ENVIRONMENTALLY CRITICAL AREAS ASSESSMENT

PARCELS 0420222005
320 Todd Road NE
City of Puyallup, Pierce County, Washington

This document has been revised to incorporate comments provided by City of Puyallup review

prepared for

Ms. Catherine Dwyer
e-mail catherine.dwyer@comcast.net

prepared by

HABITAT TECHNOLOGIES
P.O. Box 1088
Puyallup, Washington 98371-1088
253-845-5119

REVISED
JANUARY 14, 2025

Table of Contents

INTRODUCTION 1

PROJECT SITE DESCRIPTION 1

BACKGROUND INFORMATION 2

NATIONAL WETLAND INVENTORY 2
STATE OF WASHINGTON PRIORITY HABITATS AND SPECIES 2
STATE OF WASHINGTON DEPARTMENT OF FISH AND WILDLIFE 2
STATE OF WASHINGTON DEPARTMENT OF NATURAL RESOURCES 2
CITY OF PUYALLUP INVENTORY MAPPING 3
PIERCE COUNTY SURFACE WATER MAPPING 3
UPPER WAPATO CREEK 3
SOILS MAPPING 4

ONSITE ANALYSIS 4

CRITERIA FOR ENVIRONMENTALLY CRITICAL AREA IDENTIFICATION 4
STUDY METHODS 6
FIELD OBSERVATION 6
- *Soils* *6*
- *Hydrology* *7*
- *Vegetation* *7*
- *Wildlife Observations* *8*
- *State Priority Species* *9*
- *Federally Listed Species* *10*

ASSESSMENT FINDINGS 10

ONSITE 10
OFFSITE 10

SELECTED DEVELOPMENT ACTION 11

STANDARD OF CARE 12

FIGURES 13

REFERENCE AND BACKGROUND LIST 14

APPENDIX A – FIELD DATA FORMS 16

APPENDIX B – WETLAND RATING WORKSHEET 17

APPENDIX C – RESUME OF THOMAS D. DEMING 18

INTRODUCTION

This report documents the culmination of activities and onsite evaluations undertaken to complete an assessment and characterization of environmentally critical areas (wetlands, streams, fish and wildlife habitats) as a part of the proposed future development planning within **Parcel 0420222005** (project site). The onsite assessment and characterization of specific environmentally critical areas was completed following the methods and procedures defined in the *Corps of Engineers Wetland Delineation Manual* (United States Army Corps of Engineers, 1987) with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (United States Army Corps of Engineers, 2010); the Washington State *Wetland Rating System for Western Washington: 2014 Update* Publication #14-06-029 (Hruby, 2014); the State of Washington Department of Natural Resources (WDNR) Forest Practice Rules (WAC 222-16-030); and the City of Puyallup – *Chapter 21.06*. This document was designed to accommodate site planning and potential regulatory actions and is suitable for submittal to federal, state, and local authorities for potential wetland, stream/drainage corridor, and critical habitats verification and permitting actions. Please Note - This document does not provide an assessment of potential steep slopes, potential erosion hazard areas, potential geotechnical issues, potential septic suitability, potential flood zones, or potential aquafer recharge.

PROJECT SITE DESCRIPTION

The project site was composed of an existing, generally flat parcel approximately 1.68-acres in total size. The project site was located at 320 Todd Road NE within the City of Puyallup, Pierce County, Washington (part of Section 22, Township 20N, Range 04E, W.M.) (Figure 1). The project site had undergone a number of prior land use manipulations over the past several decades. These prior actions have focused on the development and utilization of the project site as a single-family homesite with associated managed yards. Additional onsite actions have included the routine maintenance of the homesite, the development of an access driveway, full perimeter fencing, onsite landscaping, equipment storage, the placement and maintenance of utilities, and adjacent residential and commercial developments. A channelized drainage ditch was present offsite to the southeast.

The project site was located within a well urbanized area generally converting from existing single-family homesites on moderately sized parcels into more intense residential communities and commercial usages.

Directions to Project Site: Northward on Meridian Avenue North through the City of Puyallup continue north across the Puyallup River and beyond Valley Avenue NE. Turn east onto Spencer Road and remain on Spencer Road and it turns northward to the intersection of Spencer Road and Todd Road East. Turn easterly onto Todd Road East and continue to the project site.

BACKGROUND INFORMATION

NATIONAL WETLAND INVENTORY

The *National Wetland Inventory (NWI) mapping* completed by the U.S. Fish and Wildlife Service was reviewed as a part of this assessment (Figure 2). This mapping resource did not identify any wetlands or surface water drainages within the project site. This mapping resource identified a palustrine, forested wetland offsite to the south of the project site.

STATE OF WASHINGTON PRIORITY HABITATS AND SPECIES

The State of Washington *Priority Habitats and Species (PHS) Mapping* was reviewed as a part of this assessment (Figure 3). This mapping resource generally did not identify any priority habitats or species within the project site. This mapping resource identified a wetland offsite to the south of the project site.

STATE OF WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

The State of Washington Department of Fish and Wildlife (WDFW) *SalmonScape Mapping* was reviewed as a part of this assessment (Figure 4). This mapping resource identified a drainage corridor adjacent to the southeastern boundary of the project site. This drainage corridor was mapped as the upper reaches of Wapato Creek and further defined to provide the documented presence of coho salmon (*Oncorhynchus kitsch*) and steelhead trout (*Oncorhynchus mykiss*), along with gradient accessible habitats for Chinook salmon (*Oncorhynchus tshawytscha*) and pink salmon (*Oncorhynchus gorbuscha*).

STATE OF WASHINGTON DEPARTMENT OF NATURAL RESOURCES

The State of Washington Department of Natural Resources (WDNR) *Water Type Mapping* was reviewed as a part of this assessment (Figure 5). This mapping resource identified the drainage corridor and wetland offsite to the south/southeast of the project site. This mapping resource identified this offsite drainage corridor as the upper reach of Wapato Creek, a Type N Water (non-fish bearing).

CITY OF PUYALLUP INVENTORY MAPPING

The City of Puyallup *Inventory Mapping* was reviewed as a part of this assessment (Figure 6). This mapping resource identified a field-verified stream and associated wetland offsite to the southeast of the project site.

PIERCE COUNTY SURFACE WATER MAPPING

The Pierce County *Surface Water Mapping* was reviewed as a part of this assessment. This mapping resource identified a surface water drainage directly to the southeast of the project site. This surface water drainage originates well offsite to the east and then continues southwesterly within a series of excavated ditches and buried culverts. Near the intersection of Valley Avenue NW and North Meridian Avenue seasonal flow within this drainage enters a buried culvert system for convenance into the Puyallup River a short distance downstream (west) of the North Meridian Avenue Bridge.

As a result of the development within the North Meridian Avenue Corridor the drainage adjacent to the project site does **not** connect to the Wapato Creek System located well west of the project site and has not connected for several decades.

UPPER WAPATO CREEK

The *Upper Wapato Creek Conceptual Fish Passage Mitigation Plan* prepared as a part of the Puget South Gateway Program – SR167 Completion Project dated August 2023 was also reviewed (WSDOT 2023). This document noted that the upper part of Wapato Creek, that portion to the east of the Meridian Avenue Corridor, had been diverted into the Puyallup River to allow for the realignment of Valley Avenue and to prevent flooding along the lower Wapato Creek. However, this document further noted that the outlet of this stream into the Puyallup River directly downstream of the Meridian Avenue Bridge is partially passible (33% passible) and therefor with the possible presence of fish this upper portion of Wapato Creek would be defined as a Type F Water (fish bearing). The stream offsite to the southeast of the project site has been defined as exhibited a 33% possible passible connection to the Lower Puyallup River (WSDOT 2023). As such this offsite stream has documented presence of coho (*Oncorhynchus kisutch*) and steelhead trout (*Oncorhynchus mykiss*) and is gradient accessible to Chinook salmon (*Oncorhynchus tshawytscha*) and pink salmon (*Oncorhynchus gorbuscha*).

SOILS MAPPING

The *Soil Mapping Inventory* completed by the Natural Resource Conservation Service – (NRCS) was reviewed as a part of this assessment (Figure 7). This mapping resource identified the soil throughout the project site as Puyallup (31A). The Puyallup soil series is defined as well drained, formed in sandy mixed alluvium, and as not listed as a “hydric” soil.

The soil mapped at the very southeastern corner of the project site was identified as Pilchuck fine sand (29A). The Pilchuck soil series is defined as excessively well drained, as formed in mixed alluvium, and as not listed as a “hydric” soil.

ONSITE ANALYSIS

CRITERIA FOR ENVIRONMENTALLY CRITICAL AREA IDENTIFICATION

To allow for proposed site planning, the assessment and delineation of specific environmentally critical areas within and immediately adjacent to the project site followed the methods and procedures defined in the *Corps of Engineers Wetland Delineation Manual* (United States Army Corps of Engineers, 1987) with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (United States Army Corps of Engineers, 2010); the Washington State *Wetland Rating System for Western Washington: 2014 Update* Publication #14-06-029 (Hruby, 2014), the State of Washington Department of Natural Resources (WDNR) Forest Practice Rules (WAC 222-16-030), and City of Puyallup – *Chapter 21.06*. This assessment did **not** include an assessment of potential steep slope, potential critical aquifer recharge areas, potential floodplain areas, potential erosion hazard areas, or potential geotechnically hazardous critical areas.

WETLANDS: Wetlands are transitional areas between aquatic and upland habitats. In general terms, wetlands are lands where the extent and duration of saturation with water is the primary factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface (Cowardin, et al., 1979). Wetlands are generally defined within land use regulations as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (United States Army Corps of Engineers 1987). Wetlands exhibit three essential characteristics, all of which must be present for an area to meet the established criteria (United States Army Corps of Engineers, 1987 and United States Army Corps of Engineers, 2010). These essential characteristics are:

Hydrophytic Vegetation: The assemblage of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence. Hydrophytic vegetation is present when the plant community is dominated by species that require or can tolerate prolonged inundation or soil saturation during the growing season.

Hydric Soil: A soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper parts. Most hydric soils exhibit characteristic morphologies that result from recent periods of saturation or inundation. These processes result in distinctive characteristics that persist in the soil during both wet and dry periods.

Wetland Hydrology: Permanent or periodic inundation, or surface soil saturation, at least seasonally. Wetland hydrology indicators are used in combination with indicators of hydric soil and hydrophytic vegetation to define the area. Wetland hydrology indications provide evidence that the site has a continuing wetland hydrology regime. Where hydrology has not been altered vegetation and soils provide strong evidence that wetland hydrology is present.

STREAMS: A stream is defined by the City of Puyallup as a feature where surface waters produce a defined channel or bed. A defined channel or bed is an area that demonstrates clear evidence of the passage of water and includes, but is not limited to, bedrock channels, gravel beds, sand and silt beds, and defined-channel swales. The channel or bed need not contain water year-round. This definition is not intended to include artificially created irrigation ditches, canals, storm or surface water devices, or other entirely artificial watercourses, unless they are used by salmonids or created for the purposes of stream mitigation.

