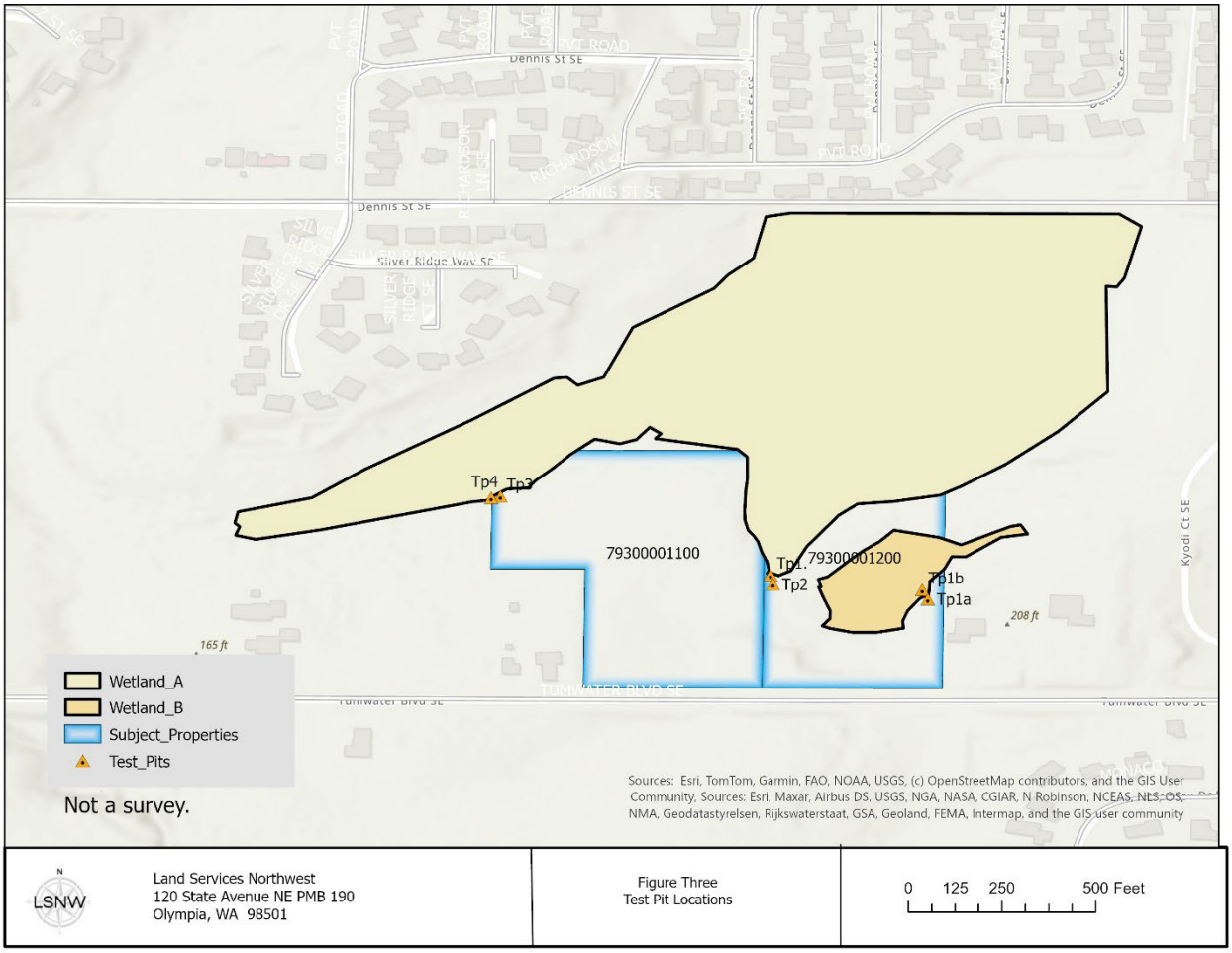


Figure 3 – Test Pit Locations

4.0 RESULTS

4.1 Existing Conditions

Parcel number 79300001100 has a slope from the south to the north with a high point in the south and is a mowed field with 15-20 yr old Douglas fir in the southern portion of the lot along Tumwater Blvd. The slope ends at the wetland that is on the northern border. When the water enters the wetland it drains far offsite to the west. No other wetlands or suspicious areas were found on site. The edge of the property was walked, and other areas were explored during the Mazama pocket gopher study, but there really were no other suspicious areas on site.

Parcel number 79300001200 is predominantly forested with a slope / depressional HGM wetland that starts on the adjacent parcel to the east. There is an upland area that separates the two wetlands, but it was breached by a culvert and short ditch that drains Wetland B into Wetland A.

4.2 Wetlands

Two wetlands were discovered during the reconnaissance and labeled Wetland A and Wetland B.

Wetland A

Wetland A is an aquatic bed, emergent, shrub scrub, forested (Cowardin Class), permanently and seasonally flooded (Hydroperiod) depressional (HGM) wetland with a muck soil. Wetland A was determined to be regulated and was rated using the Wetland Rating System for Western Washington (Hruby et al, 2014).

As mentioned, Wetland A is a large depressional wetland that has developed to the west and north. Its outlet is to the west.

Plants

Red alder (*Alnus rubra*; FAC) Western red cedar (*Thuja plicata*; FAC) Himalayan blackberry (*Rubus armeniacus*; FAC), Skunk cabbage (*Lysichiton americanum*; OBL , slough sedge (*Carex obnupta*; OBL) and Liy pads (*Nuphar polysepala*; OBL) are the primary plants found in the wetland.

Soils

Soils were sampled, and a dark brown 10YR 2/1-2 muck underlain with a 10YR6/2 silt loam.

Hydrology

It was end of the rainy season, so hydrology was directly observed. High groundwater and surface water after rain events sustain wetland hydrology.

Wetland B

Wetland B is a depressional seasonally flooded wetland that drains to Wetland A via a culvert and a very short ditch. Wetland B was determined to be regulated and was rated using the Wetland Rating System for Western Washington (Hruby et al, 2014).

Plants

Western red cedar (*Thuja plicata*; FAC), Red alder (*Alnus rubra*; FAC), Salmonberry *(Rubus Spectabilis*; FAC), Common ladyfern (*Athyrium cyclosorum;* FAC*) and* Skunk cabbage (Lysichiton americanum; OBL) are the primary plants found in the wetland.

Soils

Soils were sampled, and a dark 10YR2/1 underlain with 10YR4/2-4/6 silt loam.

Hydrology

It was end of the rainy season, so hydrology was directly observed on the surface.

5.0 WETLAND FUNCTIONAL VALUES

5.1 Wetland Functional Analysis Methodology

Wetlands, in general, provide many valuable ecological and social functions, including 1) stormwater storage, 2) groundwater recharge, 3) erosion control, 4) water quality improvement, 5) natural biological support, 6) overall habitat functions, 7) specific habitat functions, and 8) cultural and socioeconomic value.

Several procedures have been developed for assessing the importance and magnitude of functions and include the Washington Functional Assessment Method (WAFAM) Wetland Evaluation Technique, the Hydrogeomorphic Assessment Method the Habitat Evaluation Procedure (HEP), and numerous regional and/or local procedures. However, none of these methods were consistent with the needs of this project.

Wetland functions were also semi-quantitatively assessed using information gathered while performing the ECY Wetland Rating System for Western Washington (Hruby, 2014). The scores from the analysis of the wetland are found in Appendix H. This method is a comprehensive approach requiring substantial data input and assessment of onsite and landscape functions. The descriptions of wetland functions and the factors and parameters considered by that method are very helpful in interpreting the functioning of the subject wetlands and buffer areas. The methodology is scientifically based, in that its application requires a prior understanding of how wetlands function. Advanced experience, training and scientific objectivity of a wetland scientist applying the method is essential for an accurate assessment. Alex Callender has attended and received credit for the training in this method.

5.2 Wetland Functions

Wetland A

Wetland A is an approximately 15.77 - acre mostly undisturbed depressional wetland that drains much of the area south of Tumwater Boulevard and south of Dennis street and West of Henderson Boulevard.

Water Quality

Wetland A has constricted outlet and greater than 1/2 of the vegetation is ungrazed as there is aquatic bed vegetation open water in a portion of the wetland. The wetland has mapped organic soils and the area that is seasonally flooded is less than 1/4 of the overall area.

The wetland does not have greater than 10% of the buffer in pollution generating land use. There are septics within 250 feet of the wetland. There are no other pollution generating activities surrounding the wetland.

The wetland discharges within a mile of a 303d waterbody. It has a 303 d water in the basin. There is a TMDL planned for the Deschutes basin.

Hydrologic Functions

Wetland A is a depressional wetland that drains offsite to the west via a constricted outlet. Marks of ponding are 2-3 ft. The contributing basin is 10-100 times the size of the Wetland Unit.

The unit does not receive stormwater. >10% of the wetland is impervious surface. The wetland has more than 25% of the area of the catchment basin in high intensity land use. There is surface flooding in some areas in the wetland drainage basin further downstream, but the wetland is not mentioned in any flood plans or studies as important for this function.

Habitat functions

Wetland A has a high interspersion of structure as there is aquatic bed, emergent, shrub scrub and forested areas. Wetland A does not have a lot of vegetative species diversity with a forested fringe of alders and western red cedars and twinberry, Himalayan blackberry, and an emergent lily pad and cat tail interior. There is not much wetland hydroperiod diversity as it has a hard edge and is permanently flooded with a small band of seasonally flooded area. Wetland A has high density development in the area as there are subdivisions that surround the wetland and the airport rates high for land use in the landscape position, so it rates moderate. Wetland A has little high intensity accessible habitat, so it rates moderate for this feature as well.

There are snags and logs and a stream at its outlet, so it rates high for priority habitats and species. There were no other priority habitats and species found in the area via the PHS Mapping tools, and no pocket gophers or prairie was found onsite.

Wetland B

Wetland B is an approximately 1.06 acre mostly undisturbed forested depressional wetland that drains to Wetland A during periods of high precipitation.

Water Quality

Wetland B has an intermittently flowing stream or ditch. The wetland has mapped organic soil and has persistent ungrazed plants on greater than fifty percent of the area. The area that is seasonally flooded is less than 1/4 of the overall area.

The wetland does not have stormwater discharge and greater than ten percent of the land use within 150 ft. is pollution generating. There are septics within 250 ft. of the wetland.

The wetland discharges within a mile of a 303d waterbody. It has a 303 d water in the basin. There is a TMDL planned for the Deschutes basin.

Hydrologic Functions

Wetland B has an intermittently flowing stream or ditch. Marks of ponding are 2-3 ft. The contributing basin is 10-100 times the size of the Wetland Unit.

The wetland does not receive stormwater discharges. Greater than 10 percent of the area within 150 ft generates excessive runoff. More than 25 percent of the catchment basin of the wetland is covered by intensive human land uses that promote runoff (Land Use Intensity in the basin has >25% in 1 residential unit per acre or greater, or commercial /industrial use.

There is surface flooding in some areas in the basin further downstream, but the site is not mentioned in any local or regional plans as important for this function.

Habitat functions

Wetland B has two vegetative structures – forested and forested with 3 layer's There is one hydroperiods which is seasonally flooded and has moderate diversity with 5 to nineteen plant species. The wetland area has one Cowardin classifications, so it has a low interspersion of habitat. There is large, downed woody debris, snags and logs.

Ten to nineteen percent of the 1km is accessible habitat and the undisturbed habitat is ten to fifty percent of the area in more than three patches. Less than fifty percent in the 1km polygon is high intensity land use.

There were no other priority habitats and species found in the area via the PHS Mapping tools, and no pocket gophers or prairie was found onsite.

6.0 REGULATORY CONSIDERATIONS

6.1 City of Tumwater Regulations

The City of Tumwater regulates wetlands using a combination of land use intensity wetland category and habitat scores.

Wetland A was rated as a Category II wetland with an overall score of 20 and a habitat score of 7 (MMH). Using the impact reducing measures found in Table 16.28.170(5): Measures to Minimize Impacts to Wetlands, the applicant can reduce the buffer from the high intensity 150-foot buffer to the moderate use intensity buffer of 110-feet.

Wetland B was rated as a Category III wetland with an overall score of 19 and a habitat score of five (LMM). There are no impacts to the wetland proposed and through the PUD process we will improve the overall buffer by using the buffer impact reducing measures found in Table 16.28.170(5): Measures to Minimize Impacts to Wetlands, the applicant will reduce the buffer from the high intensity 150-foot buffer to the moderate use intensity buffer of 110-feet and provide treatments to enhance the buffer function.

Table 16.28.170(2) Explanatory Notes:

(1) No information on other measures for protection was available at the time the 2014 Washington State Wetland Rating System for Western Washington was written. The Washington State Department of Ecology will continue to collect new information for future updates of the 2014 rating system.

Table 16.28.170(3): Category III Wetland Buffer Widths

(Buffers for wetlands scoring sixteen to nineteen points for all functions)

Wetland Characteristics	Buffer Widths by Impact of Proposed Land Use	Other Measures Recommended for Protection
Moderate level of function for habitat (score for habitat 5 – 7 points) If wetland scores 8 – 9 habitat points, use Table 16.28.170(2): Category II Wetland Buffer Widths	Low – 75 ft Moderate – 110 ft High – 150 ft	No recommendations at this time (1)
Score for habitat 3 – 4 points	Low – 40 ft Moderate – 60 ft High – 80 ft	No recommendations at this time (1)

Table 16.28.170(3) Explanatory Notes:

16.28.170 Wetland buffers.

A. Standard Buffer Zone Widths. Wetland buffer zones shall be required for all regulated activities adjacent to regulated wetlands.

1. Any wetland created, restored or enhanced as compensation for approved wetland alterations shall also include the standard buffer required for the category of the created, restored, or enhanced wetland.

2. All buffers shall be measured from the wetland boundary as surveyed in the field pursuant to the requirements of TMC 16.28.080.

3. The width of the wetland buffer zone shall be determined according to wetland category, the functions and special characteristics of the wetland, and the proposed land use.

4. Wetlands of high conservation value, bogs, and forested wetlands shall have the buffers shown in the table below independent of points scored for habitat in the rating system.

5. If a wetland meets more than one of the characteristics listed in Tables 16.28.170(1) to 16.28.170(4), the buffer recommended to protect the wetland is the widest one.

C. Buffer Width Reduction. The buffer widths recommended for land uses with high-intensity impacts to wetlands can be reduced to those widths recommended for moderate-intensity impacts under the following conditions:

1. For wetlands that score moderate or high for habitat (five points or more), the width of the buffer around the wetland can be reduced to 110 feet through the PUD process if it is agreed that the project will provide the community with something beyond a typical mitigtation.

As a condition of the PUD application the applicant will maintain:

a. A relatively undisturbed vegetated corridor at least one hundred feet wide is protected between the wetland and any other priority habitats as defined by the Washington State Department of Fish and Wildlife. The corridor must be protected for the entire distance between the wetland and the priority habitat via some type of legal protection such as a conservation easement; and

There is a 110-ft buffer after the reduction. The applicant will maintain this as a condition of the application. In addition, the applicant will implement the measures below as applicable.

b. Measures to minimize the impacts of different land uses on wetlands, such as the examples summarized in Table 16.28.170(5), will also be applied.

Table 16.28.170(5): Measures to Minimize Impacts to Wetlands

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities That Cause the Disturbance
Lights	Direct lights away from wetland	Parking lots, warehouses, manufacturing, residential
Noise	Locate activity that generates noise away from wetland	Manufacturing, residential
Toxic runoff (1)	Route all new runoff away from wetland while ensuring that wetland is not dewatered Establish covenants limiting use of pesticides within 150 ft of wetland Apply integrated pest management	Parking lots, roads, manufacturing, residential areas, application of agricultural pesticides, landscaping
Stormwater runoff	Retrofit stormwater detention and treatment for roads and existing adjacent development Prevent channelized flow from lawns that directly enters the buffer	Parking lots, roads, manufacturing, residential areas, commercial, landscaping

Table 16.28.170(5): Measures to Minimize Impacts to Wetlands

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities That Cause the Disturbance
Change in water regime	Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns	Impermeable surfaces, lawns, tilling
Pets and human disturbance	Use privacy fencing Plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion Place wetland and its buffer in a separate tract	Residential areas
Dust	Utilize best management practices to control dust	Tilled fields

Table 16.28.170(5) Explanatory Notes:

(1) These examples are not necessarily adequate to meet the rules for minimizing toxic runoff if threatened or endangered species are present at the site.

The applicant will be able to meet the requirements of the table above. (See section 8.2 for implementation)

The wetlands, and their buffers are depicted below (**Figure 4**).

