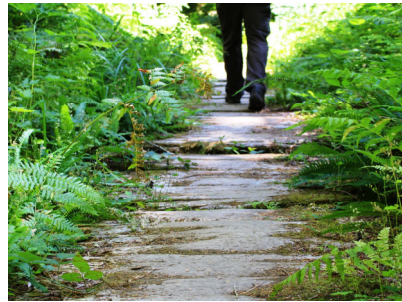




# ONSITE MITIGATION AND BANK USE PLAN

November 30, 2023



*TCC Woodland Industrial Project  
Woodland, Washington*

Prepared for  
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## SIGNATURE PAGE

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The information and data in this report were compiled and prepared under the supervision and direction of the undersigned.



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### QUALIFICATIONS

Steffanie has been employed at Ecological Land Services since 2000. Steffanie has completed numerous wetland delineations in a variety of landscape settings, conducted ordinary high water mark determinations, habitat assessments, developed and implemented numerous mitigation plans, and has prepared various environmental permit applications for private and public projects of all sizes.

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## APPENDIX A

Wetland E Rating Form, Updated Wetland B Rating Form, Updated Wetland Rating Figures, and Wetland E Test Plots

## APPENDIX B

Pacific Habitat Services Wetland Delineation Report

## APPENDIX C

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## APPENDIX E

Columbia River Wetland Mitigation Bank Functional Analysis

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Arbor Science Tree Care Tree Management Recommendations

## INTRODUCTION

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Ecological Land Services, Inc. (ELS) has completed this Onsite Mitigation and Bank Use Plan on behalf of the Trammell Crow Portland Development, Inc. for direct and indirect wetland impacts and Oregon white oak (*Quercus garryana*) tree impacts resulting from the proposed construction of two industrial buildings in Woodland, Washington. The site consists of Cowlitz County Parcels 507350104, 507350102, and 507350103 located at 345 North Pekin Road within portions of Sections 13 and 14, Township 5 North, Range 1 West of the Willamette Meridian (Sheets 1 and 2). The project site totals approximately 69 acres. Construction is anticipated to begin in spring/summer 2024 and will take approximately six months.

Construction of the industrial buildings will involve directly impacting three, small Category IV wetlands, Wetlands C, D, and E, totaling 0.017 acres (748 sq. ft.) filling them entirely, directly impacting 0.001 acres (54 sq. ft.) of Category III Wetland B from stormwater outfall installation, and indirectly impacting 0.122 acres (5,319 sq. ft.) of Wetland B due to insufficient buffer. In some areas the buffer of Wetland B will be reduced below what is allowed per City of Woodland Municipal Code (WMC), so a variance is being sought. Temporary buffer impacts from trenching for stormwater conveyance features and site grading will also occur within approximately 0.873 acres (38,048 sq. ft.) of Wetland A and B buffers (Sheets 3a and 3b).

Additionally, one 47-inch diameter at breast height (dbh) Oregon white oak (oak) with a 0.146-acre (6,369 sq. ft.) canopy will be removed and 0.013 acres (587 sq. ft.) of oak dripline will be impacted by construction of interior access ways and site grading (Sheets 3a and 3b).

Direct and indirect wetland impacts will be mitigated by purchasing 0.077 credits from the Columbia River Wetland Mitigation Bank (CRWMB). Oak removal and dripline impacts will be mitigated onsite. Onsite wetland buffer enhancement measures will also be implemented to compensate for the buffer reduction on Wetland B as required per WMC. The oak and wetland buffer reduction mitigation measures include buffer addition where possible, oak stem replacement, oak woodland creation/enhancement within the remaining Wetland B buffer to ensure no net loss of wetland and habitat functions onsite (Sheet 4). Temporary buffer impact areas will be restored to pre-project condition.

This *Onsite Mitigation and Bank Use Plan* was prepared according to the WMC *Chapter 15.08 – Critical Areas Regulation*, the multi-agency guidance *Wetland Mitigation in Washington State – Parts 1 & 2* (2021 and 2006, respectively), and from guidance provided by the Washington Department of Fish and Wildlife (WDFW) for oak mitigation. The *Interagency Review Team (IRT) for Washington State’s Guidance Paper, Using Credits from Wetland Mitigation Banks: Guidance to Applicants on Submittal Contents for Bank Use Plans* (June 2020) and the U.S. Army Corps of Engineers' (Corps) *Compensatory Mitigation for Losses of Aquatic Resources* (33 C.F.R. §332 (2008)) were followed to prepare the Bank Use Plan.

## PROJECT HISTORY

During a July 27, 2023 site visit with WDFW, a remnant channel was observed in Wetland B. Historically, Wetland B was likely connected to Goerig Slough, but has since become disconnected by fill and other development. However, due to this historic connectivity, the historic connectivity of Goerig Slough to the Columbia River, and the observation of a remnant channel in the bottom of the wetland, WDFW considers Wetland B a fish-bearing stream. The City of Woodland is deferring to WDFW recommendations, therefore will be regulating the wetland under WMC *Chapter 15.08.700 Designation of fish and wildlife habitat conservation areas* and it will require a 200-foot habitat conservation area buffer. The Washington State Department of Ecology (Ecology) and the Corps will be regulating the waterbody as a wetland because it currently functions a wetland with no outlet.

A wetland boundary verification was conducted with the Corps and Ecology on October 27, 2023. During this site visit, one additional wetland was mapped (Wetland E), and the northeast boundary of Wetland A was increased slightly. It was also determined that Wetland B should be rated as a Category III wetland instead of a Category IV wetland. These changes are reflected on the attached figures and are discussed in this report. Updated wetland rating forms and rating figures are provided in Appendix A.

## RESPONSIBLE PARTIES

Contact information for the responsible parties is listed below.

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## PROJECT DESCRIPTION

### PROJECT LOCATION

The site consists of Cowlitz County Parcels 507350104, 507350102, and 507350103 located at 345 North Pekin Road in the City of Woodland, Washington, within Sections 13 and 14, Township 5 North, Range 1 West of the Willamette Meridian. Total size of the parcels is 69.5 acres (Sheets 1 through 2a).

### PROPOSED DEVELOPMENT PROJECT

The project consists of constructing two industrial buildings with associated semi-trailer and employee parking, interior access roads, stormwater facilities, and street improvements. Each building will include office space to support each tenant. Building A will be approximately 15 acres (655,000 sq. ft.) with 146 dock doors, 387 associated semi-trailer/employee parking spaces, and 131 trailer storage spaces. Building B will be approximately 6 acres (276,000 sq. ft.) with 45 dock doors, 159 semi-trailer/employee parking spaces, and 51 trailer storage spaces. Utilities and stormwater facilities will also be constructed. The project will create approximately 46 acres (1,993,000 sq. ft.) of new impervious surface. Improvements will also be made to North Pekin Road and Rose Way will be extended along the western property boundary. The development will require two access points off North Pekin Road as well as off the Rose Way extension. A separate approximately 250-foot by 350-foot parcel will be created in the southeast corner of the property, around an existing residence and will not be part of the proposed project.

To achieve adequate drainage for stormwater and sewer, Building A will need to be raised approximately

7 feet and Building B will need to be raised approximately 5 feet. Approximately 225,500 cubic yards of clean fill material from a local source will be used raise the building elevations. An additional approximately 100,000 cubic yards of material will be needed to raise the drive aisles and parking areas. Stormwater will be directed to one of five stormwater facilities for treatment and detention. Approximately half of the stormwater generated onsite will be treated and detained then released directly into Wetland B. Wetland B is approximately 6 to 8 feet lower in elevation than the surrounding uplands. By releasing treated and detained stormwater directly to Wetland B, the project will avoid importing significantly more fill to raise the site even higher in elevation to achieve adequate drainage. Stormwater will outflow from Wetland B to the central stormwater facility for additional storage during heavy precipitation events. A portion of the clean stormwater generated by roofs will be captured and released to Wetland A's buffer to maintain the wetland's hydroperiod. The amount of stormwater captured and directed to Wetland A will be equal to pre-development discharge rates. Stormwater will ultimately exit the site through a Consolidated Diking Improvement District (CDID) 2 maintained ditch that flows west just offsite to the south. Flow in the ditch is intermittent and ultimately reaches Goerig Slough to the west, which is also maintained by CDID 2. Water from Goerig Slough is pumped into the Columbia River approximately 2 miles west. Goerig slough is considered a Type F water due to historic fish presence.

Buffer averaging will be conducted on Wetland A in accordance with *WMC 15.08.400.G* to avoid indirect impacts as described in the *Wetland Buffer Averaging* section. A variance is being sought for reduction of Wetland B's buffer beyond what is allowed per code. Portions of Wetland B's buffer will be reduced from 200 feet and will generally vary from 21 feet to 60 feet wide. The remainder of Wetland B's buffer aside from the lowest portions of the storm ponds will be enhanced by planting native trees and shrubs to create an oak woodland, installing habitat features, removing invasive species, and removing trash to ensure no net loss of critical area function onsite. Signage stating "The area beyond this sign is a critical area buffer. Alteration or disturbance is prohibited by law." Or with similar wording will be placed every 100 feet along the final buffers of Wetland A and Wetland B.

One 47-inch dbh Oregon white oak will be removed and 0.013 acres (587 sq. ft.) of Oak 6's dripline will be impacted. Mitigation for removal of the oak will include installing 250 oak saplings (250:1 stem replacement), retaining the branches and the trunk as habitat features, oak release around remaining oaks adjacent to Wetland B, and creating/enhancing approximately 3.559 acres (155,046 sq. ft.) of oak woodland (including 0.135 acres for Oak 6 dripline impacts at a 10:1 mitigation ratio and 1.291 acres, 26,250 sq. ft., to accommodate 250 oak trees at 15-foot spacing) onsite. Utility trenching for the stormwater facilities will avoid the Oak 8 dripline, and curbing will be used to avoid grading within the driplines of Oaks 2 and 3 in the southwest corner of the site.

Best management practices (BMPs) that will be completed prior to construction include designating staging and stockpile areas outside of buffers and oak driplines, establishing standard construction entrances at each entry point, installing silt fencing along the remaining buffers and/or along the edge of clearing, installing construction fencing around the remaining oak driplines and around oak saplings where present, and making a water truck available during construction to prevent dust blowing.

The applicant will submit any proposed changes to the project or mitigation plan to Ecology for review and approval prior to implementation. This requirement only applies to significant changes to the project or plan, such as changes to: the amount, location, or design of mitigation; the goals, benchmarks, or performance standards; the monitoring or adaptive management provisions. Minor changes, such as slight alterations in the species listed in the planting plan, will not be required to be pre-approved but will be documented in the as-built or monitoring report.



## EXISTING CONDITIONS

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### EXISTING AND SURROUNDING LAND USES

The subject property consists mainly of mowed pasture that is periodically tilled or disced and has been in agricultural use for decades. Zoning of the property is light industrial (I-1) with light-industrial-zoned properties bordering to the north and west, and property zoned Heavy Industrial (I-2) bordering the east and south. Properties east of North Pekin Road and the property adjoining the southeast corner of the site are currently developed with heavy industrial uses. Properties adjoining to the north and west are developed for light industrial use, and agricultural properties about the southwest portion of the site. In general, properties to the west and south that have not been developed for industrial uses consist of high intensity farmland. North Pekin Road extends along the eastern property boundary. The Woodland City limits are located approximately 600 feet to the west.

### LANDSCAPE POSITION

The project site is situated on the historic floodplain of the Columbia River near the eastern extent of the Woodland Bottoms area. The Woodland Bottoms is a low-lying area dominated by agricultural fields that has been historically diked and drained through ditching. Larger ditches and sloughs in the area are regularly maintained by CDID 2. Water in the ditch system is ultimately pumped into the Columbia River. The project site is located within Hydrologic Unit Code (HUC) 170800030306 Burris Creek-Frontal Columbia River, which is in Water Resource Inventory Area (WRIA) 27 Lewis River.

### GENERAL SITE DESCRIPTION

There are no structures onsite aside from the residence and outbuildings in the southeast corner that will be contained within newly created parcel. The property is generally flat with a low depressional area in the southeast corner surrounding Wetland A. A shallow depressional area is also within the forested area surrounding Wetlands C, D, and E. An approximately 8-foot-deep U-shaped depression along the northern property boundary contains Wetland B. The depression abuts historical fill at the northwest and northeast ends.

Much of the site consists of pasture that is regularly hayed and periodically tilled. The southeast corner of site is partially forested with deciduous trees that transition to scrub-shrub vegetation to the east near the homesite. Multiple Oregon white oaks surround the homesite. There is an open area between the oaks and scrub-shrub vegetation that appears to be partially filled or otherwise disturbed. This area is dominated by herbaceous vegetation and blackberries (*Rubus* sp.). A wetland (Wetland A) is located between the homesite and forested area. A small stand of black cottonwood trees containing three small wetlands (Wetland C, D, and E) is located along the central-western property line and mixed stand of deciduous trees is located along the north-central property boundary that contains Wetland B. Scattered black cottonwood (*Populus balsamifera* spp. *trichocarpa*) and Oregon white oaks are present along the southwestern and the northwestern property lines. A 10-foot-wide, 4-foot-deep ditch extends west from the central portion of the southern property line just offsite that is maintained by CDID 2.

The understory beneath the oaks in the southwest corner of the property is mowed, except immediately adjacent to the oak trunks where Himalayan blackberry (*Rubus armeniacus*) is dense. The oaks in the northwest corner are surrounded by dense blackberry, which was too dense to cut through and measure the oak trunk diameters. Additionally, these oaks are heavily infested with ivy. Ivy has also heavily infested the riparian habitat area north of Wetland B, growing both up trees and covering the ground. There are scattered ivy infestations throughout the forested area around Wetland A.

## CRITICAL AREAS AND PRIORITY HABITAT DESCRIPTIONS

The *Wetland Delineation for the Bozarth Property, Woodland, Cowlitz County, Washington* prepared by Pacific Habitat Services (PHS) on April 3, 2023, contains detailed information regarding critical area delineation methodology and field observations (Appendix B). PHS delineated four wetlands onsite and mapped the driplines of five Oregon white oaks and one oak trunk on November 23 and December 6, 2022. The dripline of six additional Oregon white oaks along with their trunk locations and dbh were mapped by ELS on August 2, 2023. It was determined during a site visit on July 27, 2023 with the WDFW and City of Woodland that Wetland B will be regulated under WMC *Chapter 15.08.700* as a fish and wildlife habitat conservation area by the City of Woodland and WDFW. The waterbody, however, currently functions as a wetland as it is surrounded by uplands and will be regulated as a wetland by the Corps and Ecology. Wetland E was delineated by ELS following the wetland boundary verification on October 27, 2023. The rating of Wetland B was increased from a Category IV to a Category III following the boundary verification as well. Test plots and the rating form for the recently delineated Wetland E and the updated rating form for Wetland B are located in Appendix A.

### WETLAND CATEGORIZATION AND BUFFERS

Wetlands were rated according to Washington State Wetlands Rating System for Western Washington - 2014 Update (Rating System, Hruby & Yanke 2023) (Appendix A and B), and buffers were determined according to WMC 15.08.400 and 15.08.700. The following three parameters determine wetland buffer widths for Wetlands A, and C through E: the wetland category, its habitat score, and the proposed land-use intensity, which is high for this project. Wetland A rated as Category III with a habitat score of 5 requiring an 80-foot buffer. Wetlands C, D, and E are Category IV wetlands with habitat scores of 4 requiring 50-foot buffers. A score of 5 points or less on the Rating System is considered low, amended from 4 points or less in July 2018 by the Department of Ecology (Ecology 2023). The WMC Critical Areas Regulation Chapter 15.08.400 *Wetland buffers*, however, has not been updated to reflect this amendment. Wetlands and buffers are summarized in Table 1 below.

Wetland B rated as a Category III wetland with habitat score of 5, which requires an 80-foot wetland buffer; however, Wetland B is regulated by the City of Woodland under WMC 15.08.700 as a fish and wildlife habitat conservation area. According to Table 15.08.730-1 *Riparian Habitat Areas*, Type 3 (F) streams 5 to 20 feet wide require 200-foot riparian habitat area (RHA) widths. Both the riparian and wetland buffer are shown on the project figures and listed in the table. Indirect wetland impacts were calculated using the wetland buffer.

**Table 1. Wetland and Buffer Summary**

Wetland	Size	Category <sup>1</sup> /HGM Class <sup>2</sup> / Cowardin Class <sup>3</sup>	Land Use Intensity	Habitat Score	Buffer Width <sup>4</sup>
A	2.544 ac. (110,811 sq. ft.)	III/Palustrine Depressional/ Forested, Scrub-Shrub, Emergent	High	5	80 feet
B	0.755 ac. (32,888 sq. ft.)	III/Palustrine Depressional/ Forested	High	4	RHA: 200 ft. <sup>5</sup> Wetland 80 ft.
C	0.007 ac. (315 sq. ft.)	IV/Palustrine Depressional/ Forested	High	4	Exempt <sup>6</sup>
D	0.007 ac. (313 sq. ft.)	IV/Palustrine Depressional/ Forested	High	4	Exempt <sup>6</sup>
E	0.003 ac. (120 sq. ft.)	IV/Palustrine Depressional/ Forested	High	4	Exempt <sup>6</sup>

<sup>1</sup>Hruby & Yanke 2023 <sup>2</sup>NRCS 2008 <sup>3</sup>FGDC 2013 <sup>4</sup>WMC 15.08.400 <sup>5</sup>Regulated Under WMC 15.08.700 <sup>6</sup>WMC 15.08.400.L.1

## WETLAND DESCRIPTIONS

### Wetland A

Wetland A is a depressional, palustrine, forested, scrub-shrub, and emergent, seasonally flooded/saturated Category III wetland totaling 2.544 acres (110,811 sq. ft.). The westernmost portion of Wetland A is forested; the northeastern portion of the wetland and the northern fringe that extends into the agricultural field are dominated by herbaceous vegetation; and the central and southern portions of the wetland are dominated by dense shrubs. The forested wetland community is dominated by black cottonwood with a dense understory of red-osier dogwood (*Cornus alba*) and little ground cover. The scrub-shrub community is dominated by willow (*Salix* sp.) and stinging nettle (*Urtica dioica*), and the emergent wetland community is dominated by reed canarygrass (*Phalaris arundinacea*). The forested western buffer of Wetland A contains similar species as the forested wetland but also contains sword fern (*Polystichum munitum*), trailing blackberry (*Rubus ursinus*), and Himalayan blackberry.

Throughout the wetland, a seasonally high water table appears to be the primary source of hydrology. There was no ponded water or evidence of ponding within the wetland at the time of PHS's wetland investigation. Wetland A has a narrow, constricted connection to an offsite, excavated ditch that extends in an east-west orientation to the south of the southern boundary of the study area that is maintained by CDID 2. Flow in the ditch is intermittent and ultimately reaches Goerig Slough to the west, which is also maintained by CDID 2. Water from Goerig Slough is pumped into the Columbia River 2 miles to the west. Goerig slough is considered a Type F water due to historic fish presence.

