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CRITICAL AREAS REPORT

Yelm Highway Community Park and Future School

THURSTON COUNTY, WASHINGTON

SHANNON & WILSON

September 14, 2023

Shannon & Wilson No: 103284-010

Submitted To: Berger Partnership
1927 Post Alley, Suite 2
Seattle, WA 98101
Attn: Mr. Andy Mitton

Subject: CRITICAL AREAS REPORT, YELM HIGHWAY COMMUNITY PARK AND FUTURE SCHOOL, OLYMPIA, WASHINGTON

Shannon & Wilson prepared this report and participated in this project as a subconsultant to Berger Partnership. Our scope of services was approved on June 28, 2019, and further on June 28, 2021. This report presents results from our critical areas investigation and was prepared by the undersigned. Thurston County provided comments on the report on August 17, 2023, which have been addressed in this version.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON

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ACRONYMS

bgs	below ground surface
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
DNR	Department of Natural Resources
DP	data plot
Ecology	Washington State Department of Ecology
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
HCP	Habitat Conservation Plan
NWI	National Wetlands Inventory
NRCS	Natural Resources Conservation Service
OHWM	ordinary high water mark
OPARD	City of Olympia Parks, Arts & Recreation Department
OSD	Olympia School District
PHS	Priority Habitats & Species
Project	The Yelm Highway Community Park and Future School Project
TCC	Thurston County Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WSS	Web Soil Survey

1 INTRODUCTION

1.1 Project Location

The Yelm Highway Community Park and Future School Project (Project) is located on 86.25 acres to the south of Yelm Highway Southeast at 3327 Yelm Highway SE, Olympia, Washington 98501 (Section 41/40, Township 18N/17N, Range 1W), parcel numbers 09330005001, 09330005000, 09330006000, and 09330008002 (Figure 1). The Project is located in unincorporated Thurston County. The Project site is bordered to the west and east by residential neighborhoods and undeveloped areas and a residential neighborhood delineates the southern border. The site is relatively flat and is partitioned into agricultural and grass fields; one occupied and one vacant residential properties; upland and wetland forest at the south end of the site; and small clusters of trees scattered throughout the northeast, southwest, and middle sections of the site.

1.2 Project Description

The City of Olympia's Parks, Arts & Recreation Department (OPARD) plans to develop the southern portion of the site (60.1 acres) by constructing playing fields and courts, hiking trails, an off-leash dog park, restroom/storage facilities, light poles and other utilities, stormwater infiltration facilities, and other structures. An area of 3.24 acres at the northeast corner of the site would be developed as OPARD's maintenance facility.

The Olympia School District (OSD) also has proposed the colocation of a future secondary school campus on 22.91 acres of the site along the Yelm Highway frontage. Figure 2, prepared by Berger Partnership, is the site plan developed for the Project's Master Plan, including the future school campus. The colocation of the park and school will allow both entities to provide greater community services and facilities with a smaller combined footprint and net impervious areas than if they were to independently pursue their projects on separate land areas.

The Project site contains a number of critical areas, described in Section 3 of this report. The Project includes wetland buffer reduction to accommodate a 20-foot-wide loop path and ballfield, wetland buffer reduction to accommodate 8-foot-wide public trails, and a potential future wetland boardwalk. These proposed actions and associated mitigation are described in Sections 5 and 6 below. Impacts to Mazama pocket gophers and their habitat to accommodate the park and school improvements are discussed in a separate report.

1.3 Study Objectives

The objectives of the critical areas study were to:

- Conduct a background review of information relating to the study area.
- Delineate wetlands within the study area.
- Conduct an ordinary high water mark (OHWM) delineation of streams within the study area.
- Assess wetland functions and rate/categorize wetlands and streams within and adjacent to the study area.
- Assess aquatic and upland habitat within the study area.
- Conduct an assessment of Oregon white oak (*Quercus garryana*) and map any oak groves or individual oak trees that meet the definition of "Important Oak Habitat" found in Table 24.25-4 of Chapter 24.25 Thurston County Code (TCC).
- Determine applicable wetland and stream buffer widths required by Chapter 24.25 TCC Fish and Wildlife Habitat Conservation Areas and Chapter 24.30 TCC Wetlands.
- Identify applicable federal, state, and local regulations pertinent to natural resources and geologic hazards.

Mazama pocket gophers, a federal and state protected species, were documented on the property by Washington Department of Fish and Wildlife (WDFW) in 2006 and 2013 (WDFW, 2021a). Additional surveys were completed in 2019 and 2021 as part of this Project. Because of their status as Threatened under the federal Endangered Species Act and their prevalence in upland areas within Thurston County, the County has worked with U.S. Fish and Wildlife Service (USFWS) to develop a Habitat Conservation Plan (HCP) and obtain an Incidental Take Permit to allow the County to "locally manage habitat protection when authorizing lawful projects that may impact the federally protected species." Because this Project site contains pocket gophers and will be seeking coverage under the County's HCP, all gopher-related analysis, including pocket gopher survey methods, survey results, and regulatory compliance discussions, are provided in a separate Mazama Pocket Gopher Study (Shannon & Wilson, 2023).

2 METHODS

2.1 Review of Existing Information

Prior to conducting fieldwork, the following background information was reviewed:

- Thurston County GeoData Center Permitting Map (Thurston County, 2022). This resource identifies potential wetlands, streams, critical aquifer recharge areas, and flood hazards.
- U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS) Web Soil Survey (WSS) interactive mapping system (USDA NRCS, 2022)
- USFWS National Wetlands Inventory (NWI) Mapper interactive mapping system (USFWS, 2022)
- WDFW Priority Habitats and Species (PHS) on the Web interactive mapping system (WDFW, 2022a)
- WDFW SalmonScape interactive mapping system (WDFW, 2022b)
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FEMA, 2016)

2.2 Wetland Delineation, Classification, and Rating

Biologists Amy Summe and Merci Clinton visited the site on June 25 and 26, 2019 and again on July 29, 2021. Potential wetlands were identified using methods described in the U.S. Army Corps of Engineers (Corps) *Wetlands Delineation Manual* (Corps, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (U.S. Army Engineer Research and Development Center, 2010). Ground visual surveys were used to characterize the vegetation (Federal Geographic Data Committee, 2013) and hydrogeomorphic (Brinson, 1993) classifications. The *Washington State Wetland Rating System for Western Washington, 2014 Update* (Hruby, 2014) was used to rate and categorize each wetland unit.

Potential wetland areas within the study area were identified using the triple-parameter approach, which considers vegetation types, soil conditions, and hydrologic conditions. For an area to be considered wetland, it must display each of the following: (a) dominant plant species that are considered hydrophytic by the accepted classification indicators, (b) soils that are considered hydric under federal definition, and (c) indications of wetland hydrology in accordance with the federal definition. Appendix A includes a more detailed summary of the delineation methodology.

The boundary of one wetland, Wetland A, within the study area was marked with pink wetland delineation flags numbered 1 through 35 and the wetland and upland data plots (DPs) were marked with yellow flags with polka dots (1-4). Wetland data forms are found in Appendix B. Photos of Wetland A are included in Appendix C. Flags were then surveyed by the City of Olympia Department of Public Works.

Thurston County classifies wetlands into one of four categories (I through IV) based on the most recent version of the Washington State Department of Ecology's (Ecology's) wetland rating system for Western Washington (TCC 24.30.030). Wetland A is a Category I wetland based on a total score of 23. See Appendix D for the Wetland Rating Form.

2.3 Stream Delineation

The OHWM of Chambers Ditch was identified using the Corps' regulatory report, *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (U.S. Army Engineer Research and Development Center, 2014). The OHWM was located using indicators such as vegetation patterns, topography, bank undercutting, and water lines. The portions of Chambers Ditch that cross onto the Project area were marked in the field with orange flags numbered 1 through 18 on the left bank. OHWM boundary flags were then surveyed by the City of Olympia Department of Public Works. Photos of Chambers Ditch are included in Appendix C.

2.4 Important Habitats and Species

TCC 24.25.065 Important Habitats and Species contains regulations governing important habitats and species designated by the state or federal government (TCC 24.25.065.A and B). According to PHS on the Web (WDFW, 2022a), the Project area may contain the following federal or State-listed species and habitats:

- Priority wetland (see Section 2.2 above)
- Little brown bat (*Myotis lucifugus*) communal roosts, big brown bat (*Eptesicus fuscus*) breeding areas, and Yuma myotis (*Myotis yumanensis*) communal roosts
- Mazama pocket gopher (discussed in separate report)
- Coho salmon (*Oncorhynchus kisutch*) and cutthroat trout (*Oncorhynchus clarkii clarkii*)

The Project site was also reviewed for presence of County-designated habitats and species of local importance that may be present, primarily Oregon white oak (TCC 24.25.065.C, Tables 24.25-5 and -5). Oregon white oak is also a State priority habitat, but was not mapped on PHS on the Web. Other species of local importance listed in Table 24.25-5 are not expected in the Project area because they are either strongly prairie-associated (in the case of the designated birds) or have specific stream and forest requirements that are not met at the site (in the case of the designated amphibians).

2.4.1 Oak Tree Assessment

During the site visit, Shannon & Wilson biologists surveyed all parcels associated with the Project for Oregon white oak trees and groves. Trees were identified using common characteristics including leaf shape, fruit (if found), and tree crown shape. All identified individual trees or groves were marked on a map at their approximate locations and included in the critical areas site plan (Figure 3).

Table 24.25-4 provides the following definition of important oak habitat:

> *Important Oak Habitat means stands of Oregon white oak (Quercus garryana) or oak/conifer associations where canopy coverage of the oak component of the stand is twenty-five percent or more; or where total canopy coverage of the stand is less than twenty-five percent, but oak accounts for at least fifty percent of the canopy coverage. The latter is often referred to as oak savanna. Important oak habitat consists of stands greater than or equal to one acre (0.4 hectares) in size. Single oaks or stands less than one acre (0.4 hectares) shall also be considered an important habitat when found to be particularly valuable to fish and wildlife (i.e. they contain many cavities, have a large diameter at breast height, are used by priority species, or have a large canopy), or are located in degraded habitat areas. Individual oak trees and stands of pure oak or oak conifer associations less than one acre in size that are located in close proximity to an oak habitat larger than one acre may also be considered an important habitat.*

During the 2019 site visits, an assessment of oak habitat importance was made using Thurston County's definitions.

2.4.2 Other Wildlife Species

No data sources were located that identified the presence of the priority bats in the Project area or within 600 feet. Indicators of the presence of these species and suitable habitat was looked for during the field effort.

2.5 Geologic Hazard Areas

Geologic hazards were analyzed by reviewing previous subsurface explorations and liquefaction maps provided by the Washington State Department of Natural Resources (DNR's) Washington Geologic information portal (DNR, 2022a).

3 RESULTS

3.1 Review of Existing Information

3.1.1 Terrestrial Wildlife and Habitat

Little brown bat, big brown bat, and Yuma myotis bat species have mapped breeding or communal roosting areas at the township level which incorporates the Project area (Figure 4; WDFW, 2022a). These bats are State priority species.

3.1.2 Aquatic Wildlife and Habitat

Thurston County GeoData Center Permitting Map (Thurston County, 2021) maps the southwestern corner of the study area as wetland and shows Chambers Ditch running along the west side of the study area (Figure 6).

The WDFW PHS interactive mapping system (WDFW, 2022a) and the WDFW SalmonScape interactive mapping system (WDFW, 2022b) list Chambers Ditch as documented presence for coho salmon and residential cutthroat trout (Figure 5). The DNR's Forest Practices Application Mapping Tool also identifies Chambers Creek as Type F (fish-bearing) (DNR, 2022b). Coho salmon and cutthroat trout are State priority species.

The southwest corner of the Project area is also shown on WDFW's PHS interactive mapping system as a priority forested/shrub wetland (WDFW, 2022a). USFWS NWI Mapper interactive mapping system (USFWS, 2022) maps the southwestern corner of the study area as a wetland made up of PSSC (palustrine, scrub-shrub, seasonally flooded), PFOA (palustrine, forested, temporarily flooded), and PEM1C (palustrine, emergent, persistent, seasonally flooded). Chambers Ditch is mapped as a freshwater emergent wetland PEM1C (Figure 7).

3.1.3 Soils

NRCS WSS interactive mapping system (USDA NRCS, 2022) maps the presumed wetland area in the southwest corner of the study area as (70) Mukilteo muck, drained. The rest of the site is mapped as (73) Nisqually loamy fine sand, 0 to 3% slopes; (74) Nisqually loamy fine sand, 3 to 15% slopes; and (20) Cagey loamy sand. Of these soils, (70) Mukilteo muck, drained and (20) Cagey loamy sand are considered hydric. See Figure 8 for the soils map.

3.2 Wetland Delineation

During the site visit, one wetland, Wetland A, was delineated within the study area (Figure 3). Wetland Determination Data Forms that provide recorded data for upland and

wetland DPs are included in Appendix B, representative site photos are included in Appendix C (Exhibits C-1 and C-2), and the wetland rating form and figures are included in Appendix E.

Exhibit 3-1: Summary of Wetlands Delineated in the Study Area

Wetland Name	Size (acres)	USFWS Classification[a]	HGM Classification[b]	Ecology Category[c]	Buffer Width (feet)
A	96.77	PSSC, PSSB, PFOA, PFOB, PEM1H, PEM1C	Depressional	I	260

NOTES:

a. USFWS classification is based on Cowardin (Federal Geographic Data Committee, 2013): palustrine scrub-shrub seasonally flooded and seasonally saturated (PSSC and PSSB), palustrine forested temporary flooded and seasonally saturated (PFOA and PFOB), palustrine emergent persistent permanently flooded and seasonally flooded (PEMIH and PEM1C).

b. Hydrogeomorphic (HGM) classification is based on Brinson (1993).

c. Wetland categories are based on the *Washington State Wetland Rating System for Western Washington, 2014 Update* (Hruby, 2014).

Wetland A is located at the southwestern portion of the study area, extending off the Project site. According to the Cowardin system of classifying wetlands, Wetland A is made up of a mosaic of palustrine scrub-shrub seasonally flooded and seasonally saturated (PSSC and PSSB), palustrine forested temporarily flooded and seasonally saturated (PFOA and PFOB), and palustrine emergent persistent permanently flooded and seasonally flooded (PEMIH and PEM1C). According to the hydrogeomorphic wetland classification system, Wetland A is depressional saturated and flooded wetland (Brinson, 1993).

Vegetation in Wetland A is a mix of emergent, scrub-shrub, and forested vegetation communities. The emergent areas are dominated by reed canarygrass (*Phalaris arundinacea,* FACW) and hardstem bulrush (*Schoenoplectus acutus,* FACW); the scrub-shrub vegetation community is dominated by hardhack (*Spiraea douglasii,* FACW); and the forested community is dominated by an overstory of red alder (*Alnus rubra,* FAC) and western red cedar (*Thuja plicata)* with an understory of herbaceous species including skunk cabbage (*Lysichiton americanus,* FACW), reed canarygrass, and lady fern (*Athyrium filix-femina,* FAC).

Soils at Wetland A are comprised of a black (7.5YR 2.5/1) matrix with yellowish-red (5YR 5/6) redox concentrations in the matrix at 5% from 0 to 12 inches below ground surface (bgs) and 10% at 12 to 20 inches bgs. The soil profile at DP-2 meets the criteria for the Redox Dark Surface (F6) soil indicator.