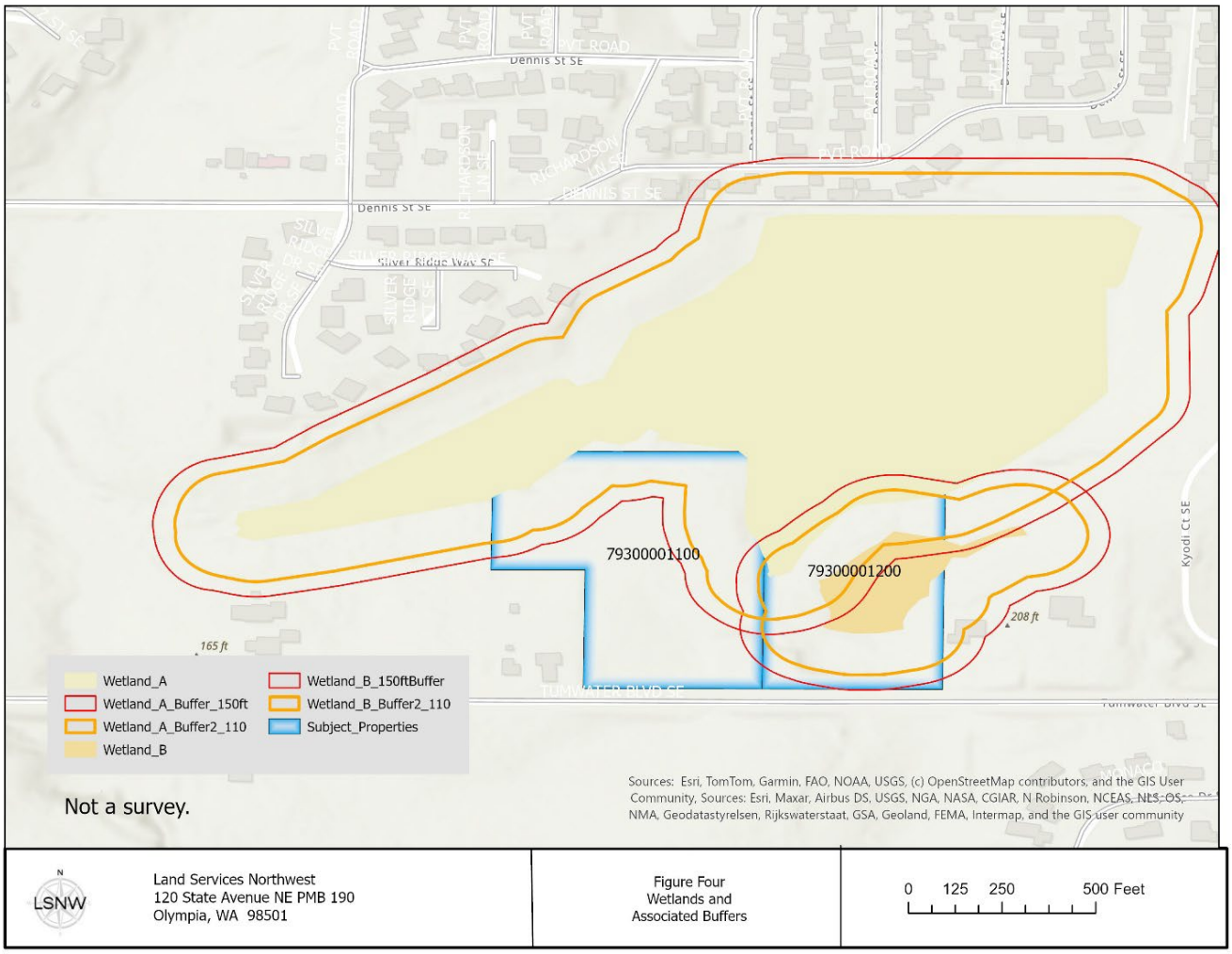


Figure 4 – Standard 150 ft Wetland Buffers and 110 ft Reduced Buffers.

Table 2 - Summary of Wetlands and Streams on or in the Vicinity of the Subject Property

Wetland	Size (Acres)		Category	Habitat Score	Base Buffer Width (feet)	Buffer after rehabilitation	Comments
	On-site	Off-site (estimated)					
Wetland A	0.2894	~15.57	II	7 (MMH)	150	110	Buffer reduction using table and 92,000 sq ft of wetland buffer enhancement and prairie enhancement with rehabilitation to be applied.
Wetland B	.99	0.7	III	5 (LMM)	150	110	No development activity

6.2 Corps Regulations

Wetlands A and B flow offsite and eventually to the Deschutes River and then to the Puget Sound. Therefore, they would be maintained as a Water of the US and regulated under the Clean Water Act. No impacts are proposed to Wetlands A or B beyond the buffer reduction.

6.3 Department of Ecology

Under RCW 90.48, the Washington Department of Ecology (DOE) reserves regulatory authority to regulate “waters of the state” under Section 401 of the Clean Water Act. No wetland impacts are proposed.

7.0 WILDLIFE

Wildlife observed during the field investigations are typical of urban/suburban adapted species (Table 2). The European starling, possum, and other species adapted to urbanization may inhabit or visit the site for food and shelter.

No other Federally-listed, or priority species was observed on the subject property or near the site based on the WDFW Priority Habitats and Species (PHS) and field observations during the

reconnaissance and delineation. During the limited duration of the site reconnaissance and delineation, no evidence of the Federally-listed Bald Eagle, Marbled Murrelet, or Spotted Owl was observed on-site.

No Federally-listed salmonid species are known to occur on-site, based on the WDFW SalmonScape database, the WDFW PHS database, and site reconnaissance.

No wildlife was observed on site during site visit beyond the occasional mole mound and deer and coyote scat.

8.0 PROPOSED PROJECT

8.1 Description

The project proposes a 6 lot quad unit multifamily subdivision with roads, sewer, water, utilities, parking and waste facilities. **(Figure 5 – Site Plan)**

8.2 Development Impacts

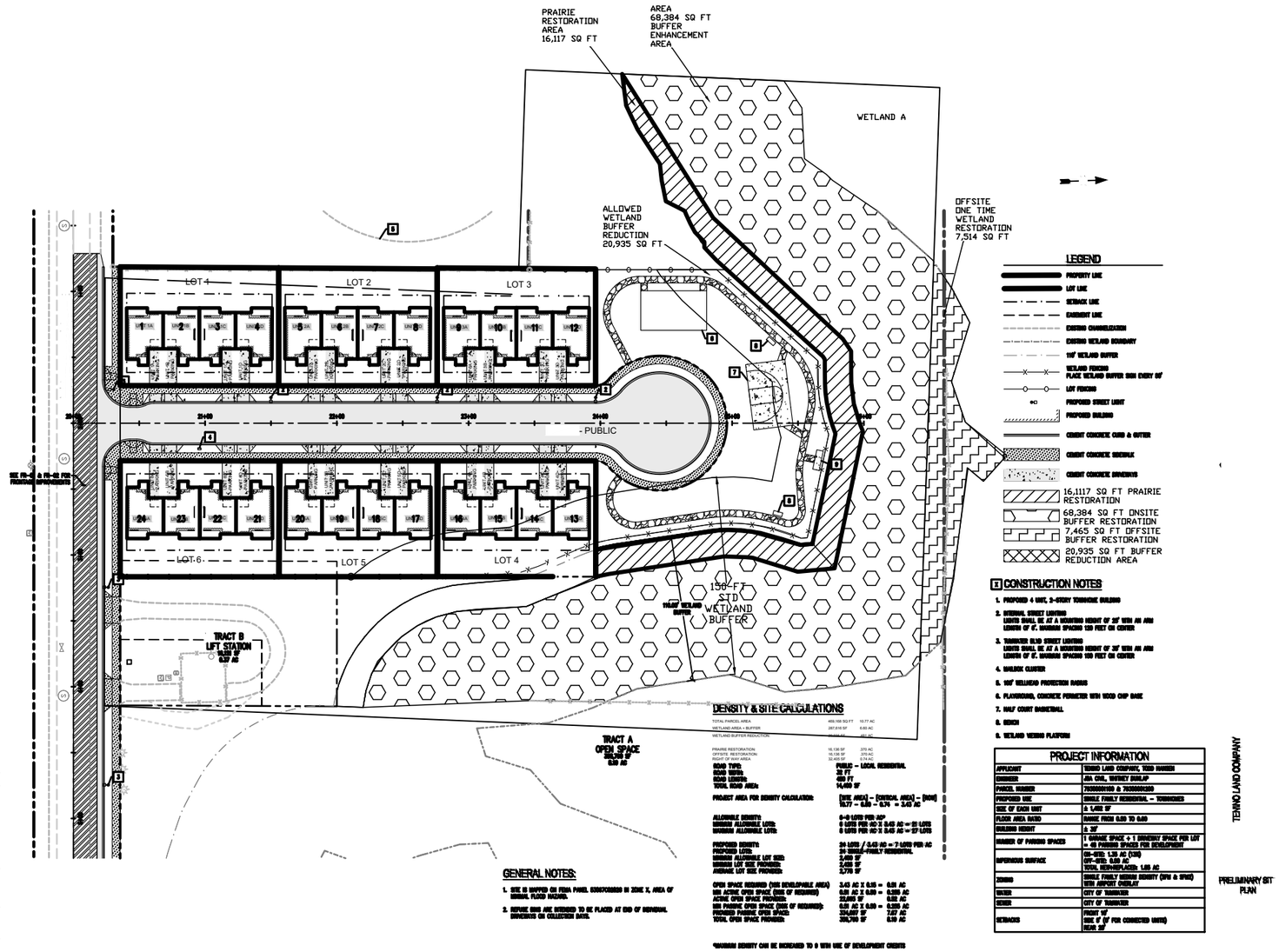
No direct impacts to the wetlands are expected. Wetland buffers will be reduced from 150 ft to 110 feet using measures in code. This will require the special mitigating measures invoked by the PUD process. Specifically, the PUD Public Benefit Point Two – Critical Areas Enhancement:

TMC Section 18.36.010.B.3 "*One point: Go significantly beyond the minimum requirements for critical area protections to preserve, enhance, or rehabilitate critical areas and buffers in the planned unit development. Both the applicant and the city shall agree upon the location, size, and extent of the additional protection, enhancement, or rehabilitation.*"

This project proposes to rehabilitate and enhance the prairie and wetland habitat in the vicinity of Wetland A. Improvements include a one-time improvement of a large area of Himalayan blackberry and Scotch broom, English holly and English hawthorne (invasive plant species). This area is offsite and currently owned by the applicant, but cannot be maintained in the future due to ownership. Native plants will be added in the area where the invasive species are removed to enhance the buffer by improving: screening, food resources, nutrient uptake, and shade for the beneficial uses of the water that benefits the area fauna. The onsite areas immediately next to the Wetland A will have dense native plants installed with a 10 year monitoring plan for maintenance and contingencies. The area beyond the wetland enhancement area will be reserved for a prairie restoration area which will also have maintenance and contingenies provided for up to ten years. Additional habitat features will be installed near the Wetland A to include Three wood duck boxes, three bat boxes, and two Martin houses will be installed in the trees at the edge of Wetland A to enhance wildlife habitat at the site. Outside of the praire rehabilitation area an open space area with walking paths, interpretive signage and viewing platforms will provide additional vegetation and amenities for the community to see a south sound praire and introduce this special habitat only found in this part of the country..

To reduce the impacts of development, other measures will be applied from the table as applicable to include:

- Direct Lights Away
- Locate activity that generates noise away from the wetland
- Route all new runoff away from wetland while ensuring that wetland is not dewatered. (Level Spreader to be Installed)



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360-481-4208

FIGURE 5
SITE PLAN WITH PLANTING AREAS
(NOT A SURVEY)

Scale: 1" = 100'

- HOA to Establish covenants limiting use of pesticides within 150 ft of wetland
- Use integrated pest management (**Appendix K**)
- Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns (level spreader)
- Plant dense native vegetation prairie and buffer plants in the buffer. Remove invasive species where present to include scotch broom and Himalayan blackberries (See Chapter 9).
- Utilize best management practices to control dust (Construction BMP's for Dust.

8.3 Impact Avoidance and Minimization

The development plan should concentrate the development area primarily to the center of the lot which will be designed to maintain stormwater on site. Native plants will maintain the screening that a buffer typically provides along with the erosion control. The mitigating measures mentioned in earlier chapters will minimize the impacts of the project to buffers and maintain no-net-loss of wetland functions and values.

The applicant has identified the area that needs invasive species removal and native plant rehabilitation and will systematically remove blackberries and scotch broom while planting native species that if successful would create a much more resilient and better functioning wetland and buffer. The applicant has avoided all of the wetland impacts and will minimize future impacts by limiting access to the area and by thoughtfully controlling invasive species.

The buffer/prairie rehabilition area is also a place that has native prairie outwash soils that are required for several south sound prairie species such as the Taylors checkerspot butterfly, the Mardon skipper and Mazama pocket gopher. Although these species were not found onsite, they could use this area in the future and the plant species that we are installing to enhance the area are known to be utilized during their life cycles.

8.4 Minimization of Water Quality Impacts

Implementing water quality and sedimentation best management practices (BMPs) will act to minimize sedimentation and protect water quality on-site and any bare areas will be planted with a cover crop. Silt fences and straw waddles will be used where necessary. Splash blocks and infiltration galleries and level spreaders will be used to reduce stormwater impacts from the residences. The increase in vegetation from the proposed buffer and prairie rehabilitation plan will provide for increased surface roughness and nutrient uptake, food sources, and erosion protection.

9.0 Buffer and Prairie Invasive Species Removal and Native Plant Rehabilitation Plan

9.1 PUD Requirements

It was determined that in order to meet the second point of the PUD the applicant will rehabilitate the **buffer** of Wetland A and provide a prairie planting to benefit endangered prairie species. This will require rehabilitation of the buffer by removing invasives and replacement with native plants at a density to provide a resilient buffer that will be self-maintaining once established.

To allow the reduction of the standard 150 ft **buffer** to the reduced 110 ft buffer through the PUD process, the applicant needs to go beyond what is typically required for a buffer reduction. The Department of Ecology BAS has guidance for buffers that are not adequately vegetated, or contain non-native species. They mention that it is generally better to improve the vegetation than widen the buffer (ECY, 2005). Typically, with buffers a 1:1 reduction of buffer, to vegetated buffer rehabilitation ratio is required using native plants. In this case we would like to do more than what is typical, as encouraged by the PUD. This project will require 21,445 sq ft of buffer reduction for the common space and back yards of lots. What is proposed amounts to a buffer rehabilitation plan which will provide ~400 percent more area than the 1:1 improvement typically required for a buffer reduction. No-net-loss of wetland functions and values will be maintained and there will be benefits to prairie habitats as well. The project should be educational too.

The area is mapped with Indianola Loamy Sand 0-3% slopes which is a more preferred MPG soil and Norma Silt loam which is less preferred. Both of these soils are habitat indicators for the Mazama pocket gopher and the Indianola soils are also native prairie soils. To mitigate for the buffer reduction, we propose enhancing the area between the development and the wetland using three different restoration activities which will improve wetland and prairie functions which have both been impacted by invasive species. We will use this unique opportunity to develop a successful wetland and prairie restoration. As mentioned in the now implemented Thurston HCP, sites which exhibit resiliency would be preferred and this has a transition from wetland to upland after planting should provide diversity so that it can maintain itself through adverse climatic conditions.

This Rehabilitation Plan was developed by Alex Callender MS, PWS. He has over 21 years of experience creating, installing and monitoring buffer enhancement mitigation and rehabilitation plans.

The buffer and prairie rehabilitation activities are as follows:

- The applicant proposes to have the non-native scotch broom and non-native blackberry removed and replanted with 16,117 sq ft of native prairie species which will provide numerous benefits to the threatened butterflies and become a landscape amenity that connects the community with the presence of South Sound Prairie.

- 7,035 sq ft of offsite upland area will receive a one-time treatment to remove invasive species. This area is important because it is adjacent to the wetland and is dominated by Himalayan blackberry and scotch broom and left alone, this area would be a source of invasive species recruitment that could impact the new plantings we are proposing for the subject property.

  After treatment the area will be planted with native Garry oaks, Red twig dogwood, and snowberry. These plants are relatively aggressive native plants that should outcompete the blackberries and scotch broom and prevent a resurgence of these species.

  Three Wood duck boxes, three bat boxes and two Martin houses will be installed in the trees at the edge of Wetland A.

- The remaining 68,384 sq ft area between the northern property boundary and the northern edge of the prairie restoration area will have non-native plants removed and native shrubs and trees planted to maintain the screening between the wetland and the development.
- Outside of the main rehabilitation areas will be a 28,380 sq ft of intermediate buffer of ornamental landscaping that can be utilized as buffer as well. This area encompasses a passive foot path with viewing platforms and interpretive signs..

The applicant will combine the mitigating measures found in Table 16.28.170(5). and the qualifications found in TMC Table 16.28.170(2):

As directed, the applicant will do the following in accordance with the objective of meeting the intent of the PUD special

- Lights will be directed away from the wetland and buffers.
- Pesticide limited within 150 ft of wetland.
- Fence off the wetland
- Runoff will be infiltrated onsite to keep from dewatering the wetland
- Use LID infiltration on downspouts.
- 91,555 sq ft of dense native vegetation will be planted in buffer between the development and the wetland area which is approximately a 4 to 1 rehabilitation area to impact area ratio which is well above the typical 1: 1 ratio required in most cases.
- Remove invasive species in the rehabilitation area
- Other mitigation measures from this table will be implemented as applicable.

- **Table 16.28.170(5): Measures to Minimize Impacts to Wetlands**

Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities That Cause the Disturbance
Lights	Direct lights away from wetland	Parking lots, warehouses, manufacturing, residential
Noise	Locate activity that generates noise away from wetland	Manufacturing, residential
Toxic runoff (1)	Route all new runoff away from wetland while ensuring that wetland is not dewatered Establish covenants limiting use of pesticides within 150 ft of wetland Apply integrated pest management	Parking lots, roads, manufacturing, residential areas, application of agricultural pesticides, landscaping
Stormwater runoff	Retrofit stormwater detention and treatment for roads and existing adjacent development Prevent channelized flow from lawns that directly enters the buffer	Parking lots, roads, manufacturing, residential areas, commercial, landscaping

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Examples of Disturbance	Examples of Measures to Minimize Impacts	Activities That Cause the Disturbance
Change in water regime	Infiltrate or treat, detain, and disperse into buffer new runoff from impervious surfaces and new lawns	Impermeable surfaces, lawns, tilling
Pets and human disturbance	Use privacy fencing Plant dense vegetation to delineate buffer edge and to discourage disturbance using vegetation appropriate for the ecoregion Place wetland and its buffer in a separate tract	Residential areas
Dust	Utilize best management practices to control dust	Tilled fields

Table 16.28.170(5) Explanatory Notes:

(1) These examples are not necessarily adequate to meet the rules for minimizing toxic runoff if threatened or endangered species are present at the site.

9.2 Integrated Pest Management

The applicant will use the integrated pest management plan (IPM) methods and utilize management recommendations from the Thurston County IPM Website The primary objectives of the planting plan is to provide shrub species that will shade and outcompete the two main species which require control; Himalayan blackberry, scotch broom, English holly and the Single seeded hawthorne. The applicant will use manual or mechanical means as the preferred method for removal of the Himalayan and Evergreen blackberries on site. If these methods are found to be ineffective or infeasible, Other more aggressive methods will be considered to include use of popular effective herbicides consistent with the recommended label application rates and conducted during the dry season by licensed applicators. Other species which may require control from time to time will use recommendations from the Thurston County Noxious Weed website and the Homeowner IPM recommendations adopted for this particular purpose.

9.3 Functional Analysis

The following planting plan to rehabilitate the buffer will maintain wetland functions and improve the overall landscape as well by:

- providing increase roughness
- increasing nutrient uptake of stormwater
- increasing site plant diversity
- Provide screening for wildlife,
- Provide shade for water quality and habitat,

- Produce food for wildlife and structure.
- Provide nectar for threatened butterflies

Currently, the area that will be impacted is field with invasive Himalayan blackberry and Scotch broom. There is a lack of prairie and tree and shrub vegetation and the screening that it provides. This plan will provide a properly rehabilitated buffer in the area, where it matters most, between the wetland and the residences. The planting plan will provide species diversity and structure as well as roughness.