Wetland A provides a moderate level of water-quality functions (7 points) because it has an intermittently flowing outlet, has persistent, ungrazed, plants greater than 95 percent of area, and the surrounding agriculture land use could generate pollutants. The wetland does not discharge directly within 1 mile to a stream, river, or lake, on the 303(d) list; however, it is in a basin where an aquatic resource is on the 303(d) list. The wetland provides a low level of hydrologic functions (5 points) as it has an intermittently flowing outlet, ponding is less 0.5 feet, the contributing basin is large, there is a high amount of runoff from intensive human land uses, and downstream water levels are controlled by the CDID. Habitat functions are low (5 points). Although there are multiple vegetation classes, there are limited hydroperiods, special habitat features, and undisturbed or accessible habitat surrounding the wetland. There is one priority habitat (Oregon white oak) within 300 feet of the wetland.

### Wetland B

Wetland B is a depressional, palustrine forested, seasonally flooded Category III wetland totaling 0.755 acres (32,888 sq. ft.). WDFW considers Wetland B a remnant historic fish-bearing stream. The City of Woodland, therefore, is regulating the wetland as a Fish and Wildlife Habitat Conservation Area subject to WMC *Chapter 15.08.700*. Based on width, Wetland B requires a 200-foot RHA buffer which is consistent with the RHA for Type 3 fish-bearing streams that are 5 to 20 feet wide. The wetland boundary is synonymous with the ordinary high water mark. Wetland B currently functions as a wetland because it is surrounded by uplands and has no downstream or upstream connections to other water bodies.

The wetland is located in a 6- to 8-foot-deep depression. Trees are rooted along the upper edge of the wetland boundary and mainly include black cottonwood. Pacific willow (*Salix lasiandra*) and red-osier dogwood are scattered throughout the wetland floor and there is little ground cover. A seasonally high water table appears to be the primary source of hydrology, and water appears to pond to 3 feet or deeper within the wetland based on water staining on trunks/stems.

Wetland B provides a moderate level of water-quality functions (10 points) because it has no outlet, ungrazed plants cover about half of the wetland, and the surrounding agriculture land use could generate pollutants. The wetland does not discharge directly within 1 mile to a stream, river, or lake, on the 303(d)

list; however, it is in a basin where an aquatic resource is on the 303(d) list. The wetland provides a moderate level of hydrologic functions (6 points) as ponding can be greater than 3 feet, there is a high amount of runoff from intensive human land uses, and downstream water levels are controlled by the CDID. Habitat functions are low (4 points) because there is little interspersion of habitats, only one hydroperiod, limited plant species richness, and there is limited undisturbed or accessible habitat surrounding the wetland. There is one priority habitat (Oregon white oak) within 300 feet.

The majority of the southern 200-foot RHA buffer consists of a regularly mowed agricultural field with a 40- to 50-foot-wide band of deciduous-forested vegetation with a dense understory. Dominant vegetation in the forested portion of the southern buffer consists of black cottonwood, bigleaf maple (*Acer macrophyllum*), and Oregon ash (*Fraxinus latifolia*), with scattered Oregon white oaks. The understory is dominated by red-osier dogwood, snowberry, Nootka rose (*Rosa nutkana*), beaked hazelnut, (*Corylus cornuta*), Himalayan blackberry, trailing blackberry, and stinging nettle. The northern buffer is similarly forested with cottonwood, maple, and oak, but is heavily infested with ivy (*Hedera helix*). Ivy completely covers the ground and is growing up the trees as well. Similar native shrubs are present with tall Oregon grape (*Mahonia aquifolium*) and sword fern also observed, but shrubs are ivy-covered as well.

#### Wetlands C, D, and E

Wetlands C, D, and E are very small, palustrine, forested, seasonally ponded Category IV wetlands totaling 0.007 acres (315 sq. ft.), 0.007 acres (313 sq. ft.), and 0.003 acres (120 sq. ft.), respectively. Within the wetlands, the forest canopy is dominated by black cottonwood, with red-osier dogwood and Himalayan blackberry dominant in the understory. Slough sedge (*Carex obnupta*) is present the herbaceous layer, which is very sparse. Due to their small size and low function, the wetlands are exempt from buffer requirements (Table 1). They are surrounded by deciduous forest containing the same species as Wetlands A and B. Hydrology is mainly from groundwater and runoff from the surrounding agricultural field.

Wetlands C, D, and E provide a moderate level of water-quality functions (6 points) because they have no outlet, and the surrounding agriculture and industrial use land use can generate pollutants. The wetlands do not discharge directly within 1 mile to a stream, river, or lake, on the 303(d) list; however, they are in a basin where an aquatic resource is on the 303(d) list. The wetlands provide low level of hydrologic functions (5 points) as ponding is less than 0.5 feet, their contributing basins are large, there is a high amount of runoff from intensive human land uses, and downstream water levels are controlled by the CDID. Habitat functions are low (4 points) because there is little interspersion of habitats, only one hydroperiod, limited plant species richness, the wetlands lack special habitat features, and there is limited undisturbed or accessible habitat surrounding the wetlands.

Wetland E was delineated by ELS following the wetland boundary verification on October 27, 2023. The eastern portion of Wetland E appears to be man-made as it is circular in shape and approximately 3 feet deep with steeply sloping sides. It may have been used historically for a stock pond or refuse pit as garbage and broken glass was present within the wetland and encountered in both the upland and wetland test pits. The western portion is a shallower depression that appears to overflow into the deeper eastern portion.

#### **PRIORITY HABITAT – OREGON WHITE OAK**

Oregon white oak trees are present around the perimeter of the field onsite and oak woodland was mapped in the southeastern corner of the property where the new parcel will be created. PHS mapped a portion of the oak trees and driplines during their field work in late 2022, and ELS mapped additional oaks and driplines as well as the dbh of all oaks on August 2, 2023. Onsite oaks and oak woodland are summarized in Table 2.

**Table 2. Summary of Oregon White Oaks**

Oregon White Oak Identifier	Diameter at Breast Height (inches)	Canopy Area
Oak 1	47	0.146 ac. (6,369 sq. ft.)
Oak 2	47	0.111 ac. (4,816 sq. ft.)
Oak 3	36	0.048 ac. (2,074 sq. ft.)
Oaks 4 and 5	Undetermined, unable to access	0.108 ac. (4,714 sq. ft.)
Oak 6 (Split trunk)	28 each trunk	0.064 ac. (2,780 sq. ft.)
Oak 7	34	0.058 ac. (2,520 sq. ft.)
Oak 8	25	0.040 ac. (1,721 sq. ft.)
Oak 9	26	0.037 ac. (1,604 sq. ft.)
Oak 10	26	0.031 ac. (1,335 sq. ft.)
Oak 11	20	Not mapped <sup>1</sup>
Oak 12	20	
Oak 13	23	
<b>Totals</b>	<b>13 Trees</b>	<b>0.643 ac. (27,933 sq. ft.)</b>
<sup>1</sup> Oaks located north of Wetland B and are not near development therefore canopy was not mapped.		

The oak habitat onsite consists of small clusters of oaks with overlapping canopies or single oaks (no overlapping canopy) scattered around the site perimeter (Oaks 1 through 5) and individual oaks (Oaks 6 through 13) within a larger deciduous-wooded area not meeting the definition of an oak woodland (Wetland B buffer). Oak 1’s canopy is more than 100 feet away from the oak woodland boundary on the separate parcel and the space between is regularly mowed, therefore, was not considered part of the woodland. The understories of Oaks 1 through 10 are within or partially within the agricultural field and their understories are regularly mowed. The bases of the trunks are generally surrounded by blackberries. Oaks 4 and 5 are heavily infested with ivy and are surrounded by dense blackberries that are mowed around, which also prevented measuring their dbh. It is estimated their dbh is between 30 and 40 inches based on the similar canopy size of other oaks onsite. The majority of the canopies on Oaks 6 through 10 overhang the mowed field with little canopy extending into the forested area. All of these oaks had acorns, dead branches, and many contained galls. Only one cavity was observed on Oak 5.

**LISTED SPECIES AND HABITATS IN THE PROJECT VICINITY**

The potential presence of listed species that have a primary association with the habitat on or adjacent to (within 200 feet) the project area (as shown in Table 3) was evaluated by a site visit, aerial photographs, the WDFW Priority Habitats and Species website (WDFW 2023a), SalmonScape Mapping Tool (WDFW 2023b), Washington Department of Natural Resources (WDNR), Washington Natural Heritage Program website (WDNR 2023b), Forest Practices Application Mapping Tool (WDNR 2023a), and the U.S. Fish and Wildlife Service (USFWS), IPaC website (USFWS 2022). ELS fieldwork did not occur during an official botanical survey window for listed plant species.

**Table 3. Species of Local Importance, Priority Species and Endangered, Threatened, Candidate, and Sensitive species that have the Primary Association Habitat within 200 feet of Proposed Project Area.**

Species	State Status <sup>1</sup>	Federal Status <sup>1</sup>	Suitable Habitat <sup>2</sup> in Project Vicinity
<b>Mammals</b>			
Big Brown Bat ( <i>Eptesicus fuscus</i> )	PHS Listed	Not Listed	Yes
<b>Birds</b>			
Sandhill Crane ( <i>Grus canadensis</i> )	Endangered	Not Listed	Yes
<b>Plants</b>			
Nelson’s Checker-mallow ( <i>Sidalcea nelsoniana</i> )	Endangered	Delisted	Yes
Oregon White Oak ( <i>Quercus garryana</i> )	PHS Listed	Not Listed	Yes
Soft-leaved Willow ( <i>Salix sessilifolia</i> )	Sensitive	Not Listed	Yes

1) Endangered - In danger of becoming extinct or extirpated; Threatened - Likely to become endangered within the foreseeable future throughout all or a significant portion of its range and that has been formally listed as such in the State and Federal Register under the Federal Endangered Species Act; Sensitive - Vulnerable or declining and could become endangered or threatened in the state;

2) WDFWa 2023

#### SANDHILL CRANE

Sandhill cranes were observed onsite, flying over, and on the adjacent agricultural field during the wetland boundary verification visit in October 2023. Sandhill cranes prefer habitats with visibility in all directions, emergent wetland vegetation, and limited amounts of disturbance to feed and nest successfully. During migration they live in more open grassland and river valleys, and often feed in agricultural fields (WDFW 2023c). Sandhill cranes nest in open wetlands, preferring those with standing water. Nesting habitat is not present onsite. The project area will no longer be available for wildlife foraging; however, surrounding agricultural lands that provide many square miles of wildlife foraging habitat will still be available. Therefore, this project will not significantly affect feeding and resting for sandhill cranes.

#### BIG BROWN BAT

Big brown bats are a considered a priority species. According to the Bat Conservation International (BCI) website, big brown bats are found in nearly every habitat ranging from meadows to lowland deserts but are most abundant in deciduous forests as well as in suburban areas. Roosting and hibernating habitat includes tree cavities, caves, and all variety of buildings and other man-made structures. The BCI website also states that they are generalists in their foraging behavior, frequenting neighborhoods, clearings, and forests and will feed over water or land showing little preference. Bats may be present onsite roosting in trees or foraging for insects. Removal of some trees may eliminate roosting habitat; however, most of the forested areas will be avoided. The future building may also provide roosting habitat following construction. Removal of some of the trees onsite and construction of the future building is not likely to affect foraging activities.

#### SOFT-LEAVED WILLOW

Soft-leaved willow is found in a variety of lowland habitats including riparian forest and on dredge spoils (WDNR, 2022c). Habitat may be present along the Wetland B side slopes and bottom. No impacts Wetland B or its side slopes are anticipated during construction activities.

#### NELSON’S CHECKER-MALLOW

Nelson’s checker-mallow is found in meadow, prairie or grassland habitat, along fencerows, streams, roadsides, drainage swales, and edges of plowed fields adjacent to wooded areas. Standing water is present at some sites (WDNR, 2023b). Nelson’s checker-mallow could be present onsite near Wetland A.

The areas proposed for temporary disturbance around Wetland A are regularly mowed and occasionally tilled, so the species is not likely to be impacted.

#### OREGON WHITE OAK

Oregon white oaks are discussed in the *Priority Habitat* section above.

#### FISH

Wetland B is considered a fish-bearing stream by WDFW based on historic fish presence and historic connection to Goerig Slough. Fish are no longer present in the wetland as the remnant channel is disconnected from Goerig Slough by fill and other development, and the channel goes dry for a large portion of the year. Additionally, the remaining continuous channel of Goerig Slough outlets the to the Columbia River via a pumpstation that does not allow fish access.

## WETLAND AND RIPARIAN HABITAT AREA BUFFER REDUCTION

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### WETLAND A BUFFER AVERAGING

Wetland buffer averaging is proposed to Wetland A's regulated buffer. In accordance with WMC 15.08.400.G, the director may allow for the standard buffer width to be averaged on a case-by-case basis when a qualified wetlands professional demonstrates the following criteria listed below in italics are met:

1. *Averaging will not reduce wetland functions or values;*

The majority of Wetland A's buffer that will be decreased (average-out) consists of regularly mowed/hayed pasture. Buffer averaging increase (average-in) areas on the western side of the wetland are dominated by deciduous forest; however, this area will be graded to facilitate development fill slopes and trees will be removed. Graded areas in the buffer average-in areas will be seeded with a native seed mix and planted with native trees and shrubs to ensure no net loss of ecological functions.

2. *The wetland would benefit from a wider buffer in places and would not be adversely impacted by a narrower buffer in other places due to varying wetland quality;*

The average-out areas of the buffer consist of mowed pasture with some scattered shrubs. Mowing and tilling will cease in the remaining pasture-dominated buffer allowing species to recover and forested/shrub species may expand into previously mowed areas. Temporarily impacted buffer areas will be seeded and planted with shrubs. Stormwater from roadways will be conveyed to stormwater facilities for treatment and detention so road runoff will not impact water quality in the wetland or buffer; therefore, a narrower buffer in places will not affect with wetland.

3. *The total area of the averaged buffer is not less than would be contained if there were no buffer averaging; and*

A total of 0.041 acres (1,784 sq. ft.) of Wetland A's buffer will be decreased (averaged-out) and the buffer will be increased (averaged-in) by the same amount (Sheets 3a and 3b).

4. *The buffer width is not reduced to less than twenty-five percent of the standard buffer width or fifty feet, whichever is greater in any one location.*

Twenty-five percent of the regulated 80-foot buffer is 60 feet. The narrowest point of buffer after averaging is 70 feet (Sheets 3a and 3b).

## RIPARIAN HABITAT BUFFER REDUCTION

In accordance with WMC 15.08.730.D.6, the director may allow the standard riparian habitat area buffer to be reduced on a case-by-case basis when it is determined that a smaller area is adequate to protect the habitat functions and values based on site-specific characteristics and when all of the criteria listed below are met. These criteria are listed below in italics followed by a response in regular font. A variance is being sought as the reduction is more than 50 percent of the standard buffer width.

- a. *The critical area report provides a sound rationale for a reduced buffer based on the best available science;*

Approximately 150 to 160 feet of the southern 200-foot RHA consists of regularly mowed pasture grasses providing minimal buffer function. The final proposed southern buffer of Wetland B will range between 20 feet and 200 feet and encompasses the vast majority of existing trees and shrubs in the RHA. The buffer addition areas which currently consist of mowed pasture, will be enhanced creating an oak woodland and corridor that extends across the northern portion of the property. Stormwater facilities will also be located in the corridor, which, although are utilities, will also provide habitat while treating and detaining stormwater runoff. Stormwater generated by impervious surfaces will be routed to the stormwater facilities for treatment and detention. Treated stormwater will be released to the wetland in a manner that will not affect the wetland hydroperiod, avoiding adverse impacts to wetland water quantity and quality functions due to runoff from the new development. Later sections of this report demonstrate no net loss of habitat function for the buffer reduction.

- b. *The existing buffer area is well-vegetated or will be significantly enhanced with native species and has less than a ten percent slope;*

The buffer has less than a 10 percent slope. The vast majority of the well-vegetated portion of the southern buffer will be retained, while the portions consisting of regularly mowed pasture will be developed. Additional buffer will be added and the remaining buffer will be planted to create an oak woodland. The enhancement will significantly improve overall habitat function and value, which is further described in later sections of this report.

- c. *No direct or indirect, short-term or long-term, adverse impacts to habitats will result from the proposed activity;*

A variance is being sought for reduction of the buffer beyond what is allowed per code. All direct impacts from placement of stormwater facility outfalls will be mitigated by purchasing credits from CRWMB. Indirect wetland impacts will also be mitigated by purchasing credits from CRWMB. Enhancing the remaining buffer area with native trees, shrubs, and habitat features, removing invasive species, and removing trash from the wetland are all additional proposed measures to ensure there are no long-term adverse impacts to the riparian buffer. After implementing enhancement and mitigation measures, no adverse impacts to the habitat are anticipated.

- d. *As required by the director, a five-year monitoring program of the buffer and habitat shall be included. Subsequent corrective actions may be required if adverse impacts to the habitats are discovered during the monitoring period;*

A 10-year monitoring plan has been prepared and is described in the *Monitoring, Maintenance and Contingency Measures* section below.

- e. *In no case shall the standard buffer width be reduced by more than fifty percent using this provision.*

A variance is being sought for the buffer reduction as it is being reduced below the 50 percent allowance. The proposed buffer is 21 feet at the narrowest point, and more than 200 feet at the



widest. Buffer enhancement is being proposed in the remaining buffer area and credits are being purchased from CRWMB for indirect wetland impacts to Wetland B.

## MITIGATION SEQUENCING AND MITIGATION STRATEGY

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### AVOIDANCE AND MINIMIZATION

The applicant used preferred mitigation sequencing that first avoids, then minimizes, and finally compensates for unavoidable impacts to onsite wetlands, riparian habitat, and Oregon white oaks. Project needs and requirements include two access points being required off of North Pekin Road and the Rose Way extension. The southern access on North Pekin must align with the existing access on the east side of the road. Additional needs/requirements include a minimum 40-foot clearance around each building, turning radius large enough for semi-trucks maneuvering, loading, and offloading, building size needs for the end-users, employee and tractor-trailer parking needs, Rose Way street extension, and access requirements.

The original site plan consisted of one large, centrally located facility. The single-building development plan, including access ways and parking, encroached to within 5 feet the boundaries of Wetlands A and B, nearly eliminating their buffers on the north and south sides, respectively (see Figure 1 in Appendix C). Additionally, Oak 1 (47-inch dbh) in the southeast corner of the site was proposed for removal and the majority of the canopies of Oak 7 (37-inch dbh) and Oak 6 (split trunk, 26-inch dbh) would be impacted. Storm pond locations also impacted oak canopies. Wetlands C, D, and E were avoided in the site plan.

The single-building site plan was changed to two smaller buildings reducing buffer impacts to Wetlands A and B, avoiding impacts to Oak 7, and removing Oak 1 (see Figure 2 in Appendix C). Wetlands C, D, and E were proposed to be filled in this scenario. Impacts would occur within the driplines of Oaks 2, 3, 6, and 10 from side-slope grading due to the amount of fill being imported to raise the site elevation high enough to achieve adequate drainage.