Hydrology in Wetland A is influenced by overbank flooding from Chambers Ditch, rainwater, and runoff from the surrounding area. Beavers are known to occupy the site and have created dams at the south end of the wetland near Chambers Creek causing increased inundation. Human interference, including removal of beaver dams, ditching, and the periodic draining of the wetland to grow blueberries (reported by the property owner and

seen in historic imagery; Exhibit 3-2), have also altered the hydrology of the site. During the time of the field visit, the water table was observed at 17 inches bgs and saturation was observed at 8 inches bgs at DP-2.

Wetland A is rated as a Category I wetland (23 total points) according to Ecology's wetland rating manual (Hruby, 2014) (Appendix D) based on functions associated with depressional wetlands. Wetland A scored high for habitat site potential, low for habitat landscape potential, and high for habitat value, for a total of 7 habitat points.

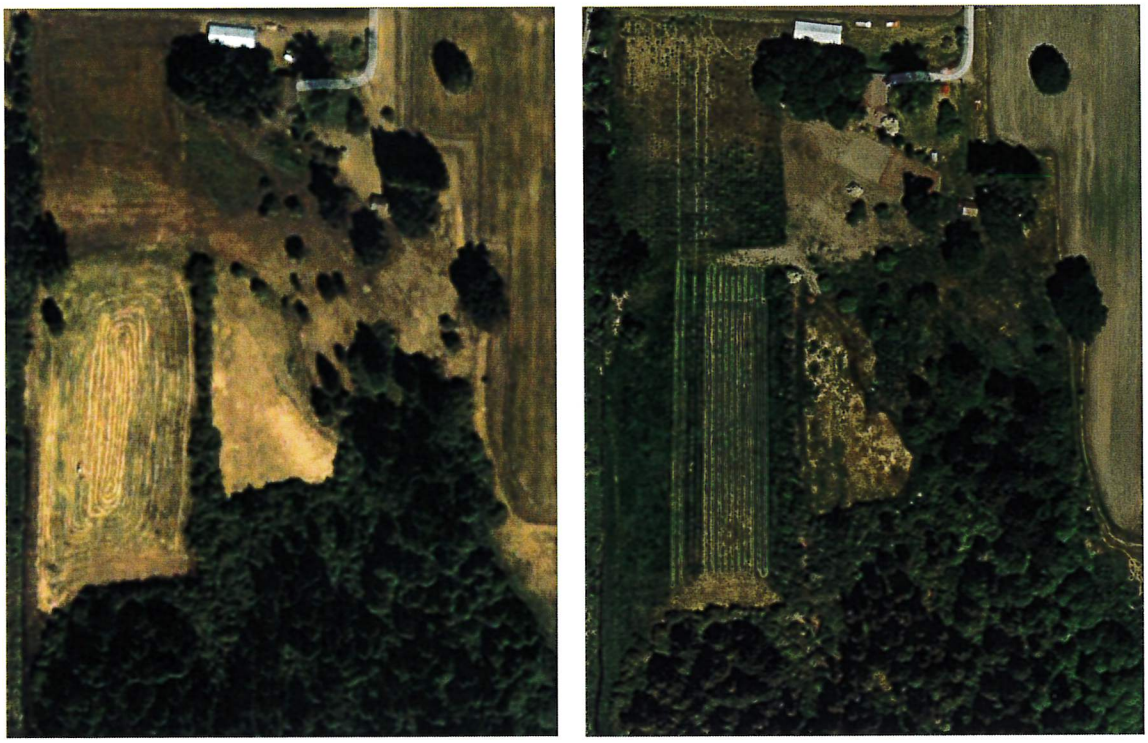

Exhibit 3-2: Historical Aerial Photographs of Wetland A Showing Past Farming Practices, September 2002 (Left) and May 2009 (Right) (Google Earth)

3.3 Stream Delineation

During the site visit, one stream, Chambers Ditch, was delineated within the study area (Figure 3, and Exhibits C-7 and C-8 in Appendix C).

Chambers Ditch runs from north to south along the western edge of parcel 09330008002, through Wetland A, terminating in Chambers Creek at the southwest corner of Wetland A. Chambers Ditch has documented occurrence and migration of coho salmon and cutthroat trout (WDFW, 2022a and 2022b). Based on documented fish presence, the ditch is classified as a Water Type F under Washington Administrative Code 222-16-030 and Type F under

TCC 24.25.020. Buffers were determined based on Thurston County's stream type and bankfull width (>5 feet) (Exhibit 3-3).

Exhibit 3-3: Summary of Streams Delineated in the Study Area

Stream Name	Water Type[a]	Stream Type[b]	County Buffer Width (feet)[c]
Chambers Ditch	Type F	F	200

NOTES:

a. Water type is based on Washington Administrative Code 222-16-030.
b. Stream type is based on TCC 24.25.020.
c. Buffer width is based on TCC 24.25.020.

The southwest portion of the site associated with Chambers Creek and Wetland A lies within a 100-year floodplain according to the Federal Emergency Management Agency's Flood Insurance Rate Map (effective September 2, 2016).

3.4 Uplands and Buffers

The upland portions of the study area, including stream and wetland buffers, are comprised of tilled agricultural land, a vacant residence and an occupied rural residence with associated structures, and planted and natural forested areas (see Exhibits C-3 through C-5 in Appendix C). The naturally vegetated areas are dominated by an overstory of Douglas-fir (*Pseudotsuga menziesii*, FACU), western red cedar, big leaf maple (*Acer macrophyllum*, FACU), and red alder; an understory of mixed shrubs and woody vines including osoberry (*Oemleria cerasiformis*, FACU) and small amounts of invasive Himalayan blackberry; and an herbaceous layer dominated by reed canarygrass and other grasses, sword fern (*Polystichum munitum*, FACU), and other mixed native and non-native species. Of particular note was a large patch of Scotch broom at the northeast corner of the upland forest. The upland forest contains a few snags, with abundant indicators of use by birds for foraging and possible nesting.

Soils in the upland plots (DP-1, DP-3, and DP-4) are comprised of a black (7.5YR 2.5/1) matrix. Yellowish-brown (10YR 4/6) concentrations at 1% were found in DP-4. No saturation or high water tables were observed at any of the upland data plots.

3.5 Important Habitats and Species Surveys

3.5.1 Oak Tree Assessment

Two small pockets of Oregon white oak trees and a single oak were documented within the study area (see Exhibit C-6 in Appendix C). Both small stands are located on parcel number 09330008002 (Figure 3) and the single oak is located at the boundary of parcels 09330008002 and 09330005000. No other single oak or oak groves were observed.

Based on the definition provided above in Section 2.4.1, the few oaks in the Project area could be considered important habitat based on their large size and canopy, although neither WDFW nor TCC provide dimensional requirements. The oaks may also be considered to be in "degraded habitat" as they are next to a single-family residence and agricultural uses.

3.5.2 Other Wildlife Species

PHS on the Web (WDFW, 2022a) showed communal roosts for the little brown bat and the Yuma myotis bat and a breeding area for the big brown bat at the Township scale that includes the Project area. Larger communal roost sites, including maternity roosts, are found in buildings, caves, old mines, and under bridges, trestles, or piers. The largest known maternity roost of little brown bat in Washington State is under an abandoned railroad trestle near Olympia (Hayes and Wiles, 2013), approximately 8 miles to the north. This same location is shared with one of the largest Yuma myotis bat roosts (Hayes and Wiles, 2013). Bats also use trees that have cavities or crevices, but these sites are not typically long-term habitats and may be part of a chain of sites. The Project contains a few trees that might provide some limited roosting opportunities in the upland forest and forested wetland. Both myotis species prefer sites near water, which is provided by Wetland A and Chambers Ditch. The residential buildings and associated outbuildings may also be suitable, if measures haven't been taken to prevent access.

Based on site conditions, the Project area is unlikely to provide roosting opportunities for large numbers of bats.

3.6 Geologic Hazard Areas

Geologic hazards were investigated and documented by a Shannon & Wilson geotechnical engineer (Shannon & Wilson, 2019). Earthquake-induced geologic hazards that may affect a given project site include landsliding, fault rupture, and the associated effects of liquefaction (such as loss of shear strength, bearing capacity failures, loss of lateral support, ground oscillation, settlement, and lateral spreading). Based on review of previous subsurface explorations and liquefaction maps provided by DNR, the risk of liquefaction and its effects due to seismic activity is considered low. There is also little risk of a seismically induced landslide due to the relatively flat topography of the Project site. The potential for fault rupture is low, given that there are no mapped faults within the immediate vicinity of the Project site. The nearest mapped fault is the northwest-southeast-trending Olympia Structure, located about 2 miles away.

3.7 Frequently Flooded Areas

The southwest portion of the site associated with Chambers Creek and Wetland A lies within a 100-year floodplain according to the Federal Emergency Management Agency's Flood Insurance Rate Map (effective September 2, 2016) (Exhibit 3-4, left). The County has also mapped a high groundwater hazard area within Wetland A, generally corresponding to the ponded portion of the wetland (Thurston County, 2022) (Exhibit 3-4, right).

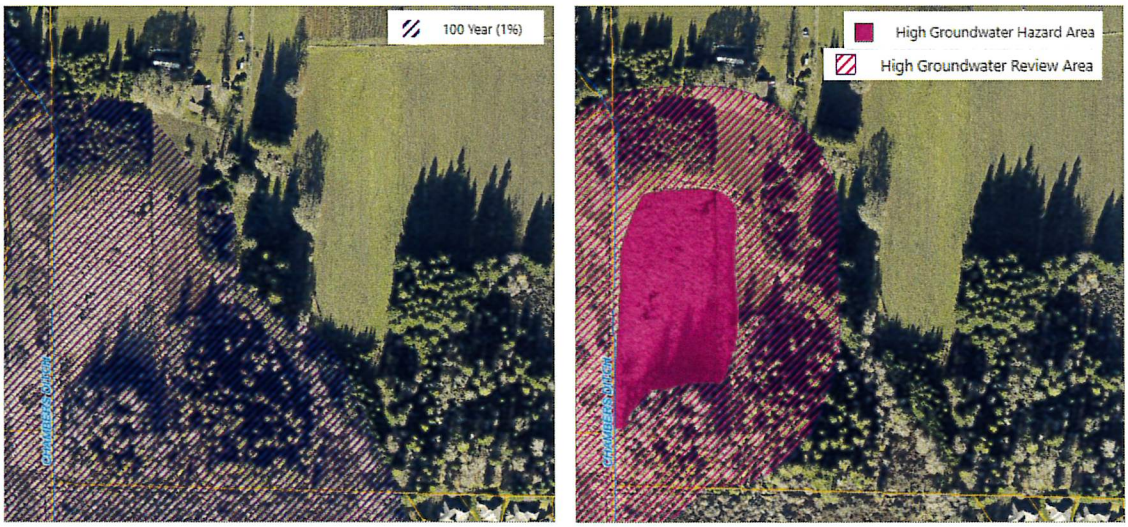

Exhibit 3-4: Map of 100-year Floodplain (Left) and Groundwater Hazards (Right) Located at the Southwest Corner of the Project Site (From Thurston County GeoData Center Permitting Map; Thurston County, 2022)

3.8 Critical Aquifer Recharge Areas

The entire project area and most of the County is mapped as a critical aquifer recharge area according to the County's GeoData Center Permitting Map (Thurston County, 2022). The upland areas on the site are mapped as Category I (extreme aquifer sensitivity) and the wetland is mapped as Category III (moderate aquifer sensitivity) (Exhibit 3-5, left).

Wellhead protection areas are also mapped on the project site in the southeast corner and a small area on the west side of the southern half (Exhibit 3-5, right). Most of the protection area has a five-year time of travel zone, with some 10-year time of travel zone and a small one-year time of travel zone.

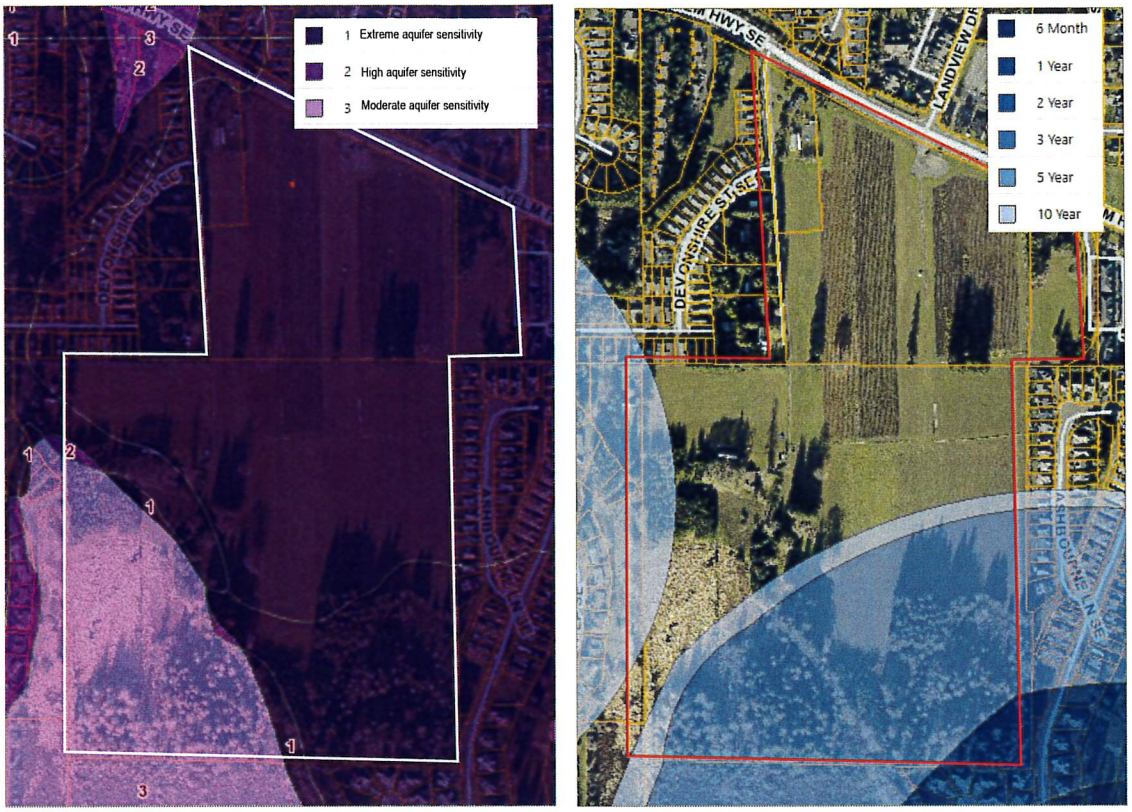

Exhibit 3-5: Map of Critical Aquifer Recharge Areas (Left) and Wellhead Protection Areas (Right) on the Project Site (from Thurston County GeoData Center Permitting Map; Thurston County, 2022)

4 REGULATIONS

4.1 Thurston County

Thurston County requires a Critical Areas Review Permit "for all development permits for properties that may be impacting critical areas and associated buffers" (TCC 24.40.010). The permit application and supporting documents are reviewed by Thurston County's Resource Stewardship Department.