CRITICAL FISH AND WILDLIFE HABITAT AREAS: The City of Puyallup defines “fish and wildlife habitat conservation areas” as those areas that serve a critical role in sustaining needed habitats and species for the functional integrity of the ecosystem, and which, if altered, may reduce the likelihood that the species will persist over the long term.

(a) These areas may include, but are not limited to, rare or vulnerable ecological systems, communities, and habitat or habitat elements including seasonal ranges, breeding habitat, winter range, and movement corridors; and areas with high relative population density or species richness. These areas also include locally important habitats and species as determined by the city.
(b) “Habitats of local importance” designated as fish and wildlife habitat conservation areas include those areas found to be locally important by the city.
(c) These areas do not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of and are maintained by a port district or an irrigation

district, unless these features are documented as being used by salmonids for habitat.

STUDY METHODS

Habitat Technologies completed a series of onsite assessments during September 2022. Additional assessments were completed during 2023 and 2024 as a part of the City of Puyallup review process In addition, Habitat Technologies has completed similar assessments for a wide variety of parcels within the area of the project site. The objective of 2022 onsite assessments were to define and delineate potential environmentally critical areas (specifically wetlands, surface water drainage corridors/streams, and critical habitats) within or immediately adjacent to the project area. Boundaries between wetland and non-wetland areas were established by examining the transitional gradient between wetland criteria. Onsite activities were completed in accordance with criteria and procedures established in the *Corps of Engineers Wetland Delineation Manual* (United States Army Corps of Engineers, 1987) with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (United States Army Corps of Engineers, 2010); the Washington State *Wetland Rating System for Western Washington: 2014 Update* Publication #14-06-029 (Hruby, 2014); the State of Washington Department of Natural Resources (WDNR) Forest Practice Rules (WAC 222-16-030); and the City of Puyallup – *Chapter 21.06*.

FIELD OBSERVATION

The project site was accessed along the northern boundary via an existing access driveway connection to Todd Road East. The project site had undergone a number of prior land use manipulations to include clearing and grading, the development and maintenance for an existing single-family homesite with associated outbuildings, the development of an access driveway, the placement and maintenance of perimeter fencing, onsite landscaping, equipment storage, the ditching of an adjacent drainage corridor offsite to the southeast, the placement and maintenance of utilities, and adjacent residential and commercial developments. Field data (*Wetland Determination Data Form*) are provided in Appendix A.

- **Soils**

As documented throughout the project site the soil exhibited a sandy loam texture and coloration typical of the Pilchuck and Puyallup soil series. However, the surface soil had also been modified by prior homesite and managed yard development. The surface soil exhibited a very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) coloration and a sandy loam texture. The subsoil to a depth of approximately 20 inches exhibited a dark

brown (10YR 3/3) to brown (10YR 4/3) coloration, and a sandy loam to sand texture. This soil was identified as non-hydric in character.

- **Hydrology**

Onsite hydrology appeared to be the result of seasonal stormwater runoff from onsite and from adjacent parcels. The entire of the project site appeared to drain moderately well to well and did not exhibit field indicators typically associated with wetland hydrology or the concentrated movement of surface water.

A topographic swale was identified offsite of the southeastern boundary of the project site. This topographic swale extended offsite to the northeast and to the southwest of the project site. Prior assessments along this drainage corridor completed by Habitat Technologies and dating back to the early 1980s have identified that this corridor conveyed seasonal surface water generally from the area to the east of the project site westerly and then southwesterly by a pattern of open ditches and buried culverts managed and maintained by the Pierce County Stormwater Management Division. The open portions of this topographic swale have been identified to remain damp to saturated following the seasonal movement of surface water.

This topographic swale enters a series of buried culverts associated with the Meridian Avenue Corridor which conveys seasonal surface water runoff into the Puyallup River just downstream of the Meridian Avenue Bridge. As such, this surface water drainage is **not** contiguous with the Wapato Creek Corridor to the west of Meridian Avenue.

- **Vegetation**

The project site exhibited a single, well managed plant community. As noted above, the project site was dominated by an existing single-family homesite, a few outbuildings, and well managed and maintained associated yard areas. The onsite plant community exhibited a variety of primarily ornamental trees and shrubs scattered throughout the project site which was dominated by managed lawn. The managed lawn areas included a variety of seeded and volunteer grasses and herbs. Observed species included orchard grass (*Dactylis glomerate*), bluegrass (*Poa spp*.), quackgrass (*Agropyron repens*), colonial bentgrass (*Agrostis tenuis*), meadow foxtail (*Alopecurus pratensis*), brome (*Bromus* spp.), fescue (*Festuca* spp.), velvet grass (*Holcus lanatus*), ryegrass (*Lolium* spp.), common horsetail (*Equisetum arvense*), Canadian thistle (*Cirsium arvensis*), bull thistle (*Cirsium vulgare*), geranium (*Geranium* spp.), morning glory (*Ipomaea purpurea*), plantain (*Plantago major*), sheep sorrel (*Rumex acetosella*), common dandelion (*Taraxacum officinale*), daisy (*Bellis perennis*), clover (*Trifolium* spp.), scouring rush (*Equisetum hymale*), and buttercup (*Ranunculus repens*). This plant community was identified as non-hydrophytic in character (typical of uplands). This same plant community was identified within adjacent managed yard areas.

The plant community along the drainage corridor directly offsite to the southeast of the project site was dominated by a deciduous forest overstory rooted along the top of the ditched corridor and a generally dense understory dominated by blackberries (Rubus spp.) and reed canarygrass (*Phalaris arundinacea*). Observed deciduous tree species included black cottonwood (*Populus trichocarpa*), red alder (*Alnus rubra*), and Oregon ash (*Fraxinus latifolia*). In addition to the dominant reed canarygrass the understory included buttercup, curled dock (*Rumex crispus*), Sitka willow (*Salix sitchensis*), crabapple (*Pyrus fusca*), and iris (*Iris pseudacorus*). This plant community was identified as hydrophytic in character (typical of wetlands) and generally followed along the defined drainage corridor.

- **Wildlife Observations**

Wildlife species observed directly and indirectly within the project site, along with those species previously observed within the area and those species that would reasonably be expected to use the habitats provided within and immediately adjacent to the project site included red tailed hawk (*Buteo jamaicensis*), common raven (*Corvus corax*), sharp-shinned hawk (*Accipiter striatus*), great blue heron (*Ardea herodias*), American crow (*Corvus brachynchos*), American robin (*Turdus migratorius*), rufous-sided towhee (*Pipilo erythrophthalmus*), dark eyed junco (*Junco hyemalis*), Steller's jay (*Cyanocitta stelleri*), Northern flicker (*Colaptes auratus*), mourning dove (*Zenaida macroura*), black capped chickadee (*Parus atricapillus*), chestnut backed chickadee (*Parus rufescens*), black-capped chickadee (*Parus atricapillus*), purple finch (*Carpodacus purpureus*), song sparrow (*Melospiza melodia*), golden crowned sparrow (*Zonotrichia atricapilla*), purple finch (*Carpodacus purpureus*), song sparrow (*Melospiza melodia*), white crowned sparrow (*Zonotrichia leucophrys*), red breasted nuthatch (*Sitta canadensis*), marsh wren (*Cistothorus palustirs*), rufous hummingbird (*Selasphorus rufus*), red winged blackbird (*Agelaius phoenisues*), brewer blackbird (*Euphagus cyanocephalus*), common mallard (*Anas platyrhynchos*), Canada goose (*Branta canadensis*), black tailed deer (*Odocoileus hemionus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), eastern cottontail (*Sylvilagus floridanus*), stripped skunk (*Mephitis mephitis*), opossum (*Didelphis virginianus*), deer mouse (*Peromyscus maniculatus*), shrew (*Sorex* spp.), mole (*Scapanus spp.*), bats (*Myotis* spp.), Norway rat (*Rattus norvegicus*), eastern gray squirrel (*Sciurus carolinensis*), deer mouse (*Peromyscus maniculatus*), shrew (*Sorex* spp.), red-legged frog (*Rana aurora*), Pacific treefrog (*Hyla regilla*), and common garter snake (*Thamnophis sirtalis*).

The drainage along the southeastern boundary of the project site has been documented to exhibit seasonal flow and was defined in 2023 to exhibit a possible passable connection (33% passible) to downstream aquatic habitats associated with the Puyallup River Corridor. As such, this drainage has been revised as providing accessible or suitable habitats for fish species.

Wildlife Movement Corridors: The project site was surrounded by long-term urban residential development that also included a mixture of commercial and multi-family developments. As identified by onsite wildlife trails, small and medium sized mammals appeared to be moving throughout the project site. However, such movement offsite was required to cross developed properties. The project site is also within the general area of the migratory movement of passerine birds and waterfowl.

- **State Priority Species**

Several species identified by the State of Washington as "Priority Species" were observed onsite or potentially may utilize the habitats provided by the project site. Priority species require protective measures for their survival because of population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance.

Game Species: "Game species" are regulated by the State of Washington through recreational hunting bag limits, harvest seasons, and harvest area restrictions. Observed or documented "game species" within and adjacent to the project site included common mallard, Canada goose, mourning dove, and black tailed deer.

The stream offsite to the southeast of the project site has been defined as exhibited a 33% possible passible connection to the Lower Puyallup River (WSDOT 2023). As such this offsite stream has been documented to exhibit the presence of coho and steelhead trout and is gradient accessible to Chinook salmon and pink salmon.

State Monitored: State Monitored species are native to Washington but require habitat that has limited availability, are indicators of environmental quality, require further assessment, have unresolved taxonomy, may be competing with other species of concern, or have significant popular appeal. A single State Monitored species – great blue heron – may utilize the habitats associated with the offsite drainage corridor and wetland adjacent to the project site.

State Candidate: State Candidate species are presently under review by the State of Washington Department of Fish and Wildlife (WDFW) for possible listing as endangered, threatened, or sensitive. No State Candidate species would be expected, and none have been documented, within or adjacent to the project site.

State Sensitive: State Sensitive species are native to Washington and are vulnerable to declining and are likely to become endangered or threatened throughout a significant portion of its range without cooperative management or removal of threats. No State Sensitive species were observed as a part of this assessment.

State Threatened: State Threatened species means any wildlife species native to the state of Washington that is likely to become an endangered species within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats. The project site did not appear and has not been documented to provide direct critical habitats for State Threatened species.

State Endangered: State endangered species means any species native to the state of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the state. The project site did not appear and has not been documented to provide direct critical habitats for State Endangered species.

- **Federally Listed Species**

As presently defined (WSDOT 2023) the stream offsite to the southeast of the project site has documented presence of coho salmon (federal species of concern) and steelhead trout (federally listed threatened species) and is gradient accessible to Chinook salmon (federally listed threatened species). Another, federally listed "species of concern" – bald eagle – has been documented to utilize the habitats generally associated the Puyallup River Corridor. However, the project site did not appear to provide and has not been documented to provide critical habitats for bald eagle.

ASSESSMENT FINDINGS

ONSITE

The entire project site was dominated by an existing single-family homesite, associated outbuildings, and well managed yard areas. **No** portion of the project site exhibited field characteristics typically associated with a "wetland" or a "stream." In addition, **no** portion of the project site was identified to exhibit field characteristics associated with a City of Puyallup "fish and wildlife habitat conservation area."