The two-building site plan was revised, and the southeastern access was modified to curve around Oak 1 avoiding removal. Included in this version of the site plan, stormwater would be released directly to Wetland B instead of its buffer. By releasing treated and detained stormwater directly to the wetland, the project would avoid importing significantly more fill material to raise the site to achieve adequate drainage. This would also avoid dripline impacts to Oaks 2, 3, and 10 and reduce dripline impacts to Oak 6. Wetlands C, D, and E would be filled in this scenario; however, filling the small wetlands and releasing treated and detained stormwater directly to Wetland B was preferred by the agencies over impacting Oak 1.

Upon further evaluation of the revised two-building site plan and discussion with the project engineers, fill and grading would still need to occur within the dripline of Oak 1. Because of the size and shape of the canopy, grading could not be completed without removing a large portion of the canopy for construction equipment to grade near the trunk. Additionally, the proposed building would be located immediately adjacent to the oak canopy. The canopy and critical root zone would likely be impacted by equipment accessing that side of the building during building construction even if additional fill and grading was not needed. Branches would eventually need to be removed from the southern portion of the canopy as well because they extend over the main access where semi-trucks will be entering and leaving. The oak would still be surrounded by fill, although fill would be shallower so it may be possible to drain water out of the depression. Because of the extent of construction activities needing to occur within the dripline of the oak, even with the road and buildings being located outside the dripline, it is highly likely the oak would eventually die regardless of the avoidance efforts; therefore, it was decided to remove the oak and mitigate for impacts rather than have the oak become a hazard later and be removed, potentially without

mitigation.

Additional avoidance measures include:

- Moving the stormwater ponds and associated grading outside of oak driplines.
- Moving the discharge pipe from the northwestern stormwater facility outside of Oak 8 and Oak 9 driplines.
- Using a tall curb along the access near Oaks 2 and 3 to avoid grading in their driplines.
- Capturing clean roof runoff and routing to Wetland A's buffer to maintain its hydroperiod.
- Setting the outflow pipe in Wetland B to an elevation so its hydroperiod is not affected.
- Following recommendations as outlined in the *Oak Tree Protection and Conservation Plan* prepared by Arbor Science Tree Care (Appendix F).

Best management practices will be implemented prior to construction include the following:

- Designating staging and stockpile areas outside of critical areas and oak driplines.
- Establishing standard construction entrances at each entry point off North Pekin Road.
- Installing silt fencing along the remaining critical area buffers and/or along the edge of clearing.
- Installing construction fencing around the remaining oak driplines and around oak saplings, where present, to further avoid impacts.
- Making a water truck available during construction to prevent dust blowing.
- Using higher curbs along the street edge near Oaks 2 and 3 to avoid dripline impacts.

## STORMWATER

In accordance with 15.08.700.10 *Stormwater Conveyance Facilities*, stormwater conveyance facilities are allowed within a riparian buffer with an approved critical area report subject to the following code criteria listed in italics with our response in regular font following.

*a. No other feasible alternatives with less impact exist;*

The stormwater facilities need to be located around the perimeter of the site generally outside of the building and parking footprints and must be sized appropriately. The northeastern facility is located as far east of the RHA as possible. The northwestern facility was designed around two mature oak trees located in the northwestern corner of the site. The central facility is located as far south of the RHA as possible to still accommodate stormwater input from surrounding development. The facilities are located in previously mowed pasture areas onsite, and none require removal of trees or shrubs. Following construction, they will be seeded with a native herbaceous seed mix.

*b. Mitigation for impacts is provided;*

Mitigation is being proposed for impacts associated with outfall and overflow structures and by purchasing credits from the CRWMB. The remaining RHA will be planted with native species to develop into an oak woodland and ensure no net loss of habitat function.

*c. Conveyance facilities shall incorporate habitat features; and*

Habitat features consisting of downed logs, large woody material piles, and bird nest boxes will be placed around the stormwater facilities as shown on Sheets 3a and 3b.

*d. Vegetation shall be maintained.*

Construction of the stormwater facilities does not require tree or shrub removal, Once constructed, the facilities will be seeded with a native herbaceous seed mix.

The stormwater facilities further meet the criteria listed in 15.08.420 - *Stormwater management* in the wetland section of the WMC.

- A. *New developments shall utilize best management practices to minimize stormwater quantity and quality impacts to wetlands, both during and following construction.*

Best management practices are described in the *Avoidance and Minimization Section* above.

- B. *Stormwater runoff from new development shall not significantly change the rate of flow, hydroperiod which is the seasonal period and duration of water saturation or inundation, nor decrease the water quality of wetlands.*

Treated and detained stormwater will be released to the wetland similar to predevelopment rates. The outflow pipe will be set at an elevation to maintain the hydroperiod of the wetland. Water will outflow from Wetland B to another stormwater facility during flooding events for additional storage.

- C. *Authorized modifications of wetlands or buffer areas for construction of discharge from drainage facilities shall protect wetland hydrologic functions classified pursuant to this section.*

Hydrologic functions of the wetland and buffer will be protected as described above and throughout this report.

- D. *Stormwater runoff shall not be diverted from the watershed of wetlands.*

Treated and detained stormwater will be released to Wetland B similar to predevelopment rates. Release of stormwater in the wetland is also necessary to maintain the hydroperiod so as not to starve the wetland of hydrology. A portion of the clean stormwater generated by the future buildings will be captured and released to Wetland A's buffer to maintain the wetland's hydroperiod. The amount captured and directed to Wetland A will be equal to pre-development contributing basin.

As stated in *Appendix I-C Compensatory Wetland Protection Guidelines Section I-C.6 Compensatory Mitigation of Wetlands* in the *Stormwater Management Manual for Western Washington* (Ecology 2019), compensatory wetland mitigation is not required if the following criteria are met. These criteria are listed below in italics followed by our response in regular font.

- *The wetland is rated Category III or IV.*  
Wetland B is a Category III wetland.
- *The wetland has a habitat score of 5 or less.*  
Wetland B scored 5 for habitat on the Rating System.
- *The wetland does not provide habitat for rare, threatened or endangered species.*  
There are no rare, threatened, or endangered species in Wetland B.
- *The wetland does not contain a breeding population of any native amphibians.*  
Wetland B is not expected to contain a breeding population of native amphibians as there is less than ¼-acre of thin stemmed persistent vegetation in the wetland. Shrubs are present in the wetland in scattered patches and are too large to be considered thin-stemmed. The wetland lacks an emergent component as most of the wetland floor is bare ground.
- *The hydrologic functions of the wetland can be improved by modification. Generally, this means that constraints exist within the wetland (or surrounding area) that have altered natural hydrologic processes. The constraints are described in Charts 4 & 5 in Selecting Wetland Mitigation Sites Using a Watershed Approach (Hruby et al., 2009).*

Surrounding industrial and agricultural development have altered the wetland over time. The wetland was likely historically part of Goerig Slough. Historic fill and downstream development have disconnected the wetland from the slough. Recent development in the surrounding area is likely directing runoff away from the wetland. Release of treated and detained stormwater from the project site into the wetland is needed to prevent the wetland from drying up. An outflow pipe will be set at an elevation that will maintain the existing hydroperiod of the wetland to avoid changes in the water regime.

As outlined in the discussion above, placement of stormwater facilities in the riparian area and placement of outfalls that release treated and detained stormwater directly to Wetland B are allowed per local and state regulations. Direct impacts from the outfalls and the outflow pipe will be mitigated by purchasing credits at the CRWMB. Indirect impacts due to insufficient buffer will be mitigated by purchasing credits. The remaining riparian buffer will be planted with native trees and shrubs, invasive species will be removed, and trash will be removed from the wetland as described below resulting in no net loss of habitat or function within the wetland. For these reasons and because the wetland hydroperiod will be maintained, we believe placement of the stormwater facility outfalls/outflow and releasing treated and detained stormwater directly to the wetland will not require additional mitigation beyond what is proposed.

## UNAVOIDABLE IMPACTS

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After buffer averaging and implementing avoidance and minimization measures, the project will directly impact 0.017 acres (748 sq. ft.) of Category IV wetland (Wetlands C, D, and E) from fill, directly impact 0.001 acres (54 sq. ft.) of Category III Wetland B from stormwater outfall/outflow placement, indirectly impact 0.122 acres (5,319 sq. ft.) of Wetland B due to insufficient buffer, remove one 47-inch dbh oak tree (Oak 1) with a 0.146-acre (6,369 sq. ft.) canopy, and impact .013 acres (587 sq. ft.) of oak dripline (Oak 6). The project will also temporarily impact 0.873 acres (38,048 sq. ft.) of RHA and wetland buffer from utility trenching and grading. A variance is being sought for reducing the wetland and riparian habitat area buffers beyond the minimum allowed per code. Direct and indirect wetland impacts will be mitigated by purchasing 0.077 credits from CRWMB as detailed in the *Bank Use Plan* section of this report. Oak impacts and reduction of the RHA buffer beyond what is allowed per code will be mitigated onsite through oak woodland creation and installation of habitat features including utilizing the removed oak as a habitat feature.

Because Ecology is regulating Wetland B as a wetland (not a stream), the City does not assess indirect impacts, and a variance is being sought for reduction of the RHA buffer beyond what is allowed per code. Indirect wetland impacts due to insufficient buffer have been assessed for Wetland B based on a 60-foot wetland buffer. An 80-foot wetland buffer is required for Category III wetlands with a low habitat score, which can be reduced or averaged up to 25 percent or down to 60 feet; therefore a 60-foot buffer was used to calculate indirect impacts to Wetland B. The remaining buffer around Wetland B following development will range between 20 feet and 200 feet and will be enhanced with native trees, shrubs, and habitat features. The vast majority of existing forested buffer vegetation will not be disturbed during construction.

Table 4 below summarizes expected impacts to wetlands, and Table 5 summarizes expected impacts to oaks.

**Table 4. Expected Impacts to Wetlands**

Wetland Name	Wetland Area	Direct Impacts	Indirect Impacts	Temp. Impacts (Buffer Only)	Ecology Rating <sup>1</sup>	Cowardin Class <sup>2</sup>	HGM Class <sup>3</sup>
A	2.552 ac. (111,168 sq. ft.)	---	---	0.157 ac. (6,830 sq. ft.)	III	FO/SS/ EM <sup>4</sup>	Dep. <sup>5</sup>
B	0.755 ac. (32,888 sq. ft.)	0.001 ac. (54 sq. ft.)	0.122 ac. (5,319 sq. ft.)	0.716 (31,218 sq. ft.)	IV	FO	Dep.
C	0.007 ac. (315 sq. ft.)	0.007 ac. (315 sq. ft.)	---	---	IV	FO	Dep.
D	0.007 ac. (313 sq. ft.)	0.007 ac. (313 sq. ft.)	---	---	IV	FO	Dep.
E	0.003 ac. (120 sq. ft.)	0.003 ac. (120 sq. ft.)	---	---	IV	FO	Dep.
<b>Totals</b>	<b>3.324 ac.</b> <b>(144,804 sq. ft.)</b>	<b>0.018 ac.</b> <b>(802 sq. ft.)</b>	<b>0.122 ac.</b> <b>(5,319 sq. ft.)</b>	<b>0.873 ac.</b> <b>(38,048 sq. ft.)</b>			

<sup>1</sup>Hruby & Yanke 2023  
<sup>2</sup>FGDC 2013  
<sup>3</sup>NRCS 2008  
<sup>4</sup>FO=Forested, SS=Scrub-shrub, EM=Emergent  
<sup>5</sup>Dep.= Depressional

**Table 5. Expected Impacts to Oregon White Oaks**

Identifier	DBH	Canopy Area	Impact
Oak 1	47 inches	0.146 ac. (6,369 sq. ft.)	Removal
Oak 6	26 inches Split trunk 26 each stem	0.064 ac. (2,780 sq. ft.)	0.013 ac. (587 sq. ft.) Dripline Impact

## IMPACTED CRITICAL AREA FUNCTIONS

### WETLANDS

#### WETLAND B

Although regulated under the Fish and Wildlife Habitat Conservation Area section of the WMC because WDFW considers Wetland B a remnant historic fish-bearing stream, Wetland B currently functions as a wetland and there are no fish present in the wetland. Detained and treated stormwater from two stormwater ponds is proposed to be released directly to the wetland. The discharge points will consist of a culvert outfall with an approximate 3-foot by 6-foot quarry spall splash pad around the culvert mouth to prevent erosion and scour. An overflow pipe will be set at an appropriate elevation to maintain the hydroperiod and will also be armored with quarry spalls to prevent erosion. This will result in approximately 0.001 acres (54 sq. ft.) of fill in the wetland. Placement of the quarry spall pads and the culvert mouths in the wetland will nominally affect flood storage capacity. Water will outflow to another detention pond to the south during flooding, maintaining the existing hydroperiod so vegetation will also not be affected. Water quality will not be affected as the released stormwater will be fully treated for pollutants.

Critical area buffers can reduce adverse impacts to critical area functions and values from adjacent development by moderating the effects of stormwater runoff including stabilizing soil to prevent erosion, filtering runoff, and moderating water level fluctuations. Buffers also provide habitat opportunities for forage, refuge, mobility, and thermal protection. Additionally, buffers help screen critical areas from adjacent developments blocking noise, providing visual separation, and providing protection from other human disturbances (Castelle et al. 1992). Although the buffer around Wetland B will be significantly reduced, the existing function of the buffer is limited because the majority of the buffer consists of regularly mowed pasture grasses. Other agricultural related activities including placing soils amendments and tilling have occurred in the pasture portion of the buffer. The large majority of existing forested and scrub-shrub vegetation will be maintained, and the remaining buffer will be enhanced with native trees and shrubs.

#### WETLANDS C, D, AND E

All functions provided by Wetlands C, D, and E as described in the *Wetland Descriptions* section above will be impacted as these wetlands will be filled in their entirety.

#### PRIORITY OAK HABITAT REMOVAL AND DRIPLINE IMPACT

Oak 1, a 47-inch dbh oak, will be completely removed during construction. This oak produces acorns providing a food source for various animals and its canopy may provide nesting and roosting opportunities for a variety of animals as well. Various types of invertebrates also utilize oaks during their life cycles. Oak 1 is separated by more than 100 feet from the small oak woodland to the southeast by regularly mowed and occasionally tilled pasture.

A paved access way will encroach into the outer dripline of Oak 6. The branches are high enough in this area that they will not likely need to be removed. Although roots may be damaged, the impacts will not be critical to the tree.

## WETLAND MITIGATION SITE SELECTION RATIONALE

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### WETLAND MITIGATION

The CRWMB site provides mitigation for projects that impact wetlands within its service area. The CRWMB service area extends from river mile 68 (approximately the downstream end of the confluence of the Cowlitz River with the Columbia River) upstream to Bonneville Dam (approximately river mile 146), including the historical floodplain of the Columbia River and those portions of the watersheds that immediately adjoin and influence the historical Columbia River floodplain. The project site is located approximately 17.5 miles northwest of the CRWMB site (Sheet 5). Both the impact site and CRWMB are located within the historic floodplain of the Columbia River, which is the main reason for selecting CRWMB over the Coweeman Mitigation Bank as the project site is also within the service area of the Coweeman Bank.

ELS biologists believe that this proposal is environmentally preferable and supports using mitigation bank credits to compensate for wetland impacts rather than creating a permittee-responsible wetland mitigation site. This logic is consistent with 33 C.F.R. §332, which gives preference to mitigation bank credits where applicable. Small and discontinuous mitigation sites located adjacent to developing urban or industrial areas or infrastructure are threatened by expanding development and have greater risk of uncertainty. Thus, mitigation banking has become a preferred option due to certainty of compliance and the environmental resource benefits that are provided by large continuous mitigation sites.

ELS biologists advise purchasing mitigation bank credits for ecological considerations (lower risk of failure

and lower temporal loss of resources and services) and to avoid the maintenance and contingency issues and outright failures that often accompany permittee-responsible wetland mitigation sites. Use of the CRWMB substantially lowers the risk of failure and temporal loss of resource functions and services over newly established, permittee-responsible wetland mitigation sites. As described below, the functional lift anticipated in the CRWMB will adequately compensate for wetland functions. A discussion of functions provided at the CRWMB and anticipated functional lift are located in Appendix E.

### OAK AND BUFFER MITIGATION

Mitigation for oak impacts and buffer reduction is being completed onsite was selected because of the opportunity to create and enhance the existing oak habitat as remaining mature oaks are being choked out by ivy and/or blackberries. Additionally, their understories currently consist of regularly mowed pasture so there is ample opportunity to improve and create oak habitat. Enhancement of the remaining riparian buffer is required for variance approval to reduce the riparian buffer beyond what is allowed per code and must be done onsite. Oak and riparian habitat buffer mitigation is described in the *Oak and Buffer Mitigation* section below.

### PROPOSED WETLAND MITIGATION CREDIT PURCHASE

The table below is from the Mitigation Banking Instrument (MBI) for the CRWMB (CCMP 2014), and it lists the recommended credit ratios for purchasing credits based on the impacted wetland category or buffer.

**Table 6. Credits Recommended for Wetland Impacts at Columbia River Wetland Mitigation Bank.**

Resource Impact	Bank Credits : Impact Area
Category I Wetland	Case-by-Case
Category II Wetland	1.2:1
Category III Wetland	1:1
Category IV Wetland	0.85:1
Critical Area Buffer	Case-by-Case

Direct impacts result in immediate changes of hydrological characteristics of a wetland, loss of habitat, loss of flood storage, and loss of nutrient removal or retention and will be mitigated by purchasing credits at the ratios listed in Table 6 above. Indirect wetland impacts will be compensated by multiplying the credits necessary for direct wetland impacts in the table by 0.5 (50 percent of the direct wetland ratio). The 0.50 (50 percent) multiplier is based on the rationale that indirect impacts can be adequately compensated for by using 50 percent of the Bank’s required ratio for direct wetland impacts. Indirect impacts adversely affect the ability of the wetland to provide functions and values over time, which the wetland provided prior to disturbance. Examples are changes in drainage characteristics, changes in water levels, and changes in wetland characteristics. Mitigating at 50 percent of the Bank’s required ratio for direct wetland impacts is therefore reasonable and ecologically sound.

Bank credits will be purchased from CRWMB at the ratio of 1:1 designated for impacts to Category III wetlands and at the ratio of 0.85:1 designated for Category IV wetland impacts. Indirect wetland impacts will be calculated by applying a 0.50 multiplier to the corresponding ratio for wetland category. Table 7 below details the mitigation ratios used to calculate the total number of Bank credits needed to compensate for the project impacts. A total of 0.077 credits will be purchased to compensate for 0.018 acres (802 sq .ft.) of direct impact and 0.122 acres (5,319 sq. ft.) of indirect impact.