4.1.1 Wetlands

The study area contains one wetland, Wetland A. Thurston County classifies wetlands into one of four categories (I through IV) based on the most recent version of Ecology's wetland rating system for Western Washington (TCC 24.30.030). See Appendix D for the Wetland Rating Form.

Wetland A is a Category I wetland based on a total score of 23. Thurston County assigns buffers to wetland areas based on the wetland category and the habitat score from the

wetland rating form under the *Washington State Wetland Rating System for Western Washington* (Hruby, 2014) (TCC 24.30.045). The habitat rating for the assessed functions was as follows: high site potential, high functional value, and low landscape potential (H,H,L).

For wetlands with H,H,L habitat ratings, the standard buffer is 260 feet. Thurston County code allows for reducing the standard buffer width to 195 feet if mitigation is conducted following TCC 24.30.050, specifically applying the mitigation measures identified in TCC Table 24.30-2, and the applicant can demonstrate that "the proposed reduction in buffer width, coupled with the proposed mitigation plan, would result in better protection of the wetland or better wetland or buffer functions than the standard buffer without such enhancement."

In addition to the general buffer preservation, Thurston County requires tree protection in buffers for wetlands that score 5 points or higher on the habitat rating (this would include Wetland A). This means that "*Trees within wetland buffers with driplines that extend beyond the upland edge (furthest from the wetland)… shall be protected*" (TCC 24.30.065). Protection would entail identifying in site development plans a "tree area extending a minimum of five feet beyond the dripline of trees twelve inches or greater in diameter" at breast height in which clearing, grading, filling, vehicle travel, parking, storage, or other development activities are not allowed.

After the application of the standard mitigation sequencing process, including to first avoid the wetland and wetland buffer and second to minimize impacts, remaining adverse impacts to wetlands and buffers require compensatory mitigation (TCC 24.30.070 and -.075). Buffer mitigation is required at a 1:1 ratio, and wetland mitigation is required at ratios that vary based on the wetland category and the type of compensation.

Wetland buffers must generally be preserved in their existing condition, but there are a few allowed modifications and uses subject to a critical areas review permit. Trails and trail-related facilities, for example, are allowed in buffers provided certain standards are met (TCC 24.30.085).

4.1.2 Streams

Stream buffers are based on the stream rating system that categorizes streams as Types S, F, Np, and Ns based on mean annual flow, stream channel width, presence of fish, and annual duration of flow. Chambers Ditch has a mean annual flow of less than 20 cubic feet per second, so it is not a Type S (Shoreline) water. A number of agency resources indicate that it contains fish, so it is classified as Type F (fish-bearing). Type F streams with a channel width between 5 and 20 feet require a 200-foot buffer (TCC 24.25.020, Table 24.25-1).

An additional 50-foot riparian management zone measured from the upland edge of the stream buffer has additional limitations on use and alteration. Reduction of a buffer on Type F streams requires a reasonable use exception.

Preliminary Project objectives include avoidance of all direct and indirect adverse impacts to Chambers Ditch and only limited intrusions into its buffer to support passive recreation and educational opportunities. Stream buffers must generally be preserved in their existing condition, but there are a few allowed modifications and uses subject to a critical areas review permit. Trails and trail-related facilities, for example, are allowed in buffers provided certain standards are met (TCC 24.25.270).

4.1.3 Oak Tree

The few on-site oaks may meet the criteria for a WDFW priority habitat[1] and are a local habitat of importance. As stated in TCC 24.25.360, "Removal of native vegetation within priority habitat, marine riparian habitat areas, and riparian habitat areas shall be prohibited except as provided for in this chapter." Oak-specific regulations in TCC 24.25.370 govern removal of Douglas-fir in oak woodlands and thinning of oaks in oak savanna when the activity would benefit the habitat. The Project area does not include oak woodlands or oak savannas as defined in TCC 17.15.200 and therefore regulations in TCC 24.25.370 are not applicable.

WDFW developed the following management recommendations for white oaks (edited to list only those potentially applicable to the Project area) (Larsen and Morgan, 1998):

- Do not cut Oregon white oak woodlands except for habitat enhancement.
- Allow low-impact recreation (hunting, fishing, hiking, and mushroom and acorn collecting).
- Thin encroaching conifers in oak woodlands west of the Cascades.
- Retain large, dominant oaks and standing dead and dying trees.
- Leave fallen trees, limbs, and leaf litter for foraging, nesting, and denning sites.
- Retain contiguous aerial pathways.

4.1.4 Aquifer Recharge Areas

Table 24.10-1 in TCC 24.10.020 identifies parks, athletic fields, stormwater facilities, and other uses that might reasonably apply to the school (which is not specifically listed) as a

[1] Because the WDFW definition does not provide dimensions for what constitutes a "large" diameter at breast height or a "large" canopy, a determination cannot be made definitively without consulting with WDFW.

permitted use in all categories of aquifer recharge areas, including the wellhead protection areas, subject to applicable standards and a critical areas permit. Some potential use/activity categories that might apply to the Project are limited in the one-year time of travel zone, but no development is proposed in that mapped area of the site. TCC 24.10.130 requires that "Fertilizer, herbicide and pesticide management practices for golf courses, parks, playgrounds, athletic fields and other public facilities and institutions with landscaped areas exceeding one acre in size shall comply with integrated pest management standards established in TCC 24.10.100." Both OPARD and OSD have Integrated Pest Management Programs that will be utilized in their respective areas of the site.

4.1.5 Frequently Flooded Areas

As shown in the Master Plan, the only structures or improvements that may be proposed in the mapped floodplain and high groundwater hazard area are ground-level trails (when outside of Wetland A) and a raised boardwalk. Table 24.20-1 in TCC 24.20.070 states that trails/paths and elevated walkways are allowed in these zones, subject to applicable standards and a critical areas permit.

4.2 State of Washington

4.2.1 401 Water Quality Certification

Ecology has been authorized to implement Section 401 of the Clean Water Act (CWA) for Water Quality Certification in Washington for most projects that require Corps permits under CWA Section 404 (see Section 4.3). Typically, projects requiring a CWA Section 404 permit also require a CWA Section 401 Water Quality Certification.

The purpose of the certification process is to ensure that federally permitted activities comply with the federal CWA, state water quality laws, and any other applicable state laws. Some general requirements for Section 401, if it is required, include pollution spill prevention and response measures, disposal of excavated or dredged material in upland areas, use of fill material that does not compromise water quality, clear identification of construction boundaries, and provision for site access to the permitting agency for inspection.

The master plan currently does not include any activities that would require an Ecology 401 Water Quality Certification.

4.2.2 National Pollutant Discharge Elimination System

Projects that disturb more than one acre and discharge stormwater to surface waters of the State, or that meet other criteria, must obtain authorization under Section 402 of the federal

Clean Water Act. Section 402 establishes National Pollutant Discharge Elimination System (NPDES) permits and is administered in Washington State by Ecology. Obtaining a Construction Stormwater General Permit from Ecology under Section 402 requires submittal of a Notice of Intent, publication of a public notice, and development of a Stormwater Pollution Prevention Plan. Based on the proposed ground disturbance area, this project will require coverage under an NPDES Construction Stormwater General Permit for each phase of construction.

4.3 Federal

The Corps' CWA Section 404 review process is required for projects involving discharges of dredged or fill material into the waters of the United States, including streams and non-isolated wetlands. Any proposed impact located within a jurisdictional wetland or stream would require either a Nationwide Permit or an Individual Permit from the Corps.

Projects that require or trigger a federal permit from the Corps would also require review and approval under the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, and the National Historic Preservation Act.

The Master Plan currently does not include any activities that would require a Corps Section 404 authorization. Installation of a boardwalk within wetlands if it is supported by piles or pre-cast diamond piers, or similar, is not considered fill material.

5 CRITICAL AREAS IMPACTS

5.1 Mitigation Sequencing

Compliance with a mitigation sequencing process is a requirement of the Washington State Environmental Policy Act (Chapter 43-21C Revised Code of Washington), administered by Ecology, and TCC 24.01.037 and 24.35.015, administered by the County. The steps must be followed in order as listed below:

1. Avoiding the impact altogether by not taking a certain action or parts of an action;
2. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
4. Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;

5. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or
6. Monitoring the impact and taking appropriate corrective measures.

The proposed Master Plan mitigation sequencing process is described below. Refinement of the Project design is still underway; as needed, additional detailed description of mitigation sequencing efforts and outcomes will be provided for each phase of project implementation with any necessary additional impact analysis and any necessary additional mitigation plan.

5.1.1 Avoid and Minimize

Master Plan design objectives included avoidance and minimization of direct adverse impacts to critical areas, consistent with the achievement of park objectives. To date, this has resulted in the following:

- Avoidance of any impacts to Chambers Ditch, the Chambers Ditch buffer, and oak trees.
- Placement of fill in the 100-year floodplain has been avoided; alterations in the floodplain would be limited to the potential future installation of a raised boardwalk on pin piles in the overlapping wetland and floodplain.
- Although the Project site is mapped as a critical aquifer recharge area, no activities of concern to aquifers and groundwater are proposed. The potential for groundwater contamination of drinking water is very low.
- The arrangement of park facilities, particularly the ballfields and a 20-foot-wide loop path, has been adjusted several times to minimize intrusion into the 260-foot standard wetland buffer. The loop path is necessary to provide emergency, law enforcement, and service access and has been located so that it is just outside of the proposed reduced buffer (195 feet wide) allowed under TCC 24.30.050. The total area of proposed buffer reduction is 15,476 square feet. Construction of these improvements is planned for an early phase of Master Plan implementation, so a mitigation plan has already been developed, is described in detail in this report (see Section 6.1), and is provided in Appendix E.
- According to TCC 24.30.085, trails are allowed in the buffers if certain standards in TCC 24.30.260 (Wetlands—Recreation facilities, trails, and trail-related facilities—Administrative approval) are met related to location, width, water quality, plant salvage, and parking. The total area of proposed trail-related buffer impact is 7,432 square feet. Construction of these improvements may occur in an early phase of Master Plan implementation, so a mitigation plan has already been developed, is described in detail in this report (see Section 6.1), and is provided in Appendix E.
- Construction of a raised boardwalk through Wetland A, field located to minimize tree removal. Boardwalk construction would occur in later phases of Master Plan implementation and the alignment is still conceptual. The conceptual alignment (see

Figure 2) would result in approximately 9,960 square feet of raised boardwalk in the wetland. A final impact assessment and mitigation plan will be provided during permitting of that phase. Potential mitigation opportunities are described in Section 6.2.

5.1.2 Rectify/Reduce/Mitigate

The proposed buffer reduction area is located in existing previously farmed area, with mostly grasses and other weeds. The area immediately adjacent is in similar condition, with no trees or shrubs and lacking any special habitat features. To mitigate for the proposed buffer reduction and trail-related impacts (totaling 22,908 square feet), this adjacent area (totaling 25,000 square feet) will be significantly enhanced with a diverse mix of native trees, shrubs and groundcovers, with adding snags and downed wood to increase habitat niches for a wide array of wildlife. Bird nest boxes and bat boxes will also be added to provide immediate nesting and refuge opportunities while the vegetation matures.

The proposed trail alignment through the buffer was also carefully selected to pass primarily through areas that currently lack any native trees or shrubs.

5.1.3 Monitor

Proposed monitoring is described in Section 6.1.4 below.

5.2 Summary

The total proposed buffer impact from the limited reduction (15,476 square feet) and the pedestrian trails (7,432 square feet) is approximately 22,908 square feet.

6 PROPOSED AND POTENTIAL MITIGATION AND RESTORATION

6.1 Proposed Buffer Mitigation

As described above in Section 5.1, mitigation sequencing has resulted in minimal impacts (approximately 22,908 square feet) to the buffer of Wetland A that require mitigation:

- Construction of a 20-foot-wide loop path and ball field, located between the standard 260-foot buffer and the proposed reduced 195-foot buffer.
- Construction of 8-foot-wide, low-impact, ADA-compliant public trails within the standard and reduced buffer.

According to TCC 24.30.080.A, "Buffer mitigation shall occur at a 1:1 ratio of buffer impact to mitigation impact." Proposed buffer mitigation totals 25,000 square feet or the equiavelent of a 1.1:1 ratio.

6.1.1 Wetland Buffer Reduction

TCC 24.30.050 allows a buffer width to be reduced 25% from the standard width, in this case from 260 to a minimum of 195 feet, if certain criteria are met. One of the standards requires incorporation of Table 24.30-2 in the area of the buffer reduction; see Exhibit 6-1 for an analysis of consistency with that code table.

Exhibit 6-1: Consistency with Table 24.30-2 in TCC 24.30.050

Disturbance	Required Measures to Minimize Impacts	Project Analysis
Lights	Direct lights away from wetland and buffers.	Lighting will adhere to City and County standards. No lighting will be installed within the standard 260-foot buffer, and as feasible, lighting will be located farther from the wetland/buffer and will not be directed into those habitats.
Noise	• Locate activity that generates noise away from wetland. • If warranted, enhance existing buffer with native vegetation plantings adjacent to noise source. • For activities that generate relatively continuous, potentially disruptive noise, such as certain heavy industry or mining, establish an additional 10 feet heavily vegetated buffer strip immediately adjacent to the outer wetland buffer.	Except for the minimal intrusion by one ballfield and the 20-foot-wide loop path into the outer 25% of the standard wetland buffer in one area, all active playfields and roads have been proposed outside of the standard wetland buffer. Pedestrian trail use, which typically has low noise generation, is the only activity proposed in a few areas of the reduced buffer. Proposed plantings of trees and shrubs in the reduced buffer between the proposed intrusion and the wetland will help moderate road- and playfield-related noise impacts on the wetland.
Toxic runoff	• Treat and contain any toxic runoff. • Route all new, untreated runoff away from wetland while ensuring wetland is not dewatered. • Establish covenants limiting use of pesticides within 150 feet of wetland. • Apply integrated pest management standards.	No runoff, toxic or otherwise, will be routed to the wetland or into the buffer. OPARD will comply with its established Integrated Pest Management Program at the park, within and outside of any buffers. The wetland is fed primarily by a high groundwater table, Chambers Ditch, and direct precipitation. Little overland surface flow is currently supplying the wetland with its hydrology.