Areas will be planted with buffer plants, which will not only provide benefits already mentioned, but will also become a landscape amenity that combines the practical plantings with aesthetic attributes of our native flora.

The following analysis uses the qualitative scoring values similar to the values developed in the Wetland Rating System for Western Washington (Hruby, 2014). The best available science has found that the resolution of value can only be rated using a qualitative system and maintain a rapid assessment of less than one day. Therefore, we have examined common buffer functions for wetland protection and other habitats to show the overall expected lift by the rehabilitation plan. The functions we are studying were found in the latest buffer BAS (Hruby, 2013)

TABLE 3 – Buffer Functions Comparison Before and After Rehabilitation

Buffer Perf criteria	**Other Habitats (Bat, Martin and Wood duck habitat**	**Screening**	**Nutrient uptake**	**Invasive Species**	**Structure**	**Surface roughness**	**Temperature attenuation**	**Diversity**
Before mitigating measures	Low	Medium	Medium	High	Low	Medium	Medium	Low
After mitigating measures	Medium	High	Medium	Low	High	Medium	Medium	Medium

The rehabilitation measures once applied should provide new habitat for birds, bats and macroinvertabrates and restore habitat for the Taylor's checkerspot and Mardon skipper.

9.4 Planting Plan

To provide for a higher functioning a wetland and prairie, a wetland invasive removal plan was developed to make the remaining buffer and wetland more resilient and effective. Figure 6 illustrates

the placement area which was created to maximize plant performance by placing species in a position in the landscape where they will thrive and provide the most benefit to the system.

Trees and shrubs will be planted at grade in holes 2-3 times the width of the container or root ball. Mulch will be applied around each tree 2-4 inches deep in a three-foot diameter around the tree with an edge to retain water. Containerized rootbound trees will be cut with sharp shears on the bottom in an x pattern to promote root growth. Four cuts will be made vertically to allow roots to spread. Trees and shrubs will be thoroughly watered after installation.

Table 4 – Clear, Plant, and Leave Area #1 (7,035 sq ft)

Common Name	Scientific Name	Size	Spacing	Quantity	Cost ea.	Total
Oregon white Oak	*Quercus garryana*	1 Gallon	15 ft O.C.	4	$10.00	$40.00
Snowberry	*Symphoricarpos alba*	1 Gallon	5 ft O.C.	60	$10.00	$600.00
Pacific willow	*Salix lasiandra*	1 Gallon	8 ft oc	20	$10.00	$200.00
Red osier dogwood	*Cornus sericea*	1 Gal	8ftnoc	20	$10.00	200.00
Total				**104**		**$1040.00**

Table 5 --Prairie Restoration (16,117 sq ft)

Common Name	Scientific Name	Size	Spacing	Quantity	Cost ea.	Total
Common camas	*Quamash cammassia*	1 Gallon	3 ft O.C.	115	$3.00	$345.00
Buttercup	*ranunculus occidentalis*	1 Gallon	3 ft O.C.	20	$10.00	$200.00
Large-leaved lupine	*Lupinus polyphyllus*	1 Gallon	3 ft O.C.	25	$10.00	$250.00
Common yarrow	*Achillea millefolium*	1 gallon	5 ft oc	20	$10.00	$200.00
Prairie Seed mix to be developed				1 pound		tbd
Total				**180**		**$995.00**

Table 6 – Buffer Rehabilitation Area (68,384 sq ft)

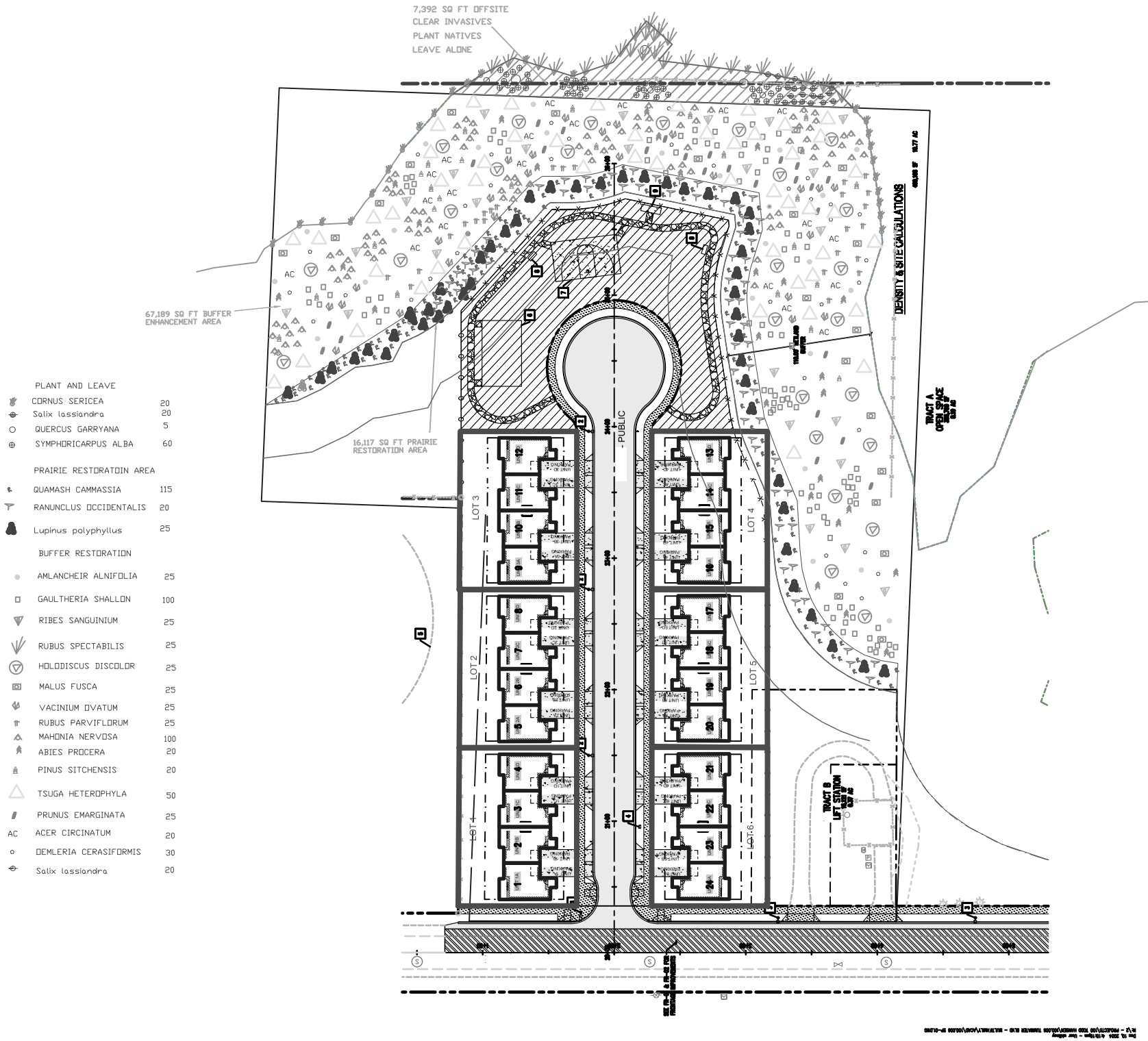
Common Name	Scientific Name	Size	Spacing	Quantity	Cost ea.	Total
Serviceberry	*Almlanchier alnifolia*	1 Gallon	8 ft O.C.	25	$10.00	$250.00
Salal	*Gaultheria shallon*	1 Gallon	5 ft O.C.	100	$10.00	$1,000.00
Oregon grape	*Mahonia nervosa*	1 Gallon	5 ft O.C.	100	$3.00	$300.00
Red flowering currant	*Ribes sanguineum*	1 Gallon	8 ft O.C.	25	$10.00	$250.00
Salmonberry	*Rubus spectablisi*	1 Gallon	8 ft O.C.	25	$10.00	$250.00
Oceanspray	*Holodiscus discolor*	1 Gallon	8 ft O.C.	25	$10.00	$250.00
Pacific crabapple	*Malus fusca*	1 Gallon	8 ft O.C.	25	$10.00	$250.00
Evergreen huckleberry	*Vaccinium ovatum*	1 Gallon	8 ft O.C.	25	$10.00	$250.00
Thimbleberry	*Rubus parviflorum*	1 Gallon	8 ft O.C.	25	$10.00	$250.00
Red twig dogwood	*Cornus sericea*	1 Gallon	8 ft O.C.	25	$10.00	$250.00
Noble fir	*Abies procera*	1 Gallon	15 ft O.C.	20	$10.00	$200.00
Sitka spruce	Pinus sitchensis	1 Gallon	15 ft O.C.	20	$10.00	$200.00
Western hemlock	Tsuga Heterophylla	1 Gallon	15 ft O.C.	20	$10.00	$200.00
Bitter cherry	Prunus emarginata	1 Gallon	15 ft O.C.	25	$10.00	$250.00
Vine maple	Acer cercinatum	1 Gallon	15 ft O.C.	20	$10.00	$200.00
Osoberry	Oemleria cerasiformis	1 Gallon	15 ft O.C.	30	$10.00	$300.00
Total				**535**		**$4,650.00**

Table 7- Total Costs

Labor	100/hour	$6,500.00
Mulch	$100/5 yards	$200.00
Monitoring w/report	200.00/yr.	$2,000.00

Plants and Materials		$6,685.00
Total		**$13,385.00**

*=Not included in Costs



PLANT AND LEAVE

	CORNUS SERICEA	20
	Salix lassiandra	20
	QUERCUS GARRYANA	5
	SYMPHORICARPUS ALBA	60

PRAIRIE RESTORATION AREA

	QUAMASH CAMMASSIA	115
	RANUNCLUS OCCIDENTALIS	20
	Lupinus polyphyllus	25

BUFFER RESTORATION

	AMLANCHEIR ALNIFOLIA	25
	GAULTHERIA SHALLON	100
	RIBES SANGUINIUM	25
	RUBUS SPECTABILIS	25
	HOLODISCUS DISCOLOR	25
	MALUS FUSCA	25
	VACINIUM OVATUM	25
	RUBUS PARVIFLORUM	25
	MAHONIA NERVOSA	100
	ABIES PROCERA	20
	PINUS SITCHENSIS	20
	TSUGA HETEROPHYLA	50
	PRUNUS EMARGINATA	25
AC	ACER CIRCINATUM	20
	OEMLERIA CERASIFORMIS	30
	Salix lassiandra	20

PROJECT NAME: TENINO LAND CO MULTIFAMILY
PROJECT #
PARCEL # 79300001100 / 79300001200
ADDRESS - XXXX TUMWATER, WA 98501

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120 STATE AVE NE #190
OLYMPIA, WA 98501
360-481-4208

Figure 6
SITE RESTORATION
PLANTING PLAN
(NOT A SURVEY)

Scale: 1" = 100'

9.5 Monitoring Plan

The planting plan will be monitored for 10 years following the as – built (Year 0). Monitoring of the performance standards will be provided each spring, shortly after leafing out, to aid in plant identification. A report that communicates the findings will be provided to the City staff a month following the monitoring.

The report will contain pictures from photo points established during the as built to allow the City personnel to evaluate site conditions and performance standards. The photos in the report will be taken in four cardinal directions, unless there is a direction that provides a better view. Four photo points that will be established during the as-built (Year 0). Management of performance deficiencies or maintenance will occur during the spring or fall season following monitoring and a summary of management actions will be included in the following year's monitoring report to track effectiveness and adaptively manage the site.

9.6 Performance Standards

The performance standards are as follows:

Year 0 an inventory of plants and photo points will be established for monitoring during the monitoring period within 1 month of the installation.

Year 1-2 will have 100% survival of installed plants. Noxious weeds will be less than 10% aerial coverage.

Volunteer trees or shrubs may account for up to 10 percent of the overall count of surviving plants. Dead plants will be replaced in kind unless a volunteer is a replacement.

Year 2 -10 will have a survival rate of 80 percent of the original count. Volunteers can account for 10 percent of the total if present. Noxious weeds such as Himalayan blackberry, scotch broom, Reed canary grass, and other invasives will not have more than 10 percent aerial coverage of the planting area.

If the area meets the survival and aerial coverage performance measure in year five. The applicant can be given approval to end monitoring.

Japanese knotweed, yellow flag iris, or hogweed will have a zero percent tolerance and be removed or sprayed using an appropriate herbicide approved for aquatic use by a licensed applicator.

The aerial coverage will be 70% by year 5, 80% by year seven and 90% by year 10. If these coverage measures are not met, and it does not appear that they will meet performance measures because of neglect, more plants may be planted to make up the difference.

Failure to meet standards by year 10 will require an additional year of monitoring.

9.7 Contingency Plans

If the site does not meet performance standards. Contingencies may be developed to adapt to the site-specific conditions. Contingencies may include:

- Increased watering

- Mulching
- Integrated Pest Management
- Microtopography changes
- Species substitution
- Herbivory protection
- Bark wrap

The area is frequented by deer and the choice of plants were chosen to avoid herbivory issues, but exclusion fencing may be necessary until the plants reach maturity. This is not expected to be needed to be a permanent fixture if required. Any contingencies will be developed in conjunction with landscapers, nursery staff, and other experts. The city would be notified in advance of the contingency plans. No contingencies will be applied without city consent.

9.6 Performance Bonds and Demonstration of Competence.

A demonstration of financial resources, administrative, supervisory, and technical competence and scientific expertise of sufficient standing to successfully execute the compensation project shall be provided. A compensation project manager shall be named and the qualifications of each team member involved in preparing the rehabilitation plan and implementing and supervising the project shall be provided, including educational background and areas of expertise, training and experience with comparable projects. In addition, bonds ensuring the fulfillment of the compensation project, monitoring program, and any contingency measure shall be posted pursuant to TMC 16.28.210 in the amount of one hundred twenty percent of the expected cost of compensation.

The applicant will provide a bond for the fullfillment, monitoring program, contingency measures in the amount of one hundred twenty percent of the expected cost which is given in this report.

The funds are to comply with the surety provisions in Tumwater code.

10.0 SUMMARY AND CONCLUSIONS

The project proposes a 6 lot quad unit multifamily subdivision with roads, sewer, water, utilities, parking and waste facilities.

Two wetlands were identified within 315 feet of the subject property.

Wetland A is a Category II wetland maintaining a 150-foot-high intensity land use buffer. This buffer can be reduced to the 110-foot moderate intensity land use buffer using the mitigation measures in the Table 16.28.170(5): Measures to Minimize Impacts to Wetlands.

Wetland B is a Category III 150-foot-high intensity land use buffer. This buffer can be reduced to the 110-foot moderate intensity land use buffer using the mitigation measures in the Table 16.28.170(5).

A wetland and prairie rehabilitation that will go beyond the requirements for wetland buffer impacts due to the project has been provided to meet the conditions for a PUD project. The project will create a new prairie and wetland buffer that will be educational and improve overall ecological functions in the

area while providing a unique opportunity to restore south sound prairie for the endangered Taylor checkerspot butterfly and Mardon skipper butterfly. The plantings will improve food cover, structure and diversity.

No impacts to wetlands is proposed, and the applicant will provide a robust rehabilitation with wetland and prairie enhancement in order to improve the habitat and wetland functions. Tumwater will soon have a property that can sustainably exist in concert with the nearby critical areas, without impacting wetland functions to the benefit of the citizens of the City of Tumwater.

11.0 LIMITATIONS

This report was created with care and best professional judgment using the current best available science, but the report is subject to interpretation by local state and federal regulators who have the final regulatory authority on wetlands and other boundary determinations. No outcomes are warranted by this report.