**Table 7. Mitigation Bank Credits Proposed for Project Impacts.**

Wetland	Wetland Category	Impact Type	Impact Amount (Acres)	Ratio	Multiplier	Amount (Acres)	Proposed Credit Purchase
B	III	Direct	0.001	1:1	--	0.001	0.001
		Indirect	0.122	1:1	0.50	0.061	0.061
C	IV	Direct	0.007	0.85:1	--	0.006	0.006
D	IV	Direct	0.007	0.85:1	--	0.006	0.006
E	IV	Direct	0.003	0.85:1	--	0.003	0.003
<b>Total Credits to be Purchased:</b>						<b>0.077</b>	<b>0.077</b>

### CREDIT PURCHASE OR TRANSFER TIMING

Following permit issuance, Trammell Crow Company, as the applicant, will enter into a Buy/Sell Agreement with Clark County Wetland Mitigation Partners, LLC for purchase of mitigation credits (in the quantity specified in Table 7) that would appropriately mitigate for the proposed project impacts. The actual purchase of credits will occur upon permit issuance. Prior to impacting project wetlands, the applicant will submit proof of transfer of mitigation credits to project managers for both Ecology and the Corps. Proof of the mitigation transfer will be provided in the form of a notification letter to the approving agencies. Upon service of this notification, the mitigation requirement to purchase 0.077 mitigation credits will be fully satisfied.

### CONFIRMATION OF MITIGATION CREDIT AVAILABILITY

Proof of the current number of available mitigation credits at the Terrace Mitigation Bank site can be confirmed by approving agency(s) through the Interagency Review Team.

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### OAK AND BUFFER MITIGATION

One 47-inch dbh Oregon white oak tree with a 0.146-acre (6,369 sq. ft.) canopy will be removed for the project, 0.013 acres (587 sq. ft.) of oak dripline will be impacted, and the RHA buffer around Wetland B will be reduced beyond what is allowed per code. Based on guidance provided by WDFW, a stem replacement ratio of 250:1 is required for removing Oak 1 and a ratio of 10:1 is needed for canopy replacement due to drip line impacts to Oak 6. The final riparian habitat buffer on Wetland B will range between 20 feet and 200 feet wide (Sheets 3a and 3b). The areas proposed for oak woodland creation and enhancement generally consist of mowed pasture grasses adjacent to remnant deciduous forests or mowed pasture beneath individual oaks. The proposed onsite mitigation incorporates measures to ensure no net loss of riparian/wetland and oak habitat function onsite and includes enhancement and creation of oak woodland within the remaining, undeveloped uplands in the north portion and southwest corner of the project site. Recommendations in the Oak Tree Protection and Conservation Plan prepared by Arbor



Science Tree Care (2023) will also be followed (Appendix F). Table 8 summarizes the oak impacts and mitigation required.

The proposed mitigation has a high likelihood of success because the plant species selected for enhancement are currently growing onsite, the existing soils will provide well-suited growing medium, and the monitoring, maintenance and site protection measures will ensure successful establishment and protection of the mitigation areas in perpetuity.

**Table 8. Oak Mitigation Required**

Oak Identifier	Impact	WDFW Score <sup>1</sup>	Stem Replacement Ratio <sup>2</sup>	Canopy Replacement Ratio	Mitigation Area Required
Oak 1	Removal	15	250:1	---	1.291 ac. 56,250 (sq. ft.)
Oak 6	Dripline Impact 0.013 ac. (587 sq ft.)	12	---	10:1	0.135 ac. (5,870 sq. ft.)
				<b>Total</b>	<b>1.426 acres (62,120 sq. ft.)</b>
				<b>Total Stems</b>	<b>276</b> Based on 15' spacing

<sup>1</sup>Functional Assessment for Individual Oregon White Oak Trees Provided by WDFW (Appendix D).

A combination of onsite oak woodland creation and enhancement (also serving as riparian habitat buffer enhancement) will be used to compensate for the oak removal and buffer reduction beyond what is allowed per code. The mitigation areas will be planted with native shrubs and oak saplings to create an oak woodland. Ivy will be removed from existing oak trees and from the mitigation areas in general. Other invasive species, mainly invasive blackberries, will also be removed. Habitat features including a snag made from the removed oak trunk, downed logs and large woody material (LWM) piles made from the removed oak limbs and other removed trees, bird nest boxes, and bat houses will be placed throughout the mitigation areas.

Creating an oak woodland within the pasture areas will provide more wildlife habitat opportunities for forage and refuge, and it will help screen Wetland B from development. The remaining oaks will also likely have a higher chance of reproducing from acorns as mowing and other ground disturbing agricultural activities will cease. A habitat corridor will be created along the northern property boundary consisting of both forested and emergent/herbaceous areas. The stormwater ponds will provide a wider variety of habitat types with emergent/herbaceous areas that will have varying water regimes. The oaks in the northwest corner of the site are surrounded by dense blackberries and are heavily infested with ivy. They will likely die if the ivy is not controlled. Oak woodland will be created/enhanced in the southwest corner of the property where the understories of the oaks are regularly mowed, and the oak trunks are surrounded by blackberries.

The mitigation has been broken down into four areas as each area will require different treatment. Mitigation Areas 1 through 4 are described below and are summarized in Table 9.

**MITIGATION AREA 1**

Mitigation Area (MA) 1 is located in the north portion of the site and totals 2.655 acres (115,649 sq. ft.) with approximately 0.23 acres (9,960 sq. ft.) of existing oak canopy. It consists of the remaining buffer around the south, west, and east sides of Wetland B, which consists of mowed pasture. The forested

portion of the buffer consists of deciduous forest dominated by black cottonwood, big leaf maple, red-osier dogwood, snowberry, and Himalayan blackberry with scattered mature Oregon white oaks. The existing oak trees will be released by girdling at least one tree adjacent to each oak to lessen competition from shading. Although all adjacent trees are deciduous, the oaks have well developed canopies on the south side and little to no canopy on the north side of the tree, so they will benefit from less competition for resources. The remaining pasture-dominated buffer areas outside of the stormwater pond floors will be planted to develop into an oak woodland. The portions of the stormwater ponds not receiving plantings will be seeded with a native grass seed mix appropriate to the water regime. Invasive blackberries and other invasive vegetation species will be removed and controlled throughout the buffer on the south side of Wetland B. Habitat features including a snag using the removed Oak 1 trunk, two LWM piles and three downed logs using Oak 1 branches and tree(s) removed from project footprint, and four bird nest boxes and four bat houses placed on existing trees or on treated wooden posts will be placed around the mitigation area and storm ponds. Trash will also be removed from the wetland.

## **MITIGATION AREA 2**

Mitigation Area (MA) 2 is located in the southeast portion of the site and totals 0.331 acres (14,434 sq. ft.) and ranges from approximately 10 feet to 30 feet wide. This area includes restoration of buffer areas temporarily impacted during grading and includes a portion of the buffer addition area that will also be graded. The majority of the temporarily impacted buffer areas consist of pasture grasses with some shrubs being removed. The buffer addition area is currently forested with black cottonwood with a dense understory and will be planted with species similar to those removed as these species will likely re-establish from the adjacent forested area. The temporarily impacted buffer areas will be planted with shrubs. Both areas will be seeded with a native seed mix. Two LWM piles and two downed logs using Oak 1 branches and tree(s) removed from project footprint will be placed in the northern buffer of Wetland A.

## **MITIGATION AREA 3**

Mitigation Area (MA) 3 is located in the southwest portion of the site and totals 0.484 acres (21,091 sq. ft.) with approximately 0.159 acres (6,890 sq. ft.) of existing oak canopy. The enhancement area contains Oaks 2 and 3 as well as several large black cottonwoods along the southern property line. The understory is mowed pasture with the trunks of Oaks 2 and 3 being surrounded by blackberries. The area will be planted as an oak woodland and invasive species will be removed. Habitat features including one downed log using a tree removed from project footprint, one bird nest box, and one bat house will be placed in the mitigation area.

## **MITIGATION AREA 4**

Mitigation Area (MA) 4 is located in the northwest portion of the site and totals 0.420 acres (18,306 sq. ft.) with approximately 0.108 acres (4,714 sq. ft.) of existing oak canopy. The enhancement area contains Oaks 4 and 5, which are surrounded by a blackberry thicket and are heavily infested with ivy. The remaining area consists of mowed pasture. Invasive species will be removed from the oaks and from the ground then the area will be planted as an oak woodland. One downed log using a tree removed from the project footprint will be placed in the mitigation area.

**Table 9. Proposed Buffer and Oak Mitigation**

Location	Enhancement Acres	Oaks Planted	Mitigation Activity
MA 1 (north portion)	2.655 (115,649 sq. ft.)	238	<ul style="list-style-type: none"> <li>▪ Maintain 0.23 acres (9,960 sq. ft.) of existing oak canopy.</li> <li>▪ Release oaks in northwest portion of mitigation area by girdling at least one tree adjacent to each oak.</li> <li>▪ Create oak woodland by planting 238 oaks and 2,280 shrubs outside existing oak driplines.</li> <li>▪ Remove invasive species.</li> <li>▪ Apply native seed mixes around storm pond according to water regime.</li> <li>▪ Install one vertical snag using trunk of Oak 1.</li> <li>▪ Install 2 LWM piles using Oak 1 branches or tree(s) removed from project footprint.</li> <li>▪ Install 3 downed logs using tree(s) removed from project footprint.</li> <li>▪ Install 4 bat houses and 2 bird nest boxes on existing trees.</li> <li>▪ Install 2 bird nest boxes on metal or treated wooden posts along storm ponds.</li> </ul>
MA 2 (southeast corner)	0.331 acres (14,434 sq. ft.)	---	<ul style="list-style-type: none"> <li>▪ Seed graded areas with native seed mix.</li> <li>▪ Plant 50 native trees and 70 shrubs in buffer addition area</li> <li>▪ Plant native shrubs in temporarily impacted buffer area.</li> <li>▪ Install 2 LWM piles using Oak 1 branches or tree(s) removed from project footprint.</li> <li>▪ Install 2 downed logs using tree(s) removed from project footprint.</li> </ul>
MA 3 (southwest corner)	0.484 (21,091 sq. ft.)	26	<ul style="list-style-type: none"> <li>▪ Maintain 0.159 acres (6,890 sq. ft.) acres of existing oak canopy.</li> <li>▪ Create oak woodland by installing 26 oaks and 462 shrubs outside of existing oak driplines.</li> <li>▪ Remove invasive species.</li> <li>▪ Install 1 downed log using tree removed from project footprint.</li> <li>▪ Install 1 bat house and 1 bird nest box on existing trees.</li> </ul>
MA 4 (northwest corner)	0.420 (18,306 sq. ft.)	26	<ul style="list-style-type: none"> <li>▪ Maintain 0.108 acres (4,714 sq. ft.) acres of existing oak canopy.</li> <li>▪ Create oak woodland and corridor connecting to Area 3 by planting 26 oaks and 462 shrubs outside of existing oak driplines.</li> <li>▪ Remove ivy from oak trunks and remove other invasive species.</li> <li>▪ Install 1 downed log using tree(s) removed from project footprint.</li> </ul>
<b>Total</b>	<b>3.890</b> <b>(169,480 sq. ft.)</b>	<b>290</b>	
<b>Total Oak Woodland Required: 1.426 ac. (62,120 sq. ft.)/276 stems</b>			
<b>Total Oak Woodland Proposed: 3.559 ac (155,046 sq. ft.)/290 stems</b>			

**SITE PREPARATION, PLANTING PLAN, AND HABITAT FEATURE SPECIFICATIONS**

*SITE PREPARATION*

Once best management practices are in place including site fencing at the edge of clearing, and demarcation of clearing limits, the site will be cleared, fill imported, graded, and utilities installed followed by the construction of the remaining project elements. Oak 1 will be removed during clearing activities. Large branches will be limbed 2 to 3 feet from the trunk and will be stockpiled for later use as habitat features. The trunk will also be stockpiled and will be installed as a vertical snag in MA 1. Four other removed trees will be stockpiled for use as habitat features. At least five trees adjacent to Oaks 7 through 10 in MA 1 will be selected and girdled for oak release.

Once grading activities are complete, habitat features will be placed, and stormwater ponds will be seeded with a native seed mix appropriate to water regime. Blackberries will be mowed, followed by herbicide application when regrowth appears. Ivy will be removed from oaks and other trees by cutting an approximate 2-foot band from the tree trunk. Ivy on the ground will be sprayed during the growing season. Blackberries and ivy may need multiple spray treatments. Bare areas from invasive species removal will be similarly seeded with a native seed mix.

#### PLANT SPECIFICATIONS

Once blackberry and ivy control are complete, the prescribed plantings will be installed during the late fall to early spring when the plants are dormant, and the soil moisture conditions are favorable for planting. Plant species selected are common to oak woodlands in the Pacific Northwest. Approximately 2 weeks prior to tree and shrub installation, herbicide will be applied in a 2-foot diameter circle at each planting location. Plants will be installed after herbicide takes effect. Once plants are installed, mulch will be placed in a 4-foot diameter circle around oak and in a 2-foot diameter circle around other species. Plant protector tubes will also be installed on all trees and tall shrubs.

Table 10 below details plantings by mitigation location. Plant numbers take into account existing oak driplines in MAs 2, 3, and 4 as plants will only be installed within the outer portion of their driplines. Native seed mixes are listed in Tables 11 and 12.

**Table 10. Plant Specifications by Mitigation Area**

Species	Spacing (on-center)	Stock	Amount
<i>MA 1: 2.655 acres (2.54 ac. plantable.)</i>			
Oregon white oak ( <i>Quercus garryana</i> )	15'	5-gallon	238
Beaked hazelnut ( <i>Corylus cornuta</i> )	5'	Bare root	380
Douglas hawthorn ( <i>Crataegus douglasii</i> )	5'	Bare root	380
Indian plum ( <i>Oemleria cerasiformis</i> )	5'	Bare root	380
Nootka rose ( <i>Rosa nutkana</i> )	5'	Bare root	380
Snowberry ( <i>Symphoricarpos albus</i> )	5'	Bare root	380
Tall Oregon grape ( <i>Mahonia aquifolium</i> )	5'	Bare root	380
		<b>Total</b>	<b>2,518</b>
<i>MA 2: 0.331 acres (0.331 ac. plantable)</i>			
Black cottonwood ( <i>Populus balsamifera</i> )	10'	Bare root	50
Indian plum ( <i>Oemleria cerasiformis</i> )	5'	Bare root	70
Nootka rose ( <i>Rosa nutkana</i> )	5'	Bare root	70
Snowberry ( <i>Symphoricarpos albus</i> )	5'	Bare root	70
		<b>Total</b>	<b>260</b>
<i>MA 3: 0.484 acres (0.405 ac. plantable)</i>			
Oregon white oak ( <i>Quercus garryana</i> )	15'	5-gallon	26
Beaked hazelnut ( <i>Corylus cornuta</i> )	5'	Bare root	77
Ocean spray ( <i>Holodiscus discolor</i> )	5'	Bare root	77
Indian plum ( <i>Oemleria cerasiformis</i> )	5'	Bare root	77
Nootka rose ( <i>Rosa nutkana</i> )	5'	Bare root	77
Snowberry ( <i>Symphoricarpos albus</i> )	5'	Bare root	77
Tall Oregon grape ( <i>Mahonia aquifolium</i> )	5'	Bare root	77
		<b>Total</b>	<b>488</b>

Species	Spacing (on-center)	Stock	Amount
<i>MA 4: 0.420 acres (0.366 ac. Plantable)</i>			
Oregon white oak ( <i>Quercus garryana</i> )	15'	5-gallon	26
Douglas hawthorn ( <i>Crataegus douglasii</i> )	5'	Bare root	77
Indian plum ( <i>Oemleria cerasiformis</i> )	5'	Bare root	77
Ocean spray ( <i>Holodiscus discolor</i> )	5'	Bare root	77
Nootka rose ( <i>Rosa nutkana</i> )	5'	Bare root	77
Snowberry ( <i>Symphoricarpos albus</i> )	5'	Bare root	77
Tall Oregon grape ( <i>Mahonia aquifolium</i> )	5'	Bare root	77
		<b>Total</b>	<b>488</b>
		<b>Grand Total</b>	<b>3,754</b>

**Table 11. Buffer /Upland Seed Mix Specifications**

River Refuge Seed Native Upland Grass Mix			
Species	Composition	Rate	Quantity
Blue wild rye ( <i>Elymus glaucus</i> )	30%	15 lbs/acre	25/lbs
California brome ( <i>Bromus carinatus</i> )	25%		
Meadow barely ( <i>Hordeum brachyantherum</i> )	10%		
Roemer's fescue ( <i>Festuca roemeri</i> )	10%		
Slender hairgrass ( <i>Deschampsia elongata</i> )	10%		
Spike bentgrass ( <i>Agrostis exarata</i> )	5%		
Tufted hairgrass ( <i>Deschampsia cespitosa</i> )	5%		
Red fescue ( <i>Festuca rubra</i> )	5%		
<b>Total</b>	<b>100%</b>		

**Table 12. Wet Area/Stormwater Pond Seed Mix Specifications**

River Refuge Seed Native Bioswale Mix			
Species	Composition	Rate	Quantity
American slough grass ( <i>Beckmannia syzigachne</i> )	15%	20 lbs/acre	35/lb
Meadow barely ( <i>Hordeum brachyantherum</i> )	10%		
California brome ( <i>Bromus carinatus</i> )	10%		
Blue wild rye ( <i>Elymus glaucus</i> )	10%		
Spike bentgrass ( <i>Agrostis exarata</i> )	10%		
Tufted hairgrass ( <i>Deschampsia cespitosa</i> )	10%		
Roemer's fescue ( <i>Festuca roemeri</i> )	10%		
Shortawn foxtail ( <i>Alopecurus aequalis</i> )	5%		
California oatgrass ( <i>Danthonia californica</i> )	5%		
Slender hairgrass ( <i>Deschampsia elongata</i> )	5%		
Slender rush ( <i>Juncus tenuis</i> )	5%		
One-sided ( <i>Carex unilaterlis</i> )	5%		
<b>Total</b>	<b>100%</b>		

### Planting Implementation

- Plant the specified trees and shrubs in late fall to early spring (October-March) in accordance with specifications listed in Table 10. Space the plants somewhat irregularly and in groups to create heterogeneity in the density and appearance.
- Install plants with a tree shovel or comparable tool.
- Remove the plant from the pot and work the roots free from majority of potted soil.
- Place the potted or bare root plant species in the planting holes so that their roots can extend down entirely and do not bend upward or circle inside the hole (no “J” or “U” roots).
- Position the root crowns so that they are at or slightly above the level of the surrounding soil.
- Compact the soil around the planted species to eliminate air spaces.

### Gallon Stock

- Gallon potted species will be purchased from a native plant nursery.
- Gallon potted plants will be a minimum size of 18- to 36-inches tall.
- Gallon potted stock will be kept cool and moist prior to being planted.
- Gallon potted stock will have well-developed roots and sturdy stems, with an appropriate root-to-shoot ratio.
- Unplanted potted stock will be properly stored at the end of each day.
- The environmental consultant will be responsible for inspecting potted plant stock prior to and during planting, culling unacceptable plant materials.