Disturbance	Required Measures to Minimize Impacts	Project Analysis
Stormwater runoff	• To improve existing water quality runoff that may be impacting wetland functions, retrofit existing stormwater detention and treatment for roads and existing adjacent development. • Prevent channelized flow from lawns that directly enters the buffer. • Use Low Intensity Development techniques (per PSAT publication on LID techniques).	Project stormwater runoff will be mitigated by both detention and water quality treatement per the jurisdictional stormwater requirements. Stormwater flow discharged to the buffer is proposed to be gravel dispersion or sheet flow dispersion. LID best management practices (BMPs) will be utilized where feasible.
Change in water regime	In order to maintain wetland hydrology and discharge only clean stormwater toward the wetland. Stormwater should be treated; then infiltrated, detained, and/or dispersed outside the wetland buffer for any new runoff from impervious surfaces and new lawns. Permanent improvements to the site hydrology that would improve wetland functions and not create off-site flooding. This may include, but is not limited to, removal of a lawfully established agricultural ditch draining a wetland or delivering sediment, pollutants or excess nutrients to a wetland.	Project stormwater runoff will be mitigated by both detention and water quality treatment, as well as LID BMPs where feasible per the jurisdictional stormwater requirements. The proposed design of the developed athletic fields includes use of a gravel base for detention which allows for prolonged stormwater interface with the existing ground for any feasible infiltration. Any agricultural ditches within the developed area will be removed.
Pets and human disturbance	• Use privacy fencing at buffer edge OR 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 or protect with a conservation easement.	An area of the reduced buffer will be planted with a dense mx of native trees, shrubs and groundcovers as shown in Appendix E. The area will be protected by fence for up to two years to allow plantings to establish. Since the entire on-site wetland and buffer are owned and managed by OPARD, with designated public access, placement of the wetland and buffer in a separate tract is not necessary.
Dust	During construction or for commercial or industrial activities, use best management practices to control dust.	The Project's construction plans will include a Temporary Erosion and Sediment Control Plan, which will include measures to reduce dust generation and to control dust.
Disruption of corridors or connections/habitat enhancement	• In order to improve habitat quality and connectivity, a vegetation enhancement plan that improves areas with minimal trees and vegetation and proposes removal of invasive vegetation and replacing it with ground cover and shrubs that will provide dense vegetative cover at maturity. Planting noninvasive plants that provide improved filtration of sediment, excess nutrients, and pollutants that may be present. • Maintain habitat connections to off-site areas that are undisturbed. • Restore corridors or connections to off-site habitats by replanting.	As previously mentioned, the reduced buffer area is currently grasses and weedy species and will be enhanced with native trees, shrubs and groundcovers to improve buffer function and habitat quality. The southern portion of the site is forested uplands and structurally diverse wetland that are largely being preserved intact, except for minimal pedestrian trails. This area is contiguous with wetland and forest offiste to the south connecting with a large Chambers Creek stream, wetland and floodplain corridor.

The code also requires that applicants demonstrate that the reduced buffer, with mitigation, would "result in better protection of the wetland or better wetland or buffer functions than the standard buffer without such enhancement." The area proposed for the buffer reduction to accommodate the loop path and ballfield is currently farmed, and has been for many decades, and provides little benefit to Wetland A in its current condition. The loss of that standard buffer area would be compensated by enhancing immediately adjacent buffer, between the reduced buffer and the wetland, that is also a mix of farmed and otherwise disturbed land. As shown in Appendix E, the proposed buffer mitigation would include:

- Salvaged trees from other areas of the site outside of buffers would be installed to provide snag and downed wood habitat.
- Native trees and shrubs/groundcovers would be installed at 12-foot and 4-foot on-center spacing, respectively.
- Five bird boxes and five bat boxes would be mounted on installed snags.
- The mitigation area would be temporarily fenced for two years to minimize disturbance by wildlife and park users during early plant establishment.
- The mitigation area would be temporarily irrigated for two years during summer months to support plant establishment.

Implementation of the proposed mitigation plan would substantially increase the functional width of the buffer protecting Wetland A in this area, providing enhanced wildlife habitat in the form of added structural diversity, food and cover, and improved microclimate; increased screening of the wetland from light and noise disturbances originating outside of the buffer; and increased biofiltration.

6.1.2 Trails in Wetland Buffer

According to TCC 24.30.085, trails and trail-related facilities are allowed in buffers provided certain standards are met. Exhibit 6-2 outlines how the proposed non-motorized trails are consistent with the standards found in TCC 24.30.260.

Exhibit 6-2: Consistency with TCC 24.30.260

Code Section	Project Analysis
A. Passive Recreation. The approval authority may allow trails and trail-related, passive recreation facilities, such as, but not limited to, identification and interpretive signs, nature/wildlife viewing platforms, and fishing access within wetland buffers if it is determined that there is no alternative outside the buffer. Trail alignment, construction, and maintenance shall adhere to all of the following requirements:	The proposed trails through the buffer (and through the wetland in a future phase) are part of a new public park that will include active elements such as ballfields, but also passive recreational amenities.

	Code Section	Project Analysis
1.	Location	
	a. Trails and related facilities shall, to the extent feasible, be placed on existing levees, road grades, abandoned railroad lines, utility corridors, or other previously disturbed areas.	The trail alignment through the buffer has been selected to pass through open areas with only grasses and other weedy vegetation as much as possible, and will be field adjusted to avoid trees and shrubs to the maximum extent practicable at the few locations where they are present.
	b. When trails cannot be located outside of the wetland buffers or on existing disturbed corridors within the buffers, they shall be located as far from the wetland as possible, except for access points for wildlife viewing, fishing, and recreational use authorized pursuant to this chapter.	Because the long-term plan is to include an educational, interpretive boardwalk through the wetland to allow wildlife viewing, the trails through the buffer generally approach the wetland as perpendicular as feasible to shorten the disturbance distance, except where parallel for a short distance through previously disturbed areas.
	c. Trails and related facilities (e.g., viewing platforms and benches) allowed in wetland buffers shall be located, aligned and constructed to minimize disturbance to wetland functions, avoid the most sensitive and productive wildlife habitat (e.g., documented breeding, nesting, and rearing areas), and minimize removal of trees, shrubs, snags, and other significant wildlife habitat.	As previously noted, the trail alignment has been carefully selected to avoid and minimize tree and shrub removal to the maximum extent practicable.
	d. Parking areas and other facilities associated with these trails, not specifically provided for in this section and Table 24.30-4, shall be located outside of the wetland and/or wetland buffer.	All parking areas and other trail-related facilities will be located outside of Wetland A and its buffer.
2.	Stair Tower, Stairway, and Mechanical Lift.	Not applicable
3.	Protect Water Quality. Trails and related facilities shall incorporate measures (e.g., check dams or devices to induce sheet flow of stormwater runoff) as needed to assure that runoff from such trails/facilities does not create channels in the buffer or directly discharge to wetlands or streams.	Topography in the area of the trails is generally flat. The trails will be designed and installed to infiltrate or disperse runoff.
4.	Trail Width. The width of trails extending through a wetland buffer shall be minimized consistent with any applicable state or federal standards. Access paths extending through the wetland buffer to the water's edge shall be no more than three feet in width unless they are designated for public access and designed to accommodate handicapped persons. In that case, the trail and associated clearing shall be the minimum width that complies with the Americans with Disabilities Act (ADA). Clearing shall be done with hand tools unless the approval authority determines that the scale of the project necessitates mechanized equipment and its use will not harm the wetland or buffer beyond the trail corridor.	The public non-motorized trails within the reduced buffer are proposed to be 8 feet wide, and will be crushed rock designed for Americans with Disabilities Act (ADA) compliance in the buffer and wood or some other non-toxic material for the raised boardwalk in the wetland.
5.	Impervious Surfaces. Trails shall not be paved unless they are specifically designed to be accessible by handicapped persons. Trails shall be designed for	No paved trails are proposed in the wetland or reduced buffer. The non-motorized public trail segments in the reduced buffer shall be crushed rock, installed to be

	Code Section	Project Analysis
	nonmotorized use, with the exception of motorized wheelchairs. The approval authority may allow regional trails on former road or railroad beds to be paved when they extend through wetland buffers. Where impervious surfaces are used, they shall be minimized consistent with applicable standards (e.g., ADA and Washington Department of Transportation standards.) Raised boardwalks shall be used in wet areas provided that they are not treated with hazardous materials that would be harmful to wetland water quality, dependent wildlife, or sensitive wetland plants documented by the DNR Natural Heritage Program. Viewing platforms shall not be made of continuous impervious materials or treated with toxic materials that could leach into the wetland or associated buffer. The "footprint" of viewing platforms shall be as small as possible in order to minimize impacts (e.g., through the use of pin piles). Fill shall not be allowed in wetlands.	compliant with ADA standards. The boardwalk has not yet been designed, but will be either wood or composite plank (with gaps for water and light penetration) or metal or fiberglass grating. The boardwalk will be installed on pin piles, and will have sufficient elevation so that water and small wildlife can pass below unimpeded.
6.	Salvage Plants. Native vegetation disturbed by trail construction shall be made available for salvage.	Minimal native vegetation disturbance is expected as part of trail installation. When feasible, disturbed vegetation would be relocated on site.
7.	Parking areas and other facilities associated with trails, not specifically provided for in this section or Table 24.30-4, shall be located outside of the wetland and/or wetland buffer.	All parking areas and other trail-related facilities will be located outside of Wetland A and its reduced buffer.

6.1.3 Goals and Performance Standards

6.1.3.1 Goals and Objectives

Goal 1: Enhance 25,000 square feet of wetland buffer by installing native vegetation and other habitat features.

- Objective 1a: Re-establish a native vegetation community with a mix of trees and shrubs.
- Objective 1b: Increase habitat for wildlife by installing snags, downed wood, and habitat boxes.
- Objective 1c: Adaptively manage all Class A, Class B, and Class C noxious weeds on the State or County Noxious Weed List to reduce competition and interference with the development of desirable vegetation.

6.1.3.2 Performance Standards

Native plant cover will achieve the numeric standards per the schedule outlined in Exhibit 6-3 below. These performance standards may be adjusted at the time of the as-built/baseline monitoring report as needed to complement any changes in methods.

Exhibit 6-3: Vegetation Performance Standards

Performance Standards	Year 1	Year 2	Year 3	Year 4	Year 5
Plant Survival Performance Standards					
Standard 1: Shrub and Tree Survival	100%	--	--	--	--
Percent Cover Standards					
Standard 2: Native Plant Cover[1]	--	≥20%	≥35%	≥65%	≥80%
Standard 3: Invasive Plant Cover	0%	≤10%	≤10%	≤10%	≤10%

NOTES:

1 Does not include existing trees and shrubs that may overhang the mitigation area, but may include native volunteers where that can be determined in the field.

≥ = greater than or equal to; ≤ = less than or equal to

A prescriptive performance standard is not provided for Objective 1b as actual use of the habitat features by wildlife cannot be controlled or guaranteed by the City.

6.1.4 Monitoring

6.1.4.1 Monitoring Schedule

Consistent with TCC 24.35.017.B.6 (with some proposed deviations), the on-site mitigation area will be monitored for a period of five years according to the following schedule:

1. Within 30 days of completion of mitigation plan implementation (combined As-built Report/Baseline Monitoring Report);
2. Twice in Year 1 (early in the first growing season after mitigation plan implementation and end of the first growing season);
3. Twice in Year 2 (early and at the end of the second growing season); and
4. Once in Years 3, 4, and 5.

If the Year 5 performance standards are met early, the City may propose a reduction of the monitoring period to not less than three years.

6.1.4.2 Monitoring Methods

Baseline Documentation

Within 30 days of completion of the buffer mitigation plan, the site will be visited to document the as-built conditions. The final plant count by species will be verified and updated against contractor receipts, the number and condition of snags and downed wood will be documented, and the installation of bat boxes and bird boxes will be confirmed. Any approved departures from the plan will be mapped and recorded. Recommendations for correcting any unauthorized plan deviations will be included in the As-built Report.

At this site visit, baseline monitoring methods will be confirmed or adjusted as needed. One or more permanent monitoring transects may be established and marked in the field with metal stakes and then noted on the map. Methodology and the final number, length, and placement of transects will be determined and documented during the baseline monitoring effort.

Permanent photo points will also be established during the as-built site visit. These photo points will be either marked in the field with metal stakes or will use readily identifiable features on the landscape, and then noted on the map. The transect markers, if any, will serve as photo points, and additional photo points will be established to document the condition of the snags, downed wood, and habitat boxes. Photos taken from the photo points will be included in the baseline report.

Spring Weed/Maintenance Inspections

In Years 1 and 2, the mitigation area will be visited at the beginning of the growing season, typically in April or early May. This site visit will be conducted by a qualified biologist and used to identify any invasive species maintenance needs or other maintenance needs such as garbage removal or fencing or irrigation repair. The spring visits will only be conducted after Year 2 if invasive species are not meeting performance standards by the Year 2 fall vegetation inspection. Invasive species cover will be visually estimated. Findings will be communicated to the City in a letter with associated maps identifying recommendations for specific areas.

Fall Vegetation Assessment

Vegetation monitoring will be completed prior to September 30. Percent survival will be determined in Year 1 by a complete plant count to determine the contractor's obligation to replace any mortalities consistent with the one-year guarantee. In subsequent years, total percent cover of native and invasive vegetation will be measured along the established transects using the line-intercept method, or similar, as adapted during the fieldwork. Native volunteer species may be counted in the cover assessment.

6.1.4.3 Monitoring Reports

The monitoring reports for the end-of-growing season monitoring visits will be submitted to the City and the County by December 31 of each reporting year, and will include the following description/data:

- Site plan and location map.
- History of Project, including date of mitigation plan implementation, current year of monitoring, and restatement of performance standards.

- Summary of the spring visits in Years 1 and 2.
- Plant counts and/or plant cover of the installed vegetation, in the context of assessing achievement of performance standards.
- Assessment of nuisance/exotic biota and recommendations for management.
- Incidental observations of wildlife or their sign, particularly associated with the installed snags, downed wood, and habitat boxes.
- Color photographs taken from permanent photo points established during the baseline visit.
- Summary of maintenance and contingency measures proposed for the next visit, and those completed since the most recent visit.

Any deficiency discovered during any monitoring or inspection visit must have an adaptive management program developed and initiated within 60 days.

6.1.5 Maintenance

The Contractor will be responsible for maintenance of the buffer mitigation area for the first year following installation. The City will be responsible for maintenance of the restoration areas for the remaining four years of the monitoring period. Maintenance will include weeding around base of installed plants, pruning, replacing plants to meet survival requirements, maintaining mulch, removing all classes of noxious weeds, watering, and/or implementing any other measures needed to ensure plant survival.

6.1.6 Contingency

If any monitoring report reveals that the restoration has failed in whole or in part, and if that failure is beyond the scope of routine maintenance or corrective measures (such as additional plantings), a contingency plan shall be prepared and submitted. Contingency plans can include, but are not limited to additional plant installation, minor grading, use of herbicides, and plant substitutions of type, size, quantity, and location. Once approved, contingency measures may be completed and the plan revised. If the failure is substantial, the County may extend the monitoring period.

6.1.7 Surety Agreement

The City plans to install all required buffer mitigation in advance of final approval for use, and will work with the County to determine the appropriate type and duration of additional surety agreements for the five years of buffer mitigation maintenance and monitoring.

6.2 Potential Mitigation and Other Restoration Opportunities

As described above, the long-term plan for the park includes a raised boardwalk over the wetland, passing through open, emergent areas and threading its way through wetland forest. Elevated boardwalks on pin piles, or similar, will have little to no effect on the wetland's performance of water storage or water quality improvement functions. The boardwalk would not interfere with movement of water through the system, nor would it interfere with wildlife movement. Vegetation impacts would be minimal, but birds and other wildlife that utilize the wetland may be disturbed by the added noise and activity.

However, the wetland and its buffer have been adversely impacted by past uses so there are a number of enhancement opportunities that could be implemented to offset boardwalk-related impacts. Depending on the nature and extent of potential impacts, the following mitigation or restoration opportunities have been identified:

- Enhance Wetland A by ceasing mowing and active modifications that have supported blueberry production.
- Enhance Wetland A by introducing native trees and shrubs where hydrology allows.
- Enhance Wetland A in the open emergent areas by adding downed wood and snags.
- Further enhance the buffer of Wetland A and Chambers Ditch by introducing native trees and shrubs in non-native herbaceous areas that have been previously farmed or cleared.