12.0 REFERENCE

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Appendix A – Photographs


LSNWw5
Project: Tenino LAND
934 Tumwater Blvd SE, Olympia, WA 98501

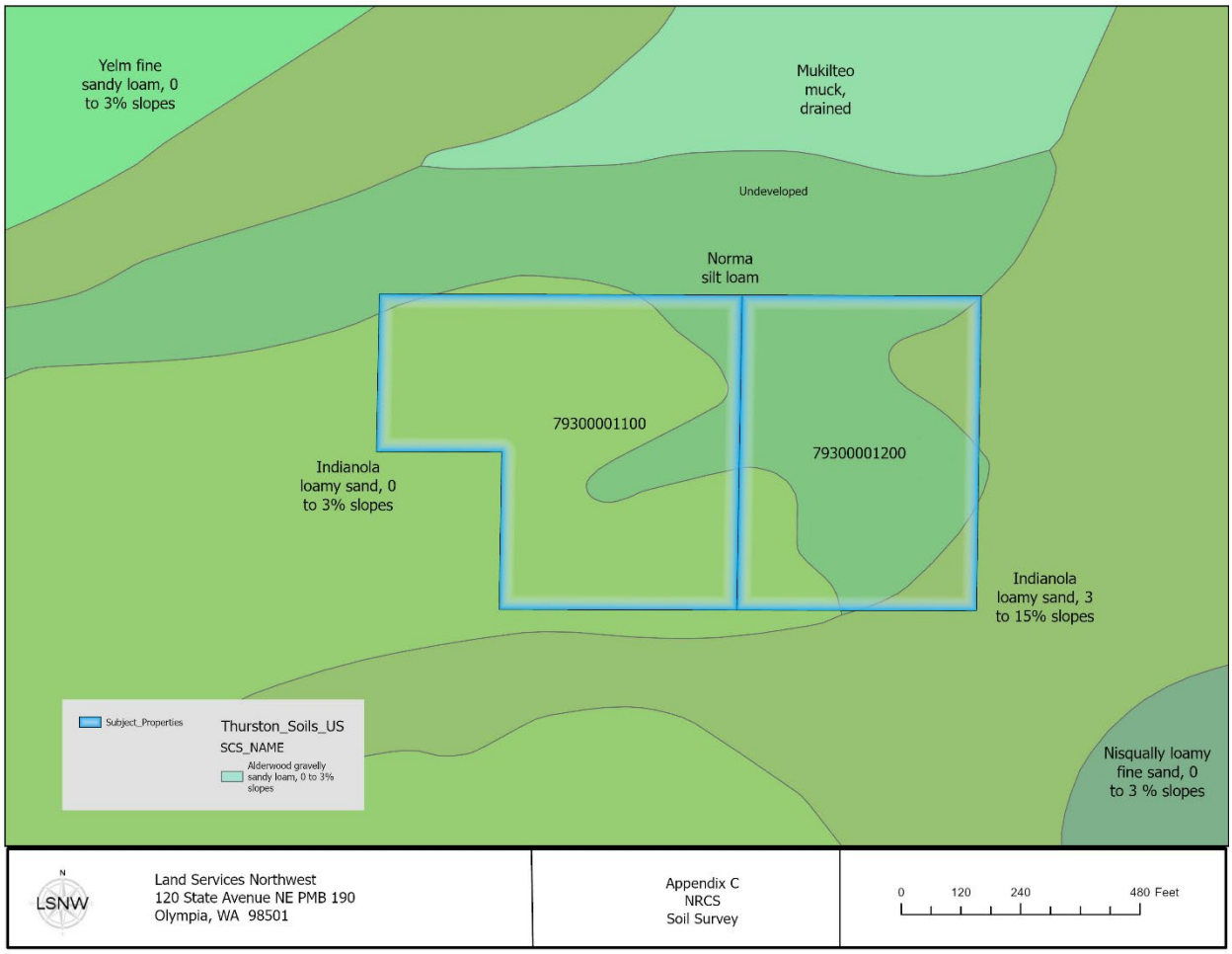

LSNWw5
Project: Tenino LAND
934 Tumwater Blvd SE, Olympia, WA 98501


LSNWw5
Project: Tenino LAND
Oswet a
934 Tumwater Blvd SE, Olympia, WA 98501

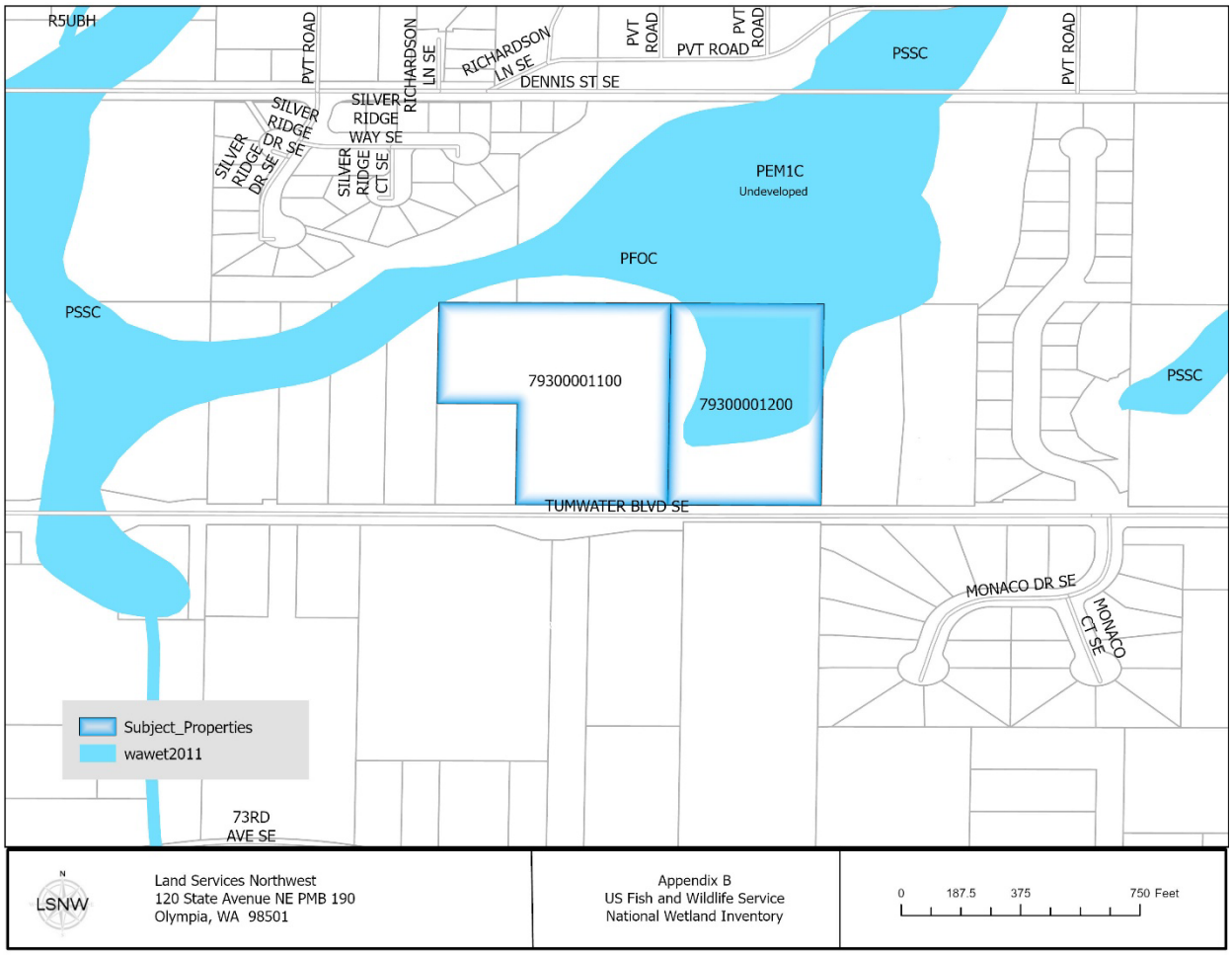

LSNWw5
Project: Tenino LAND
Tp1
934 Tumwater Blvd SE, Olympia, WA 98501


LSNWw5
Project: Tenino LAND
Tp2
934 Tumwater Blvd SE, Olympia, WA 98501

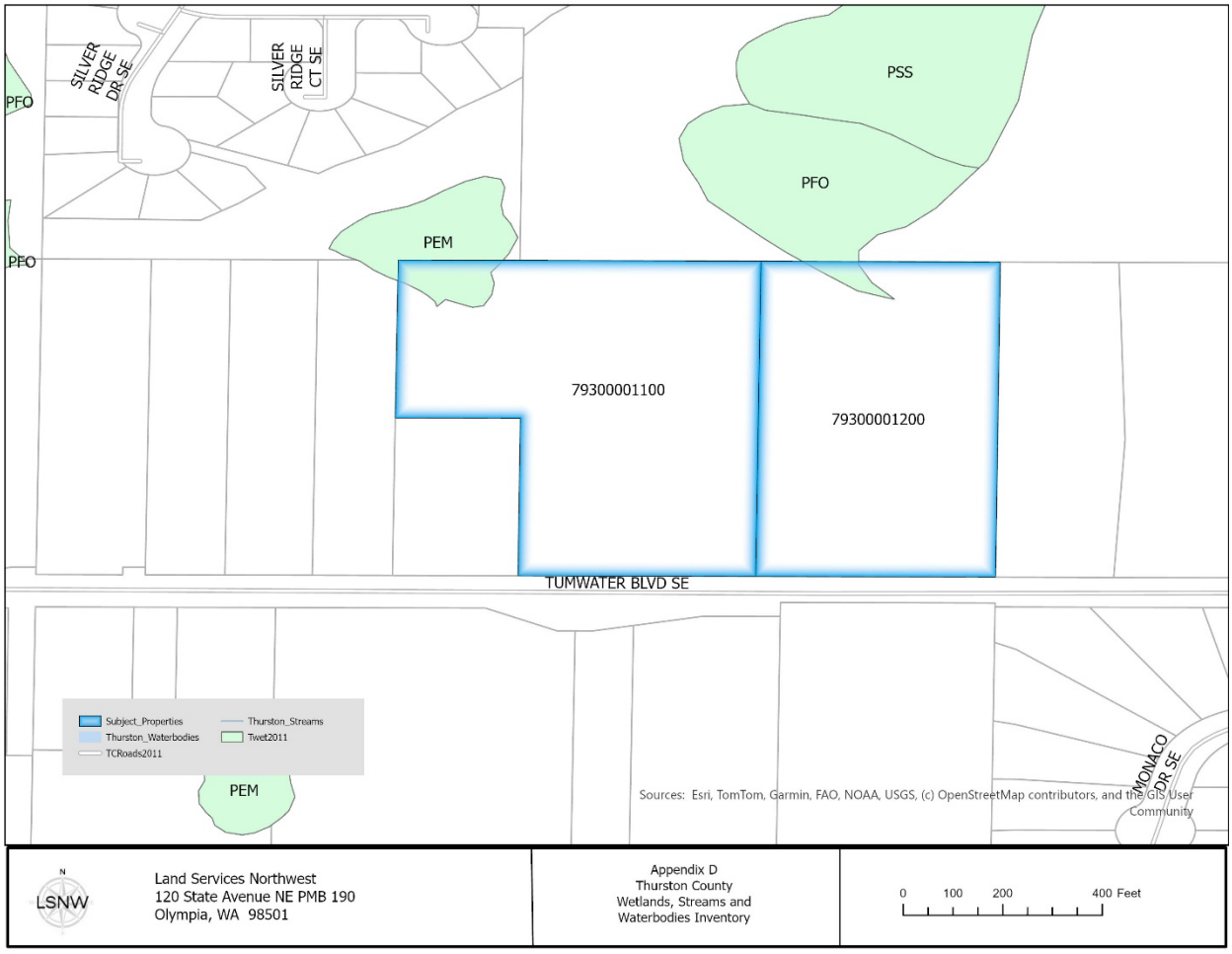
Appendix B - U.S. Fish and Wildlife Service NWI MAP



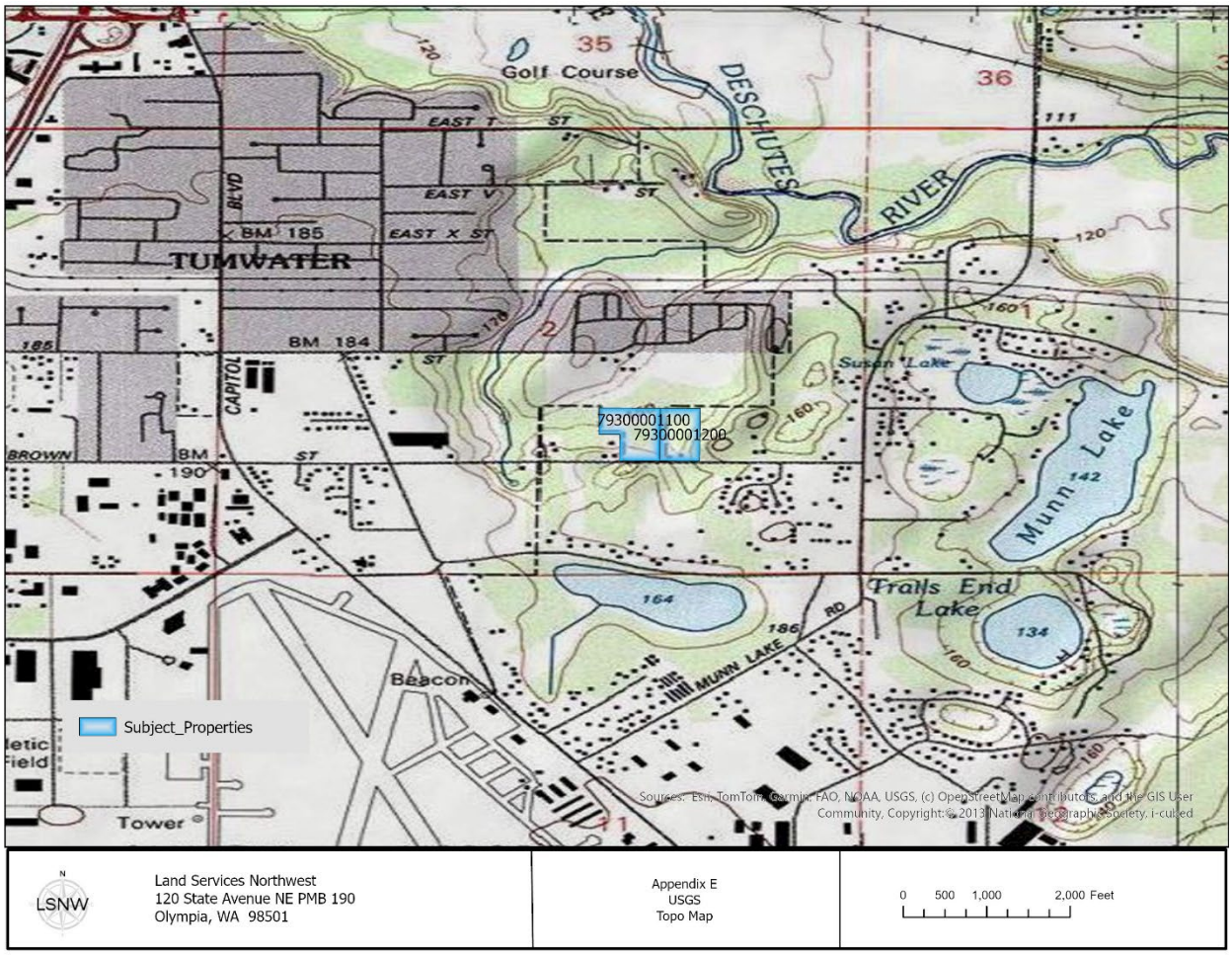
Appendix C - NRCS Soil Survey Map for Thurston County



Appendix D - Thurston County Stream and Wetland inventory

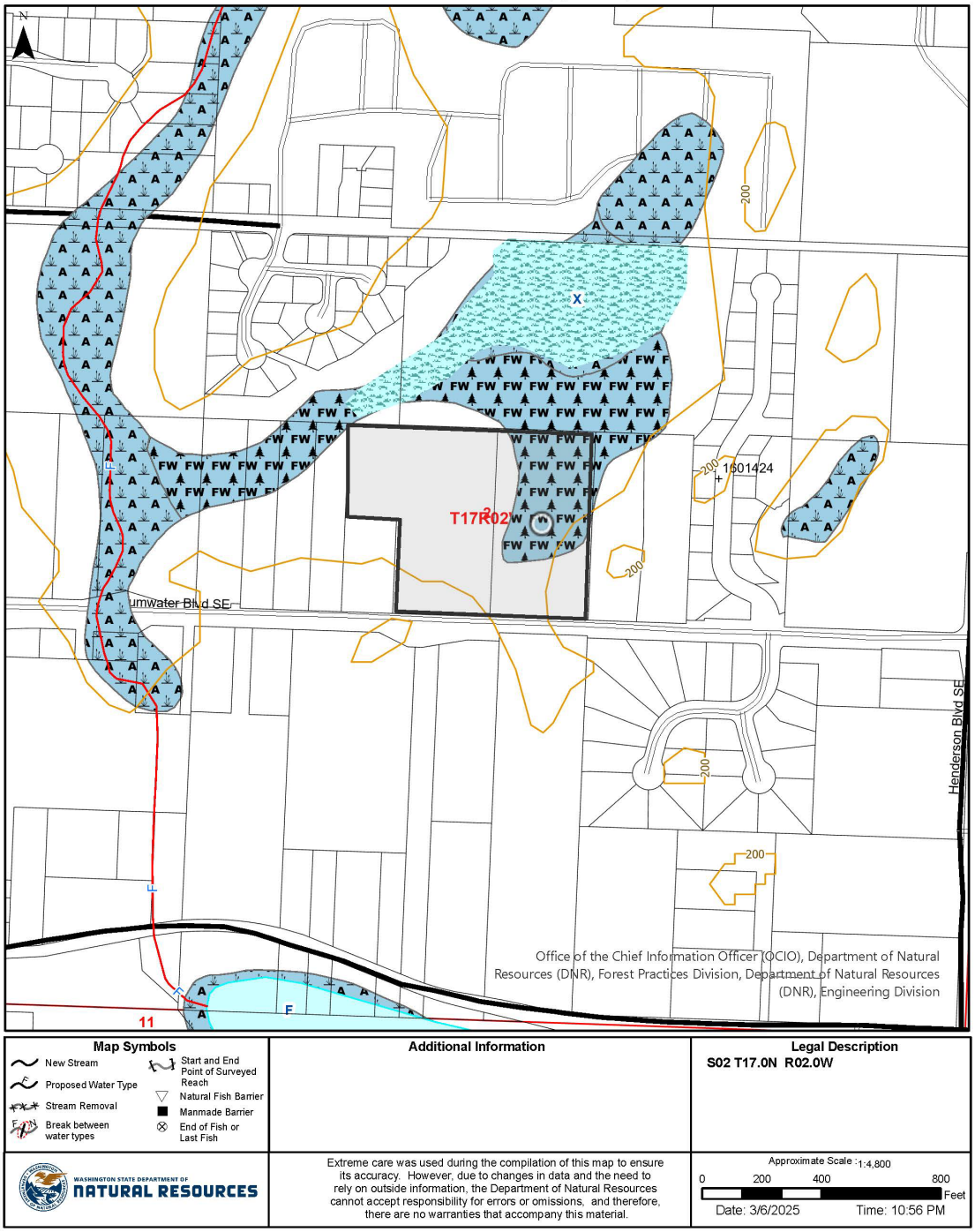


Appendix E – USGS 7.5 Minute Topographic Map



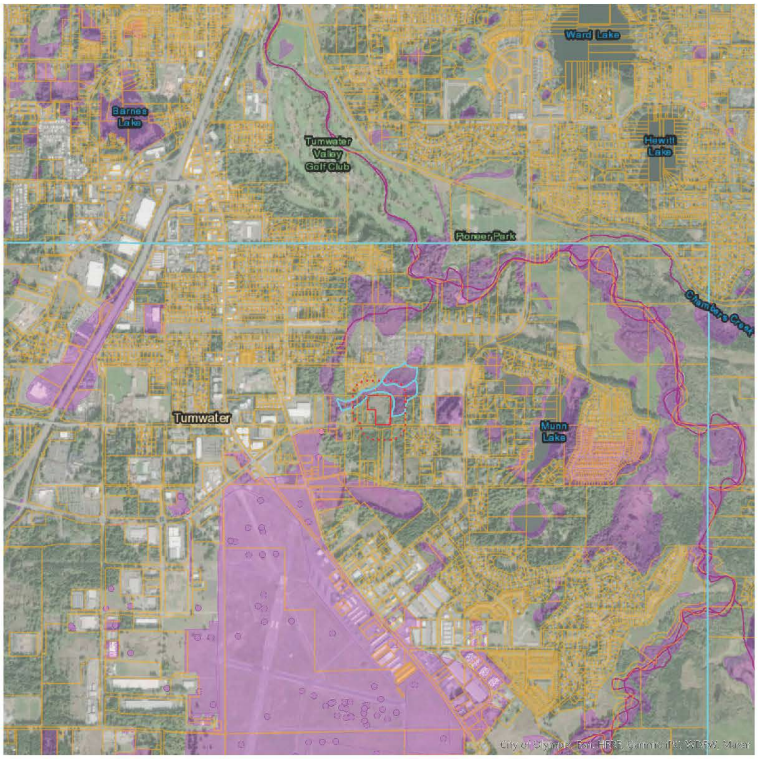
Appendix F – WADNR Forest Practices Stream Type Map