OFFSITE

With the exception of the area directly offsite to the southeast and south, the project site was generally bound by existing residential and commercial development.

A seasonal drainage – upper portion of modified Wapato Creek and generally managed by Pierce County - was identified directly offsite of the southeastern of the project site.

This drainage generally follows a remanent, small side-channel along the Puyallup River Valley that was isolated by the development of the Puyallup River revetment system during the late 1800s into the early 1900s. This drainage system is also managed by the Pierce County Stormwater Management Division and enters the Puyallup River a short distance downstream of the Meridian Avenue Bridge (Figures 8 and 8A).

As defined in a 2023 study (WSDOT 2023) the outlet of this offsite stream into the Puyallup River directly downstream of the Meridian Avenue Bridge is partially passible (33% passible) and therefor this stream would be defined as a Type F Water (fish bearing).

STREAM: With the possible presence of fish (WSDOT 2023) the offsite seasonal drainage would appear best defined as a **City of Puyallup Type II Stream**. This drainage exhibits a defined channel created by naturally occurring seasonal stormwater runoff. The standard buffer for a City of Puyallup Type II Stream is 100 feet in width as measured perpendicular from the ordinary high water mark.

WETLAND: The offsite seasonal drainage also exhibits an associated wetland. Since this areas is associated with a City of Puyallup Type II Stream, this associated wetland as identified as best defined as a **City of Puyallup Category II Wetland**. This offsite wetland area was defined as a "riverine wetland" and exhibited to total revised functions score of 21 points (6 habitat points) using the *Washington State Wetland Rating System* (Hruby 2014) (Appendix B).

WETLAND	CLASSIFICATION (USFWS)	CITY OF PUYALLUP CATEGORY	WDOE TOTAL RATING SCORE	HABITAT RATING SCORE	BUFFER WIDTH (high intensity land use)
A	**PFOC**	**II**	**21**	**6**	**150 feet**

FISH AND WILDLIFE HABITAT CONSERVATION AREA: The wetland/stream corridor identified offsite to the southeast of the project site also appeared best defined as a City of Puyallup "habitat of local importance." Both the wetland and stream corridors are defined as "Waters of the State."

SELECTED DEVELOPMENT ACTION

The *Selected Development Action* for **Parcel 0420222005** is presently within the initial planning stages and has not yet been fully identified. However, future development within the project site would be consistent with the City of Puyallup *Comprehensive Plan*, local zoning, and *Chapter 21.06*. Future site development would also utilize Best Management Practices to ensure protection of local water quality and to protect against adverse erosion.

STANDARD OF CARE

This document has been completed by Habitat Technologies for use by **Ms. Catherine Dwyer.** Prior to extensive site planning the defined critical habitats should be reviewed and verified by the City of Puyallup. Habitat Technologies has provided professional services that are in accordance with the degree of care and skill generally accepted in the nature of the work accomplished. No other warranties are expressed or implied. Habitat Technologies is not responsible for design costs incurred before this document is approved by the appropriate resource and permitting agencies.

Bryan W. Peck

Bryan W. Peck
Senior Wetland Biologist

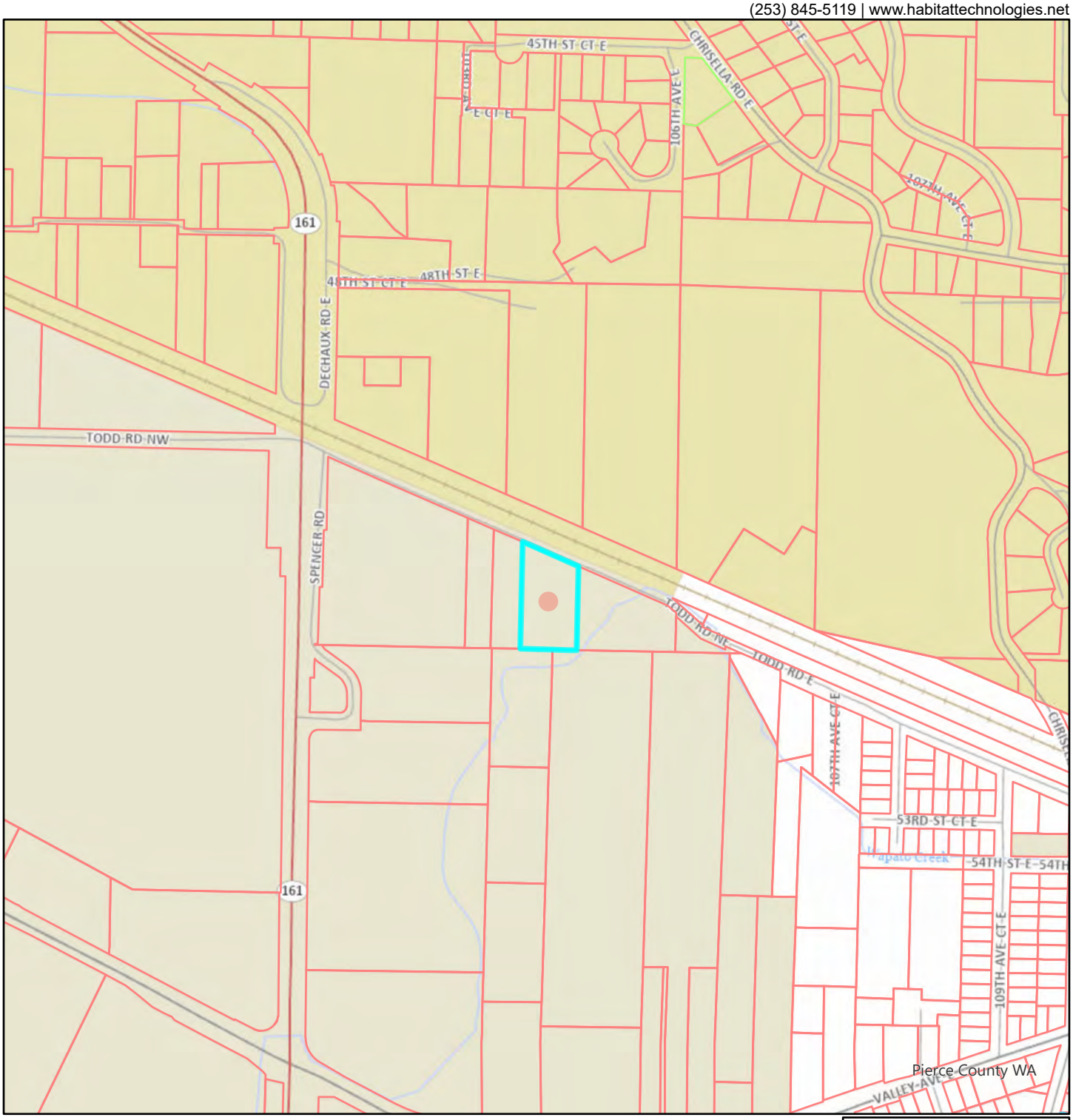
Thomas D. Deming

Thomas D. Deming, SPWS
Habitat Technologies - Resume provided in Appendix C

FIGURES

Figure 1 Site Vicinity

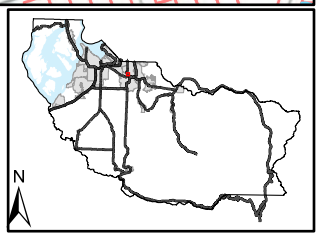
Habitat Technologies
P.O.Box 1088
Puyallup, WA 98371
(253) 845-5119 | www.habitattechnologies.net



Legend

Tax Parcels

- Base Parcel
- Condominium
- Other



1:6,000

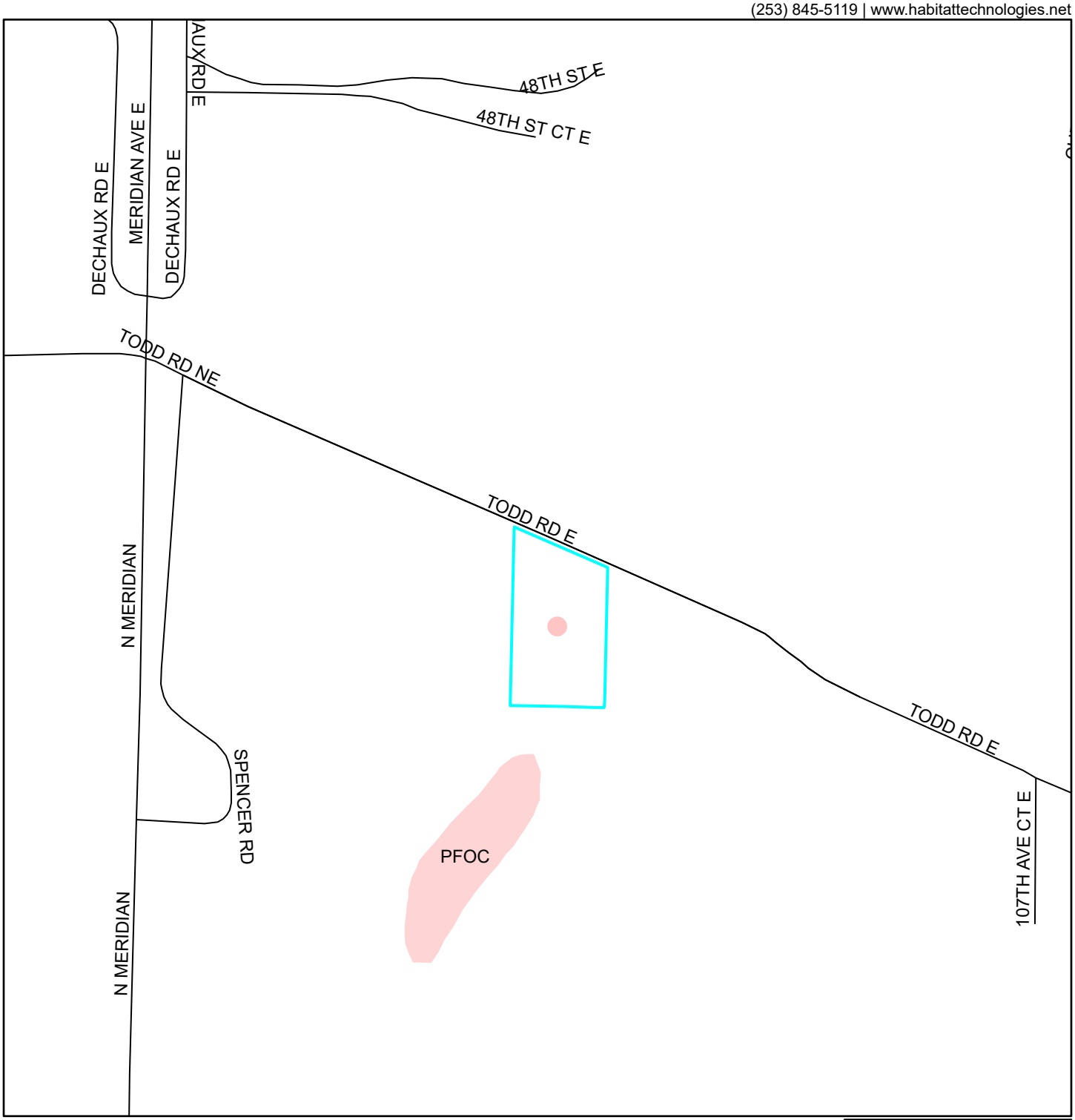
0 130 260 520 Feet

The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. Orthophotos and other data may not align. The County assumes no liability for variations ascertained by actual survey. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. The County makes no warranty of fitness for a particular purpose.