As noted above, additional impact analysis and an appropriate mitigation plan will be provided if needed as different phases are brought forward from the Master Plan for final design and permitting.

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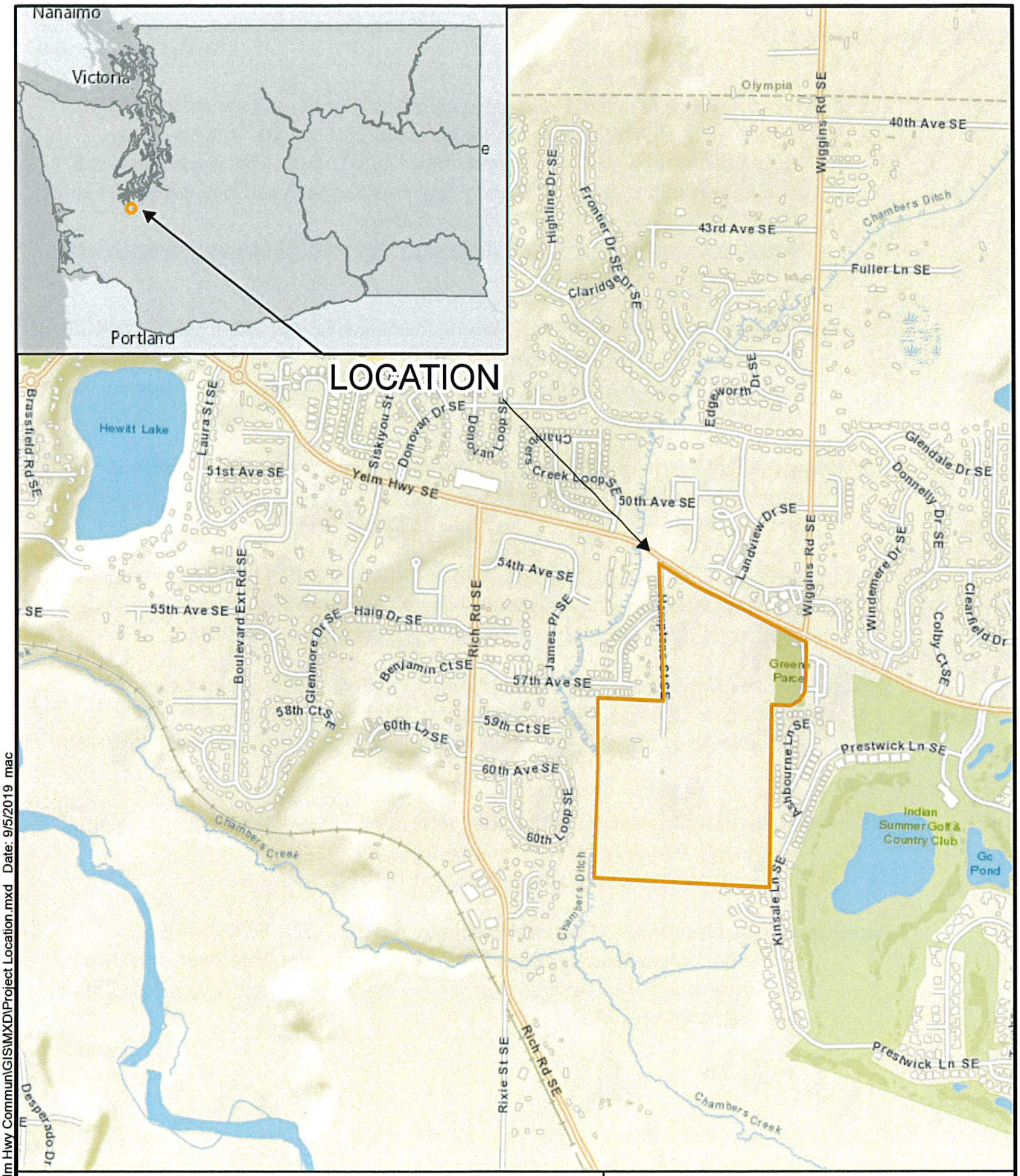

Legend

Project Location

N
W E
S

0 625 1,250 2,500
Feet

Yelm Community Park Master Plan
Olympia, Washington

Vicinity Map

September 2023 103284-010

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FIG. 1

Filename: I:\EF\SEA\103000s\103284 Yelm Hwy Communi\GIS\MXD\Project Location.mxd Date: 9/5/2019 mac

Yelm Highway Community Park Master Plan

Infrastructure

01 Entry Drive
02 Emergency Access
03 Bioretention/Stormwater Facilities
04 Parking (390 stalls)
05 Drop-off
06 Maintenance Facility

Park Core Amenities

07 Entry Plaza
08 Welcome Kiosk
09 Restrooms
10 Picnic Shelters
11 Loop Path (accessible)
12 Synthetic Turf Rectangular Fields with Lighting
13 Sport Courts
14 Playground
15 Sprayground
16 Skate Park
17 Dog Park
18 Bike Skills Park
19 Community Garden

Wetland

20 Wetland Boundary
21 Wetland Buffer
22 Boardwalk
23 Native/Mitigation Planting
24 Potential Future Connection to Chehalis Trail

Parkwide

25 Site Furnishings (benches, tables, bike racks, waste/recycling receptacles)
26 Park Identification

Shared Facilities

27 Shared Full-Sized Track and Field
28 Shared Parking (490 stalls)
29 Shared Tennis Courts

Wetland Note: The wetland and associated buffer have been identified and by Shannon & Wilson, dated September 16, 2021. For the purposes of pre and associated buffers shown herein have been located approximately and

PARTNERSHIP berger
1927 Post Alley, Ste. 2
Seattle, WA 98101
206 325 6877
bergerpartnership.com

FIG. 2

Legend

- Parcels
- Project Bounds
- Wetland A
- Stream Buffer 200 ft.
- Wetland A buffer 260 ft. *
- Oaks
- OHWM

Note: * For wetlands with H,H,L habitat ratings, the standadbuffer is 260 feet. Thurston County code allows for reducing the standard buffer width to 195 feet if mitigation is conducted following TCC 24.30.050.

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Yelm Community Park Master Plan
Olympia, Washington

DELINEATED CRITICAL AREAS AND BUFFERS

September 2023 103284-010

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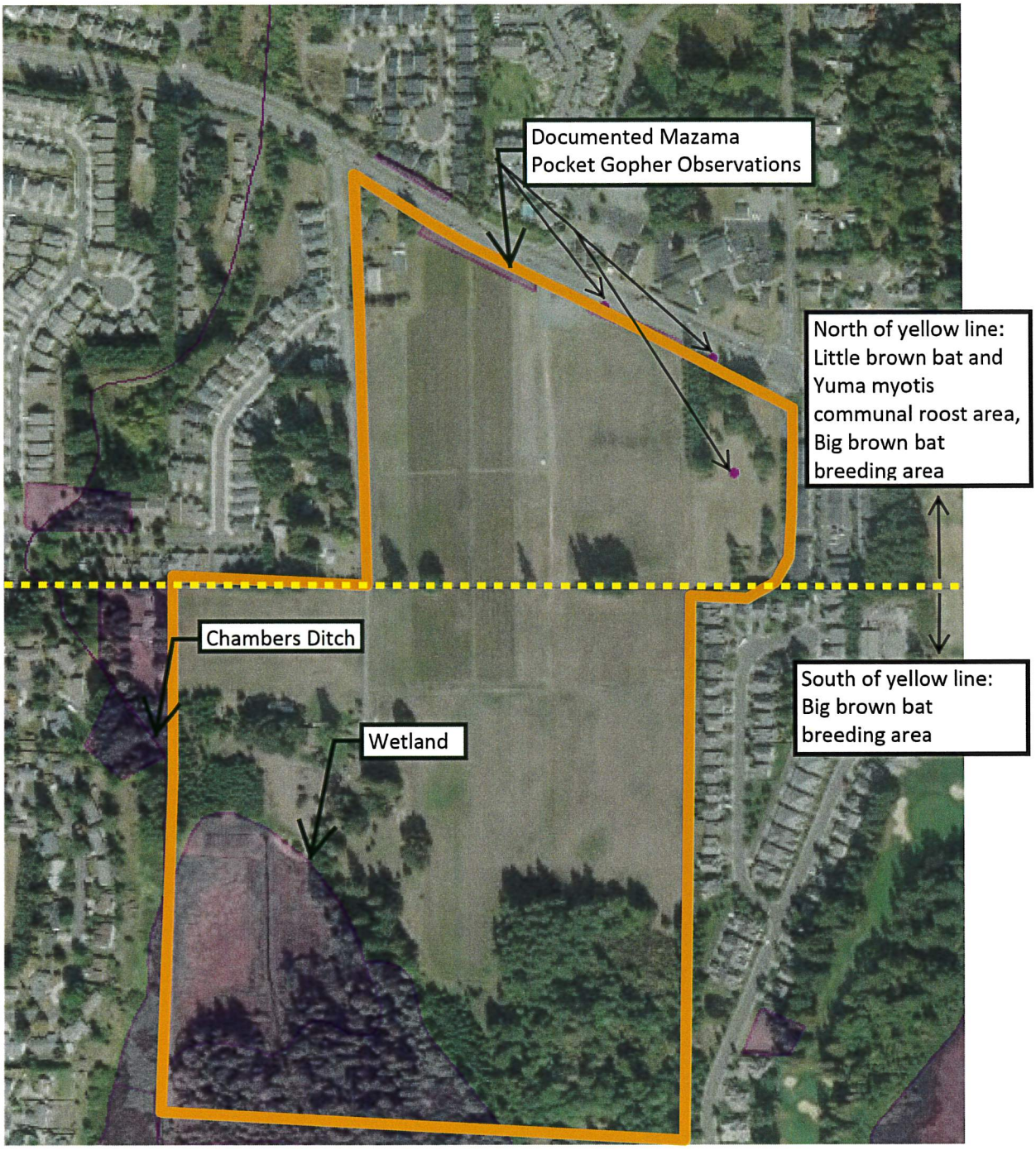
FIG. 3

Filename: P:\GIS\SEA\103000s\103284 Yelm Hwy Commun\GIS\MXD\Site Plan update 2022.mxd Date: 11/4/2022 CDK



Legend

Project Location

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Note: Map screenshot acquired from PHS on the Web: http://apps.wdfw.wa.gov/phsontheweb/, on 11/6/2022.

Yelm Community Park Master Plan
Olympia, Washington

WDFW PHS Map

September 2023 103284-010

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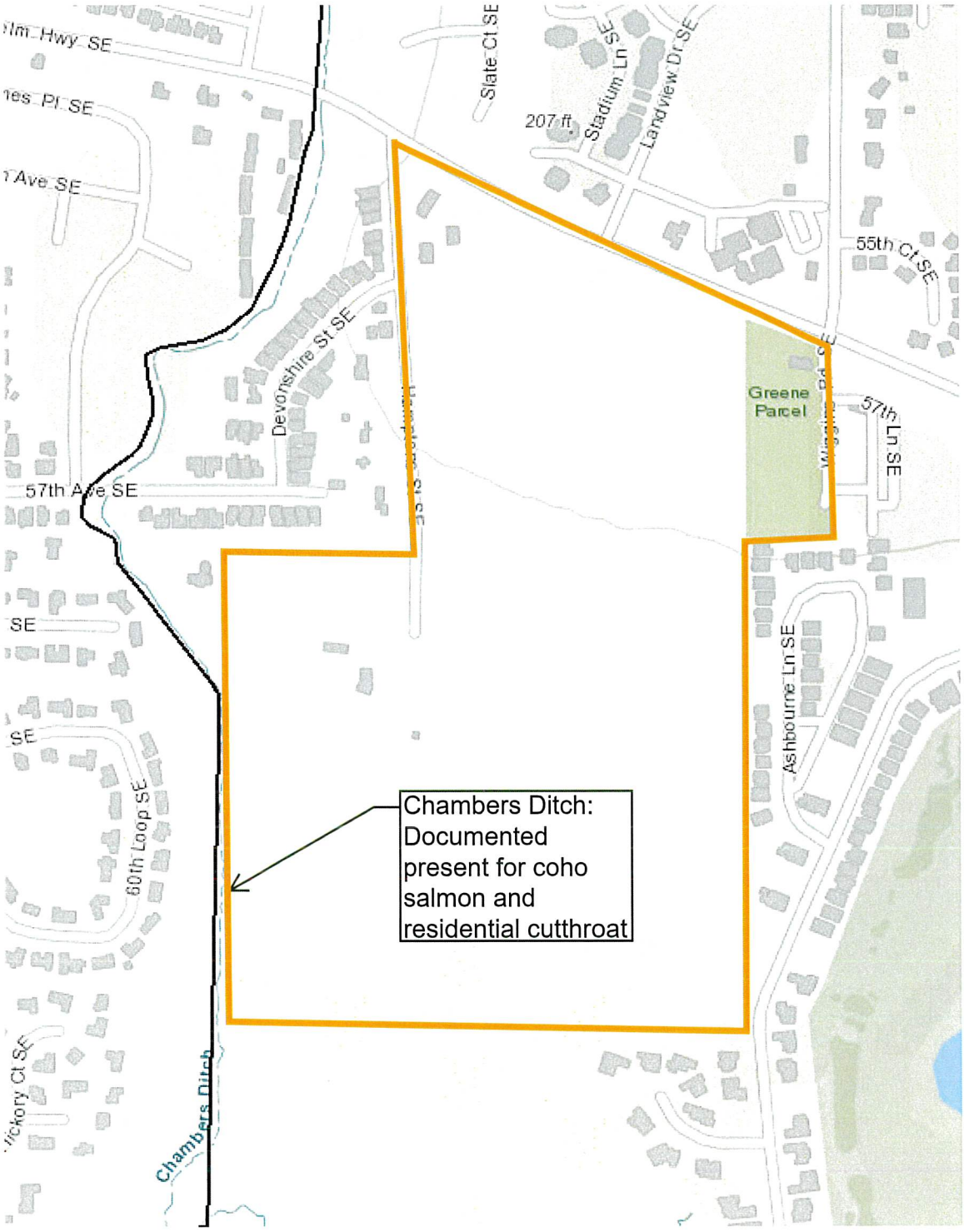
FIG. 4

Filename: I:\EF\SEA\103000s\103284 Yelm Hwy Commun\GIS\MXD\Project Location.mxd Date: 9/5/2019 mac



Legend

Project Location

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Note: Map screenshot acquired from SalmonScape: http://apps.wdfw.wa.gov/salmonscape/map.html, on 11/6/2022.