Forest Practices Water Type Map



Appendix G – WDFW Priority Habitats and Species Map and Salmonscape Map

Priority Habitats and Species on the Web



Buffer radius: 330 Feet

Report Date: 05/13/2024, Parcel ID: 79300001100

PHS Species/Habitats Overview:

Occurence Name	Federal Status	State Status	Sensitive Location
Freshwater Emergent Wetland	N/A	N/A	No
Freshwater Forested/Shrub Wetland	N/A	N/A	No
Big brown bat			Yes
myotis spp			Yes
Townsend's Big-eared Bat		Candidate	Yes

PHS Species/Habitats Details:

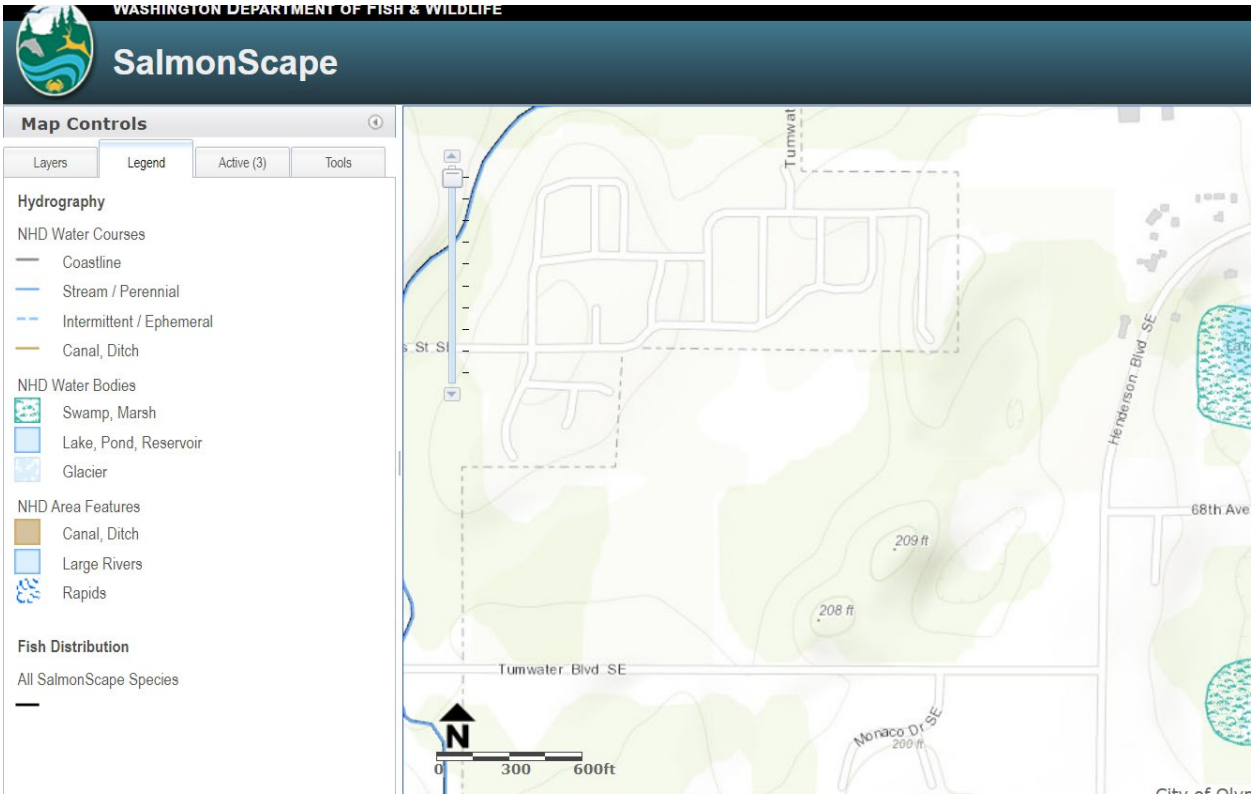
Freshwater Emergent Wetland	
Priority Area	Aquatic Habitat
Site Name	N/A
Accuracy	NA
Notes	Wetland System: Freshwater Emergent Wetland - NWI Code: PEM1C
Source Dataset	NWIWetlands
Source Name	Not Given
Source Entity	US Fish and Wildlife Service
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS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

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

Big brown bat	
Scientific Name	*Eptesicus fuscus*
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00605

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

Townsend's Big-eared Bat	
Scientific Name	*Corynorhinus townsendii*
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release at phsproducts@dfw.wa.gov for obtaining information about masked sensitive species and habitats.
State Status	Candidate
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
SGCN	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	http://wdfw.wa.gov/publications/pub.php?id=00027


WASHINGTON DEPARTMENT OF FISH & WILDLIFE
SalmonScape
Map Controls
Layers
Legend
Active (3)
Tools
Hydrography
NHD Water Courses
Coastline
Stream / Perennial
Intermittent / Ephemeral
Canal, Ditch
NHD Water Bodies
Swamp, Marsh
Lake, Pond, Reservoir
Glacier
NHD Area Features
Canal, Ditch
Large Rivers
Rapids
Fish Distribution
All SalmonScape Species
Henderson Blvd SE
68th Ave
209 ft
208 ft
Tumwater Blvd SE
Monaco Dr SE
200 ft
N
0
300
600ft

Appendix H - USACE WMVC Soil Data Sheets

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

Project/Site: Tenino Land Company | City/County: Tumwater/Thurston | Sampling Date: 5.8.24
Applicant/Owner: Tenino Land Company | State: WA | Sampling Point: TP1
Investigator(s): Alex Callender | Section, Township, Range: 02172W
Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): | Slope (%):
Subregion (LRR): 2 | Lat: | Long: | Datum: Wgs84
Soil Map Unit Name: Indianola | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)
Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x 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	x	No	
Hydric Soil Present?	Yes	x	No	
Wetland Hydrology Present?	Yes	x	No	

Is the Sampled Area within a Wetland? **Yes x No**

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata*	25	Y	FAC
2.			
3.			
4.			
	25	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1. *Rubus spectabilis*	10	Y	FAC
2.			
3.			
4.			
5.			
	10	= Total Cover	

Herb Stratum (Plot size:)			
1. *Lysichiton americanus*	25	Y	OBL
2. *Athyrium cyclosorum*	20	Y	FAC
3. *Equisetum arvense*	3	N	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	47	= Total Cover	

Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum

Dominance Test worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes x No**

Remarks: 100% of dominant vegetation is FAC or wetter.

SOIL

Sampling Point: TP1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR2/1	100					Sandy loam	
16-18	10YR4/2	85	10YR4/6	15			Sandy loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** x **No** ___

Remarks: Hydric soil F3 indicator present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes ___ No x Depth (inches): _____

Wetland Hydrology Present? **Yes** x **No** ___

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

Remarks: Hydro at surface.

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

Project/Site: Tenino Land Company | City/County: Tumwater/Thurston | Sampling Date: 8.16.24
Applicant/Owner: Tenino Land Company | State: WA | Sampling Point: TP1A
Investigator(s): Alex Callender | Section, Township, Range: 02172W
Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): | Slope (%):
Subregion (LRR): 2 | Lat: | Long: | Datum: Wgs84
Soil Map Unit Name: Indianola | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)
Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x 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	x	No	
Hydric Soil Present?	Yes	x	No	
Wetland Hydrology Present?	Yes	x	No	

Is the Sampled Area within a Wetland? **Yes x No**

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Thuja plicata*	35	Y	FAC
2. *Alnus rubra*	55	Y	FAC
3.			
4.			
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. *Rubus spectabilis*	25	Y	FAC
2.			
3.			
4.			
5.			
	25	= Total Cover	
Herb Stratum (Plot size:)			
1. *Lysichiton americanus*	20	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum

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

Prevalence Index worksheet:

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

Prevalence Index = B/A =

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

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

Hydrophytic Vegetation Present? **Yes x No**

Remarks: Greater than 50% of dominant vegetation is FAC or wetter.

SOIL

Sampling Point: TP1A

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR2/1	100						Silt loam
2-20	10YR6/2	90	10YR6/8	10				Silt loam

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** x **No** ___

Remarks: Depleted matrix present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X 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 X No ___ Depth (inches): _____

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

Saturation Present? (includes capillary fringe) Yes ___ No x Depth (inches): _____

Wetland Hydrology Present? **Yes** x **No** ___

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

Remarks: Water-stained leaves present. Hydro at surface

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

Project/Site: Tenino Land Company | City/County: Tumwater/Thurston | Sampling Date: 8.16.24
Applicant/Owner: Tenino Land Company | State: WA | Sampling Point: TP1B
Investigator(s): Alex Callender | Section, Township, Range: 02172W
Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): | Slope (%):
Subregion (LRR): 2 | Lat: | Long: | Datum: Wgs84
Soil Map Unit Name: Indianola | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)
Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x No ___
Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes	___	No	x
Hydric Soil Present?	Yes	___	No	x
Wetland Hydrology Present?	Yes	___	No	x

Is the Sampled Area within a Wetland? **Yes** ___ **No** x

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	IndicYator Status
1. *Acer circinatum*	35	Y	FAC
2. *Thuja plicata*	25	Y	FAC
3.			
4.			
	60	= Total Cover	

Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	___	= Total Cover	

Herb Stratum (Plot size: ___)			
1. *Gaultheria shallon*	35	Y	FACU
2. *Rubus ursinus*	25	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60	= Total Cover	

Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	___	= Total Cover	

% Bare Ground in Herb Stratum ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	60	x 3 =	180
FACU species	60	x 4 =	240
UPL species		x 5 =	
Column Totals:	120 (A)		420 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** ___ **No** x

Remarks: Less than 50% of dominant vegetation is FAC or wetter.

SOIL

Sampling Point: TP1B

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR3/2	100						Fine sand
4-14	10YR4/3	100						Fine sand
14-18	10YR4/2	100						Fine sand

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** x

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes ___ No x Depth (inches): _____

Wetland Hydrology Present? **Yes** ___ **No** x

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

Remarks: No wetland hydrology indicators present.

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

Project/Site: Tenino Land Company City/County: Tumwater/Thurston Sampling Date: 5.8.24
Applicant/Owner: Tenino Land Company State: WA Sampling Point: TP2
Investigator(s): Alex Callender Section, Township, Range: 02172W
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): 2 Lat: Long: Datum: Wgs84
Soil Map Unit Name: Indianola NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes		No	x
Hydric Soil Present?	Yes		No	x
Wetland Hydrology Present?	Yes		No	x

Is the Sampled Area within a Wetland? **Yes** **No** **x**

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Tsuga heterophylla*	95	Y	FACU
2. *Acer circinatum*	5	N	FAC
3.			
4.			
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Herb Stratum (Plot size:)			
1. *Polystichum munitum*	10	Y	FACU
2. *Maianthemum dilatatum*	10	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20	= Total Cover	

Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** **No** **x**

Remarks: Less than 50% of dominant vegetation is FAC or wetter.

SOIL

Sampling Point: TP2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	Organic	100						
2-16	10YR4/3	100					Sandy loam	
16-18	10YR4/2	100					Sandy loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** x

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes ___ No x Depth (inches): _____

Wetland Hydrology Present? **Yes** ___ **No** x

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

Remarks: No wetland hydrology indicators present.

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

Project/Site: Tenino Land Company City/County: Tumwater/Thurston Sampling Date: 5.8.24
Applicant/Owner: Tenino Land Company State: WA Sampling Point: TP3
Investigator(s): Alex Callender Section, Township, Range: 02172W
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): 2 Lat: Long: Datum: Wgs84
Soil Map Unit Name: Indianola NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x 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	x	No	
Hydric Soil Present?	Yes		No	x
Wetland Hydrology Present?	Yes		No	x

Is the Sampled Area within a Wetland? **Yes** **No** x

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Alnus rubra*	75	Y	FAC
2.			
3.			
4.			
	75	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Herb Stratum (Plot size:)			
1. *Urtica dioica*	15	Y	FAC
2. *Equisetum arvense*	10	Y	FAC
3. *Galium aparine*	5	Y	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	30	= Total Cover	

Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes** x **No**

Remarks: Greater than 50% of dominant vegetation is FAC or wetter.

SOIL

Sampling Point: TP3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR4/3	100					Sandy loam	
16-18	10YR4/2	100					Sandy loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** x

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes ___ No x Depth (inches): _____

Wetland Hydrology Present? **Yes** ___ **No** x

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

Remarks: No wetland hydrology indicators present.

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

Project/Site: Tenino Land Company | City/County: Tumwater/Thurston | Sampling Date: 5.8.24
Applicant/Owner: Tenino Land Company | State: WA | Sampling Point: TP4
Investigator(s): Alex Callender | Section, Township, Range: 02172W
Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): | Slope (%):
Subregion (LRR): 2 | Lat: | Long: | Datum: Wgs84
Soil Map Unit Name: Indianola | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ___ (If no, explain in Remarks.)
Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes x 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	x	No	
Hydric Soil Present?	Yes	x	No	
Wetland Hydrology Present?	Yes	x	No	

Is the Sampled Area within a Wetland? **Yes x No**

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. *Rubus spectabilis*	25	Y	FAC
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. *Athyrium cyclosorum*	45	Y	FAC
2. *Lysichiton americanus*	35	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes x No**

Remarks: 100% of dominant vegetation is FAC or wetter.

SOIL

Sampling Point: TP4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-14	10YR2/1	100					Sandy loam	
14-18	10YR4/2	90	10YR4/6	10			Sandy loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** x **No** ___

Remarks: Hydric soil F3 indicator present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

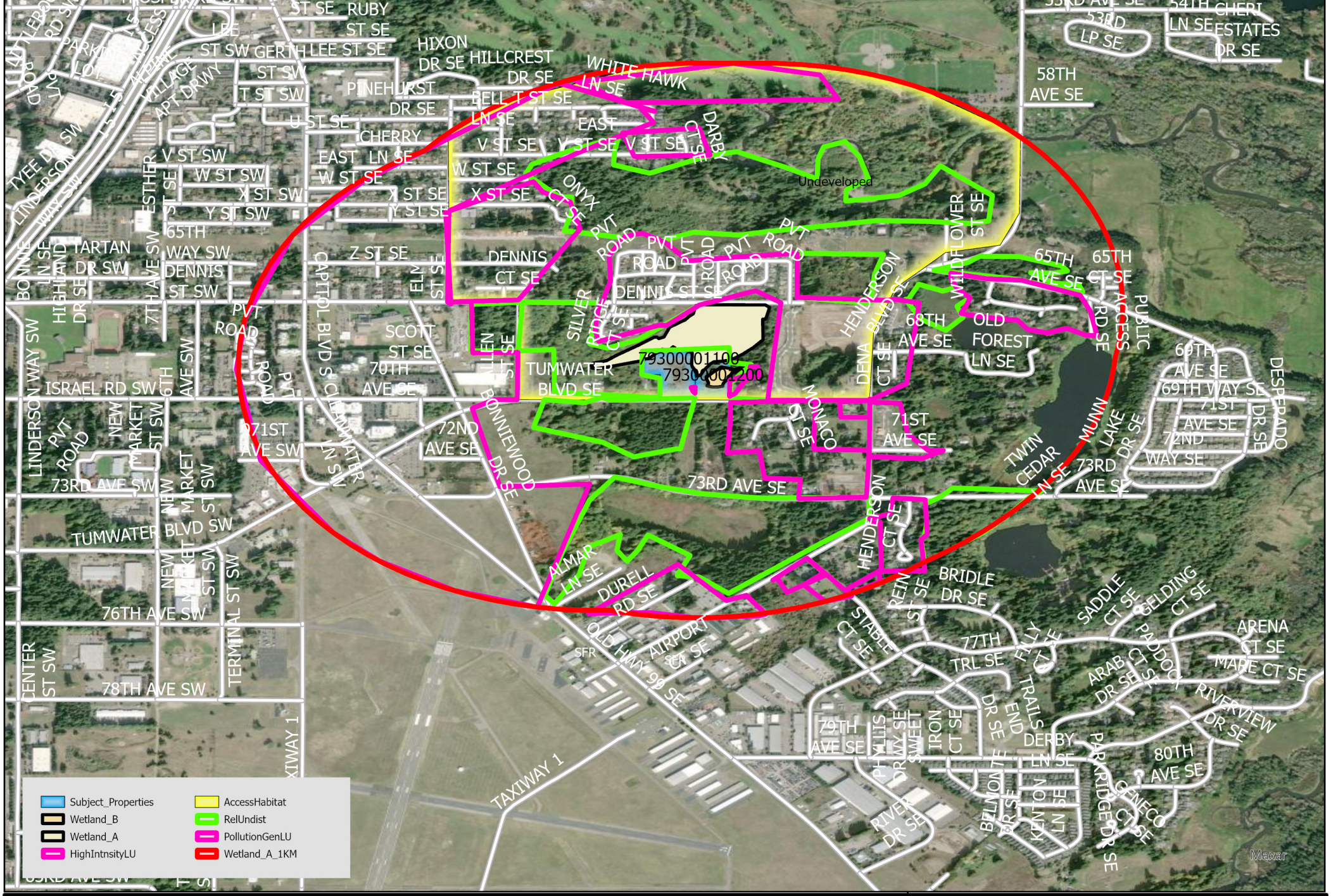
Saturation Present? (includes capillary fringe) Yes ___ No x Depth (inches): _____

Wetland Hydrology Present? **Yes** x **No** ___

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

Remarks: Hydro at surface.