Date: 10/18/2022 08:31 AM

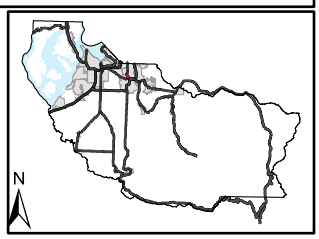
Figure 2 NWI Mapping

Habitat Technologies
P.O.Box 1088
Puyallup, WA 98371
(253) 845-5119 | www.habitattechnologies.net



Legend

- Roads
- National Wetlands Inventory



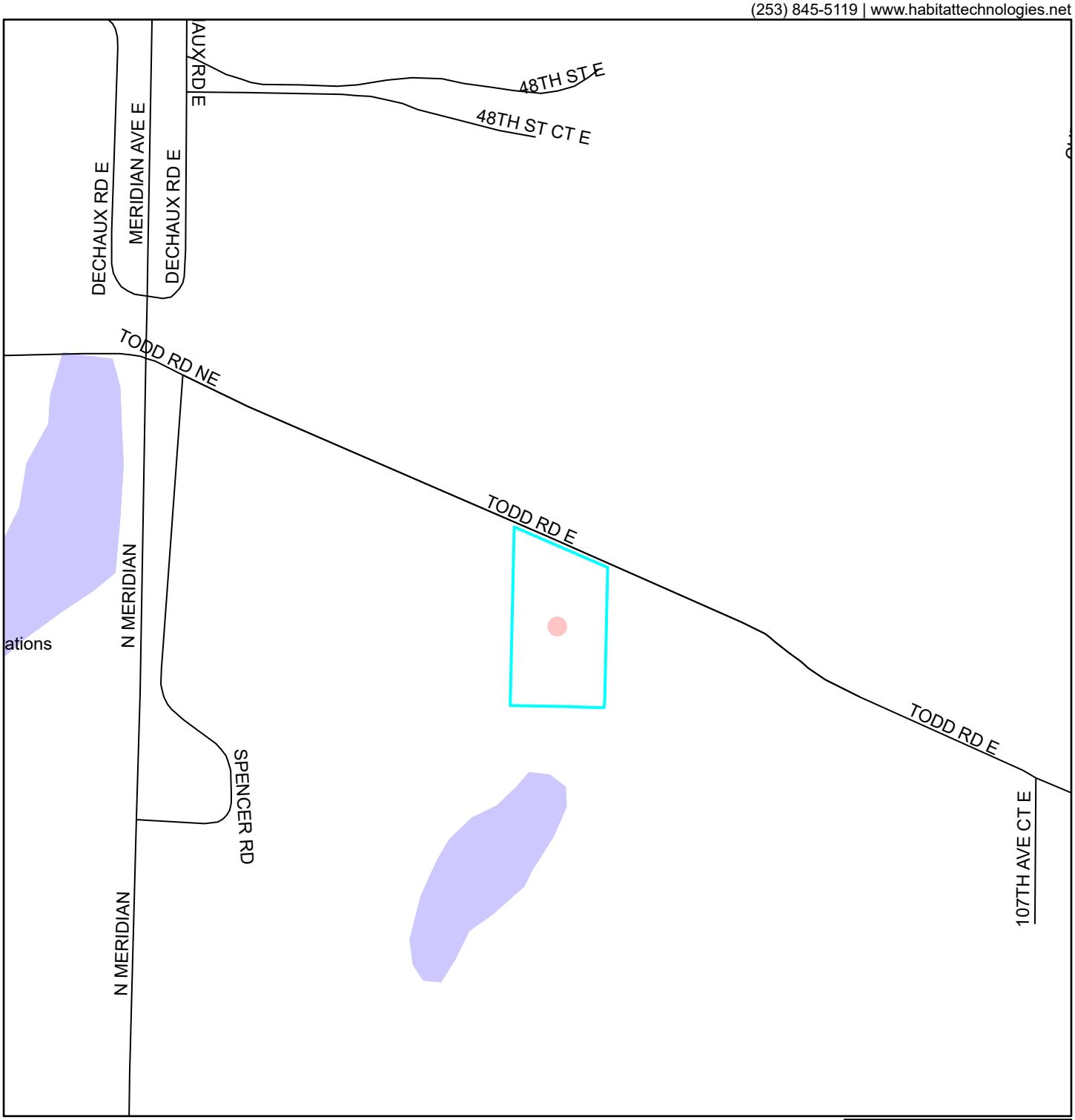
1:3,600

0 80 160 320 Feet

Date: 10/18/2022 08:34 AM

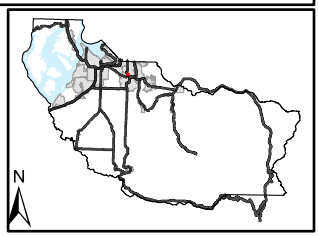
Figure 3 PHS Mapping

Habitat Technologies
P.O.Box 1088
Puyallup, WA 98371
(253) 845-5119 | www.habitattechnologies.net



Legend

- Roads
- Priority Habitat and Species



1:3,600

0 80 160 320 Feet

Date: 10/18/2022 08:36 AM

Figure 4 WDFW Salmonscape Mapping

October 18, 2022

1:9,028

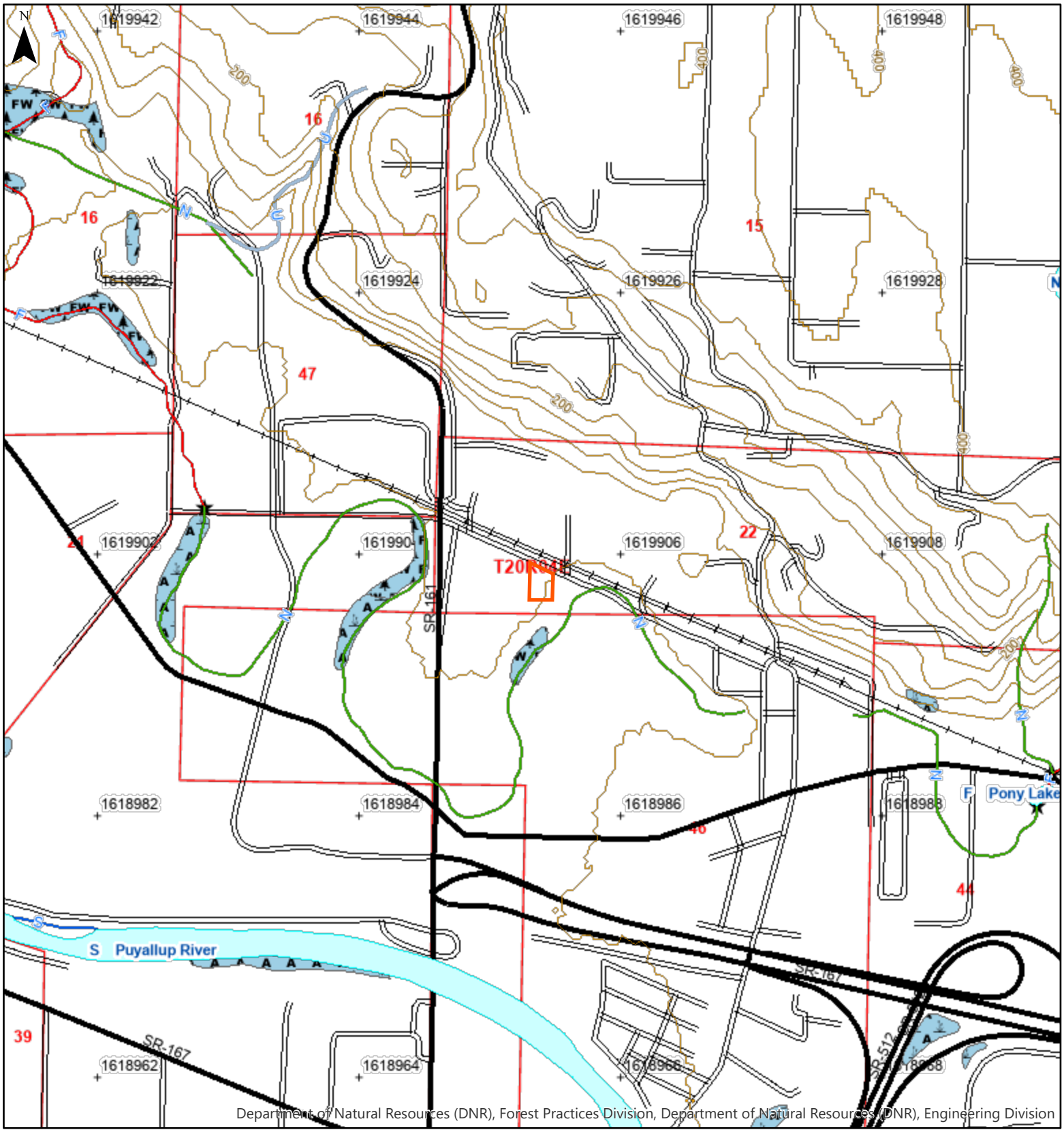
All SalmonScape Species

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Esri, HERE, Garmin, GeoTechnologies, Inc., USGS/NHD, Dale Gombert (WDFW), WDFW, Maxar

Figure 5 Forest Practices Water Type Map



Map Symbols

- New Stream
- Proposed Water Type
- Stream Removal
- Break between water types
- Start and End Point of Surveyed Reach
- Natural Fish Barrier
- Manmade Barrier
- End of Fish or Last Fish

Additional Information

Legal Description

S21 T20.0N R04.0E, S46 T20.0N R04.0E, S15 T20.0N R04.0E, S16 T20.0N R04.0E, S39 T20.0N R04.0E, S21 T20.0N R04.0E, S16 T20.0N R04.0E, S22 T20.0N R04.0E, S47 T20.0N R04.0E, S44 T20.0N R04.0E

WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

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

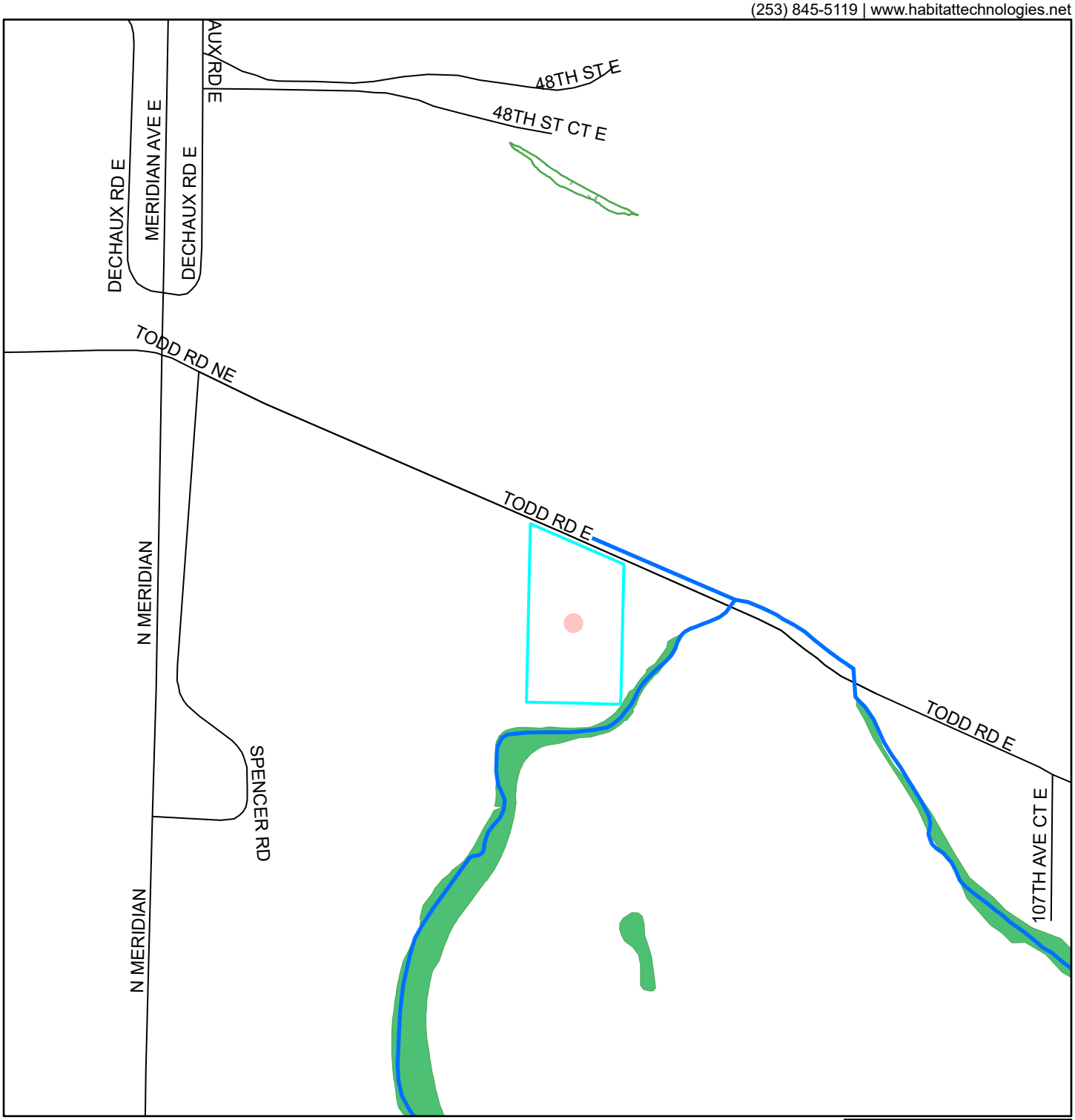
Approximate Scale : 1:12,000

0 0.06 0.12 0.18 0.24 Miles

Date: 10/18/2022 Time: 8:46 AM

Figure 6 City of Puyallup Mapping

Habitat Technologies
P.O.Box 1088
Puyallup, WA 98371
(253) 845-5119 | www.habitattechnologies.net

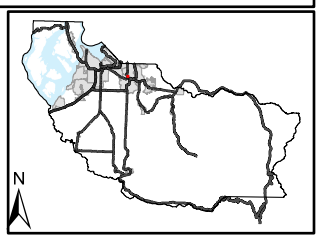


Legend

- Streams - Puyallup
- Roads

Wetlands - Puyallup

- Field-verified Delineated
- Field-verified
- Unverified
- Unverified
- Unverified
- Buffer
- Mitigation Site



1:3,600

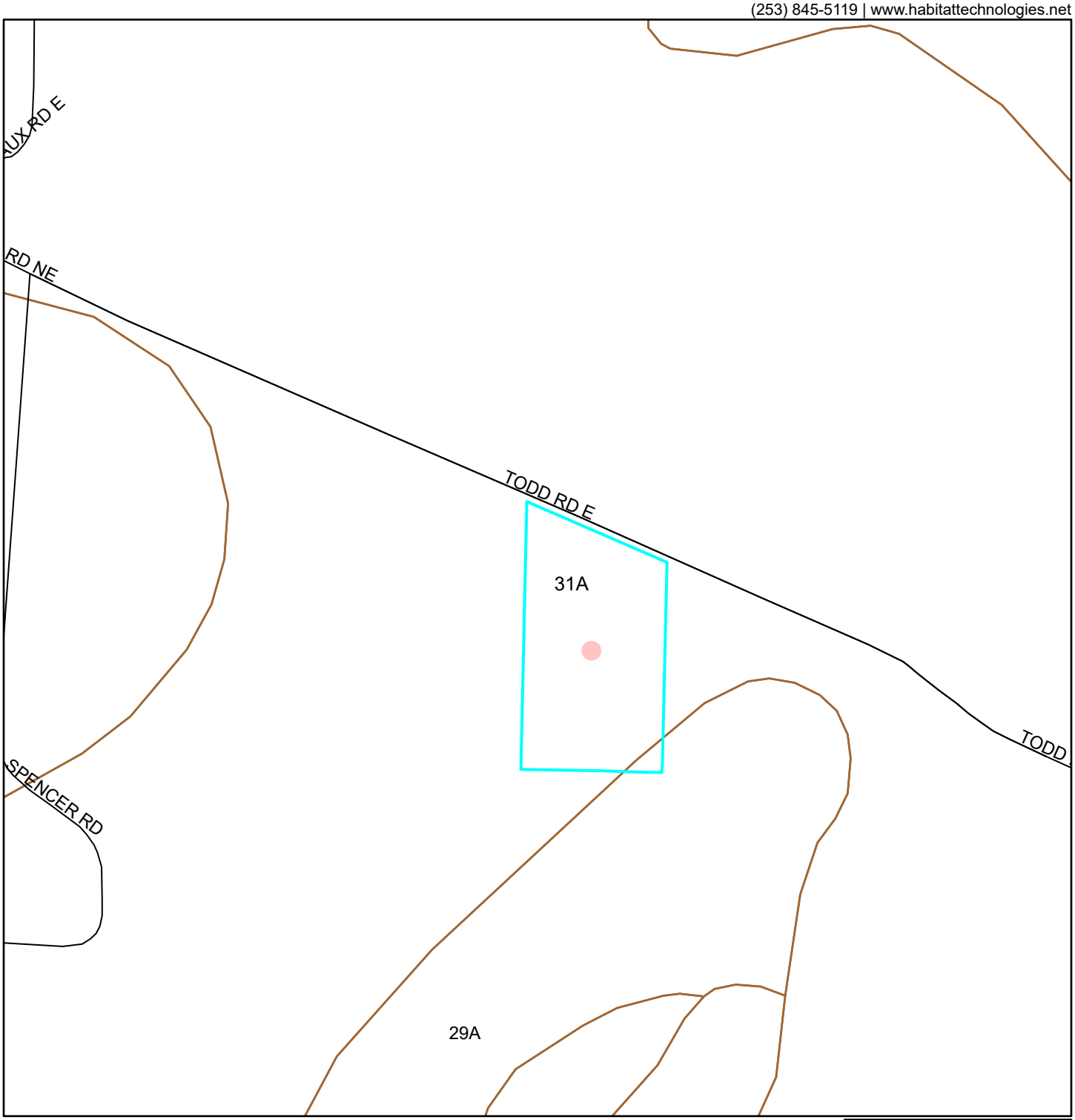
0 80 160 320 Feet

The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. Orthophotos and other data may not align. The County assumes no liability for variations ascertained by actual survey. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. The County makes no warranty of fitness for a particular purpose.

Date: 10/18/2022 08:41 AM

Figure 7 Soils Mapping

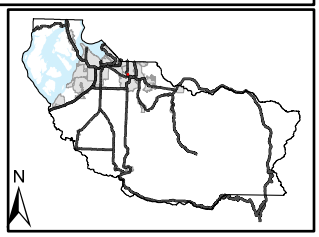
Habitat Technologies
P.O.Box 1088
Puyallup, WA 98371
(253) 845-5119 | www.habitattechnologies.net



Legend

Roads

Soils



1:2,400

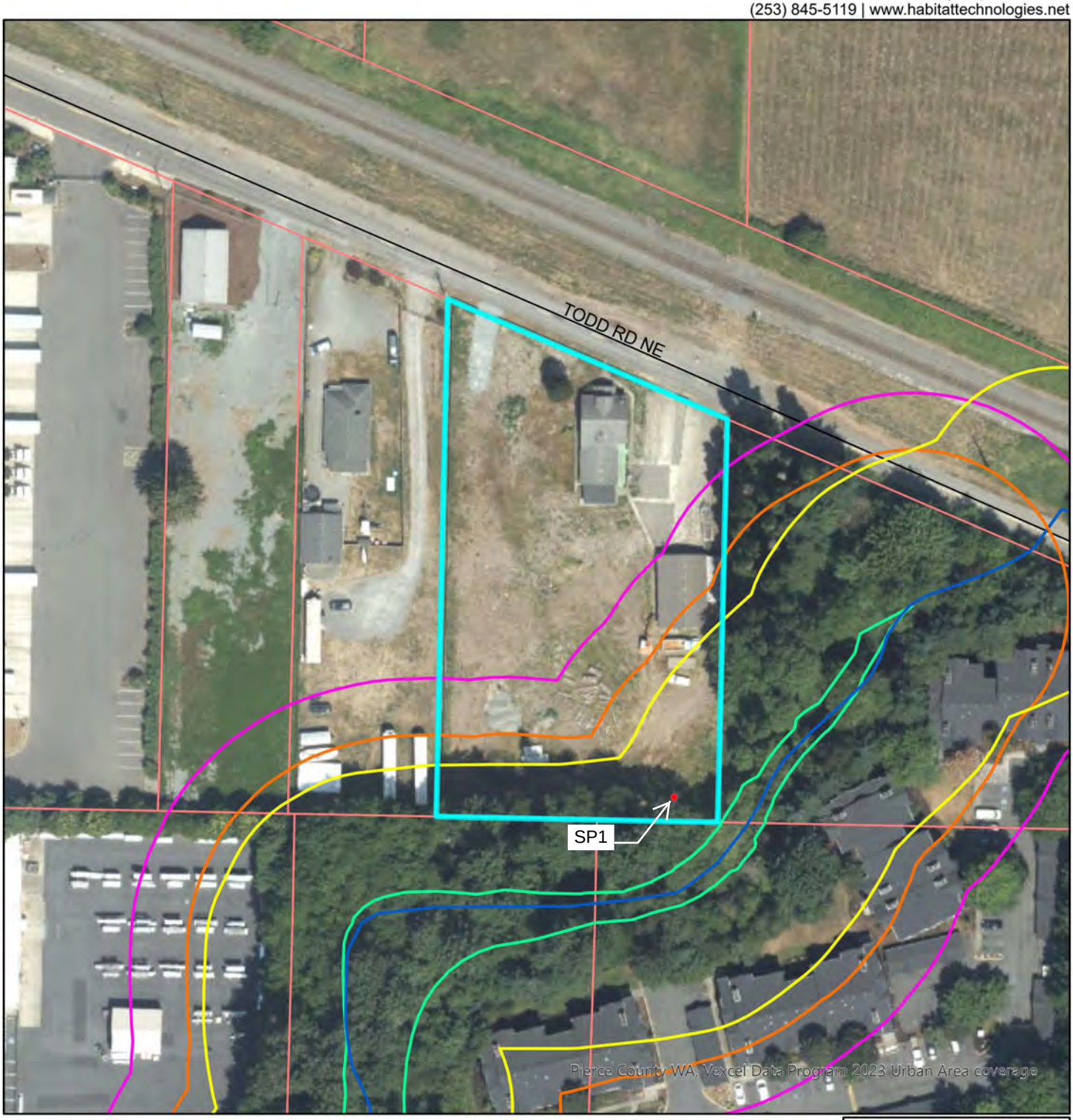
0 50 100 200 Feet

The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. Orthophotos and other data may not align. The County assumes no liability for variations ascertained by actual survey. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. The County makes no warranty of fitness for a particular purpose.