Yelm Community Park Master Plan
Olympia, Washington

SalmonScape Map

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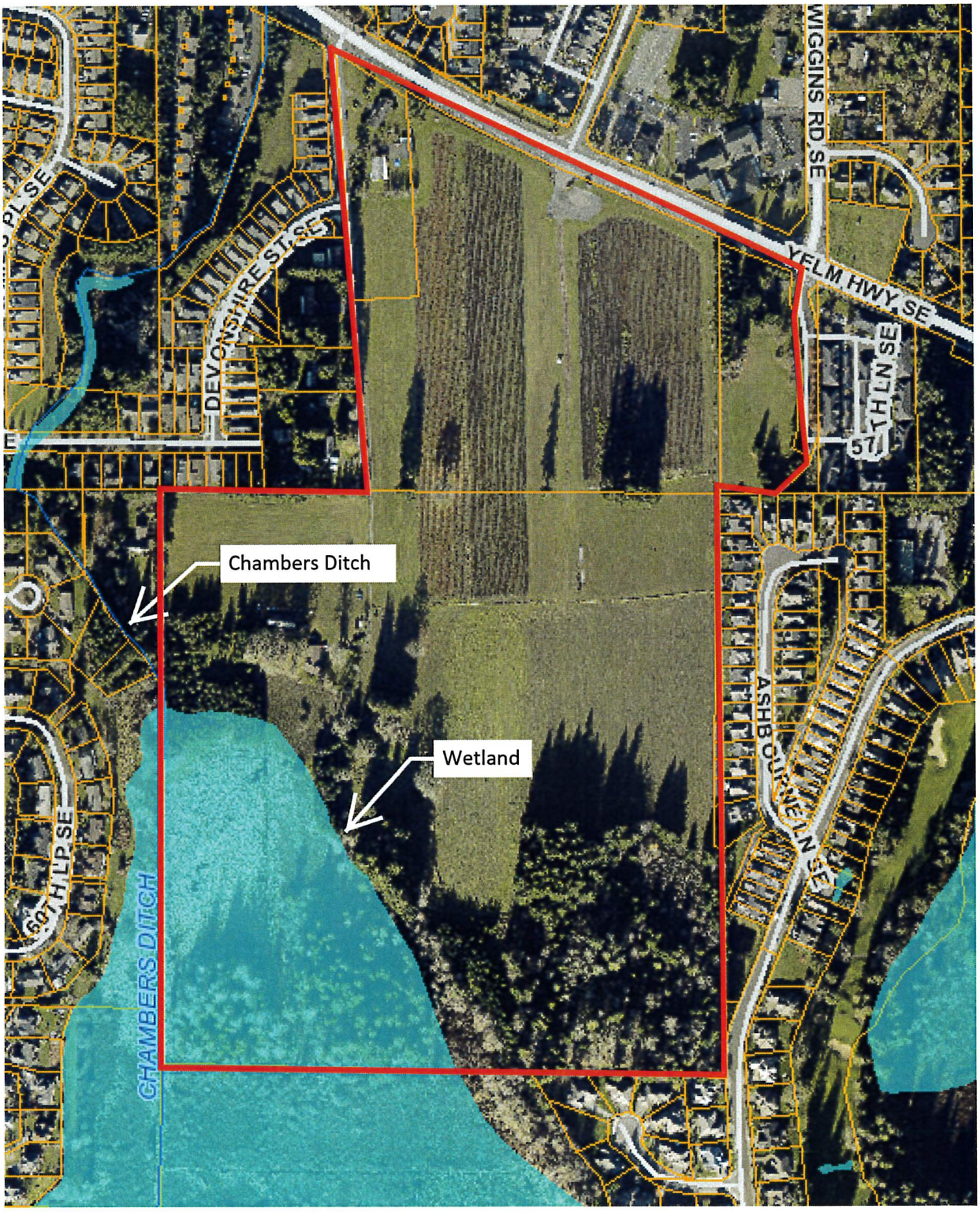
FIG. 5

Filename: I:\EF\SEA\103000s\103284 Yelm Hwy Commun\GIS\MXD\Project Location.mxd Date: 9/5/2019 mac



Legend

Project Location

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Note: Map screenshot acquired from Thurston County Permitting Map: https://map.co.thurston.wa.us/Html5Viewer/Index.html?viewer=Permitting.Main, on 11/6/2022.

Yelm Community Park Master Plan
Olympia, Washington

Thurston County GeoData Center
Permitting Map

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FIG. 6

Filename: I:\EF\SEA\103000s\103284 Yelm Hwy Commun\GIS\MXD\Project Location.mxd Date: 9/5/2019 mac

Legend

Project Location

PSSC: palustrine, scrub-shrub, seasonally flooded
PFOA: palustrine, forested, temporarily flooded
PEM1C: palustrine, emergent, persistent, seasonally flooded

Note: Map screenshot acquired from National Wetlands Inventory Map: https://www.fws.gov/wetlands/data/mapper.html, on 11/6/2022.

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Yelm Community Park Master Plan
Olympia, Washington

National Wetland Inventory Map

September 2023 103284-010

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FIG. 7

Filename: I:\EF\SEA\103000s\103284 Yelm Hwy Commun\GIS\MXD\Project Location.mxd Date: 9/5/2019 mac

Map Unit Symbol	Map Unit Name
20	Cagey loamy sand
70	Mukilteo muck, drained
73	Nisqually loamy fine sand, 0 to 3 percent slopes
74	Nisqually loamy fine sand, 3 to 15 percent slopes
76	Norma silt loam

Legend

Project Location

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Note: Map screenshot acquired from NRCS Web Soil Survey: https://websoilsurvey.sc.egov.usda.govAppWebSoilSurvey.aspx, on 11/6/2022.

Yelm Community Park Master Plan
Olympia, Washington

National Resource Conservation Service Web Soil Survey Map

September 2023 103284-010

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FIG. 8

Filename: I:\EF\SEA\103000s\103284 Yelm Hwy Commun\GIS\MXD\Project Location.mxd Date: 9/5/2019 mac

APPENDIX A: WETLAND DELINEATION METHODOLOGY

Appendix A

Wetland Delineation Methodology

APPENDIX A: WETLAND DELINEATION METHODOLOGY

Appendix A

WETLAND DELINEATION METHODOLOGY

CONTENTS

APPENDIX A: WETLAND DELINEATION METHODOLOGY

A.1 INTRODUCTION

The triple-parameter approach, as required in the U.S. Army Corps of Engineers' (the Corps') 1987 *Corps of Engineers Wetland Delineation Manual* and the Corps' 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* was used to identify and delineate the wetlands on the site described in this report. The triple-parameter approach requires that vegetation, soils, and hydrology are each evaluated to determine the presence or absence of wetlands. An area is considered to be a wetland if each of the following is met: (a) dominant hydrophytic vegetation is present in the area, (b) the soils in the area are hydric, and (c) the necessary hydrologic conditions within the area are met.

A determination of wetland presence was made by conducting a Routine Delineation. Corresponding upland and wetland plots were recorded to characterize surface and subsurface conditions and more accurately determine the boundaries of on-site wetlands.

A.2 WETLAND VEGETATION

Hydrophytic plants are plant species specially adapted for saturated and/or anaerobic conditions. These species can be found in areas where there is a significant duration and frequency of inundation, which produces permanently or periodically saturated soils. Hydrophytic species, due to morphological, physiological, and reproductive adaptations, have the ability to grow, effectively compete, reproduce, and thrive in anaerobic soil. Indicators of hydrophytic vegetation are based on the wetland indicator status of plant species on the national wetland plant list (Lichvar and others, 2016). Plants are categorized as Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), or Upland (UPL). Species in the facultative categories (FACW, FAC, and FACU) are recognized as occurring in both wetlands and non-wetlands to varying degrees. Most wetlands are dominated mainly by species rated as OBL, FACW, or FAC (Exhibit A-1).

Exhibit A-1 Plant Indicator Status

Plant Indicator Status Categories
Obligate Wetland (**OBL**) – Plants that almost always occur in wetlands.
Facultative Wetland (**FACW**) – Plants that usually occur in wetlands but may occur in non-wetlands.
Facultative (**FAC**) – Plants that occur in wetlands or non-wetlands.
Facultative Upland (**FACU**) – Plants that usually occur in non-wetlands but may occur in wetlands.
Obligate Upland (**UPL**) – Plants that almost never occur in wetlands.

Source: Lichvar and others, 2016

The approximate percentage of absolute cover for each of the different plant species occurring within the tree, sapling/shrub, woody vine, and herbaceous strata was determined. Trees within a 30-foot radius, sapling/shrubs and woody vines within a 15-foot radius, and herbaceous species within a 5-foot radius of each data point were identified and noted. However, where site conditions merited it, the dimensions of the tree, sapling/shrub, woody vine, and herbaceous strata were modified.

The dominance test is the primary hydrophytic vegetation indicator and it is used in all wetland delineations. Dominant plant species are considered to be those that, when cumulatively totaled in descending order of absolute percent cover, exceed 50% of the total absolute cover for each vegetative stratum. Any additional species individually representing 20% or greater of the total absolute cover for each vegetative strata are also considered dominant. Hydrophytic vegetation is considered to be present when greater than 50% of the dominant plant species within the area had an indicator status of OBL, FACW, or FAC.

If a plant community does not meet the dominance test in areas where hydric soils and wetland hydrology are present, vegetation is reevaluated using the prevalence index, plant morphological adaptations for living in wetlands, and/or abundance of bryophytes (e.g., mosses) adapted to living in wetlands. The prevalence index is a weighted average that takes into account the abundance of all plant species within the sampling area to determine if hydrophytic vegetation is more or less prevalent. Using the prevalence index, all plants within the sampling area are grouped by wetland indicator status and absolute percent cover is summed for each group. Total cover for each indicator status group is weighted by the following multipliers: OBL=1, FACW=2, FAC=3, FACU=4, UPL=5. The prevalence index is calculated by dividing the sum of the weighted totals by the sum of total cover in the sampling area. A prevalence index of 3.0 or less indicates that hydrophytic vegetation is present.

A.3 HYDRIC SOILS

Hydric soils are defined as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (U.S. Department of Agriculture [USDA] Soil Conservation Service [SCS], 1994). Repeated periods of saturation and inundation for more than a few days, in combination with soil microbial activity, causes depletion in oxygen (anaerobic conditions) and results in delayed decomposition of organic matter and reduction of iron, manganese, and sulfur elements. As a result of these processes, most hydric soils develop distinctive characteristics observable in the field during both wet and dry periods (Vasilas and others, 2018). These characteristics may be exhibited as an accumulation of organic matter; bluish-gray, green-gray, or low chroma and high value soil colors; mottling or other concentrations of iron and manganese; and/or hydrogen sulfide odor similar to a rotten egg smell.

The USDA Natural Resources Conservation Service (NRCS) developed official hydric soil indicators as summarized in *Field Indicators of Hydric Soils in the United States* (Vasilas and others, 2018). These indicators were developed to assist in delineation of hydric soils and are based predominantly on hydric soils near the margins of wetlands. Some hydric soils, including soils within the wettest parts of wetlands, may lack any of the approved hydric soil indicators. If a hydric soil indicator is present, the soil is determined to be hydric. If no hydric soil indicator is present, additional site information is used to assess whether the soil meets the definition of hydric soil.

Identification of hydric soils was aided through observation of surface hydrologic characteristics and indicators of wetland hydrology (e.g., drainage patterns). Soil characteristics were observation at several data points, placed both inside and outside the wetland. Holes were dug with a shovel to the depth needed to document an indicator or to confirm the absence of hydric soil indicators. Soil organic content was estimated visually and texturally. Soil colors were examined in the field immediately after sampling. Dry soils were moistened. Soil colors were determined through analysis of the hue, value, and chroma best represented in the Munsell® Soil Color Chart (Munsell Color, 1992).

A.4 WETLAND HYDROLOGY

Wetland hydrology is determined by observable evidence that inundation or soil saturation have occurred during a significant portion of the growing season repeatedly over a period of years so that wet condition have been sufficient to produce wetland vegetation and hydric soils. Wetland hydrology indicators give evidence of a continuing wetland hydrologic regime. Wetland hydrology criteria were considered to be satisfied if it appeared that wetland hydrology was present for at least 5 to 12.5% (12 to 31 days) of the growing

season. The growing season in western Washington is typically considered to be from March 1 to October 31 (244 days). However, the growing season is considered to have begun when: (a) evidence of plant growth has begun on two non-evergreen vascular plants and (b) the soil reaches a temperature of 41 degrees Fahrenheit at a depth of 12 inches. The Seattle District Corps requires 14 consecutive days of inundation or saturation for wetland hydrology to be considered present.

Wetland hydrology was evaluated by direct visual observation of surface inundation or soil saturation in data plots. The area near each data point was examined for indicators of wetland hydrology. Wetland hydrology indicators are categorized as primary or secondary based on their estimated reliability. Wetland hydrology was considered present if there was evidence of one primary indicator or at least two secondary indicators.

Some primary indicators include surface water, a shallow water table or saturated soils observed within 12 inches of the surface, dried watermarks, drift lines, sediment deposits, water-stained leaves, and algal mat/crust. Some secondary indicators include a water table within 12 to 24 inches of the surface during the dry season; drainage patterns; a landscape position in a depression, drainage, or fringe of a water body; and a shallow restrictive layer capable of perching water within 12 inches of the surface.

A.5 DISCLAIMER

This methodology was prepared for reference use only and is not intended to replace the 1987 *Corps of Engineers Wetlands Delineation Manual*, or the Corps' 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*.

A.6 REFERENCES

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Vasilas, L.M.; Hurt, G.W.; and Berkowitz, J.F., eds., 2018, Field indicators of hydric soils in the United States - a guide for identifying and delineating hydric soils, version 8.2, 2018: Washington, D.C., Natural Resources Conservation Service, 46 p., available: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_053171.pdf.

APPENDIX B: WETLAND DATA FORMS

Appendix B

Wetland Data Forms

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

Project/Site: Yelm Community Park City/County: Thurston County Sampling Date: 6/25/19
Applicant/Owner: City of Olympia State: WA Sampling Point: DP-1
Investigator(s): Amy Summe, Merci Clinton Section, Township, Range: S40 T17N R1W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): 1
Subregion (LRR): A Lat: 46.994296 Long: -122.851452 Datum: WGS84
Soil Map Unit Name: 70-Mukilteo muck, drained NWI classification: None
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: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pseudotsuga menziesii	75	Yes	FACU
2. Populus balsamifera	30	Yes	FAC
3.			
4.			
	105	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 3 ft)			
1. Ranunculus repens	100	Yes	FAC
2. Holcus lanatus	15	No	FAC
3. Phalaris arundinacea	70	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	185	= Total Cover	

Woody Vine Stratum (Plot size: 3 ft)		
1.		
2.		
	0	= Total Cover

% Bare Ground in Herb Stratum 0

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: 75 (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:

SOIL

Sampling Point: DP-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	7.5yr 2.5/1	100					Sil/Loam	Soil very dry

[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:

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:

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

Project/Site: Yelm Community Park City/County: Thurston County Sampling Date: 6/25/19
Applicant/Owner: City of Olympia State: WA Sampling Point: DP-2
Investigator(s): Amy Summe, Merci Clinton Section, Township, Range: S40 T17N R1W
Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): None Slope (%): 1
Subregion (LRR): A Lat: 46.994296 Long: -122.851452 Datum: WGS84
Soil Map Unit Name: 70-Mukilteo muck, drained NWI classification: PSSC
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 ___	**Is the Sampled Area within a Wetland?** **Yes X No ___**
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 3 ft)			
1. Ranunculus repens	30	No	FAC
2. Holcus lanatus	80	Yes	FAC
3. Phalaris arundinacea	5	No	FACW
4. Lotus corniculatus	40	Yes	FAC
5. Juncus ensifolius	10	No	FACW
6. Juncus effusus	20	No	FACW
7. Other grasses	5	No	FAC
8.			
9.			
10.			
11.			
	190	= Total Cover	

Woody Vine Stratum (Plot size: 3 ft)		
1.		
2.		
	0	= Total Cover

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (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:

SOIL

Sampling Point: DP-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR2.5/1	95	5YR5/6	5	C	M	Silt/loam	
12-20	7.5YR2.5/1	90	5YR5/6	10	C	M	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)
- ___ Depleted Matrix (F3)
- X 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:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- X 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 X No ___ Depth (inches): 17

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 8

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

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

Remarks: Beaver activity documented on the site.