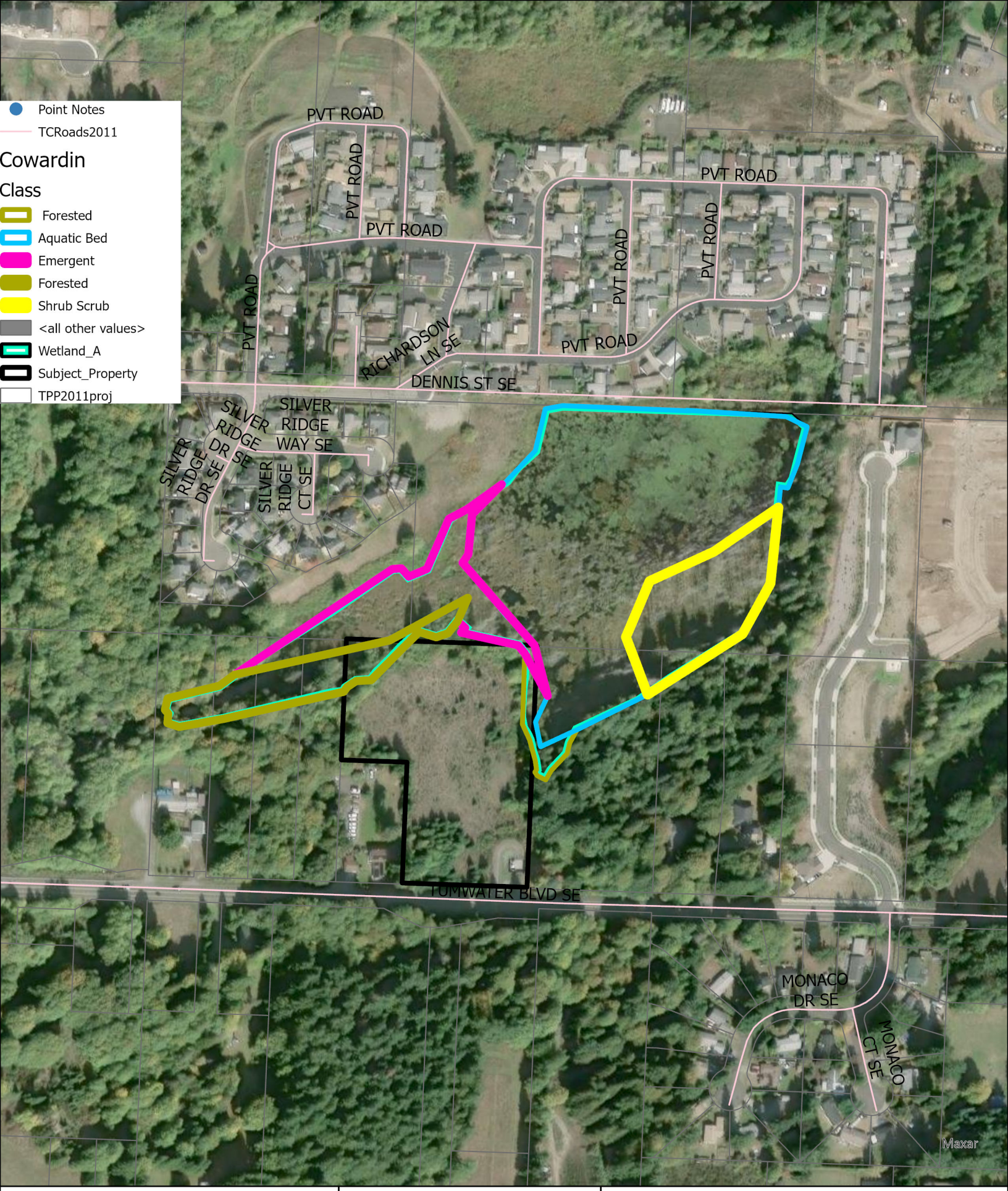
Appendix I - ECY Wetland Rating Forms for Western Washington


Subject_Properties
Wetland_B
Wetland_A
HighIntnsityLU
AccessHabitat
RelUndist
PollutionGenLU
Wetland_A_1KM
79300001100
79300001200
Undeveloped
TUMWATER BLVD SE
73RD AVE SE
71ST AVE SE
70TH AVE SE
72ND AVE SE
68TH AVE SE
65TH AVE SE
58TH AVE SE
DENNIS ST SW
DENNIS CT SE
TUMWATER BLVD SW
ISRAEL RD SW
73RD AVE SW
76TH AVE SW
78TH AVE SW
71ST AVE SW
TAXIWAY 1
AIRPORT CT SE
OLD HWY 99 SE
DURELL RD SE
ALMAR LN SE
BRIDLE DR SE
77TH TRL SE
79TH AVE SE
80TH AVE SE
DERBY LN SE
ARENA CT SE
MARE CT SE
RIVERVIEW DR SE
SADDLE CT SE
GELDING CT SE
PADDOCK CT SE
ARAB DR SE
TRAILS END DR SE
IRON CT SE
SWEET WAY SE
PHYLLIS DR SE
BELMONT DR SE
KENT LN SE
SENECA CT SE
PARKRIDGE DR SE
STABLE CT SE
REINS ST SE
FILLY CT SE
HENDERSON BLVD SE
WILDFLOWER ST SE
OLD FOREST LN SE
DENA CT SE
SILVER RIDGE CT SE
ONYX CT SE
DARBY CT SE
WHITE HAWK LN SE
HILLCREST DR SE
HIXON DR SE
PINEHURST DR SE
BELL LN SE
EAST LN SE
CHERRY ST SE
RUBY ST SE
LEE ST SE
GERTH ST SW
T ST SW
U ST SE
V ST SW
V ST SE
W ST SW
W ST SE
X ST SW
X ST SE
Y ST SW
Y ST SE
Z ST SE
ESTHER ST SE
ELM ST SE
ALLEN ST SE
CAPITOL BLVD S
CLEMMONS LN SW
BONNIEWOOD DR SE
MONACO ST SE
TWIN CEDAR LN SE
MUNN LAKE DR SE
DESPERADO
69TH AVE SE
69TH WAY SE
71ST AVE SE
72ND WAY SE
65TH CT SE ACCESS
PUBLIC
7TH AVE SW
6TH AVE SW
LINDERSON WAY SW
TARTAN DR SW
HIGHLAND DR SE
BONNIE LN SE
NEW MARKET ST SW
TERMINAL ST SW
CENTER ST SW
PVT ROAD
LP SE
54TH LN SE
CHERI ESTATES DR SE
53RD
Maxar
LSNW
Land Services Northwest
120 State Avenue NE PMB 190
Olympia, WA 98501
1KM Land Use Intensity Map
Wetland A
0 500 1,000 2,000 Feet

Land Use Calculations

	ACRES	%	
1KM	874		
Wetland A	2.19		
1KM-Wetland A	871.81	100	
High Intensity	36	0.041293	4.12934
Relatively Undisturbed	415	0.476021	47.60212
Low Medium Use	423	0.485197	48.51975

Accessible Habitat	848		
Wetland A	2.19	0.002583	0.258255
Accessible-WetA	845.81	0.970177	97.0177
RU	135	0.154462	15.44622
Low/Medium LU	677	0.776545	77.65453
High Intensity	36	0.041293	4.12934



Land Services NW
120 State Avenue PMB190
Olympia, WA 98501
360-481-4208

LSNW

Cowardin Classification Map

0 155 310 620 US Feet

Land Services Northwest
120 State Avenue NE PMB 190
Olympia, WA 98501
360-481-4208

N
LSNW

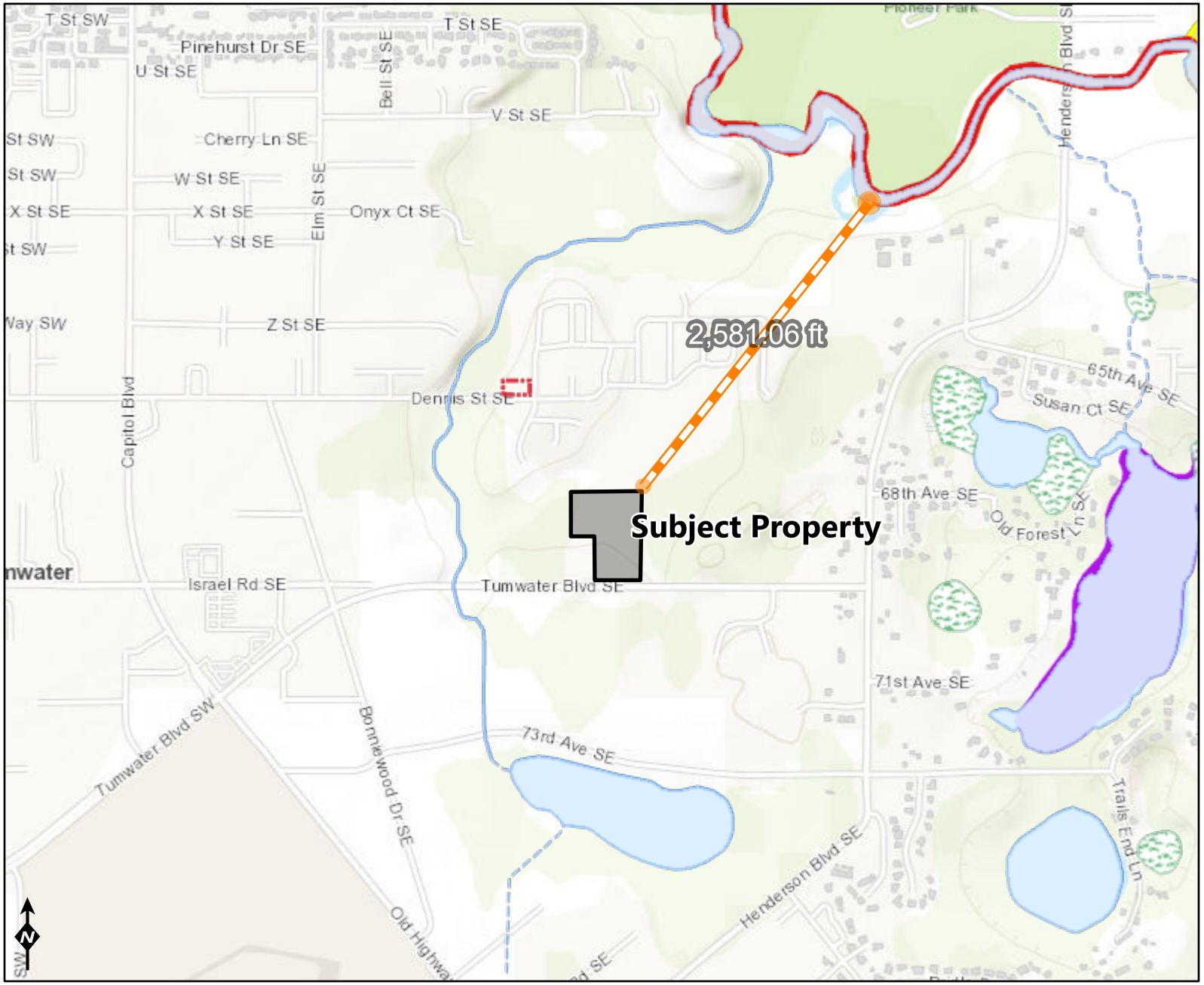
Hydroperiod Classification Map

0 50 100 200 Feet

TENINO LAND CO

May 13, 2024

303d Water Quality Atlas Map



Assessed Water/Sediment

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

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

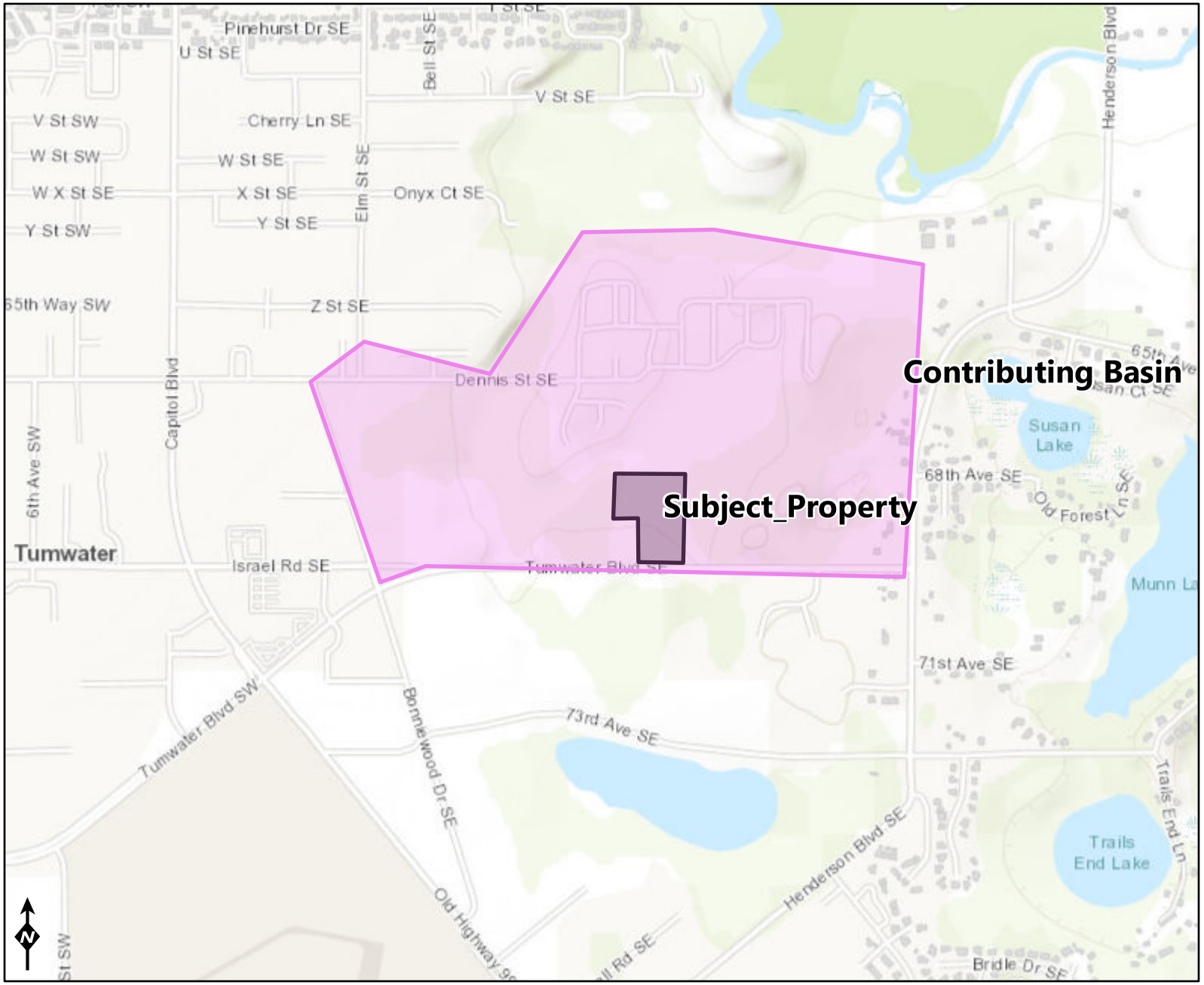
Cities
- City limits

Parcels
- Parcel boundary

Miles
0 0.1 0.2 0.4

July 15, 2024

Contributing Basin



Parcels
Parcel boundary

Subbasins (12 digit HUCs)
HUC boundary

Esri Community Maps Contributors, City of Olympia, WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA,

Miles
0 0.1 0.2 0.4

July 8, 2024

TMDL Projects

WQ Improvement Projects

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

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

Miles
0 0.05 0.1 0.2

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Tumwater Boulevard Date of site visit: 5.8.24

Rated by Alex Callender Trained by Ecology? x Yes ___No Date of training 12.13

HGM Class used for rating Depression Wetland has multiple HGM classes? ___Y x ___N

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

Source of base aerial photo/map 2024 Esri Aerial

OVERALL WETLAND CATEGORY 11___ (based on functions x__ or special characteristics__)

1. Category of wetland based on FUNCTIONS

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

x_____**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	H (M) L	
Landscape Potential	H (M) L	H (M) L	H (M) L	
Value	(H) M L	H (M) L	(H) M L	**TOTAL**
Score Based on Ratings	7	6	7	20

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

9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I II**
Interdunal	**I II III IV**
None of the above	x

Wetland name or number A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	Cowardin
Hydroperiods	D 1.4, H 1.2	Hydro
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	Outlet
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	150 ft
Map of the contributing basin	D 4.3, D 5.3	303d
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	1km
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	303d
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 *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number A

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

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

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

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size,
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
   ____The wetland is on a slope (slope can be very gradual),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheet flow, 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).

Wetland name or number A

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.

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in. below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	4
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 95% of area points = 5 Wetland has persistent, ungrazed plants > ½ of area points = 3 Wetland has persistent, ungrazed plants ≥ 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	3
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is ≥ ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	0
Total for D 1 Add the points in the boxes above	9

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

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

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

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

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

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

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

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

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

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

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

D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	2

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

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

D 6.1. Is the unit in a landscape that has flooding problems? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met. The wetland captures surface water that would otherwise flow downgradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately downgradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther downgradient. points = 1 • Flooding from groundwater is an issue in the sub-basin. points = 1 • The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0 • There are no problems with flooding downstream of the wetland. points = 0	1
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	1

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

Wetland name or number A

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac if the unit is at least 2.5 ac, or more than 10% of the unit if it is smaller than 2.5 ac. **4**

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

If the unit has a Forested class, check if:

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

H 1.2. Hydroperiods **1**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland if the unit is < 2.5 ac, or ¼ ac if the unit is at least 2.5 ac to count (see text for descriptions of hydroperiods).

x Permanently flooded or inundated	4 or more types present: points = 3
x Seasonally flooded or inundated	3 types present: points = 2
____Occasionally flooded or inundated	2 types present: points = 1
____Saturated only	1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland	
____Intermittently or seasonally flowing stream in, or adjacent to, the wetland	
____**Lake Fringe wetland**	**2 points**
____**Freshwater tidal wetland**	**2 points**

H 1.3. Richness of plant species **1**

Count the number of plant species in the wetland that cover at least 10 ft^2.