### Bare Root Stock

- Bare root species will be purchased from a native plant nursery.
- Plants will be protected until installation by being refrigerated, covered with damp burlap, and placed in moist sand, peat, or other method of keeping the roots cool and moist.
- Plants will have well-developed roots and sturdy stems, with an appropriate root-to-shoot ratio.
- No damaged or desiccated roots or diseased plants will be accepted. In particular, bare root trees must not have damaged or “J-rooted” taproots.
- Unused bare root stock must be properly stored at the end of each planting day to prevent the roots from desiccating.
- The environmental consultant will be responsible for inspecting potted plant stock prior to and during planting, culling unacceptable plant materials.

### Habitat Feature Specifications

Material for the LWM piles will be salvaged from the removed Oak 1 limbs and other trees removed during construction. Downed logs will be similarly sourced from trees removed during construction. Because there are no coniferous trees onsite, the order of preference for species to be used as downed logs will be: big leaf maple, Oregon ash, red alder, then black cottonwood.

### Snag Specifications

- Trim branches to within 2 to 3 feet from trunk of removed oak.
- Bury oak 1/3 its length.

### Woody Debris Pile Specifications

- Limbs or trunks at least 5-inches in diameter and 6 to 10 feet long.
- Place on the ground in up to 4 or 6 perpendicular (crisscross) layers depending on size.
- Smaller branches or bows can be placed over top larger pieces to fill in open spaces.

### Downed Log Specifications

- At least 12-inches dbh for at least 20 feet in length.
- Root wad attached or ends rough cut, mashed, or ripped.
- Lateral branches retained to the extent feasible.

Five standard bat houses and five standard bird nest boxes will be placed in the mitigation areas. Bat houses will be installed on existing trees in the mitigation areas and will be at least 12 feet off the ground. Bird nest boxes will be placed on existing trees or on poles within the enhancement areas and will be at least 6 feet off the ground. Table 13 details habitat features to be placed in the enhancement area.

**Table 13. Habitat Feature Summary.**

Type	Amount
Large Woody Material Pile	4
Downed Log	7
Snag (from removed oak trunk)	1
Bat House	5
Bird Nest Box	5

## GOALS, OBJECTIVES AND PERFORMANCE STANDARDS

### Mitigation Goals:

1. Achieve no net loss of Oregon white oak habitat.
2. Achieve no net loss of riparian habitat area buffer habitat.

The following objectives and performance standards will ensure the mitigation goals are accomplished:

- Objective A.* Enhance/Create 3.559 acres of Oregon white oak woodland onsite (including 0.135 acres for Oak 6 dripline impacts at a 10:1 mitigation ratio and 1.291 acres to accommodate 250 oak trees at 15-foot spacing) to ensure no net loss of Oregon white oak habitat and riparian habitat area buffer onsite.
- Objective B.* Install at least 250 Oregon white oak trees to compensate for removing Oak 1.
- Objective C.* Restore temporarily impacted buffer areas to pre-project condition.
- Objective D.* Protect the mitigation areas in perpetuity.

The following performance standards have been developed for the onsite mitigation and will ensure the goals and objectives are accomplished. Performance standards for oak, non-oak tree, and shrub installation for Objectives B and C are combined with oak, non-oak tree, and shrub performance standards in Objective A.

### *Objective A Performance Standards:*

Performance Standard A1 Release existing Oregon white oaks in Mitigation Area 1 by girdling at least five trees adjacent to Oaks 7 through 10. Girdle trees by removing a 2- to 4-inch belt of inner and outer bark on their trunks. Include location and pictures of girdled trees in as-built report.

Performance Standard A2: Photo-document the trees girdled for oak release have died. Provide photos in the Year 1 Monitoring report.

Performance Standard A3: Install removed Oak 1 as snag in Mitigation Area 1. Document location in as-built report.

Performance Standard A4: Place habitat features as detailed in Table 9 of the mitigation plan throughout mitigation areas. Document which piles are created from removed Oak 1 limbs, and document habitat feature location and type in as-built report.

Performance Standard A5: Install plants as detailed in Table 10 of the mitigation plan. Document species type, amount, and general planting locations in as-built report.

Performance Standard A6: Submit an as-built report to permitting agencies showing final mitigation area boundaries, habitat feature locations, planted species amount and locations, and signage locations within 60 days of plant installation.

Performance Standard A7: Survival of planted woody species excluding oaks will be 90 percent at the end of Year 1 as measured in established monitoring plots. Document total woody species survival, including native volunteer species, in the Year 1 monitoring report.

Performance Standard A8: Survival of planted Oregon white oaks will be 95 percent at the end of Year 1. Document total oak survival, including volunteer oaks, in the Year 1 monitoring report. Replace any failed oak plantings to meet this performance standard.

Performance Standard A9: Survival of Oregon white oak will be 90 percent for the remainder of monitoring. Document oak survival in the annual monitoring reports.

Performance Standard A10: Density of planted non-oak trees will be 10-foot on-center and density of planted shrubs will be 5-foot on-center at the end of Year 2 as measured in established monitoring plots. Document density in the Year 2 monitoring report.

Performance Standard A11: Cover of planted woody species excluding oaks will be greater than or equal to 15 percent at the end of Year 3 as measured in established monitoring plots. Document total woody species cover, including native volunteer species, in the Year 3 monitoring report.

Performance Standard A12: Cover of planted woody species excluding oaks will be greater than or equal to 25 percent the end of Year 5 as measured in established monitoring plots. Document total woody species cover, including native volunteer species, in the Year 5 monitoring report.

Performance Standard A13: Cover of planted woody species excluding oaks will be greater than or equal to 35 percent the end of Year 7 as measured in established monitoring plots. Document total woody species cover, including native volunteer species, in the Year 7 monitoring report.

Performance Standard A14: Cover of planted woody species excluding oaks will be greater than or equal to 50 percent the end of Year 10 as measured in established monitoring plots. Document total woody species cover, including native volunteer species, in the Year 10 monitoring report.

Performance Standard A15: Cover of seeded areas will achieve 80 percent by Year 1. Document cover of seeded areas in Year 1 monitoring report.

Performance Standard A16: Percent cover of state and county listed noxious weeds will not exceed 10 percent cover within the mitigation areas for the duration of the monitoring. Document cover of listed noxious weeds in annual monitoring reports.

*Objective D Performance Standards:*

Performance Standard D1: Record a conservation covenant protecting the mitigation areas in perpetuity. Submit recorded covenant with the Year 1 monitoring report.



Performance Standard D2: Install signage every 100 feet along the mitigation areas stating “The area beyond this sign is a critical area buffer. Alteration or disturbance is prohibited by law” or similar wording. Document sign locations in the as-built report.

Performance Standard D3: Signage will be in place and legible for the duration of monitoring. Replaced missing or damaged signs to meet this performance.

### **MONITORING, MAINTENANCE, AND CONTINGENCY MEASURES**

Monitoring of the mitigation areas will occur for a 10-year period in Years 1, 2, 3, 5, 7, and 10. Following plant installation, at least 13 monitoring plots will be established throughout the mitigation areas and a plant count will be taken to determine baseline conditions. Plots will be 30 feet in diameter or the equivalent area. Plot locations will be documented in the as-built report. Six plots will be placed in MA 1, three plots will be placed in MA 2 and two plots each in MAs 3 and 4. Additionally, at least 17 photo stations will be established throughout the mitigation site, one at each monitoring plot and at least four overall representative photo stations to photo-document vegetation establishment. Photo station location and the direction in which the picture is taken will also be recorded on the as-built map.

The goal of monitoring will be to determine if the previously stated performance standards are being met. Monitoring reports will be submitted to the City of Woodland, Ecology, the Corps, and WDFW by December 31st of each monitoring year. At minimum, the following items will be included in the report:

- Location map and as-built drawing, including any changes.
- Historic description of project, including dates of plant installation, current year of monitoring, and remedial actions taken (if any).
- Description of monitoring methods.
- Documentation of vegetative performance standards and overall development of plant communities.
- Assessment of non-native, invasive plant species and recommendations for management
- Photographs from established photopoints.
- Observations of wildlife including amphibians, invertebrates, reptiles, birds, and mammals. If photographs are taken, they will be included.
- Assessment of snag development.
- Summary of maintenance and contingency measures completed for the past year and proposed for the next year.

### **VEGETATION MONITORING**

Monitoring will occur annually during the growing season, preferably during the same two-week period to better compare data. The following information will be gathered within the established monitoring plots:

- Percent survival of shrubs in Years 1 and 2.
- Percent survival of oaks in all years.
- Percent cover of oaks and shrubs in Year 3 and subsequent monitoring years.
- Percent cover of native herbaceous species in all monitoring years.
- Dripline diameter of installed oak trees.
- Percent cover of non-native, invasive species in all monitoring years.
- General health of plants in the monitoring plot, noting specific problems and potential causes.
- Photographic documentation of vegetative changes over time from established photopoints.

Overall vegetative conditions outside monitoring plots will also be observed and discussed in the monitoring reports.

### *MAINTENANCE*

Maintenance will occur during the growing season for the duration of monitoring and will include the following:

- Irrigate planting areas every other week or as needed in the dry season of the planting year and Year 1.
- Taper watering in Years 2 and 3; watering approximately every 3 to 4 weeks in the dry season or as needed.
- Remove competing herbaceous species at least twice yearly, or as needed within a 3-foot radius of planted trees and shrubs.
- Weed-eat, spray, or mow invasive species as needed during the growing season.
- Replace dead or failed plants as described for the original installation to meet the minimum performance standards.

### *CONTINGENCY PLAN*

If the performance criteria are not met by Year 3, steps will be taken to correct the situation in a timely manner after consultation with appropriate permitting agencies. The following steps will be implemented when an area is identified as failing or potentially failing:

- Identify the cause(s) of the failure or potential failure.
- Identify the extent of the failure or potential failure.
- Implement corrective actions such as irrigating, fertilizing, and replanting.
- Document the activities and include this data in the monitoring reports.
- In the event that a routine corrective action will not correct the problem, immediately consult with the appropriate agencies.

### *SITE PROTECTION*

The mitigation areas will be legally protected from development in perpetuity by recording a conservation covenant over the areas. Signage stating “The area beyond this sign is a critical area buffer. Alteration or disturbance is prohibited by law” or signs with similar wording will be installed on metal T-posts or treated wooden posts every 100 feet along the outer edge of the mitigation areas.

### **IMPLEMENTATION SCHEDULE**

The following schedule reflects anticipated tasks and timing for completing project elements. Some tasks may occur currently or be modified by the contractor.

- Demarcate clearing limits.
- Designate staging areas, install silt fencing, and install a standard construction entrance(s).
- Begin clearing and grading activities.
- Remove Oak 1 and stockpile for use as habitat features. Stockpile 7 additional trees also to be used for habitat features.
- Complete grading activities.
- Install habitat features following invasive species control and/or grading.
- Complete utility installation and construction of remaining project elements.
- Seed other disturbed areas within the mitigation areas.
- Install enhancement plantings the following late October through March following construction completion.
- Complete as-built report and submit to permitting agencies.

## LIMITATIONS

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ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

## REFERENCES

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## FIGURES

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WASHINGTON



45.9106° Latitude  
-122.7633° Longitude

LOCATION MAP

*R 1 W*

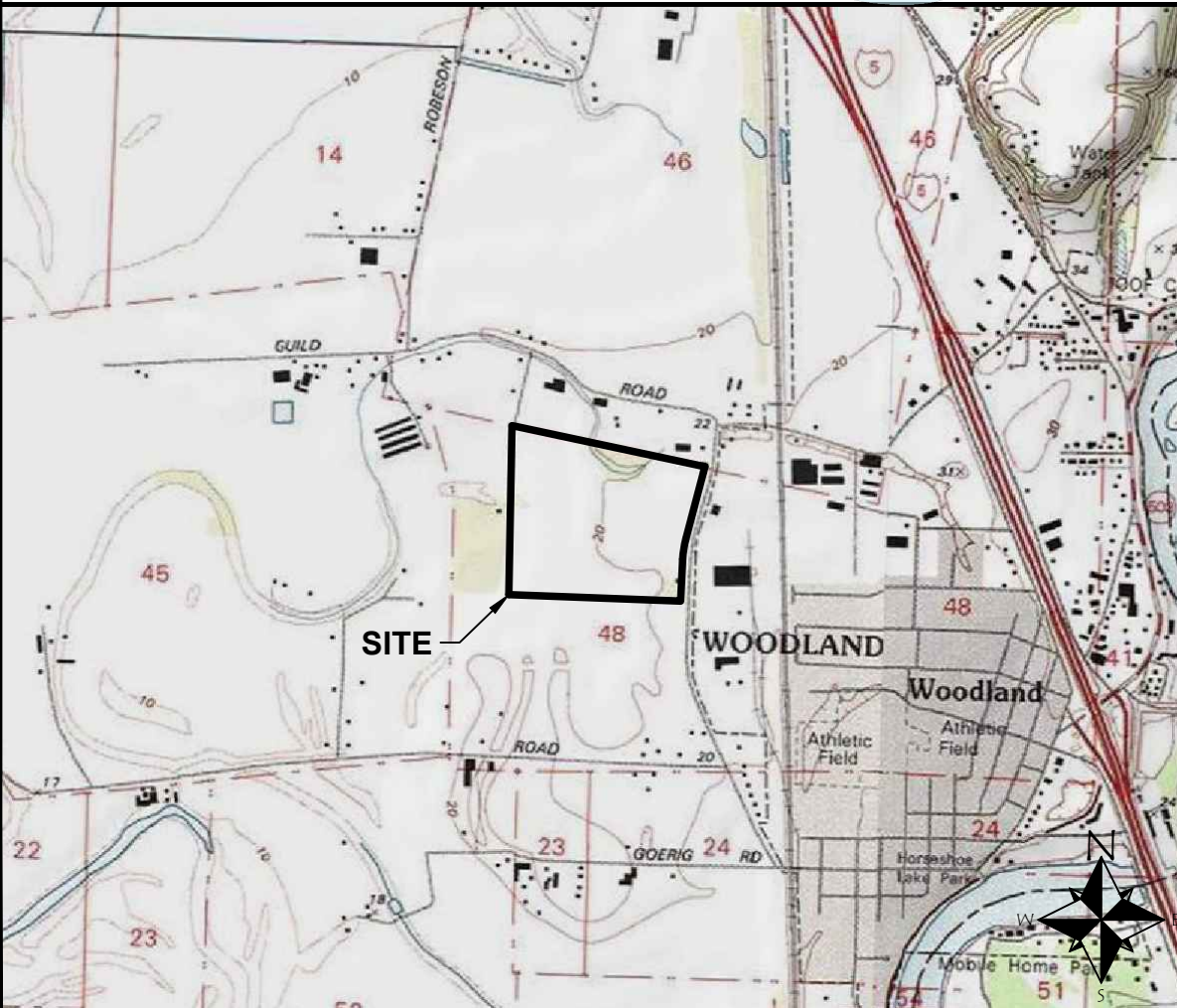
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PROJECT VICINITY MAP



NOTE:

Quadrangle topographic map from USGS.



**PROPOSED:** Fill and Grading

**VICINITY MAP**

**APPLICANT:** Trammell Crow Portland Development, Inc.

**PROJECT NAME:** TCC Woodland Industrial Project

**REFERENCE #:** Not Yet Assigned

**SITE LOCATION ADDRESS:**  
345 N Pekin Road  
Woodland, WA 98674

**DATE:** 11/30/23

**IN** Onsite Wetlands  
**NEAR:** Woodland  
**COUNTY:** Cowlitz  
**STATE:** WA  
**SHEET 1 OF 7**

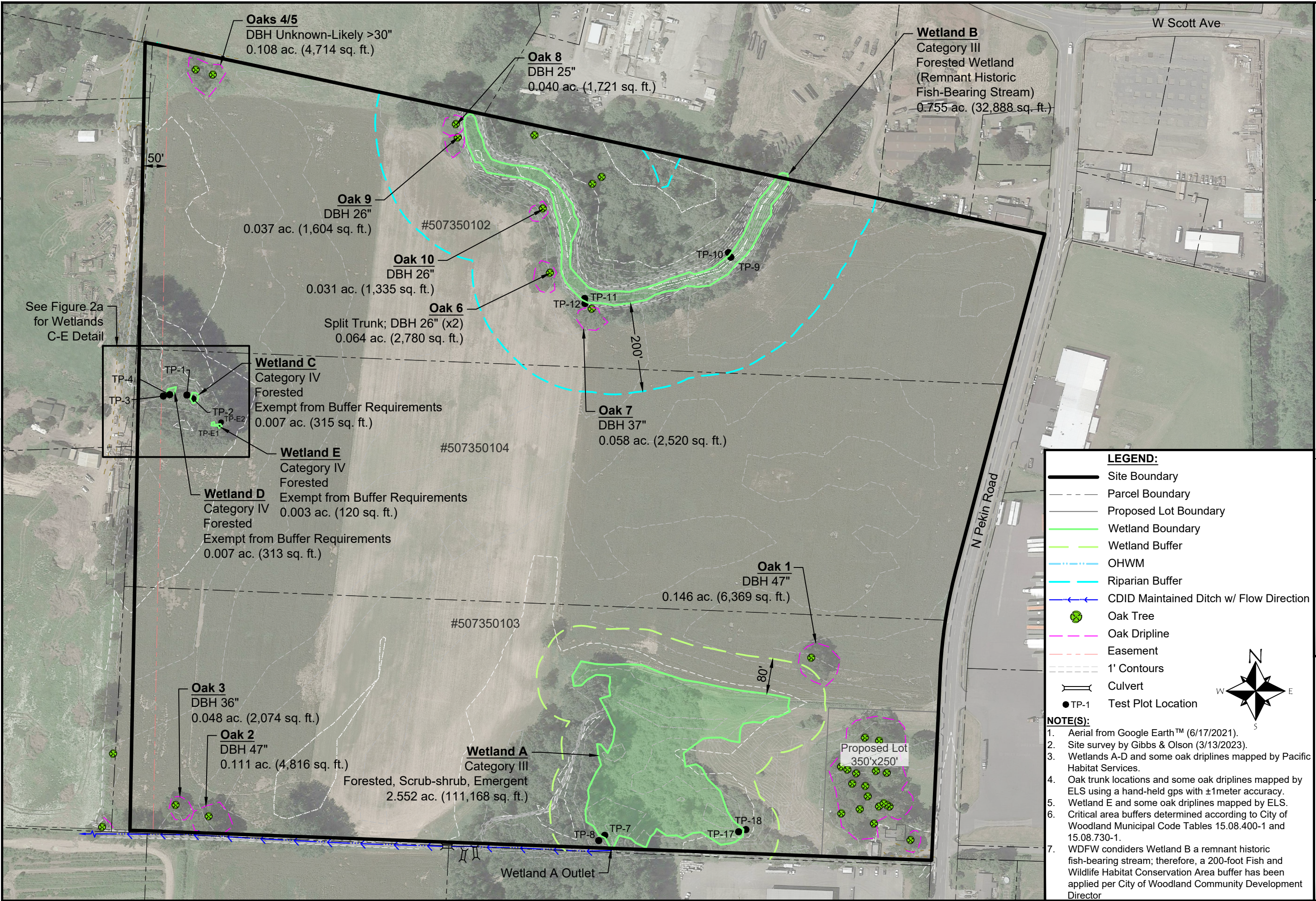
**PURPOSE:**  
Industrial Building Construction

**DATUM:** NAD83  
**ADJACENT PROPERTY OWNERS:**

1157 3rd Ave., Suite 220A  
Longview, WA 98632  
Phone: (360) 578-1371



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**Oaks 4/5**  
DBH Unknown-Likely >30"  
0.108 ac. (4,714 sq. ft.)