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

Project/Site: Yelm Community Park | City/County: Thurston County | Sampling Date: 6/25/19
Applicant/Owner: City of Olympia | State: WA | Sampling Point: DP-3
Investigator(s): Amy Summe, Merci Clinton | Section, Township, Range: S40 T17N R1W
Landform (hillslope, terrace, etc.): Stream Bank | Local relief (concave, convex, none): None | Slope (%): 1
Subregion (LRR): A | Lat: 46.994303 | Long: -122.852004 | Datum: WGS84
Soil Map Unit Name: 70-Mukilteo muck, drained | NWI classification: None
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 ___	**Is the Sampled Area within a Wetland?** Yes ___ No x
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus balsamifera	75	yes	FAC
2.			
3.			
4.			
	75	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Oemleria cerasiformis	75	Yes	FACU
2. Sambucus racemosa	5	No	FACU
3. Spiraea douglasii	15	No	FACW
4. Rubus armeniacus	5	No	FAC
5.			
	110	= Total Cover	

Herb Stratum (Plot size: 3 ft)			
1. Ranunculus repens	70	Yes	FAC
2. Urtica dioica	60	No	FAC
3. Phalaris arundinacea	70	Yes	FACW
4. Tellima grandiflora	trace	No	FACU
5. Geranium robertianum	50	No	FACU
6. Galium aparine	40	No	FACU
7. Carex deweyana	40	No	FAC
8.			
9.			
10.			
11.			
	330	= Total Cover	

Woody Vine Stratum (Plot size: 3 ft)		
1.		
2.		
	0	= Total Cover

% Bare Ground in Herb Stratum 0

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: 75 (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:

SOIL

Sampling Point: DP-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-17	7.5YR2.5/1	100					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)
___ 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:

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:

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

Project/Site: Yelm Community Park | City/County: Thurston County | Sampling Date: 6/25/19
Applicant/Owner: City of Olympia | State: WA | Sampling Point: DP-4
Investigator(s): Amy Summe, Merci Clinton | Section, Township, Range: S40 T17N R1W
Landform (hillslope, terrace, etc.): Stream Bank | Local relief (concave, convex, none): None | Slope (%): 1
Subregion (LRR): A | Lat: 46.994303 | Long: -122.852004 | Datum: WGS84
Soil Map Unit Name: 70-Mukilteo muck, drained | NWI classification: None
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	**Is the Sampled Area within a Wetland?** Yes ___ No x
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pseudotsuga menziesii	65	yes	FACU
2.			
3.			
4.			
	75	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rubus armeniacus	5	Yes	FAC
2. Sambucus racemosa	5	Yes	FACU
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 3 ft)			
1. Galium aparine	50	Yes	FACU
2. Phalaris arundinacea	40	Yes	FACW
3. Agrostis capillaris	25	Yes	FAC
4. Vicia sp.	5	No	FACU
5. Lolium perenne	20	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	117	= Total Cover	
Woody Vine Stratum (Plot size: 3 ft)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	50	x 3 =	150
FACU species	125	x 4 =	500
UPL species	0	x 5 =	0
Column Totals:	215 (A)		730 (B)

Prevalence Index = B/A = 3.4

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:

SOIL

Sampling Point: DP-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-17	7.5YR2.5/1	99	10YR4/6	1	C	M	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)
- ___ 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:

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:

APPENDIX C: SITE PHOTOGRAPHS

Appendix C

Site Photographs

APPENDIX C: SITE PHOTOGRAPHS

Exhibit C-1: View of Wetland A from the North. Wetland Continues Beyond the Forest in the Background.

Exhibit C-2: Example of Forested Area of Wetlands. Photo Taken Along Eastern Edge of Wetland A.

APPENDIX C: SITE PHOTOGRAPHS

Exhibit C-3: Example of Forested Uplands Around Wetland A. Photo Taken to the East of Wetland A.

Exhibit C-4: Tilled Agricultural Fields in the Study Area

APPENDIX C: SITE PHOTOGRAPHS

Exhibit C-5: Planted Forested Upland Area, North of Wetland A

Exhibit C-6: Image of One of the Oregon White Oak Stands Located in the Study Area

APPENDIX C: SITE PHOTOGRAPHS

Exhibit C-7: View of Dry Chambers Ditch Channel Upstream of Wetland A

Exhibit C-8: View of Wetted Chambers Ditch Channel West of Wetland A

APPENDIX D: WETLAND RATING FORMS

Appendix D

Wetland Rating Forms

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 25-Jun-19

Rated by Merci Clinton Trained by Ecology? ☑ Yes ☐ No Date of training 10/30/2018

HGM Class used for rating Depressional & Flats Wetland has multiple HGM classes? ☐ Yes ☑ No

NOTE: Form is not complete with out the figures requested (*figures can be combined*).
Source of base aerial photo/map Esri

OVERALL WETLAND CATEGORY II (based on functions ☑ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		List appropriate rating (H, M, L)		
Site Potential	H	M	H	
Landscape Potential	H	M	L	
Value	H	H	H	**Total**
Score Based on Ratings	9	7	7	**23**

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

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	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (*can be added to map of hydroperiods*)	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	D 2.2, D 5.2	2
Map of the contributing basin	D 4.3, D 5.3	3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	6

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (*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 undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (*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 another figure*)	S 4.1	
Boundary of area within 150 ft of the wetland (*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 Wetland in Western Washington

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

☐ NO - go to 7 ☑ **YES** - The wetland class is **Depressional**

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

☐ NO - go to 8 ☐ **YES** - The wetland class is **Depressional**

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

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

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

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

NOTES and FIELD OBSERVATIONS:
NRCS (Mukilteo muck, drained)

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	1
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	
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):		5
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	
D 1.4. Characteristics of seasonal ponding or inundation:		4
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	
Total for D 1	Add the points in the boxes above	**14**

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?		1
Source nitrate in groundwater	Yes = 1 No = 0	
Total for D 2	Add the points in the boxes above	**3**

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	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?	Yes = 1 No = 0	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 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	**3**

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	0
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*		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 wetland 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	**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 5.0. Does the landscape have the potential to support hydrologic function of the site?		
D 5.1. Does the wetland unit 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. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.*		2
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		
• Flooding occurs in a sub-basin that is immediately down-gradient of unit.	points = 2	
☑ • Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
☐ Flooding from groundwater is an issue in the sub-basin.	points = 1	
☐ The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. Explain why	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

Wetland name or number A

Total for D 6	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 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
- ☑ Emergent
- ☑ Scrub-shrub (areas where shrubs have > 30% cover)
- ☑ Forested (areas where trees have > 30% cover)

4 structures or more: points = 4
3 structures: points = 2
2 structures: points - 1
1 structure: points = 0

If the unit has a Forested class, check if:

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

4

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
- ☑ Seasonally flooded or inundated
- ☑ Occasionally flooded or inundated
- ☑ Saturated only

4 or more types present: points = 3
3 types present: points = 2
2 types present: points = 1
1 types present: points = 0

- ☑ Permanently flowing stream or river in, or adjacent to, the wetland
- ☑ Seasonally flowing stream in, or adjacent to, the wetland
- ☐ **Lake Fringe wetland** **2 points**
- ☐ **Freshwater tidal wetland** **2 points**

3

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

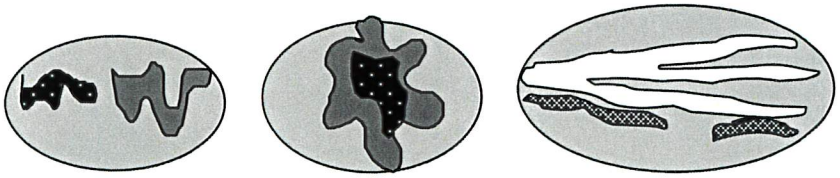
2

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** = 3 points



3

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.* ☑ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long) ☑ Standing snags (dbh > 4 in) within the wetland ☑ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☑ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (*cut shrubs or trees that have not yet weathered where wood is exposed*) ☑ 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*)	5
Total for H 1 Add the points in the boxes above	**17**

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

H 2.0. Does the landscape have the potential to support the habitat function of the site?	
H 2.1 Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* 0 % undisturbed habitat + (14 % moderate & low intensity land uses / 2) = 7% 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:* 0 % undisturbed habitat + (24 % moderate & low intensity land uses / 2) = 12% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	2
H 2.3 Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1km 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** ☑ **< 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) with in 100m points = 1 Site does not meet any of the criteria above points = 0	2

Wetland name or number __A_____

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

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

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

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

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

Wetland name or number __A_____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. List 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**	
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 page 25) ☐ 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**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes - Go to **SC 2.2** ☑ No - Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = **Category I** ☑ No = **Not WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes - **Contact WNHP/WDNR and to SC 2.4** ☑ No = **Not WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = **Category I** ☑ No = **Not WHCV**	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *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 = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No - Go to **SC 3.4** **NOTE**: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed	

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

☐ Yes = **Is a Category I bog** ☑ No = **Is not a bog**

Wetland name or number A

SC 4.0. Forested Wetlands

Does the wetland have at least 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**

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*)

☐ Yes - Go to **SC 5.1** ☑ No = **Not a wetland in a coastal lagoon**

SC 5.1. Does the wetland meet all of the following three conditions?

☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).

☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.

☐ The wetland is larger than $^1/_{10}$ ac (4350 ft^2)

☐ Yes = **Category I** ☐ No = **Category II**

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***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

☐ Yes - Go to **SC 6.1** ☑ No = **Not an interdunal wetland for rating**

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?

☐ Yes = **Category I** ☐ No - Go to **SC 6.2**

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?

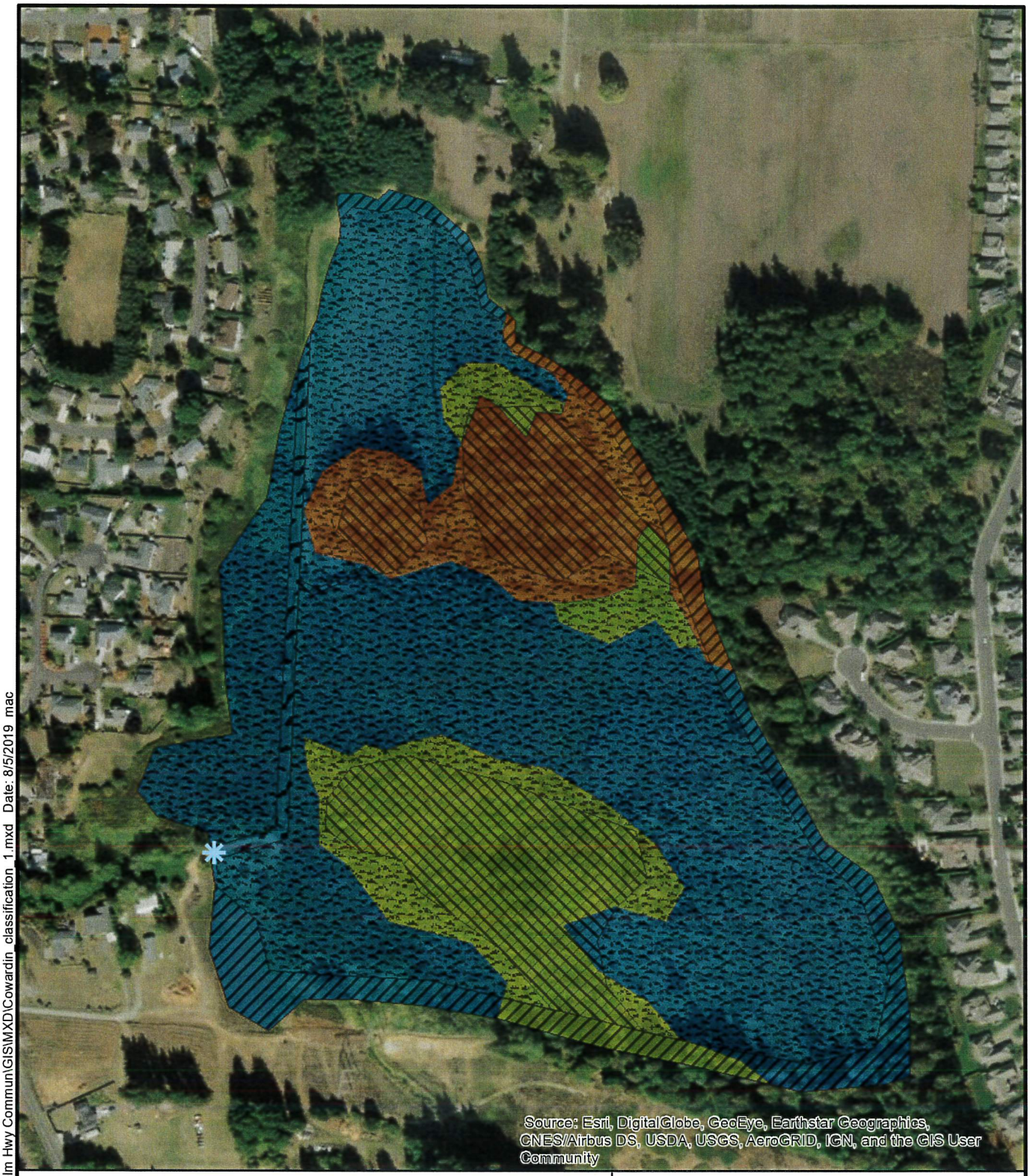
☐ Yes = **Category II** ☐ No - Go to **SC 6.3**

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

☐ Yes = **Category III** ☐ No = **Category IV**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form



Legend

- Emergent
- Forested
- Scrub-shrub
- Outlet
- Occasionally inundated
- Permanently inundated
- Saturated
- Seasonally flowing stream

N W E S

0 125 250 500 Feet

Yelm Community Park Master Plan
Olympia Washington

COWARDIN CLASSES AND HYDROPERIODS

August 2019 103284-002

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 1

Filename: I:\EF\SEA\103000s\103284 Yelm Hwy Commun\GIS\MXD\Cowardin_classification_1.mxd Date: 8/5/2019 mac