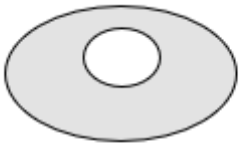
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle**

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

H 1.4. Interspersion of habitats **3**

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

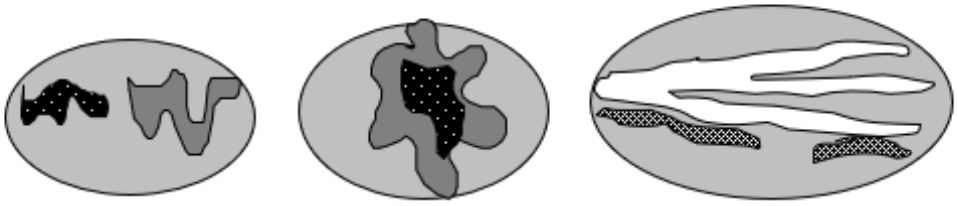
None = 0 points



Low = 1 point

Moderate = 2 points

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



Wetland name or number A

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. The number of checks is the number of points. x Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft long). x Standing snags (dbh > 4 in.) within the wetland ___ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extend at least 3.3 ft (1 m) over open water or a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) x Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed) x At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) ___ Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 above for the list of strata and H 1.5 in the manual for the list of aggressive plant species)	4
Total for H 1 — Add the points in the boxes above	13

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland. *Calculate:* % relatively undisturbed habitat 12 **+** [(% moderate and low intensity land uses)/2] 5 **=** 14.5 % 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	1
H 2.2. Total habitat in 1 km Polygon around the wetland. *Calculate:* % relatively undisturbed habitat 10 **+** [(% moderate and low intensity land uses)/2] 44 **=** 32 % Total habitat > 50% of Polygon — points = 3 Total habitat 10-50% and in 1-3 patches — points = 2 Total habitat 10-50% and > 3 patches — points = 1 Total habitat < 10% of 1 km Polygon — points = 0	1
H 2.3. Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use — points = (- 2) ≤ 50% of 1 km Polygon is high intensity — points = 0	0
Total for H 2 — Add the points in the boxes above	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 ✓ It has 3 or more Priority Habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW Priority Species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources data — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 Priority Habitats (listed on next page) within 100 m — points = 1 Site does not meet any of the criteria above — points = 0	2

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

Wetland name or number A

WDFW Priority Habitats

See complete descriptions of Priority Habitats listed by WDFW, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008 (current year, as revised). Priority Habitat and Species List.[133] This list was updated for consistency with guidance from WDFW.

This question is independent of the land use between the wetland unit and the Priority Habitat. All vegetated wetlands are by definition a Priority Habitat but are not included in this list because they are addressed by this rating system.

Count how many of the following Priority Habitats are within 330 ft (100 m) of the wetland unit:

— **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. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.

— **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.

— **Fresh Deepwater:** Lands permanently flooded with freshwater, including environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. Substrate does not support emergent vegetation. Do not select if Instream habitat is also present, or if the entire Deepwater feature is included in the wetland unit being rated (such as a pond with a vegetated fringe).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

✓ **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. Do not select if Fresh Deepwater habitat is also present.

— **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore.

— **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) diameter at breast height (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.

[133] http://wdfw.wa.gov/publications/00165/wdfw00165.pdf

Wetland name or number A

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important. For single oaks or oak stands <0.4 ha in urban areas, WDFW's Management Recommendations for Oregon White Oak[134] provides more detail for determining if they are Priority Habitats

✓ **Riparian:** The area adjacent to freshwater aquatic systems with flowing or standing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

✓ **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.

— **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.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie.

[134] https://wdfw.wa.gov/publications/00030/wdfw00030.pdf

Wetland name or number A

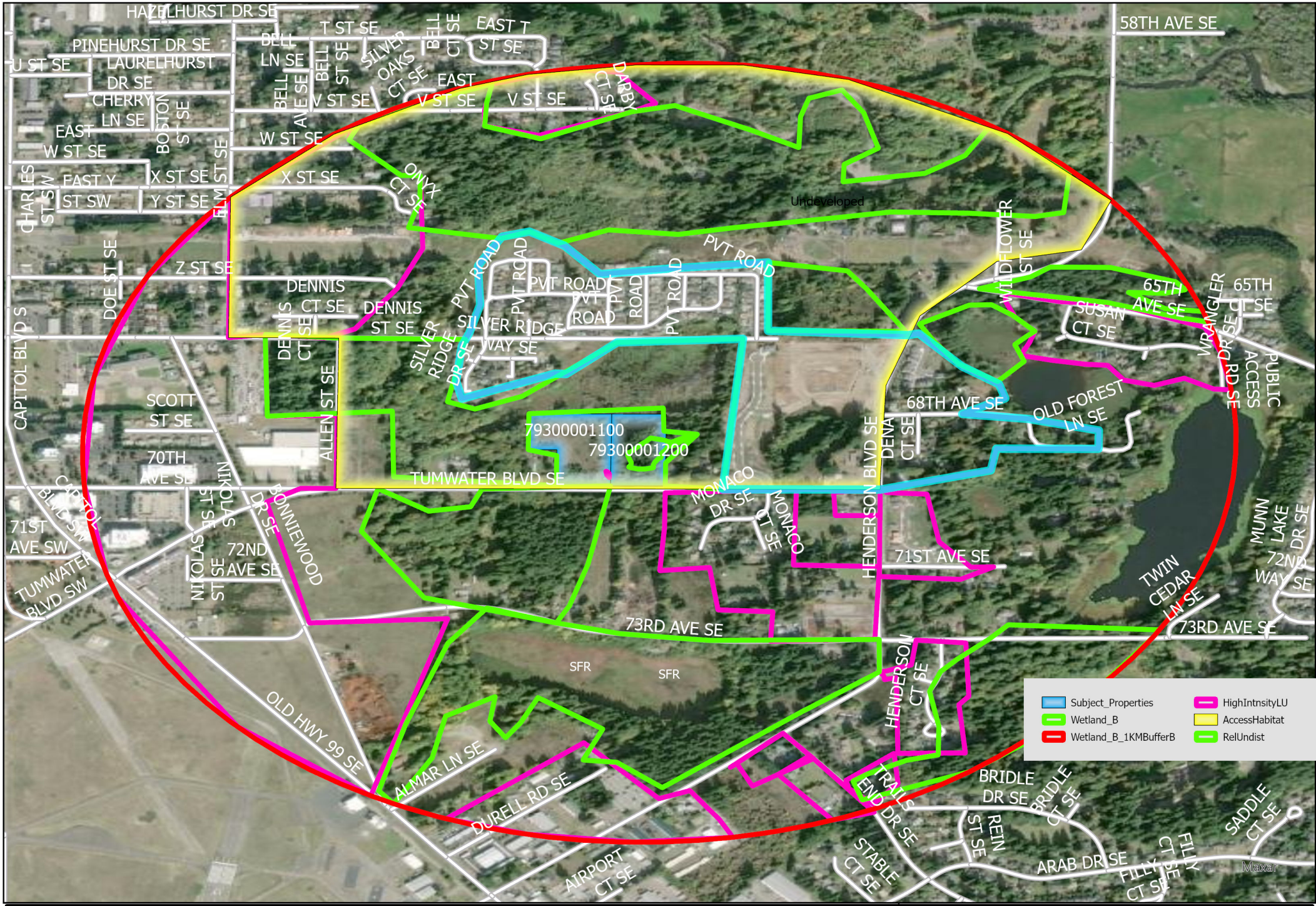
CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes – Go to **SC 1.1** (No) = **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** (No) – Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 10% cover of non-native plant species. If non-native species are *Spartina*, see chapter 4.8 in the manual. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** (No) = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Does the wetland overlap with any known or historical rare plant or rare & high-quality ecosystem polygons on the WNHP Data Explorer?[135] Yes = **Category I** (No) – Go to **SC 2.2** SC 2.2. Does the wetland have a rare plant species, rare ecosystem (e.g., plant community), or high-quality common ecosystem that may qualify the site as a WHCV? Contact WNHP for resources to help determine the presence of these elements. Yes – Submit data to WA Natural Heritage Program for determination,[136] Go to **SC 2.3** (No) = **Not a WHCV** SC 2.3. Did WNHP review the site within 30 days and determine that it has a rare plant or ecosystem that meets their criteria? Yes = **Category I** (No) = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES, you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in. or more of the first 32 in. of the soil profile? Yes – Go to **SC 3.3** (No) – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in. deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No) = **Not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Category I bog** (No) – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in. deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Category I bog** (No) = **Not a bog**	**Cat. I**

[135] https://www.dnr.wa.gov/NHPdata
[136] https://www.dnr.wa.gov/Publications/amp_nh_sighting_form.pdf

Wetland name or number A

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as Priority Habitats? ***If you answer YES, you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in. (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in. (53 cm). Yes = **Category I** [No] = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* — The lagoon retains some of its surface water at low tide during spring tides Yes – Go to **SC 5.1** [No] = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species in H 1.5 in the manual). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** [No] = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer YES, you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 and Ocean Shores Blvd SW, including lands west of E. Oceans Shores Blvd SW. Yes – Go to **SC 6.1** [No] = **Not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** [No] – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	



Land Services Northwest
120 State Avenue NE PMB 190
Olympia, WA 98501

1KM Land Use Intensity Map

0 475 950 1,900 Feet

Land Use Calculations

	ACRES		%
1KM	857		
Wetland B	1.06		
1KM-Wetland B	855.94		100
High Intensity	309	0.361007	36.10066
Relatively Undisturbed	260	0.30376	30.37596
Low Medium Use	286.94	0.335234	33.52338
Accessible Habitat	401	0.467911	
Wetland B	1.06		
Accessible Habitat-Wet B	399.94	0.467252	
RU	138	0.161226	16.12263
Low/Medium LU	160.94	0.188173	18.81731
High Intensity	101	0.117853	11.7853