**Oak 8**  
DBH 25"  
0.040 ac. (1,721 sq. ft.)

**Wetland B**  
Category III  
Forested Wetland  
(Remnant Historic  
Fish-Bearing Stream)  
0.755 ac. (32,888 sq. ft.)

**Oak 9**  
DBH 26"  
0.037 ac. (1,604 sq. ft.)

**Oak 10**  
DBH 26"  
0.031 ac. (1,335 sq. ft.)

**Oak 6**  
Split Trunk; DBH 26" (x2)  
0.064 ac. (2,780 sq. ft.)

**Wetland C**  
Category IV  
Forested  
Exempt from Buffer Requirements  
0.007 ac. (315 sq. ft.)

**Wetland E**  
Category IV  
Forested  
Exempt from Buffer Requirements  
0.007 ac. (313 sq. ft.)

**Wetland D**  
Category IV  
Forested  
Exempt from Buffer Requirements  
0.007 ac. (313 sq. ft.)

**Oak 7**  
DBH 37"  
0.058 ac. (2,520 sq. ft.)

**Oak 1**  
DBH 47"  
0.146 ac. (6,369 sq. ft.)

**Oak 3**  
DBH 36"  
0.048 ac. (2,074 sq. ft.)

**Oak 2**  
DBH 47"  
0.111 ac. (4,816 sq. ft.)

**Wetland A**  
Category III  
Forested, Scrub-shrub, Emergent  
2.552 ac. (111,168 sq. ft.)

Proposed Lot  
350'x250'

**LEGEND:**

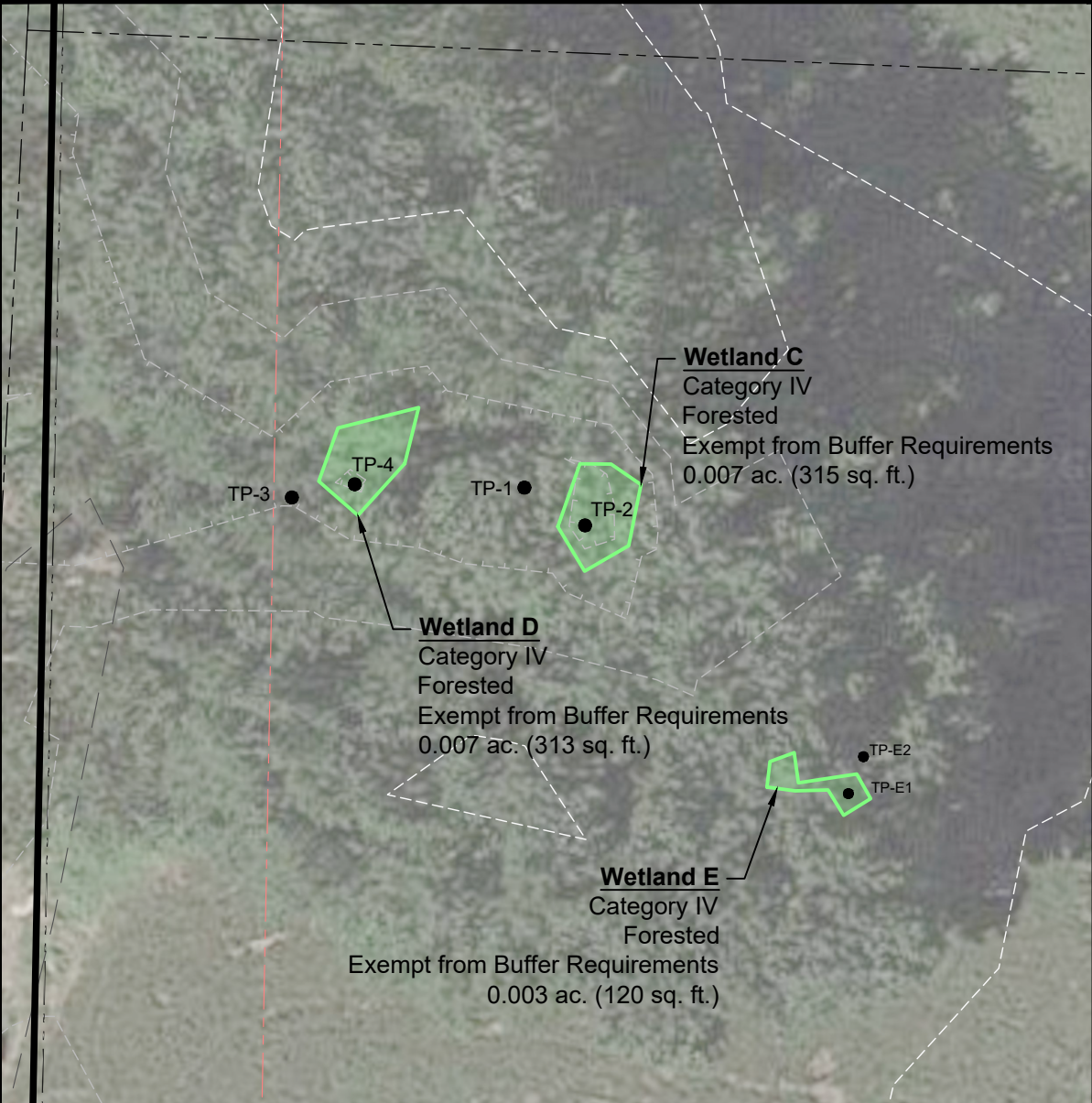
- Site Boundary
- Parcel Boundary
- Proposed Lot Boundary
- Wetland Boundary
- Wetland Buffer
- OHWM
- Riparian Buffer
- CDID Maintained Ditch w/ Flow Direction
- Oak Tree
- Oak Dripline
- Easement
- 1' Contours
- Culvert
- Test Plot Location

- NOTE(S):**
- Aerial from Google Earth™ (6/17/2021).
  - Site survey by Gibbs & Olson (3/13/2023).
  - Wetlands A-D and some oak driplines mapped by Pacific Habitat Services.
  - Oak trunk locations and some oak driplines mapped by ELS using a hand-held gps with ±1meter accuracy.
  - Wetland E and some oak driplines mapped by ELS.
  - Critical area buffers determined according to City of Woodland Municipal Code Tables 15.08.400-1 and 15.08.730-1.
  - WDFW considers Wetland B a remnant historic fish-bearing stream; therefore, a 200-foot Fish and Wildlife Habitat Conservation Area buffer has been applied per City of Woodland Community Development Director

<b>PROPOSED:</b> Fill and Grading IN Onsite Wetlands NEAR: Woodland COUNTY: Cowitz SHEET 2a OF 7 DATE: 11/30/23	<b>EXISTING CONDITIONS</b> APPLICANT: Trammell Crow Portland Development, Inc. PROJECT NAME: TCC Woodland Industrial Project REFERENCE #: Not Yet Assigned SITE LOCATION ADDRESS: 345 N Pekin Road Woodland, WA 98674
	<b>PURPOSE:</b> Industrial Building Construction
<b>DATUM:</b> NAD83 <b>ADJACENT PROPERTY OWNERS:</b>	1157 3rd Ave., Suite 220A Longview, WA 98632 Phone: (360) 578-1371







**Wetland C**  
 Category IV  
 Forested  
 Exempt from Buffer Requirements  
 0.007 ac. (315 sq. ft.)

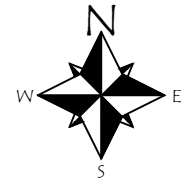
**Wetland D**  
 Category IV  
 Forested  
 Exempt from Buffer Requirements  
 0.007 ac. (313 sq. ft.)

**Wetland E**  
 Category IV  
 Forested  
 Exempt from Buffer Requirements  
 0.003 ac. (120 sq. ft.)

**LEGEND:**

- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Easement
- 1' Contours
- TP-1 Test Plot Location

- NOTE(S):**
1. Aerial from Google Earth™ (6/17/2021).
  2. Wetlands D & C mapped by Pacific Habitat Services.
  3. Wetland E mapped by ELS.
  4. Critical area buffers determined according to City of Woodland Municipal Code Tables 15.08.400-1 and 15.08.730-1.

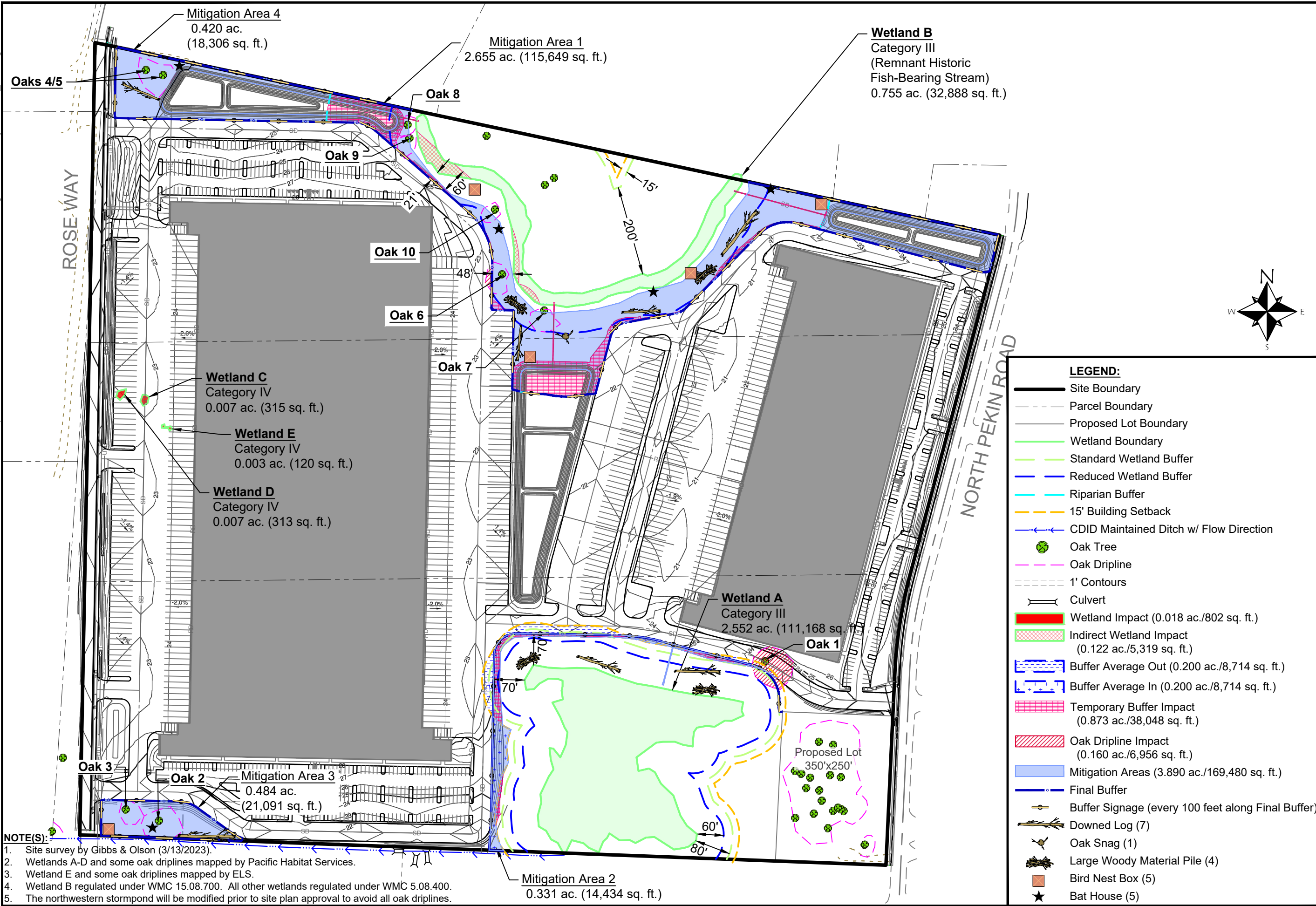


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 Longview, WA 98632  
 Phone: (360) 578-1371



<p><b>PURPOSE:</b> Industrial Building Construction</p>	<p><b>WETLANDS C-E DETAIL</b></p>	<p><b>PROPOSED:</b> Fill and Grading</p> <p><b>IN</b> Onsite Wetlands</p> <p><b>NEAR:</b> Woodland</p> <p><b>COUNTY:</b> Cowlitz    <b>STATE:</b> WA</p> <p><b>SHEET</b> 2b <b>OF</b> 7</p> <p><b>DATE:</b> 11/30/23</p>
<p><b>DATUM:</b> NAD83</p>	<p><b>APPLICANT:</b> Trammell Crow Portland Development, Inc.</p>	<p><b>PROJECT NAME:</b> TCC Woodland Industrial Project</p> <p><b>REFERENCE #:</b> Not Yet Assigned</p> <p><b>SITE LOCATION ADDRESS:</b>                  345 N Pekin Road                  Woodland, WA 98674</p>
<p><b>ADJACENT PROPERTY OWNERS:</b></p>	<p><b>ADJACENT PROPERTY OWNERS:</b></p>	<p><b>ADJACENT PROPERTY OWNERS:</b></p>

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- NOTE(S):**
1. Site survey by Gibbs & Olson (3/13/2023).
  2. Wetlands A-D and some oak driplines mapped by Pacific Habitat Services.
  3. Wetland E and some oak driplines mapped by ELS.
  4. Wetland B regulated under WMC 15.08.700. All other wetlands regulated under WMC 5.08.400.
  5. The northwestern stormpond will be modified prior to site plan approval to avoid all oak driplines.

**LEGEND:**

- Site Boundary
- - - Parcel Boundary
- - - Proposed Lot Boundary
- Wetland Boundary
- Standard Wetland Buffer
- Reduced Wetland Buffer
- Riparian Buffer
- 15' Building Setback
- CDID Maintained Ditch w/ Flow Direction
- Oak Tree
- Oak Dripline
- - - 1' Contours
- Culvert
- Wetland Impact (0.018 ac./802 sq. ft.)
- Indirect Wetland Impact (0.122 ac./5,319 sq. ft.)
- Buffer Average Out (0.200 ac./8,714 sq. ft.)
- Buffer Average In (0.200 ac./8,714 sq. ft.)
- Temporary Buffer Impact (0.873 ac./38,048 sq. ft.)
- Oak Dripline Impact (0.160 ac./6,956 sq. ft.)
- Mitigation Areas (3.890 ac./169,480 sq. ft.)
- Final Buffer
- Buffer Signage (every 100 feet along Final Buffer)
- Downed Log (7)
- Oak Snag (1)
- Large Woody Material Pile (4)
- Bird Nest Box (5)
- ★ Bat House (5)

**PROPOSED: Fill and Grading**  
 IN Onsite Wetlands  
 NEAR: Woodland  
 COUNTY: Cowitz  
 SHEET 3a OF 7  
 DATE: 11/30/23

**PROPOSED SITE PLAN**  
 APPLICANT: Trammell Crow Portland Development, Inc.  
 PROJECT NAME: TCC Woodland Industrial Project  
 REFERENCE #: Not Yet Assigned  
 SITE LOCATION ADDRESS:  
 345 N Pekin Road  
 Woodland, WA 98674

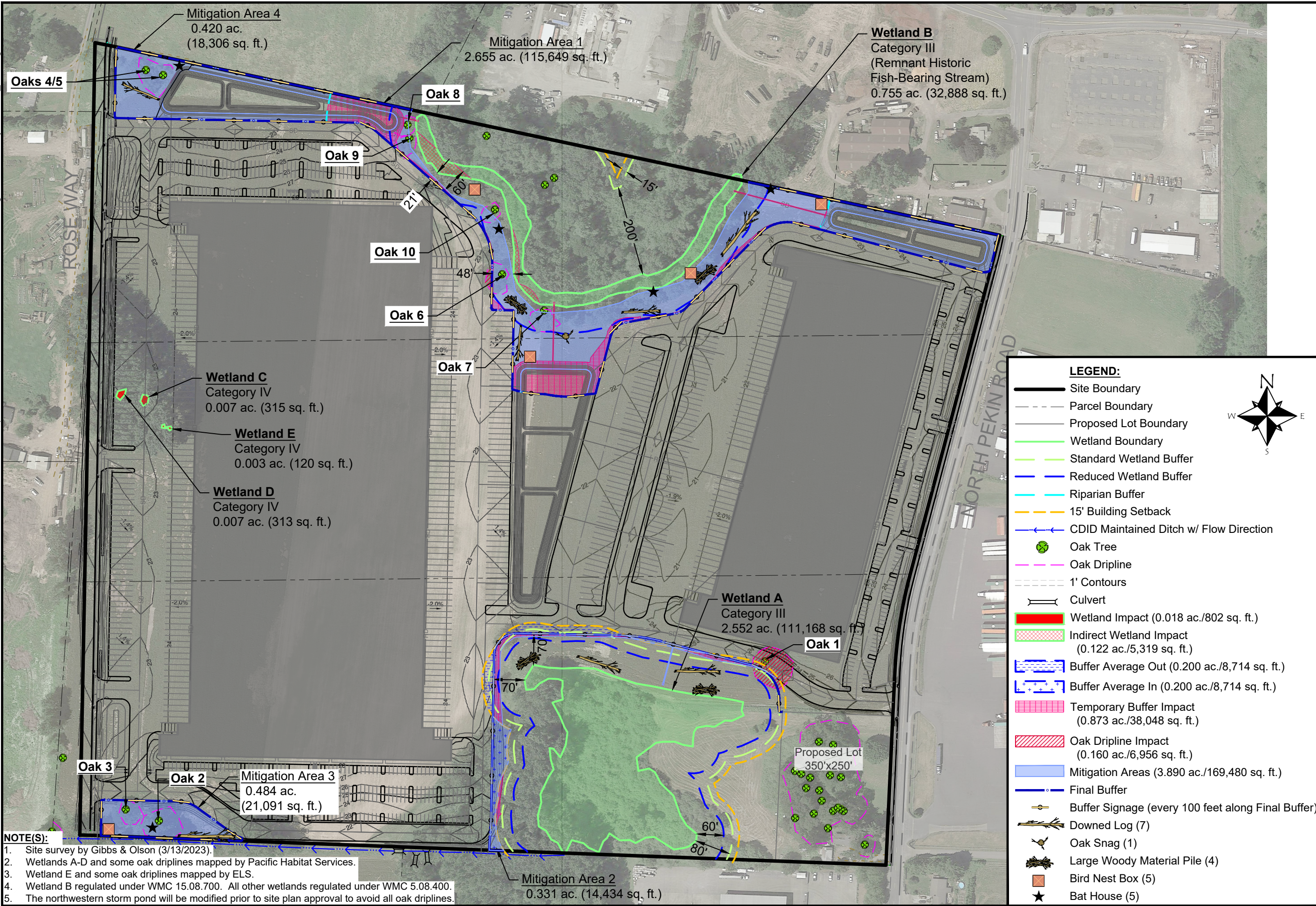
**PURPOSE:**  
 Industrial Building Construction

**DATUM:** NAD83  
**ADJACENT PROPERTY OWNERS:**

1157 3rd Ave., Suite 220A  
 Longview, WA 98632  
 Phone: (360) 578-1371

**Ecological Land Services**

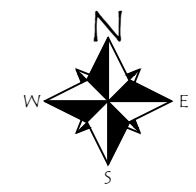
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- NOTE(S):**
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  3. Wetland E and some oak driplines mapped by ELS.
  4. Wetland B regulated under WMC 15.08.700. All other wetlands regulated under WMC 5.08.400.
  5. The northwestern storm pond will be modified prior to site plan approval to avoid all oak driplines.