Legend

- Wetland A
- 150 Foot Buffer
- Pollutant Generating Surface

N
W E
S

0 125 250 500 Feet

Yelm Community Park Master Plan
Olympia Washington

150 FOOT BOUNDARY

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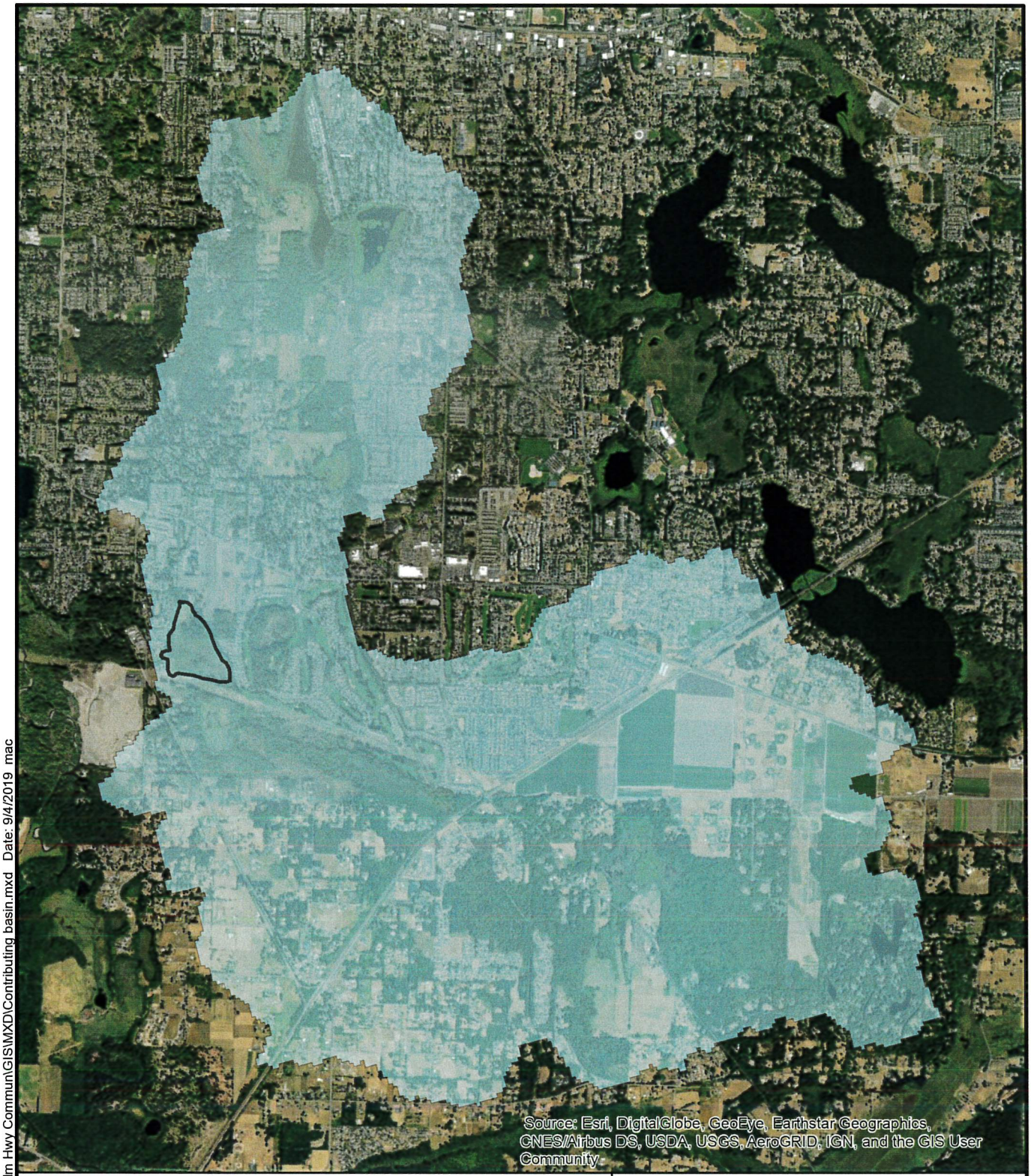
FIG. 2

Filename: I:\ER\SEA\103000s\103284 Yelm Hwy Commun\GIS\MXD\150 foot buffer.mxd Date: 8/5/2019 mac



Legend

- Wetland A
- Contributing Basin

N
W E
S

0 0.25 0.5 1 Miles

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Olympia Washington

MAP OF THE CONTRIBUTING BASIN

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FIG. 3

Filename: I:\EP\SEA\103000s\103284 Yelm Hwy Commun\GIS\MXD\Contributing basin.mxd Date: 9/4/2019 mac

Legend

- Wetland A
- 1 Kilometer Buffer
- Moderate & Low Intensity Land Use
- Accessible Habitat

N
W E
S

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1 KILOMETER POLYGON

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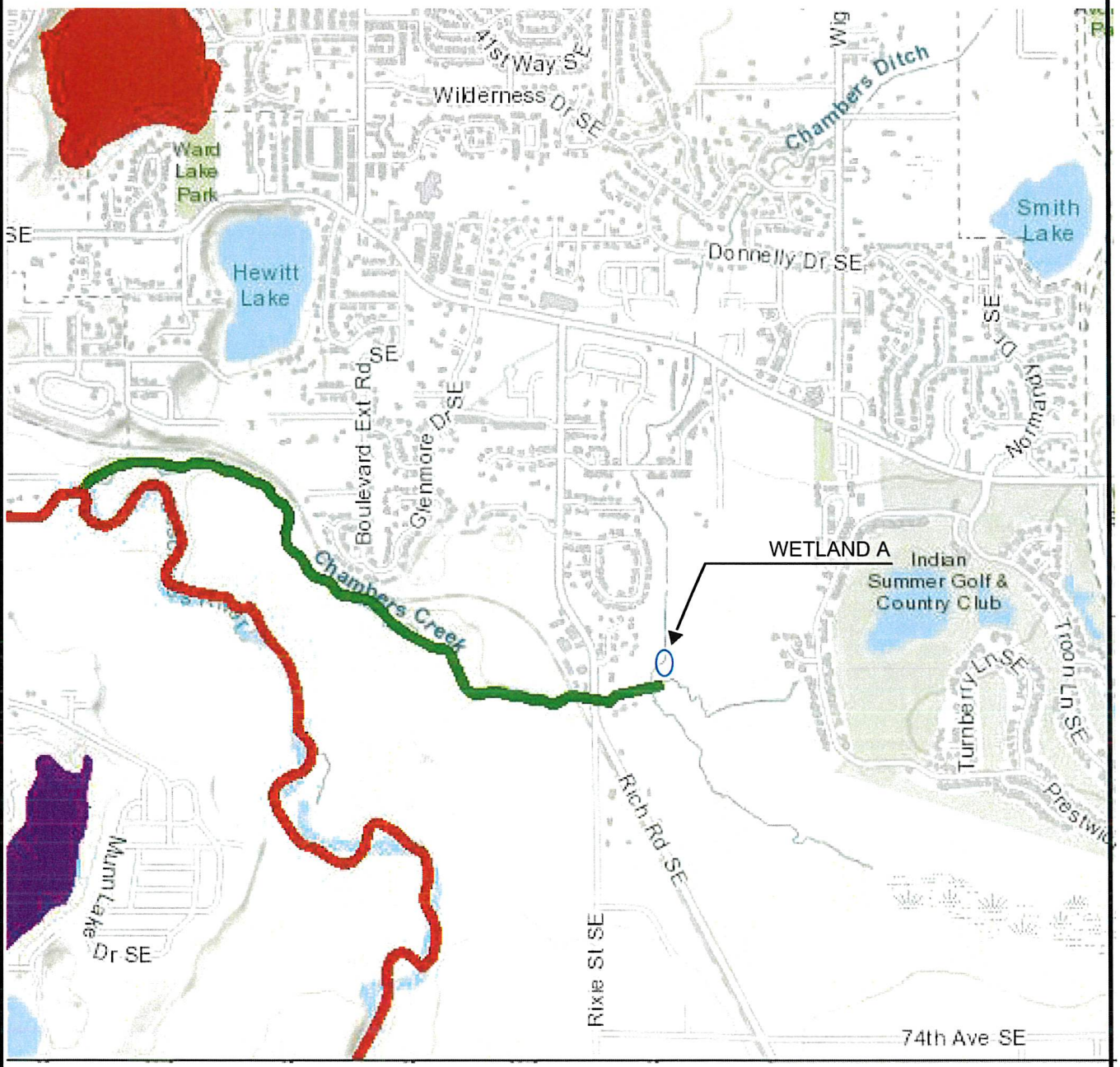
FIG. 4

Filename: I:\EFSEA\103000s\103284 Yelm Hwy Commun\GIS\MXD\1 Km Buffer.mxd Date: 8/5/2019 mac

Document Path: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\GIS\MXD\Rating_fig_5.mxd



Water

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

N
W E
S

Yelm Community Park Master Plan
Olympia Washington

WETLAND A
303(D) LISTED WATERS

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FIG. 5

Filename: I:\EF\SEA\102000s\102336 Port of Everett\Baywood\GIS\MXD\Rating_fig_5.mxd Date: 2/11/2019 MAC

DEPARTMENT OF ECOLOGY State of Washington

Thurston County

Water quality improvement projects

Select the waterbody or pollutant name to find more information about the specific project.

Waterbody Name(s)	Pollutant(s)	Status	Project Lead(s)
Deschutes River	Temperature	EPA Approved and Has an implementation plan	Andrew Kolosseus 360-407-7543
Deschutes River	Dissolved Oxygen pH Sediment Fecal Coliform	Pending	Andrew Kolosseus 360-407-7543
Budd Inlet	Dissolved Oxygen	Under development	Leanne Weiss 360-407-0243
Upper Chehalis River Watershed	Ammonia-N BOD (5-day) Dissolved Oxygen Fecal Coliform Temperature	EPA Approved	Devan Rostorfer 360-690-4665
Henderson Inlet Watershed	Multi-parameter	EPA approved and Has an implementation plan	Donovan Gray 360-407-6407
Nisqually Watershed	Dissolved Oxygen Fecal Coliform	EPA approved and Has an implementation plan	Donovan Gray 360-407-6407
Totten/Eld Inlets Tributaries	Fecal Coliform Temperature	EPA approved Has an implementation plan	Andrew Kolosseus 360-407-7543

To request ADA accommodation, call Ecology at 360-407-7668, 711 (relay service), or 877-833-6341 (TTY). More about our accessibility services.

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Olympia Washington

WETLAND A
LISTED TMDL'S SCREENSHOT

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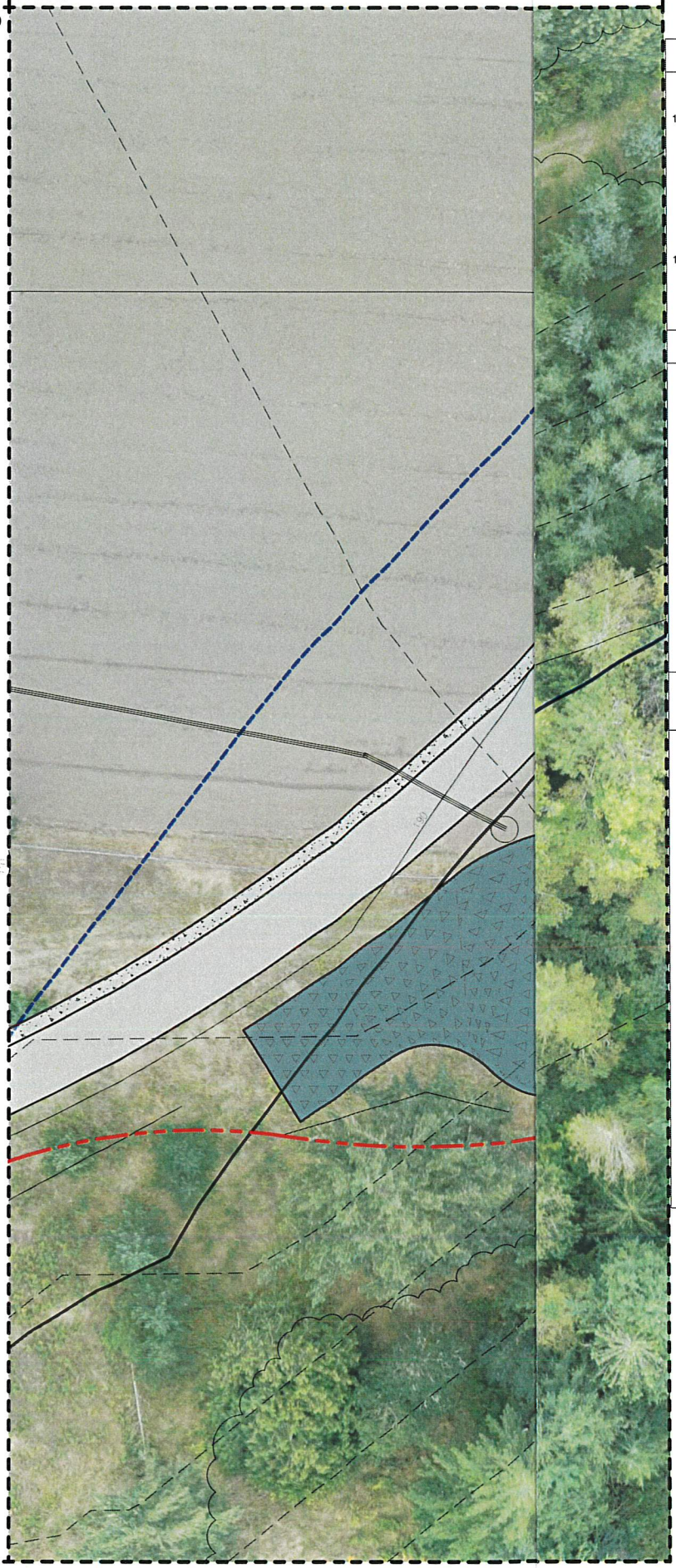
FIG. 6

APPENDIX E: BUFFER MITIGATION PLAN

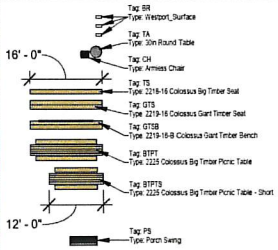
Appendix E

Buffer Mitigation Plan

1 / L-107 1 / L-108
1 / L-110

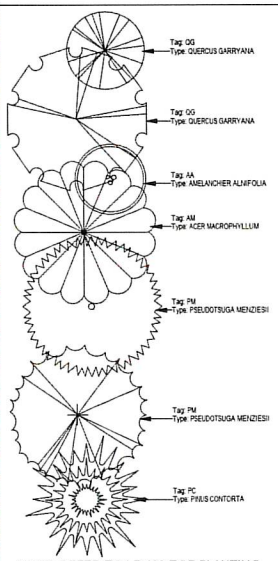


SITE FURN. LEGEND



PAVING LEGEND

TREE PLANTING LEGEND



NOTE: REFER TO LP-100 FOR PLANTING.

PARTNERSHIP berger
1927 Post Alley, Ste. 2
Seattle, WA 98101
206.325.6877
bergerpartnership.com

Yelm Highway Community Park - Phase 1

Olympia Parks, Arts and Recreation

3327 Yelm Hwy SE, Olympia, WA 98501

SET TYPE:
30% DESIGN

SET ISSUE DATE:
2021/10/29

REVISIONS:

Δ	DESCRIPTION	DATE

DRAWN/CHECKED:
SB, MM / AM

SHEET NAME:
SITE PLAN - AREA 11

SHEET NUMBER:
L-111

1 SITE PLAN - AREA 11
1" = 20'-0"

NORTH

0' 80' 160'
SCALE: 1"= 80'-0"

Berger Partnership Project Number: Project Number
Plotted: 10/29/2021 1:42:24 PM
Filename: C:\Users\stephb\Documents\YHCP-Landscape_stephbGBAFQ.rvt