Date: 10/18/2022 08:40 AM

Figure 8 Site Graphic

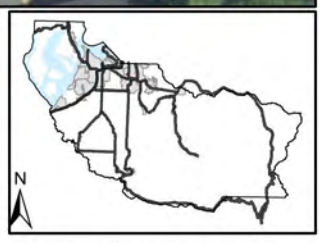
Habitat Technologies
P.O.Box 1088
Puyallup, WA 98371
(253) 845-5119 | www.habitattechnologies.net



Legend

- 100 Feet Drainage Corridor Buffer
- 150 Feet Standard Wetland Buffer
- 110 Feet Reduced Buffer
- Drainage Corridor
- Wetland A
- Tax Parcels
  - Base Parcel
  - Condominium
  - Other
- Roads

County - 2023 Ortho



1:1,200

0 25 50 100 Feet

The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. Orthophotos and other data may not align. The County assumes no liability for variations ascertained by actual survey. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. The County makes no warranty of fitness for a particular purpose.

Date: 11/14/2024 10:52 AM

REFERENCE AND BACKGROUND LIST

Adamus, P.R., E.J. Clairain Jr., R.D. Smith, and R.E. Young. 1987. Wetland Evaluation Technique (WET); Volume II: Methodology, Operational Draft Technical Report Y-87, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Cowardin, Lewis M. et al, 1979. Classification of Wetlands and Deepwater Habitats of the United States. Office of Biological Services, U.S. Fish and Wildlife Service, U.S. Department of the Interior, FWS/OBS-79/31.

Hitchcock, C.L., A. Cronquist. 1977. Flora of the Pacific Northwest. University of Washington Press. Seattle, Washington.

Hruby, T. 2014. Washington State Wetland Rating System for Western Washington: 2014 Update. (Publication #14-06-029). Olympia, WA: Washington Department of Ecology.

Lichvar,R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetlands Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X. http://wetland-plands. Usace.army.mil/

Reppert, R.T., W. Sigleo, E. Stakhiv, L. Messman, and C. Meyers. 1979. Wetland Values - Concepts and Methods for Wetland Evaluation. Research Report 79-R1, U.S. Army Corps of Engineers, Institute for Water Resources, Fort Belvoir, Virginia.

United States Army Corps of Engineers, 1987. Wetlands Delineation Manual. Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. March 1987.

United States Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), Environmental Laboratory ERDC/EL TR-08-13.

US Climate Data, 2015 http://www.usclimatedata.com/climate/tacoma/washington/united-states/uswa0441/0441/2014/1

USDA Natural Resource Conservation Service Plants Database, 2015 (for hydrophytic plan classification): http://plants.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. Web Soil Survey. 2016 http://vewsoilsurvey.nrcs.usda.gov/app/newfeatures.2.3.htm.

US Fish and Wildlife Service National Wetland Inventory Mapper, 2016 (for NWI wetland mapping): http://www.fws.gov/wetlands/Data/Mapper.html.

Washington State Department of Ecology. 1997. Washington State Wetlands Identification and Delineation Manual. Publication Number 96-94.

Washington State Department of Fish and Wildlife Priority Habitats and Species Maps 2016 http://wdfw.wa.gov/mapping/phs/

Washington State Department of Fish and Wildlife SalmonScape Mapping System, 2016 (for fish presence): http://apps.wdfw.wa.gov/salmonscape/map.html

Washington State Department of Natural Resources FPARS Mapping System, 2016 (for stream typing): http://fortess.wa.gov/dnr/app1/fpars/viewer.htm

Washington State Department of Transportation (WSDOT). 2023. Upper Wapato Creek Conceptual Fish Passage Mitigation Plan. Puget South Gateway Program. SR167 Completion Project. Olympia, Washington.

APPENDIX A – FIELD DATA FORMS

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

Project/Site: Parcel 0420222005 City/County: City of Puyallup Sampling Date: 8 SEP 2022

Applicant/Owner: _____ State: WA. Sampling Point: SP1

Investigator(s): Habitat Technologies Section, Township, Range: S22 T20 R04

Landform (hillslope, terrace, etc.): valley terrace Local relief (concave, convex, none): flat Slope (%): 1-2%

Subregion (LRR): A Lat: +47.210383N Long: -122.290071W Datum: WGS84

Soil Map Unit Name: Pilchuck NWI classification: excessively well

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

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

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

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

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

Remarks: well managed lawn area

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. Domestic plum	20	yes	FACU
2.			
3.			
4.			
	20 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft radius)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 15ft radius)			
1. Poa spp.	60	yes	FAC
2. Agrotis tenuis	20	yes	FAC
3. Hypochaeris lanatum	20	yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 15ft radius)			
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	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks: well managed lawn

SOIL

Sampling Point: SP1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					SL	mixed sandy loam
3-20	10YR 3/3	100					SL	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 ☒

Remarks: NO prominent field indicators of hydric soils

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ☐ No ☒

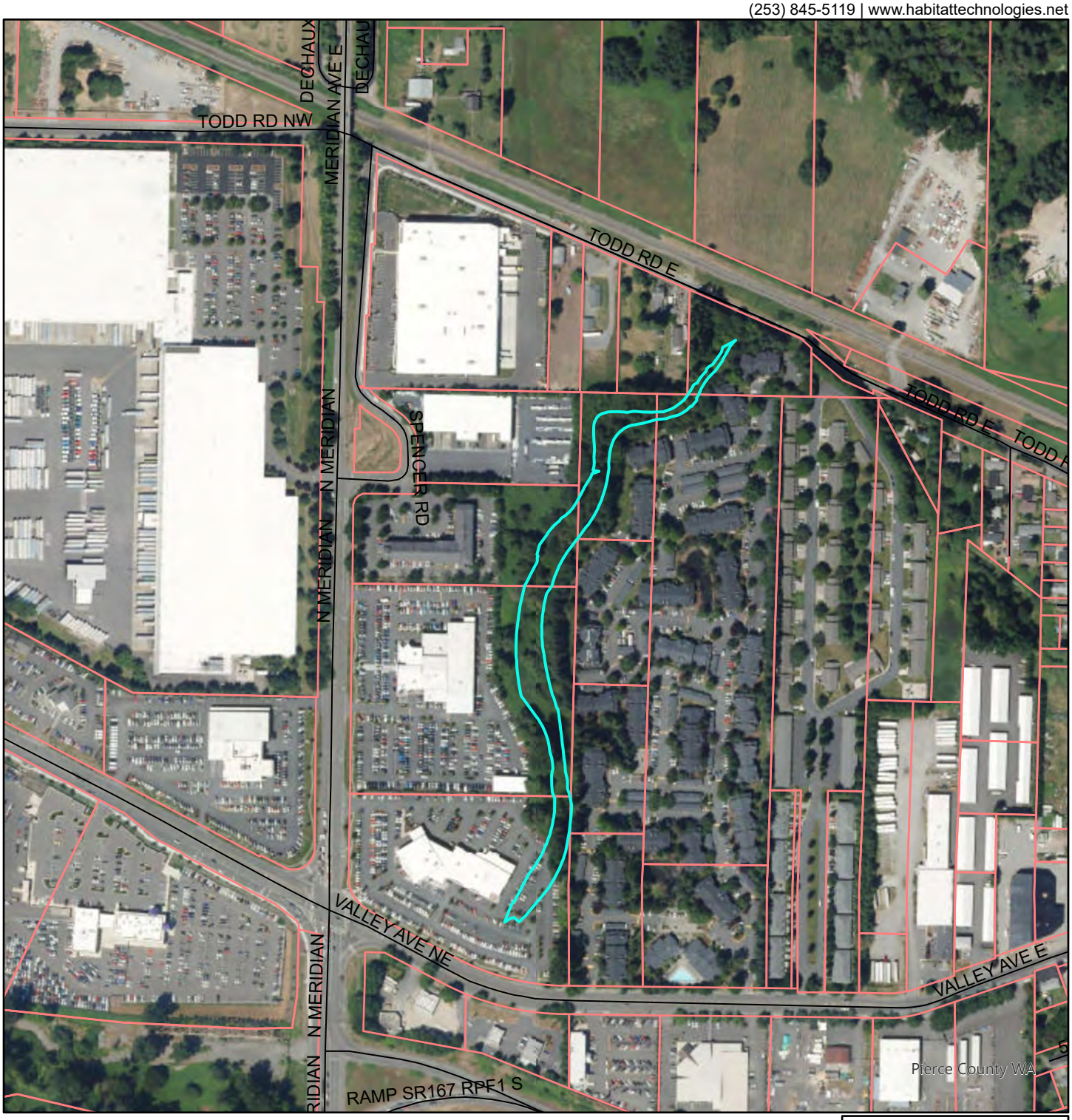
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: appears to drain moderately well to well. NO prominent field indicators of wetland hydrology.