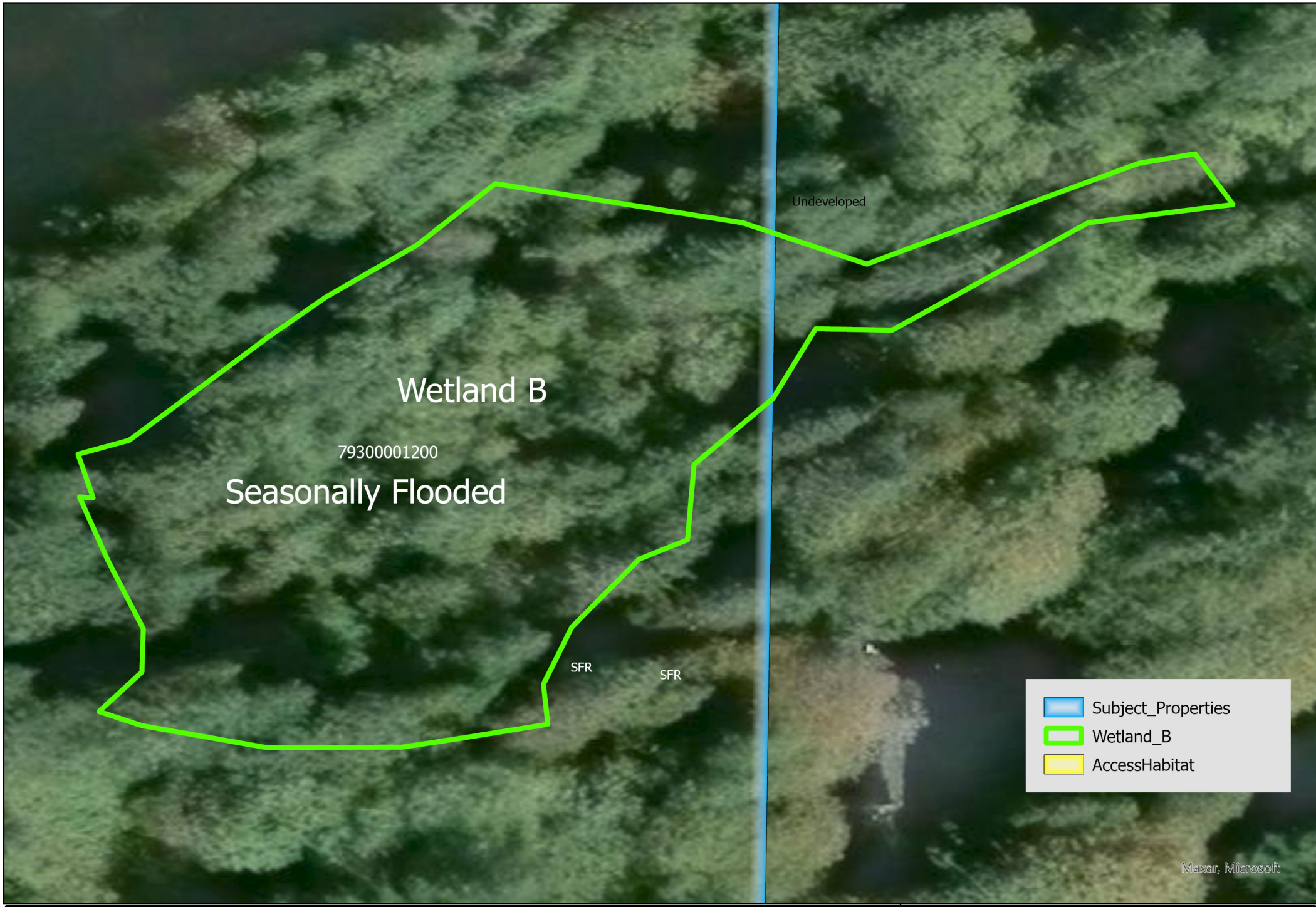
N

LSNW

Land Services Northwest
120 State Avenue NE PMB 190
Olympia, WA 98501

Cowardin Classification Map

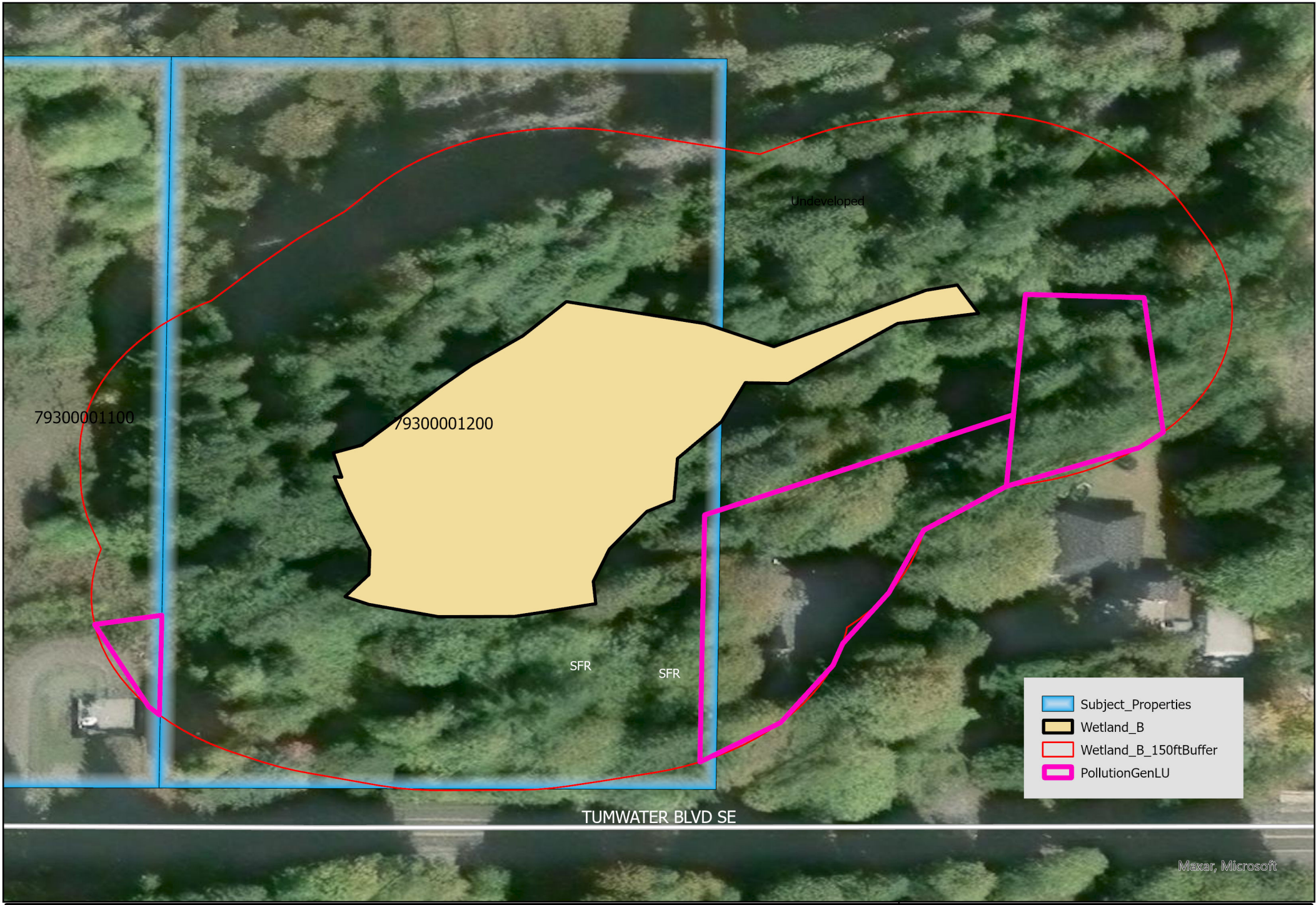
0 26.5 53 106 Feet



Land Services Northwest
120 State Avenue NE PMB 190
Olympia, WA 98501

Hydroperiod Classification Map

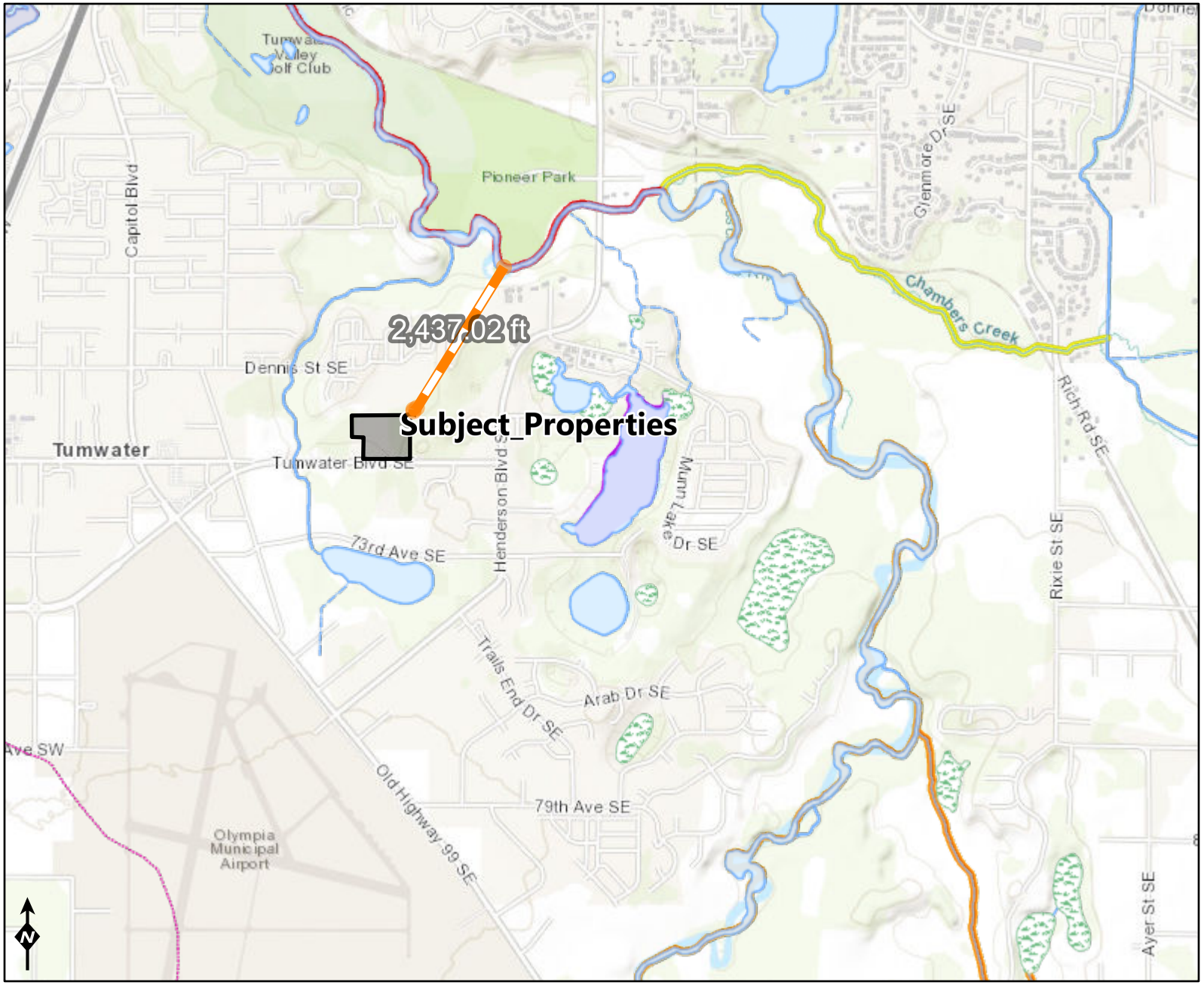
0 26.5 53 106 Feet



N LSNW Land Services Northwest 120 State Avenue NE PMB 190 Olympia, WA 98501	150ft Pollution Generating Land Use	0 47.5 95 190 Feet

March 6, 2025

303d Water Quality Atlas Map



Assessed Water/Sediment

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

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

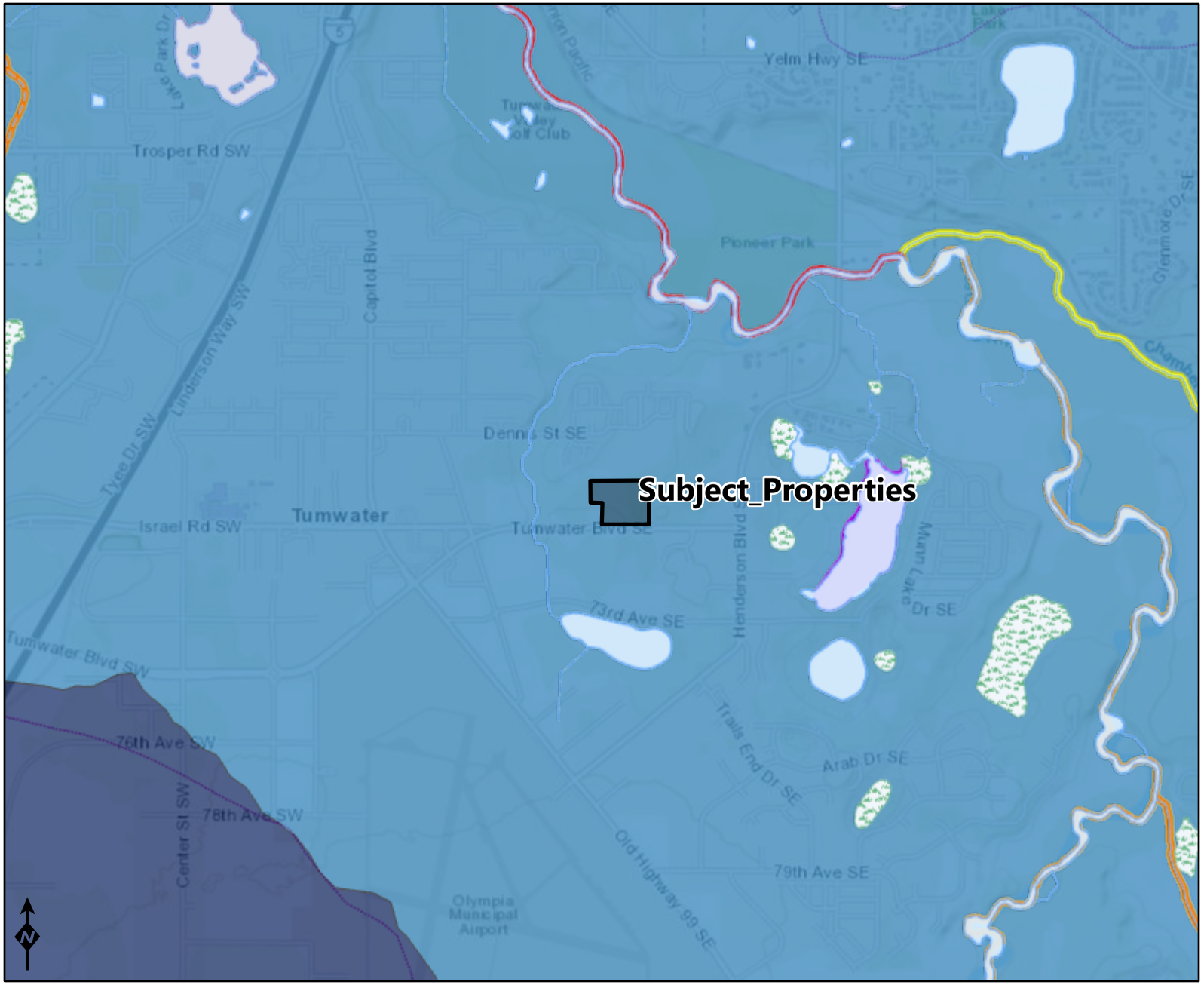
Parcels
- Parcel boundary

Miles
0 0.23 0.45 0.9

City of Olympia, WA State Parks GIS, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS

March 6, 2025

TMDL In Basin



Assessed Water/Sediment

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

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

WQ Improvement Projects
- TMDL - Approved
- 4B - Approved
- STI - Approved
- ARP - Approved
- TMDL - In Development
- STI - In Development
- ARP - In Development

Parcels
- Parcel boundary

Miles
0 0.23 0.45 0.9

Wetland name or number B

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B Date of site visit: 8/16/2024

Rated by Alexander Callender Trained by Ecology? X Yes ___No Date of training 12/13

HGM Class used for rating Depression Wetland has multiple HGM classes? ___Y X N

NOTE: **Form is not complete without the required figures** (figures can be combined).
Source of base aerial photo/map 2024 ESRI Aerial

OVERALL WETLAND CATEGORY ____ (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	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	H M (L)	
Landscape Potential	H (M) L	H (M) L	H (M) L	
Value	(H) M L	H (M) L	H (M) L	**TOTAL**
Score Based on Ratings	7	6	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	**I II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I II**
Interdunal	**I II III IV**
None of the above	X

Wetland name or number B

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number B

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size,
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
   ____The wetland is on a slope (slope can be very gradual),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheet flow, 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).

Wetland name or number B

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.

Wetland name or number B

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in. below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 95% of area points = 5 Wetland has persistent, ungrazed plants > ½ of area points = 3 Wetland has persistent, ungrazed plants ≥ 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	0
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is ≥ ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	4
Total for D 1 Add the points in the boxes above	6

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

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

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

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

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

Wetland name or number B

DEPRESSIONAL AND FLATS WETLANDS

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

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

D 4.1. Characteristics of surface water outflows from the wetland: **2**

- Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4
- Wetland has an intermittently flowing stream/ditch, OR highly constricted permanently flowing outlet points = 2
- Wetland is a flat depression (question 7 on key), whose outlet is a permanently flowing ditch points = 1
- Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0

D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part. **3**

- Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7
- Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5
- Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3
- The wetland is a "headwater" wetland points = 3
- Wetland is flat but has small depressions on the surface that trap water points = 1
- Marks of ponding less than 0.5 ft (6 in) points = 0

D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the area of the wetland unit itself. **3**

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

Total for D 4 — Add the points in the boxes above: **8**

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

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

D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0 **1**

D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0 **1**

D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0 **0**

Total for D 5 — Add the points in the boxes above: **2** 1

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

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

D 6.1. Is the unit in a landscape that has flooding problems? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met. **1**

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

- Flooding occurs in a sub-basin that is immediately downgradient of unit. points = 2
- Surface flooding problems are in a sub-basin farther downgradient. points = 1
- Flooding from groundwater is an issue in the sub-basin. points = 1
- The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0
- There are no problems with flooding downstream of the wetland. points = 0

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0 **0**

Total for D 6 — Add the points in the boxes above: **1**

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

Wetland name or number B

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac if the unit is at least 2.5 ac, or more than 10% of the unit if it is smaller than 2.5 ac. **1**

____Aquatic bed — 4 structures or more: points = 4
____Emergent — 3 structures: points = 2
____Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1
X Forested (areas where trees have > 30% cover) — 1 structure: points = 0

If the unit has a Forested class, check if:

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

H 1.2. Hydroperiods **0**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland if the unit is < 2.5 ac, or ¼ ac if the unit is at least 2.5 ac to count (see text for descriptions of hydroperiods).

____Permanently flooded or inundated — 4 or more types present: points = 3
X Seasonally flooded or inundated — 3 types present: points = 2
____Occasionally flooded or inundated — 2 types present: points = 1
____Saturated only — 1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland
____Intermittently or seasonally flowing stream in, or adjacent to, the wetland
____**Lake Fringe wetland** — **2 points**
____**Freshwater tidal wetland** — **2 points**

H 1.3. Richness of plant species **1**

Count the number of plant species in the wetland that cover at least 10 ft^2.

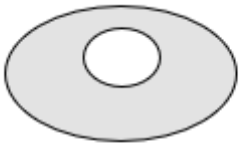
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle**

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

H 1.4. Interspersion of habitats **0**

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

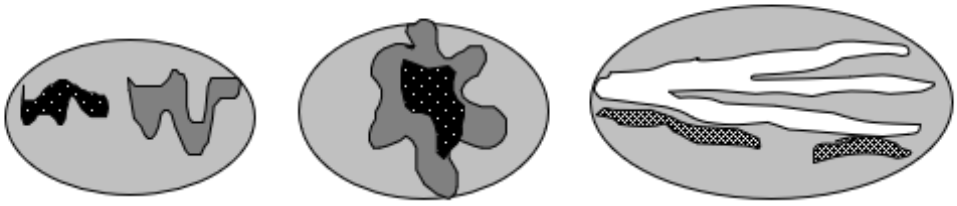
None = 0 points



Low = 1 point

Moderate = 2 points

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



Wetland name or number B

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. The number of checks is the number of points. X Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft long). X Standing snags (dbh > 4 in.) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extend at least 3.3 ft (1 m) over open water or a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed) X At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 above for the list of strata and H 1.5 in the manual for the list of aggressive plant species)	3
Total for H 1 Add the points in the boxes above	5

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland. *Calculate:* % relatively undisturbed habitat 16 + [(% moderate and low intensity land uses)/2] 9 = 25 % 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	2
H 2.2. Total habitat in 1 km Polygon around the wetland. *Calculate:* % relatively undisturbed habitat 30 + [(% moderate and low intensity land uses)/2] 16.5 = 46.5 % Total habitat > 50% of Polygon points = 3 Total habitat 10-50% and in 1-3 patches points = 2 Total habitat 10-50% and > 3 patches points = 1 Total habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	3

Rating of Landscape Potential If score is: __**4-6 = H** ✓ **1-3 = M** ___**< 1 = L** *Record the rating on the first page*

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

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

Wetland name or number B

WDFW Priority Habitats

See complete descriptions of Priority Habitats listed by WDFW, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008 (current year, as revised). Priority Habitat and Species List.[133] This list was updated for consistency with guidance from WDFW.

This question is independent of the land use between the wetland unit and the Priority Habitat. All vegetated wetlands are by definition a Priority Habitat but are not included in this list because they are addressed by this rating system.

Count how many of the following Priority Habitats are within 330 ft (100 m) of the wetland unit:

— **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. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.

— **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.

— **Fresh Deepwater:** Lands permanently flooded with freshwater, including environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. Substrate does not support emergent vegetation. Do not select if Instream habitat is also present, or if the entire Deepwater feature is included in the wetland unit being rated (such as a pond with a vegetated fringe).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **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. Do not select if Fresh Deepwater habitat is also present.

— **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore.

— **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) diameter at breast height (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.

[133] http://wdfw.wa.gov/publications/00165/wdfw00165.pdf

Wetland name or number B

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important. For single oaks or oak stands <0.4 ha in urban areas, WDFW's Management Recommendations for Oregon White Oak[134] provides more detail for determining if they are Priority Habitats

— **Riparian:** The area adjacent to freshwater aquatic systems with flowing or standing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

✓ **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.

— **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.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie.

[134] https://wdfw.wa.gov/publications/00030/wdfw00030.pdf

Wetland name or number B

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes – Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No – Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 10% cover of non-native plant species. If non-native species are *Spartina*, see chapter 4.8 in the manual. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Does the wetland overlap with any known or historical rare plant or rare & high-quality ecosystem polygons on the WNHP Data Explorer?[135] Yes = **Category I** No – Go to **SC 2.2** SC 2.2. Does the wetland have a rare plant species, rare ecosystem (e.g., plant community), or high-quality common ecosystem that may qualify the site as a WHCV? Contact WNHP for resources to help determine the presence of these elements. Yes – Submit data to WA Natural Heritage Program for determination,[136] Go to **SC 2.3** No = **Not a WHCV** SC 2.3. Did WNHP review the site within 30 days and determine that it has a rare plant or ecosystem that meets their criteria? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES, you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in. or more of the first 32 in. of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in. deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in. deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Category I bog** No = **Not a bog**	**Cat. I**

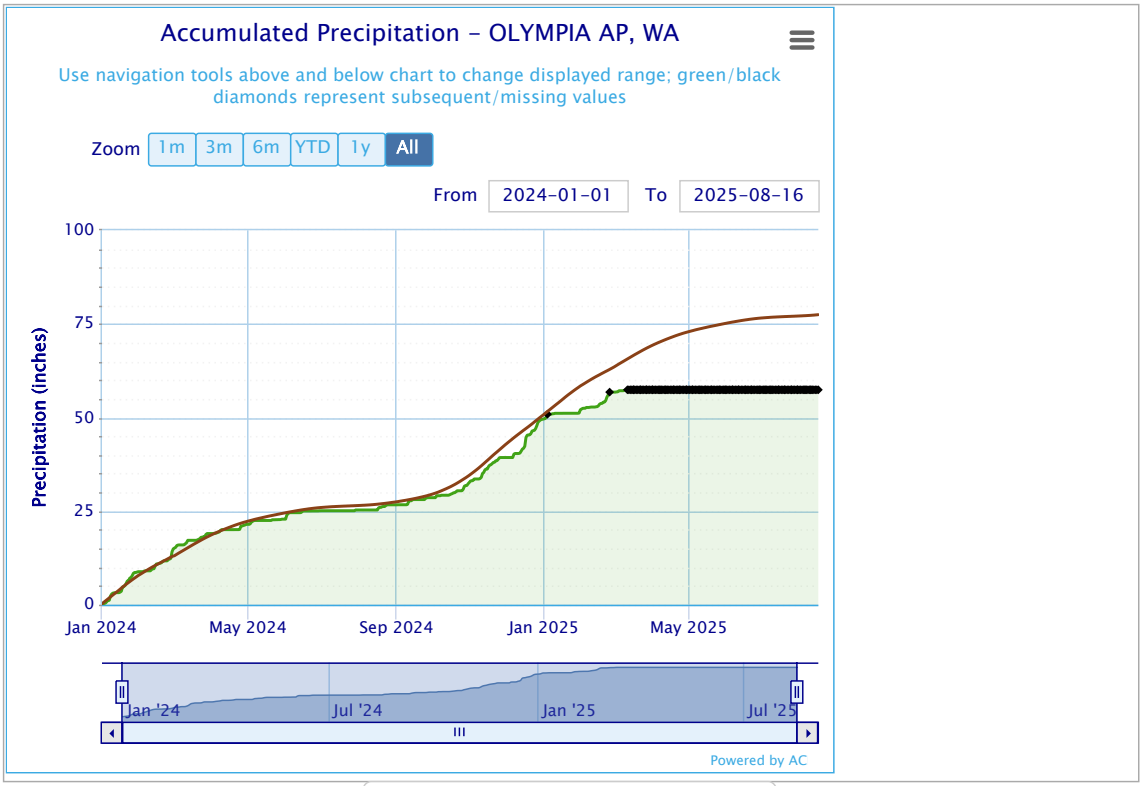
[135] https://www.dnr.wa.gov/NHPdata

[136] https://www.dnr.wa.gov/Publications/amp_nh_sighting_form.pdf

Wetland name or number B

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as Priority Habitats? ***If you answer YES, you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in. (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in. (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* — The lagoon retains some of its surface water at low tide during spring tides Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species in H 1.5 in the manual). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer YES, you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 and Ocean Shores Blvd SW, including lands west of E. Oceans Shores Blvd SW. Yes – Go to **SC 6.1** No = **Not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	

Appendix J - NOAA NOW DATA



Note regarding subsequent/missing values