**LEGEND:**

- Site Boundary
- - - Parcel Boundary
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- Wetland Boundary
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- Mitigation Areas (3.890 ac./169,480 sq. ft.)
- Final Buffer
- Buffer Signage (every 100 feet along Final Buffer)
- Downed Log (7)
- Oak Snag (1)
- Large Woody Material Pile (4)
- Bird Nest Box (5)
- ★ Bat House (5)



**PURPOSE:** Industrial Building Construction

**APPLICANT:** Trammell Crow Portland Development, Inc.

**PROJECT NAME:** TCC Woodland Industrial Project

**REFERENCE #:** Not Yet Assigned

**SITE LOCATION ADDRESS:** 345 N Pekin Road  
Woodland, WA 98674

**DATUM:** NAD83

**ADJACENT PROPERTY OWNERS:**

**PROPOSED:** Fill and Grading

**IN Onsite Wetlands**

**NEAR:** Woodland

**COUNTY:** Cow/itz

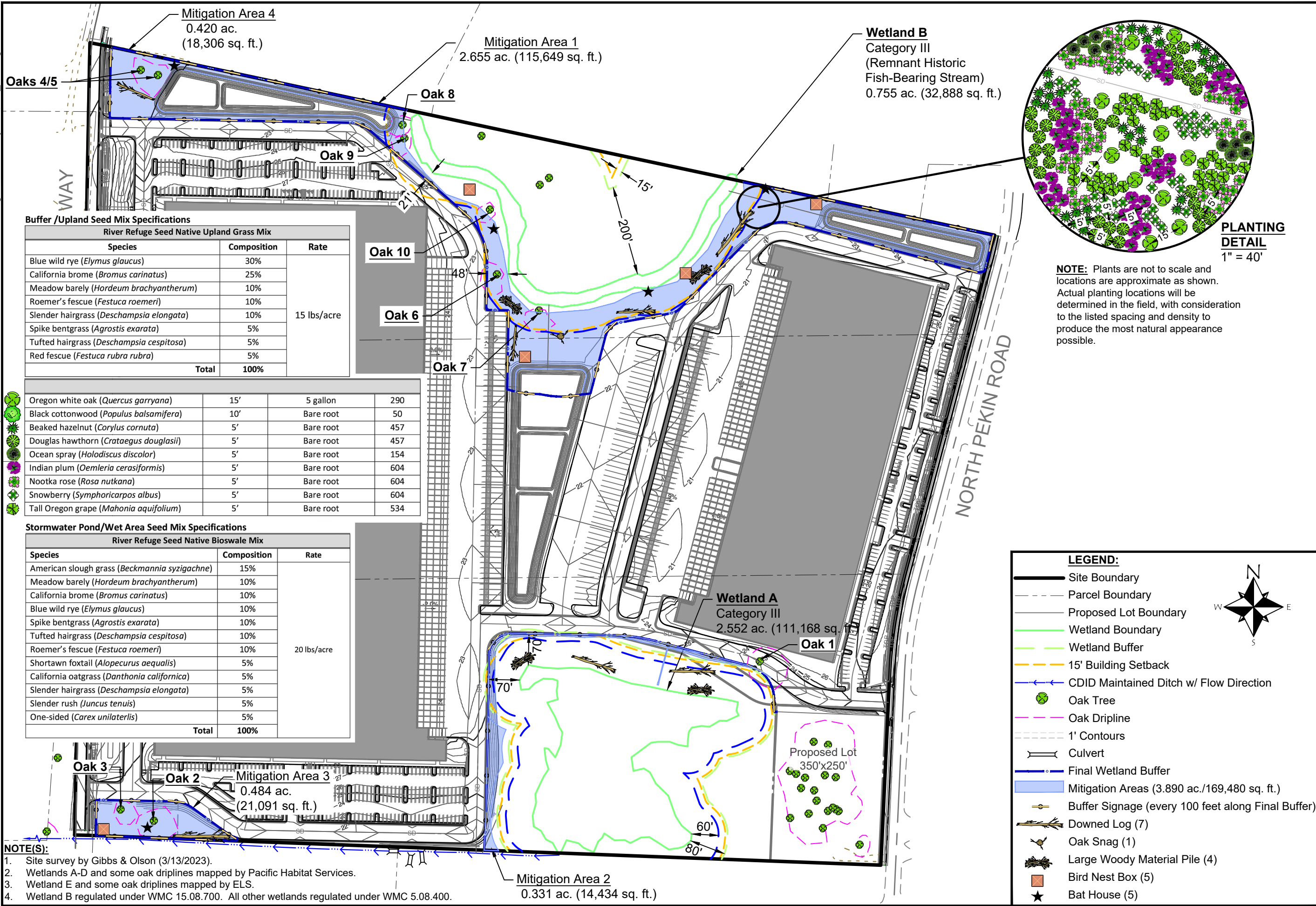
**STATE:** WA

**SHEET 3b OF 7**

**DATE:** 11/30/23

1157 3rd Ave., Suite 220A  
Longview, WA 98632  
Phone: (360) 578-1371

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**Buffer /Upland Seed Mix Specifications**

**River Refuge Seed Native Upland Grass Mix**

Species	Composition	Rate
Blue wild rye ( <i>Elymus glaucus</i> )	30%	15 lbs/acre
California brome ( <i>Bromus carinatus</i> )	25%	
Meadow bately ( <i>Hordeum brachyantherum</i> )	10%	
Roemer's fescue ( <i>Festuca roemeri</i> )	10%	
Slender hairgrass ( <i>Deschampsia elongata</i> )	10%	
Spike bentgrass ( <i>Agrostis exarata</i> )	5%	
Tufted hairgrass ( <i>Deschampsia cespitosa</i> )	5%	
Red fescue ( <i>Festuca rubra rubra</i> )	5%	
<b>Total</b>	<b>100%</b>	

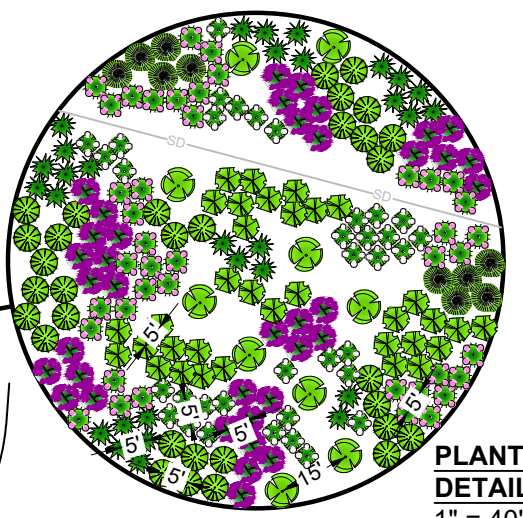
Oregon white oak ( <i>Quercus garryana</i> )	15'	5 gallon	290
Black cottonwood ( <i>Populus balsamifera</i> )	10'	Bare root	50
Beaked hazelnut ( <i>Corylus cornuta</i> )	5'	Bare root	457
Douglas hawthorn ( <i>Crataegus douglasii</i> )	5'	Bare root	457
Ocean spray ( <i>Holodiscus discolor</i> )	5'	Bare root	154
Indian plum ( <i>Oemleria cerasiformis</i> )	5'	Bare root	604
Nootka rose ( <i>Rosa nutkana</i> )	5'	Bare root	604
Snowberry ( <i>Symphoricarpos albus</i> )	5'	Bare root	604
Tall Oregon grape ( <i>Mahonia aquifolium</i> )	5'	Bare root	534

**Stormwater Pond/Wet Area Seed Mix Specifications**

**River Refuge Seed Native Bioswale Mix**

Species	Composition	Rate
American slough grass ( <i>Beckmannia syzigachne</i> )	15%	20 lbs/acre
Meadow bately ( <i>Hordeum brachyantherum</i> )	10%	
California brome ( <i>Bromus carinatus</i> )	10%	
Blue wild rye ( <i>Elymus glaucus</i> )	10%	
Spike bentgrass ( <i>Agrostis exarata</i> )	10%	
Tufted hairgrass ( <i>Deschampsia cespitosa</i> )	10%	
Roemer's fescue ( <i>Festuca roemeri</i> )	10%	
Shortawn foxtail ( <i>Alopecurus aequalis</i> )	5%	
California oatgrass ( <i>Danthonia californica</i> )	5%	
Slender hairgrass ( <i>Deschampsia elongata</i> )	5%	
Slender rush ( <i>Juncus tenuis</i> )	5%	
One-sided ( <i>Carex unilateralis</i> )	5%	
<b>Total</b>	<b>100%</b>	

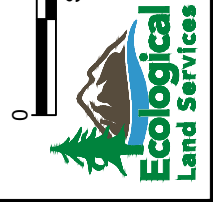
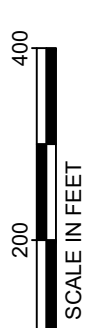
- NOTE(S):**
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  2. Wetlands A-D and some oak driplines mapped by Pacific Habitat Services.
  3. Wetland E and some oak driplines mapped by ELS.
  4. Wetland B regulated under WMC 15.08.700. All other wetlands regulated under WMC 5.08.400.



**NOTE:** Plants are not to scale and locations are approximate as shown. Actual planting locations will be determined in the field, with consideration to the listed spacing and density to produce the most natural appearance possible.

**LEGEND:**

- Site Boundary
- Parcel Boundary
- Proposed Lot Boundary
- Wetland Boundary
- Wetland Buffer
- 15' Building Setback
- CDID Maintained Ditch w/ Flow Direction
- Oak Tree
- Oak Dripline
- 1' Contours
- Culvert
- Final Wetland Buffer
- Buffer Signage (every 100 feet along Final Buffer)
- Downed Log (7)
- Oak Snag (1)
- Large Woody Material Pile (4)
- Bird Nest Box (5)
- Bat House (5)



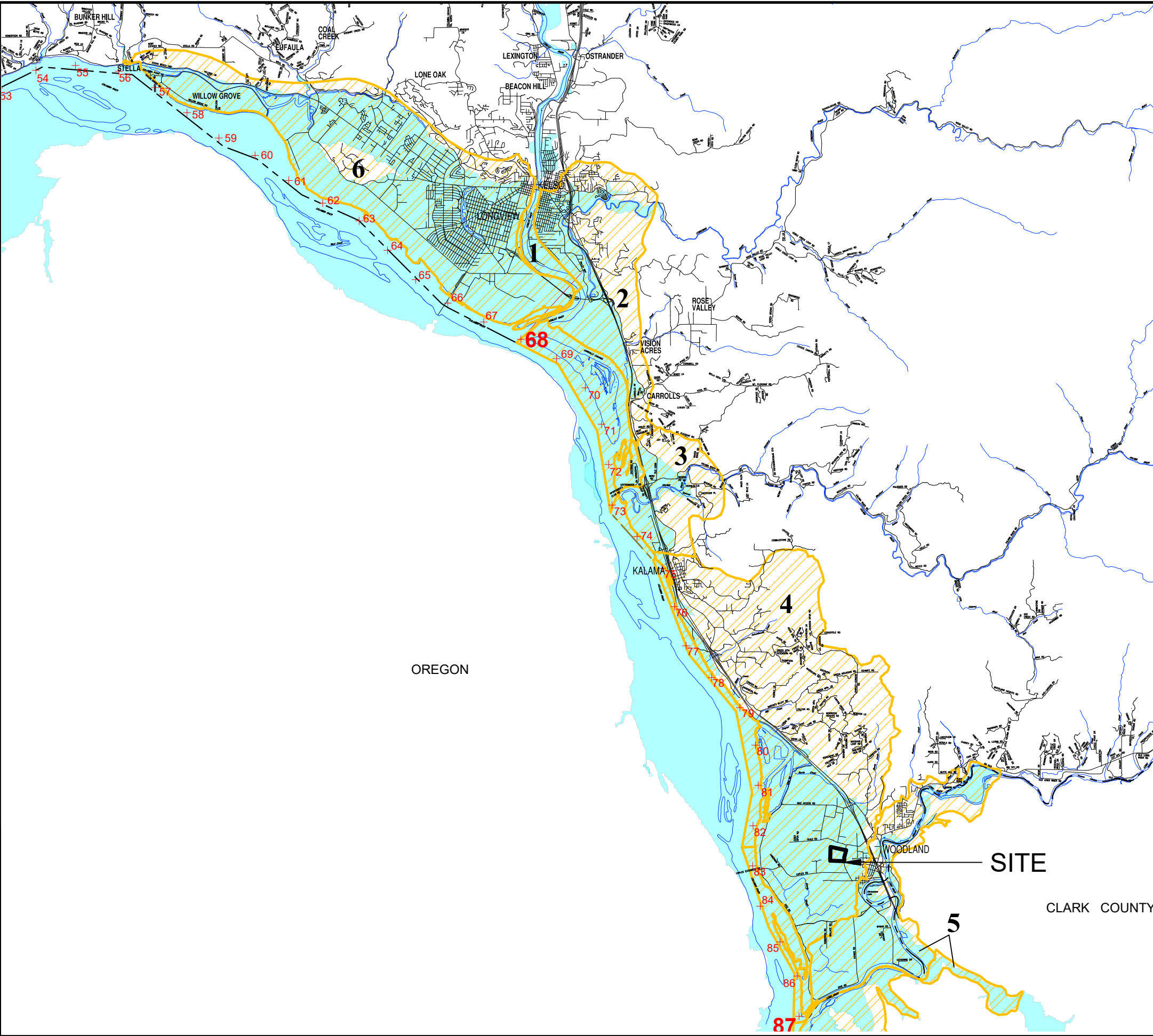
1157 3rd Ave., Suite 220A  
 Longview, WA 98632  
 Phone: (360) 578-1371

**PROPOSED:** Fill and Grading  
**IN** Onsite Wetlands  
**NEAR:** Woodland  
**COUNTY:** Cowitz  
**SHEET 4 OF 7**  
**DATE:** 11/30/23

**PLANTING PLAN**  
**APPLICANT:** Trammell Crow Portland Development, Inc.  
**PROJECT NAME:** TCC Woodland Industrial Project  
**REFERENCE #:** Not Yet Assigned  
**SITE LOCATION ADDRESS:**  
 345 N Pekin Road  
 Woodland, WA 98674

**PURPOSE:** Industrial Building Construction  
**DATUM:** NAD83  
**ADJACENT PROPERTY OWNERS:**

**PLANTING PLAN**  
**APPLICANT:** Trammell Crow Portland Development, Inc.  
**PROJECT NAME:** TCC Woodland Industrial Project  
**REFERENCE #:** Not Yet Assigned  
**SITE LOCATION ADDRESS:**  
 345 N Pekin Road  
 Woodland, WA 98674



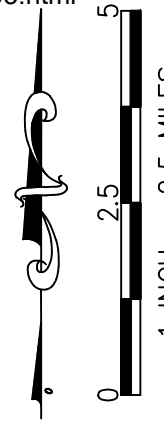
**LEGEND:**

- COUNTY BOUNDARY
- ROADS
- MAJOR RIVERS AND STREAMS
- FLOODPLAIN AREA
- RIVER MILE REACH OF SERVICE AREA
- HUC 6 BOUNDARY
- COWLITZ COUNTY COLUMBIA RIVER WETLAND MITIGATION BANK SERVICE AREA

- 1 - 170800050802 - Cowlitz River-Lecker Creek\*
  - 2 - 170800050804 - Lower Coweeman River\*
  - 3 - 170800030105 - Lower Kalama River\*
  - 4 - 170800030106 - Burris Creek
  - 5 - 170800020605 - Mouth of Lewis River\*
  - 6 - 17080030602 - Hunt Creek\*
- \*Only a portion this HUC6 boundary was included in the proposed service area.

**NOTES:**

1. STATE, COUNTY, ROADS, RIVERS AND STREAM BOUNDARIES FROM ECOLOGY WEBSITE:  
<http://www.wsdot.wa.gov/mapsdata/geodatacatalog/default.htm>
2. FLOODPLAIN DATA FROM J. BURKE, UNIVERSITY OF WASHINGTON.
3. HUC6 WATERSHED BOUNDARIES FROM USGS WEBSITE:  
<http://www.water.usgs.gov/wsc/cat/17080003.html>
4. MAP PREPARED BY ECOLOGICAL LAND SERVICES, INC., JUNE, 2008.