APPENDIX B – WETLAND RATING WORKSHEET

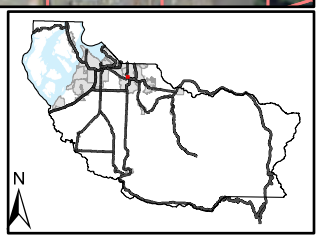
Figure A1

Habitat Technologies
P.O.Box 1088
Puyallup, WA 98371
(253) 845-5119 | www.habitattechnologies.net



Legend

- Wetland A
- Roads
- Tax Parcels
  - Base Parcel
  - Condominium
  - Other



County - 2020 Ortho

1:4,800

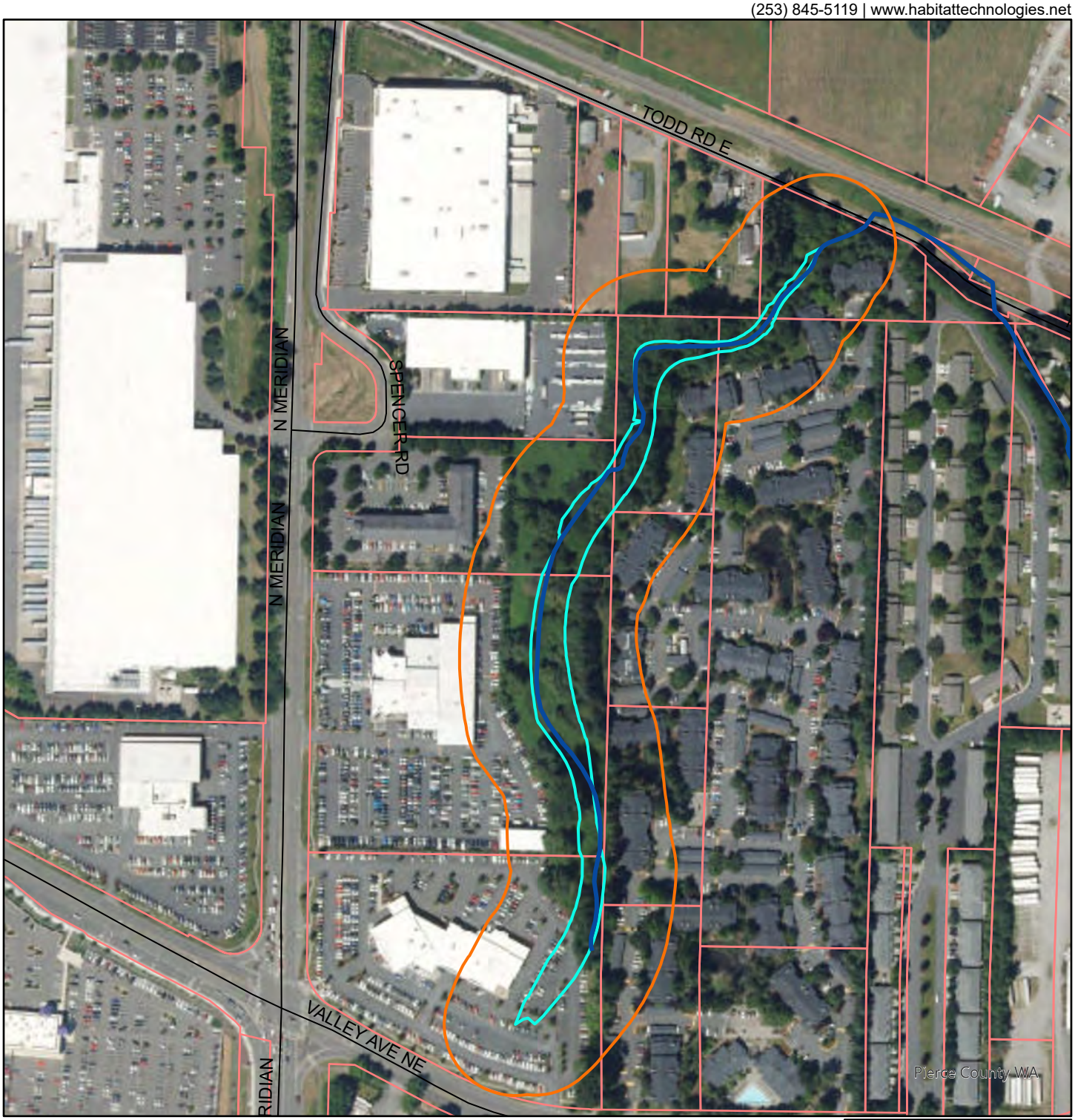
0 105 210 420 Feet

The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. Orthophotos and other data may not align. The County assumes no liability for variations ascertained by actual survey. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. The County makes no warranty of fitness for a particular purpose.

Date: 10/25/2022 10:34 AM

Figure A2

Habitat Technologies
P.O.Box 1088
Puyallup, WA 98371
(253) 845-5119 | www.habitattechnologies.net



Legend

- 150 Feet Boundary
- Drainage Corridor
- Wetland A
- County - 2020 Ortho
- Roads
- Other

Tax Parcels

- Base Parcel
- Condominium

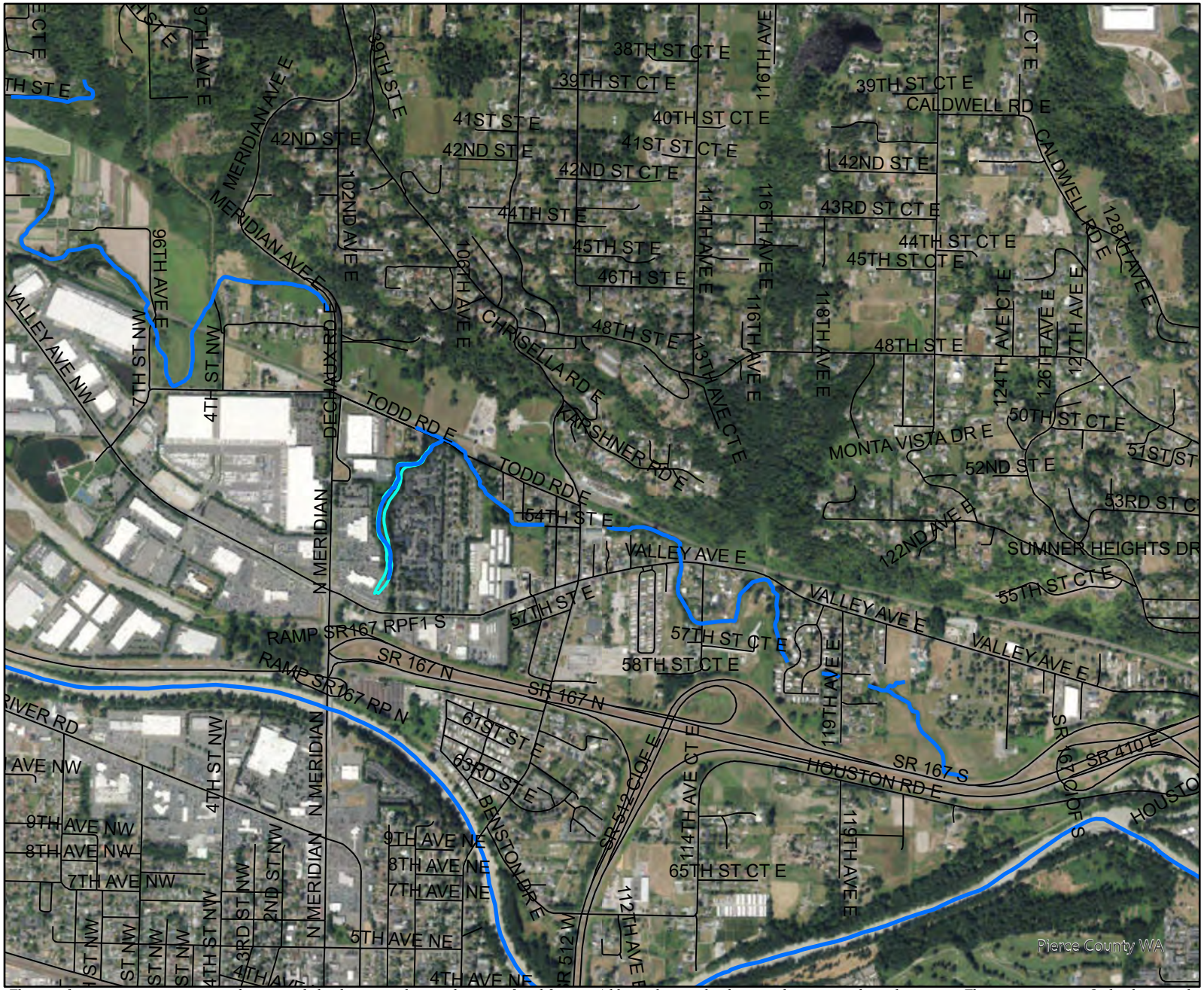
1:3,600

0 80 160 320 Feet

The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. Orthophotos and other data may not align. The County assumes no liability for variations ascertained by actual survey. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. The County makes no warranty of fitness for a particular purpose.

Date: 10/25/2022 10:39 AM

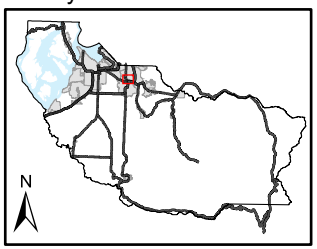
Figure A3



Legend

- Streams - Puyallup
- Wetland A
- Roads

County - 2020 Ortho



0 390 780 1,560
Feet

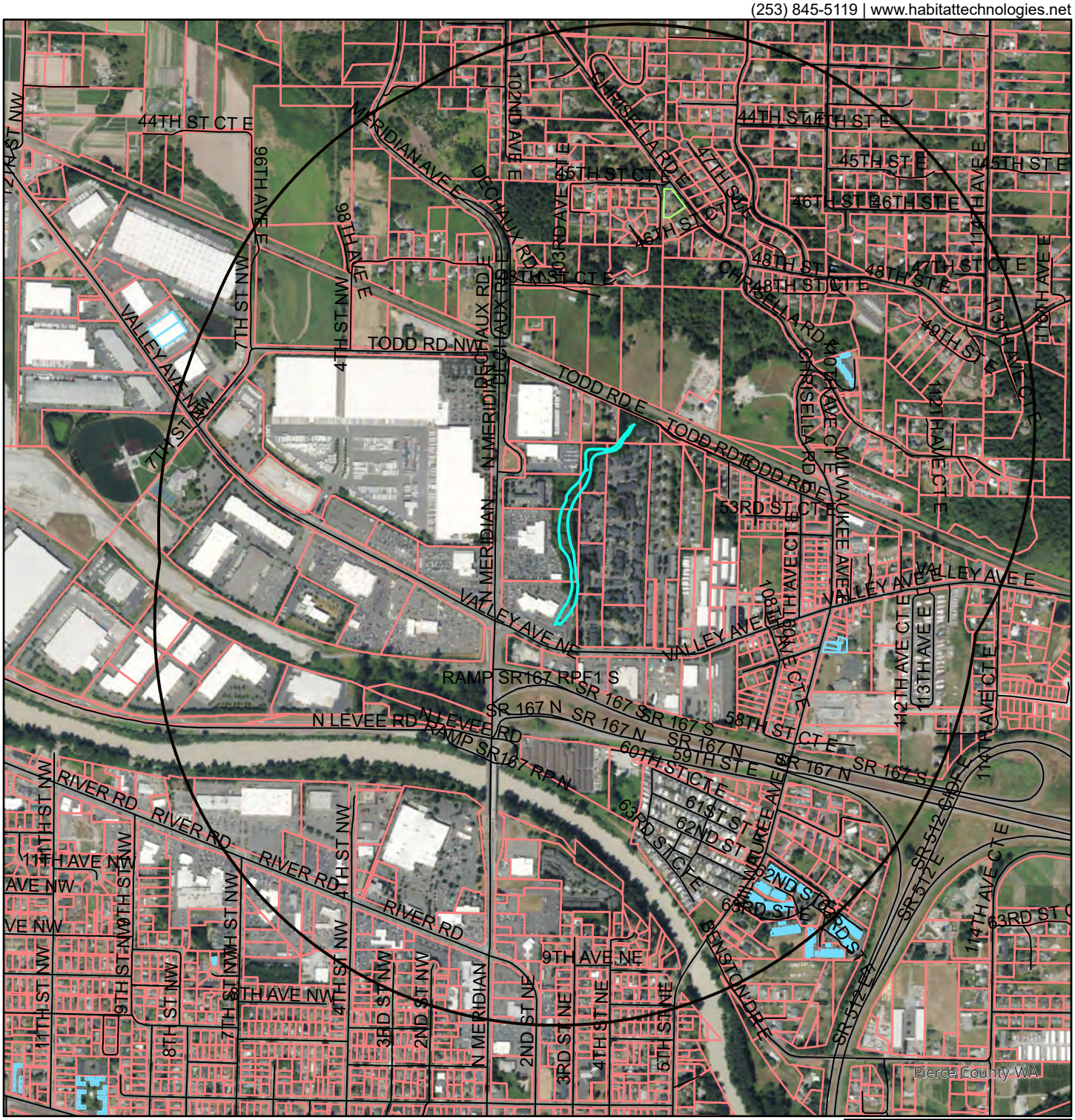
1:19,200

Habitat Technologies
P.O.Box 1088
Puyallup, WA 98371
(253) 845-5119
www.habitattechnologies.net

Date: 10/25/2022 10:43 AM

Figure A4

Habitat Technologies
P.O.Box 1088
Puyallup, WA 98371
(253) 845-5119 | www.habitattechnologies.net

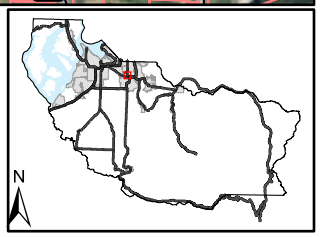


Legend

- 1 KM Boundary
- Wetland A
- Roads

Tax Parcels

- Base Parcel
- Condominium
- Other



County - 2020 Ortho

1:14,000

0 310 620 1,240 Feet

The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. Orthophotos and other data may not align. The County assumes no liability for variations ascertained by actual survey. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. The County makes no warranty of fitness for a particular purpose.

Date: 10/25/2022 10:41 AM

November 1, 2022

Figure W1

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
- Approved
- In Development

Miles
0 0.05 0.1 0.2

DEPARTMENT OF ECOLOGY
State of Washington

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Parcel 0420222005 Date of site visit: 8 SEP 2022 14 JAN 2025

Rated by Habitat Technologies Trained by Ecology? X Yes ___No Date of training 2014

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

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.
Source of base aerial photo/map Pierce County and Puyallup GIS

OVERALL WETLAND CATEGORY II (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	8	7	6	21

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	

Wetland name or number A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	A1
Hydroperiods	H 1.2	A2
Ponded depressions	R 1.1	A2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	A2
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	A1
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	A2
Map of the contributing basin	R 2.2, R 2.3, R 5.2	A3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	A4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	W1
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	W1

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number A

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

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

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

4. Does the entire wetland unit **meet all** of the following criteria?
___The wetland is on a slope (*slope can be very gradual*),
___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
___The water leaves the wetland **without being impounded**.

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
___The overbank flooding occurs at least once every 2 years.

Wetland name or number A

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

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

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

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

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

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

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

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

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

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

Wetland name or number A

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

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

R 1.0. Does the site have the potential to improve water quality?		
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event:		
Depressions cover > $^3/_4$ area of wetland	points = 8	
Depressions cover > ½ area of wetland	points = 4	
Depressions present but cover < ½ area of wetland	points = 2	4
No depressions present	points = 0	
R 1.2. Structure of plants in the wetland (areas with >90% cover at person height, **not** Cowardin classes)		
Trees or shrubs > $^2/_3$ area of the wetland	points = 8	
Trees or shrubs > $^1/_3$ area of the wetland	points = 6	
Herbaceous plants (> 6 in high) > $^2/_3$ area of the wetland	x points = 6	6
Herbaceous plants (> 6 in high) > $^1/_3$ area of the wetland	points = 3	
Trees, shrubs, and ungrazed herbaceous < $^1/_3$ area of the wetland	points = 0	
Total for R 1 Add the points in the boxes above		10

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

R 2.0. Does the landscape have the potential to support the water quality function of the site?		
R 2.1. Is the wetland within an incorporated city or within its UGA?	Yes = 2 No = 0	2
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	Yes = 1 No = 0	1
R 2.3. Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years?	Yes = 1 No = 0	0
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	1
R 2.5. Are there other sources of pollutants coming into the wetland that are not listed in questions R 2.1-R 2.4 Other sources _____	Yes = 1 No = 0	1
Total for R 2 Add the points in the boxes above		5

Rating of Landscape Potential If score is: X **3-6 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

R 3.0. Is the water quality improvement provided by the site valuable to society?		
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi?	Yes = 1 No = 0	1
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 No = 0	0
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (*answer YES if there is a TMDL for the drainage in which the unit is found*)	Yes = 2 No = 0	0
Total for R 3 Add the points in the boxes above		1

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

Wetland name or number A

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

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

R 4.0. Does the site have the potential to reduce flooding and erosion?	
R 4.1. Characteristics of the overbank storage the wetland provides: *Estimate the average width of the wetland perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of wetland)/(average width of stream between banks).* If the ratio is more than 20 points = 9 If the ratio is 10-20 points = 6 If the ratio is 5-<10 points = 4 If the ratio is 1-<5 X points = 2 If the ratio is < 1 points = 1	2
R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons need to have >90% cover at person height. These are NOT Cowardin classes).* Forest or shrub for > 1/3 area OR emergent plants > 2/3 area points = 7 Forest or shrub for > 1/10 area OR emergent plants > 1/3 area points = 4 Plants do not meet above criteria points = 0	7
Total for R 4 Add the points in the boxes above	9

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

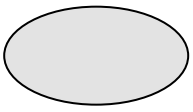
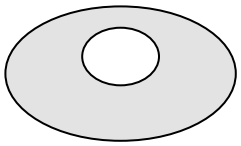
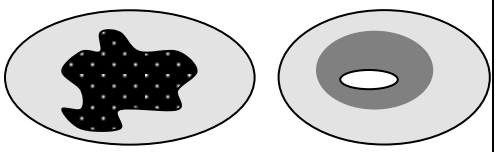
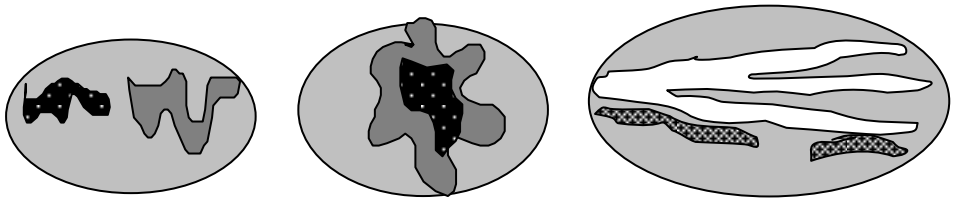
R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
R 5.1. Is the stream or river adjacent to the wetland downcut?	Yes = 0 No = 1	1
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	1
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	1
Total for R 5	Add the points in the boxes above	3

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

R 6.0. Are the hydrologic functions provided by the site valuable to society?	
R 6.1. Distance to the nearest areas downstream that have flooding problems? *Choose the description that best fits the site*. The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2 Surface flooding problems are in a sub-basin farther down-gradient points = 1 No flooding problems anywhere downstream points = 0	2
R 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 R 6 Add the points in the boxes above	2

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

Wetland name or number A

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____Aquatic bed — 4 structures or more: points = 4 ____Emergent — 3 structures: points = 2 ____Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 _X_Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* _X_The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	1
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ____Permanently flooded or inundated — 4 or more types present: points = 3 _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 _X_Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	0

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 X Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* X At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	4
Total for H 1 Add the points in the boxes above	7

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 1 = 1 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 10 + [(% moderate and low intensity land uses)/2] 12 = 22 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	(-2)
Total for H 2 Add the points in the boxes above	0

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

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

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

Wetland name or number A

WDFW Priority Habitats

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

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

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

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

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

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

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

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

X **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

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

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

APPENDIX C – RESUME OF THOMAS D. DEMING

HABITAT TECHNOLOGIES

THOMAS D. DEMING
Senior Professional Wetland Scientist - Certificate #447

EDUCATION

University of Puget Sound, School of Law - *Juris Doctor* — Tacoma, WA 1987
Oregon State University — Corvallis, OR
Bachelor of Science - Wildlife Science — 1978
Bachelor of Science - Fisheries Science — 1978

EXPERIENCE

Freshwater and Estuarine Wetlands and Streams

- Evaluation and delineation of freshwater and estuarine wetland areas using federal and state guidelines (1987 Manual with 2010 Supplement, Washington State Wetland Rating System) and the U.S. Fish and Wildlife Service classification systems.
- Conducting wetland function and value analysis evaluations.
- Development of workable wetland and stream impact mitigation programs and habitat restoration and enhancement plans. Included within these programs and plans has been the development and implementation of post-mitigation monitoring programs.
- Completion of onsite technical support and project team coordination during the implementation of mitigation site construction and vegetation planting.
- Coordination of wetland project activities and permitting processes to obtain appropriate and timely permits and project completion within defined timelines.
- Identification and evaluation of plant communities within wetland and buffer areas.

Wildlife and Fisheries

- Completion of Biological Evaluations for Threatened and Endangered Species following USFWS, NMFS, and FEMA guidelines.
- Completion of wildlife and fisheries habitat assessments to determine limiting factors to population dynamics and habitat utilization (both existing and potential).
- Completion of threatened and endangered species and habitat assessments for plants, fish, and wildlife to determine project impacts and restoration/enhancement potential.
- Development, implementation, and monitoring of restoration and enhancement projects within freshwater, estuarine, and upland habitats designed to improve wildlife and fisheries utilization and migration corridors.
- Preparation of wildlife and fisheries management prescriptions for both project-specific areas and basin-level planning processes.
- Development and implementation of hatchery components and operations for Chinook salmon, coho salmon, chum salmon, and steelhead trout culture.
- Coordination of wildlife and fisheries project activities and permitting processes to obtain appropriate and timely permits.

EMPLOYMENT HISTORY

Habitat Technologies (sole proprietorship) — 1997 to present
Watershed Dynamics, Inc. (equal owner) — 1990 to 1997
Habitat Technologies (sole proprietorship) — 1987 to 1990
Puyallup Tribal Fisheries Division (habitat biologist) — 1979 to 1989

PROFESSIONAL AFFILIATIONS

Washington State Bar Association (retired) - Society of Wetland Scientists (Senior Scientist)

wetlands, streams, fisheries, wildlife – mitigation and permitting solutions
P.O. Box 1088, Puyallup, Washington 98371
253-845-5119 contact@habitattechnologies.net

A VETERAN OWNED SMALL BUSINESS COOPERATIVE