<p><b>PURPOSE:</b> Industrial Building Construction</p> <p><b>DATUM:</b> NAD83</p> <p><b>ADJACENT PROPERTY OWNERS:</b></p>	<p><b>PROPOSED:</b> Fill and Grading</p> <p>IN Onsite Wetlands NEAR: Woodland COUNTY: Cowlitz STATE: WA</p>
	<p>COLUMBIA RIVER MITIGATION BANK SERVICE AREA</p> <p><b>APPLICANT:</b> Trammell Crow Portland Development, Inc.</p> <p><b>PROJECT NAME:</b> TCC Woodland Industrial Project</p> <p><b>REFERENCE #:</b> Not Yet Assigned</p> <p><b>SITE LOCATION ADDRESS:</b> 345 N Pekin Road Woodland, WA 98674</p>



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Longview, WA 98632  
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## APPENDIX A

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Wetland E Rating Form, Updated Wetland B Rating Form, Updated Wetland Rating Figures, and Wetland E Test Plots

Wetland name or number Wetland B

## RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B Date of site visit: 10/27/23  
 Rated by S. Simpson Trained by Ecology? X Yes    No Date of training 2006  
 HGM Class used for rating Depressional Wetland has multiple HGM classes?    Y X N

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

**OVERALL WETLAND CATEGORY III** (based on functions X or special characteristics   )

### 1. Category of wetland based on FUNCTIONS

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

**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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	H <b>(M)</b> L <b>(H)</b> M L	H M L	H M <b>(L)</b>	
Landscape Potential	H <b>(M)</b> L	H <b>(M)</b> L	H M <b>(L)</b>	
Value	H <b>(M)</b> L	H M <b>(L)</b>	H <b>(M)</b> L	<b>TOTAL</b>
<b>Score Based on Ratings</b>	6	6	4	16

### 2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	<b>I    II</b>
Wetland of High Conservation Value	<b>I</b>
Bog	<b>I</b>
Mature Forest	<b>I</b>
Old Growth Forest	<b>I</b>
Coastal Lagoon	<b>I    II</b>
Interdunal	<b>I   II   III   IV</b>
None of the above	<b>Not Applicable</b>

Wetland name or number Wetland B

## Maps and figures required to answer questions correctly for Western Washington

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	2
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	PHS Report
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	PHS Report

### Riverine Wetlands

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

### Lake Fringe Wetlands

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

### Slope Wetlands

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



## HGM Classification of Wetlands in Western Washington

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

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

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

**NO** – go to 2

**YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

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

**YES** – **Freshwater Tidal Fringe**

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

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

**NO** – go to 3

**YES** – The wetland class is **Flats**

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

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

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

**NO** – go to 4

**YES** – The wetland class is **Lake Fringe (Lacustrine Fringe)**

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

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

**NO** – go to 5

**YES** – The wetland class is **Slope**

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

Wetland name or number Wetland B

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

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

**NO – go to 6**

**YES – The wetland class is Riverine**

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

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

NO – go to 7

**YES – The wetland class is Depressional**

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

NO – go to 8

**YES – The wetland class is Depressional**

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

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

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

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

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

**Rating of Site Potential** If score is: 12-16 = H X 6-11 = M 0-5 = L

Record the rating on the first page

**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	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source <b>garbage</b> Yes = 1 No = 0	1
Total for D 2	Add the points in the boxes above 2

**Rating of Landscape Potential** If score is: 3 or 4 = H X 1 or 2 = M 0 = L

Record the rating on the first page

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

D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	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 in development or in effect for the basin in which the unit is found.) Yes = 2 No = 0	0
Total for D 3	Add the points in the boxes above 1

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

Record the rating on the first page

<b>DEPRESSIONAL AND FLATS WETLANDS</b>		
<b>Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation</b>		
<b>D 4.0. Does the site have the potential to reduce flooding and erosion?</b>		
<b>D 4.1. Characteristics of surface water outflows from the wetland:</b>		
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	4
Wetland has an intermittently flowing stream/ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (question 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
<b>D 4.2. <u>Depth of storage during wet periods:</u> 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.</b>		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	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	
<b>D 4.3. <u>Contribution of the wetland to storage in the watershed:</u> Estimate the ratio of the area of upstream basin contributing surface water to the area of the wetland unit itself.</b>		
The area of the basin is less than 10 times the area of the unit	points = 5	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	
<b>Total for D 4</b>	<b>Add the points in the boxes above</b>	<b>16</b>

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

<b>D 5.0. Does the landscape have the potential to support hydrologic functions of the site?</b>		
<b>D 5.1. Does the wetland receive stormwater discharges?</b>	Yes = 1 No = 0	0
<b>D 5.2. Is &gt;10% of the area within 150 ft of the wetland in land uses that generate excess runoff?</b>	Yes = 1 No = 0	1
<b>D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at &gt;1 residence/ac, urban, commercial, agriculture, etc.)?</b>	Yes = 1 No = 0	1
<b>Total for D 5</b>	<b>Add the points in the boxes above</b>	<b>2</b>

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

<b>D 6.0. Are the hydrologic functions provided by the site valuable to society?</b>		
<b>D 6.1. Is <u>the unit in a landscape that has flooding problems</u>? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. <u>Choose the highest score if more than one condition is met.</u></b>		
The wetland captures surface water that would otherwise flow downgradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		
• Flooding occurs in a sub-basin that is immediately downgradient of unit.	points = 2	0
• Surface flooding problems are in a sub-basin farther downgradient.	points = 1	
• Flooding from groundwater is an issue in the sub-basin.	points = 1	
• The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. <i>Explain why</i> _____	points = 0	
• There are no problems with flooding downstream of the wetland.	points = 0	
<b>D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?</b>		
	Yes = 2 No = 0	0
<b>Total for D 6</b>	<b>Add the points in the boxes above</b>	<b>0</b>

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

**These questions apply to wetlands of all HGM classes.**




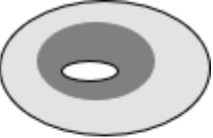


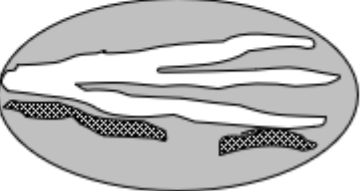
**HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat

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

<p>H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac if the unit is at least 2.5 ac, or more than 10% of the unit if it is smaller than 2.5 ac.</p> <p> <input type="checkbox"/> Aquatic bed <span style="float: right;">4 structures or more: points = 4</span>  <input type="checkbox"/> Emergent <span style="float: right;">3 structures: points = 2</span>  <input type="checkbox"/> Scrub-shrub (areas where shrubs have &gt; 30% cover) <span style="float: right;">2 structures: points = 1</span>  <input checked="" type="checkbox"/> Forested (areas where trees have &gt; 30% cover) <span style="float: right;">1 structure: points = 0</span> </p> <p><i>If the unit has a Forested class, check if:</i></p> <p><input type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/groundcover) that each cover 20% within the Forested polygon <b>No herbaceous layer</b></p>	1
---	---

<p>H 1.2. Hydroperiods</p> <p>Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland if the unit is &lt; 2.5 ac, or ¼ ac if the unit is at least 2.5 ac to count (see text for descriptions of hydroperiods).</p> <p> <input type="checkbox"/> Permanently flooded or inundated <span style="float: right;">4 or more types present: points = 3</span>  <input checked="" type="checkbox"/> Seasonally flooded or inundated <span style="float: right;">3 types present: points = 2</span>  <input type="checkbox"/> Occasionally flooded or inundated <span style="float: right;">2 types present: points = 1</span>  <input type="checkbox"/> Saturated only <span style="float: right;">1 type present: points = 0</span>  <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland  <input type="checkbox"/> Intermittently or seasonally flowing stream in, or adjacent to, the wetland  <input type="checkbox"/> <b>Lake Fringe wetland</b> <span style="float: right;"><b>2 points</b></span>  <input type="checkbox"/> <b>Freshwater tidal wetland</b> <span style="float: right;"><b>2 points</b></span> </p>	0
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<p>H 1.3. Richness of plant species</p> <p>Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>. Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. <b>Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle</b></p> <p>If you counted: &gt; 19 species <span style="float: right;">points = 2</span>          5 - 19 species <span style="float: right;">points = 1</span>          &lt; 5 species <span style="float: right;">points = 0</span></p>	1
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<p>H 1.4. Interspersion of habitats</p> <p>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.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end; margin-top: 20px;"> <div style="text-align: center;">  <p><b>None = 0 points</b></p> </div> <div style="text-align: center;">  <p><b>Low = 1 point</b></p> </div> <div style="text-align: center;">  <p><b>Moderate = 2 points</b></p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-end; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p style="margin-top: 10px;">All three diagrams in this row are <b>High = 3 points</b></p>	0
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Wetland name or number Wetland B

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

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?		
<p>H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland.)</p> <p><i>Calculate:</i> % relatively undisturbed habitat ___ + [(% moderate and low intensity land uses)/2] ___ = _____%</p> <p>Total accessible habitat is:</p> <p>&gt; 1/3 (33.3%) of 1 km Polygon <span style="float: right;">points = 3</span></p> <p>20-33% of 1 km Polygon <span style="float: right;">points = 2</span></p> <p>10-19% of 1 km Polygon <span style="float: right;">points = 1</span></p> <p>&lt; 10% of 1 km Polygon <span style="float: right;">points = 0</span></p>		0
<p>H 2.2. Total habitat in 1 km Polygon around the wetland.</p> <p><i>Calculate:</i> % relatively undisturbed habitat ___ + [(% moderate and low intensity land uses)/2] ___ = _____%</p> <p>Total habitat &gt; 50% of Polygon <span style="float: right;">points = 3</span></p> <p>Total habitat 10-50% and in 1-3 patches <span style="float: right;">points = 2</span></p> <p>Total habitat 10-50% and &gt; 3 patches <span style="float: right;">points = 1</span></p> <p>Total habitat &lt; 10% of 1 km Polygon <span style="float: right;">points = 0</span></p>		0
<p>H 2.3. Land use intensity in 1 km Polygon:</p> <p>&gt; 50% of 1 km Polygon is high intensity land use <span style="float: right;">points = (- 2)</span></p> <p>≤ 50% of 1 km Polygon is high intensity <span style="float: right;">points = 0</span></p>		-2
Total for H 2	Add the points in the boxes above	-2

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

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

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

## WDFW Priority Habitats

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

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

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

- **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.
- **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- **Fresh Deepwater:** Lands permanently flooded with freshwater, including environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. Substrate does not support emergent vegetation. Do not select if Instream habitat is also present, or if the entire Deepwater feature is included in the wetland unit being rated (such as a pond with a vegetated fringe).
- **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. Do not select if Fresh Deepwater habitat is also present.
- **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore.
- **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in. (81 cm) diameter at breast height (dbh) or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in. (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

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<sup>133</sup> <http://wdfw.wa.gov/publications/00165/wdfw00165.pdf>

Wetland name or number \_\_\_\_\_

- **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important. For single oaks or oak stands <0.4 ha in urban areas, [WDFW's Management Recommendations for Oregon White Oak](#)<sup>134</sup> provides more detail for determining if they are Priority Habitats
- **Riparian:** The area adjacent to freshwater aquatic systems with flowing or standing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in. (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in. (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.
- **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie.

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<sup>134</sup> <https://wdfw.wa.gov/publications/00030/wdfw00030.pdf>



Wetland name or number \_\_\_\_\_

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
<p><b>SC 1.0. Estuarine wetlands</b></p> <p>Does the wetland meet the following criteria for Estuarine wetlands?</p> <ul style="list-style-type: none"> <li>— The dominant water regime is tidal,</li> <li>— Vegetated, and</li> <li>— With a salinity greater than 0.5 ppt</li> </ul> <p style="text-align: right;">Yes – Go to <b>SC 1.1</b>    <b>No = Not an estuarine wetland</b></p>	
<p>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?</p> <p style="text-align: right;">Yes = <b>Category I</b>    No – Go to <b>SC 1.2</b></p>	<b>Cat. I</b>
<p>SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions?</p> <ul style="list-style-type: none"> <li>— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 10% cover of non-native plant species. If non-native species are <i>Spartina</i>, see chapter 4.8 in the manual.</li> <li>— 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.</li> <li>— The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</li> </ul> <p style="text-align: right;">Yes = <b>Category I</b>    No = <b>Category II</b></p>	<b>Cat. I</b>  <b>Cat. II</b>
<p><b>SC 2.0. Wetlands of High Conservation Value (WHCV)</b></p> <p>SC 2.1. Does the wetland overlap with any known or historical rare plant or rare &amp; high-quality ecosystem polygons on the WNHP <a href="#">Data Explorer</a>?<sup>135</sup></p> <p style="text-align: right;">Yes = <b>Category I</b>    No – Go to <b>SC 2.2</b></p> <p>SC 2.2. Does the wetland have a rare plant species, rare ecosystem (e.g., plant community), or high-quality common ecosystem that may qualify the site as a WHCV? Contact WNHP for resources to help determine the presence of these elements.</p> <p style="text-align: right;">Yes – <a href="#">Submit data to WA Natural Heritage Program for determination</a>,<sup>136</sup> Go to <b>SC 2.3</b>    <b>No = Not a WHCV</b></p> <p>SC 2.3. Did WNHP review the site within 30 days and determine that it has a rare plant or ecosystem that meets their criteria?</p> <p style="text-align: right;">Yes = <b>Category I</b>    No = <b>Not a WHCV</b></p>	<b>Cat. I</b>
<p><b>SC 3.0. Bogs</b></p> <p>Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES, you will still need to rate the wetland based on its functions.</i></p> <p>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?</p> <p style="text-align: right;">Yes – Go to <b>SC 3.3</b>    No – Go to <b>SC 3.2</b></p> <p>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?</p> <p style="text-align: right;">Yes – Go to <b>SC 3.3</b>    No = <b>Not a bog</b></p> <p>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?</p> <p style="text-align: right;">Yes = <b>Category I bog</b>    No – Go to <b>SC 3.4</b></p> <p><b>NOTE:</b> 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.</p> <p>SC 3.4. Is an area with peats or mucks forested (&gt; 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?</p> <p style="text-align: right;">Yes = <b>Category I bog</b>    <b>No = Not a bog</b></p>	<b>Cat. I</b>

<sup>135</sup> <https://www.dnr.wa.gov/NHPdata>

<sup>136</sup> [https://www.dnr.wa.gov/Publications/amp\\_nh\\_sighting\\_form.pdf](https://www.dnr.wa.gov/Publications/amp_nh_sighting_form.pdf)

Wetland name or number \_\_\_\_\_

<p><b>SC 4.0. Forested Wetlands</b></p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife’s forests as Priority Habitats? <b><i>If you answer YES, you will still need to rate the wetland based on its functions.</i></b></p> <ul style="list-style-type: none"> <li>— <b>Old-growth forests</b> (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.</li> <li>— <b>Mature forests</b> (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).</li> </ul> <p style="text-align: right;">Yes = <b>Category I</b>    No = <b>Not a forested wetland for this section</b></p>	<p><b>Cat. I</b></p>
<p><b>SC 5.0. Wetlands in Coastal Lagoons</b></p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> <li>— 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</li> <li>— The lagoon in which the wetland is located contains ponded water that is saline or brackish (&gt; 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</li> <li>— The lagoon retains some of its surface water at low tide during spring tides</li> </ul> <p>Yes – Go to <b>SC 5.1</b>    No = <b>Not a wetland in a coastal lagoon</b></p> <p><b>SC 5.1. Does the wetland meet all of the following three conditions?</b></p> <ul style="list-style-type: none"> <li>— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species in H 1.5 in the manual).</li> <li>— 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.</li> <li>— The wetland is larger than 1/10 ac (4350 ft<sup>2</sup>)</li> </ul> <p>Yes = <b>Category I</b>    No = <b>Category II</b></p>	<p><b>Cat. I</b></p> <p><b>Cat. II</b></p>
<p><b>SC 6.0. Interdunal Wetlands</b></p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <b><i>If you answer YES, you will still need to rate the wetland based on its habitat functions.</i></b></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> <li>— Long Beach Peninsula: Lands west of SR 103</li> <li>— Grayland-Westport: Lands west of SR 105</li> <li>— Ocean Shores-Copalis: Lands west of SR 115 and SR 109 and Ocean Shores Blvd SW, including lands west of E. Oceans Shores Blvd SW.</li> </ul> <p style="text-align: right;">Yes – Go to <b>SC 6.1</b>    No = <b>Not an interdunal wetland for rating</b></p> <p><b>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)?</b>  Yes = <b>Category I</b>    No – Go to <b>SC 6.2</b></p> <p><b>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</b>  Yes = <b>Category II</b>    No – Go to <b>SC 6.3</b></p> <p><b>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?</b>  Yes = <b>Category III</b>    No = <b>Category IV</b></p>	<p><b>Cat I</b></p> <p><b>Cat. II</b></p> <p><b>Cat. III</b></p> <p><b>Cat. IV</b></p>
<p><b>Category of wetland based on Special Characteristics</b>  If you answered No for all types, enter “Not Applicable” on Summary Form</p>	<p><b>Not Applicable</b></p>

Wetland name or number Wetland E

## RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland E Date of site visit: 10/27/23  
 Rated by S. Simpson Trained by Ecology? X Yes    No Date of training 2006  
 HGM Class used for rating Depressional Wetland has multiple HGM classes?    Y X N

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

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

### 1. Category of wetland based on FUNCTIONS

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

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

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	H (M) L	H (M) L	H M (L)	
Landscape Potential	H (M) L	H (M) L	H M (L)	
Value	H (M) L	H M (L)	H (M) L	<b>TOTAL</b>
<b>Score Based on Ratings</b>	6	5	4	15

### 2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	Not Applicable

Wetland name or number Wetland E

## 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 ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	2
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	PHS Report
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	PHS Report

### Riverine Wetlands

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

### Lake Fringe Wetlands

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

### Slope Wetlands

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

## HGM Classification of Wetlands in Western Washington

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

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

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

**NO** – go to 2

**YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

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

**YES** – **Freshwater Tidal Fringe**

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

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

**NO** – go to 3

**YES** – The wetland class is **Flats**

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

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

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

**NO** – go to 4

**YES** – The wetland class is **Lake Fringe (Lacustrine Fringe)**

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

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

**NO** – go to 5

**YES** – The wetland class is **Slope**

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

Wetland name or number Wetland E

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.

**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. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	3
D 1.2. <u>The soil 2 in. below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0	0
D 1.3. <u>Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</u> 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 <b>lots of bare ground</b> points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	1
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is ≥ ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	4
Total for D 1	Add the points in the boxes above 8

**Rating of Site Potential** If score is: 12-16 = H X 6-11 = M 0-5 = L

Record the rating on the first page

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

D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	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	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source <b>garbage</b> Yes = 1 No = 0	1
Total for D 2	Add the points in the boxes above 2

**Rating of Landscape Potential** If score is: 3 or 4 = H X 1 or 2 = M 0 = L

Record the rating on the first page

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

D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	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 in development or in effect for the basin in which the unit is found.) Yes = 2 No = 0	0
Total for D 3	Add the points in the boxes above 1

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

Record the rating on the first page

<b>DEPRESSIONAL AND FLATS WETLANDS</b>		
<b>Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation</b>		
<b>D 4.0. Does the site have the potential to reduce flooding and erosion?</b>		
<b>D 4.1. Characteristics of surface water outflows from the wetland:</b>		
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	4
Wetland has an intermittently flowing stream/ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (question 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
<b>D 4.2. <u>Depth of storage during wet periods:</u> 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.</b>		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	5
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	
<b>D 4.3. <u>Contribution of the wetland to storage in the watershed:</u> Estimate the ratio of the area of upstream basin contributing surface water to the area of the wetland unit itself.</b>		
The area of the basin is less than 10 times the area of the unit	points = 5	0
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
<b>Total for D 4</b>	<b>Add the points in the boxes above</b>	<b>9</b>

**Rating of Site Potential** If score is:     12-16 = H   X   6-11 = M     0-5 = L

*Record the rating on the first page*

<b>D 5.0. Does the landscape have the potential to support hydrologic functions of the site?</b>		
<b>D 5.1. Does the wetland receive stormwater discharges?</b>	Yes = 1 No = 0	0
<b>D 5.2. Is &gt;10% of the area within 150 ft of the wetland in land uses that generate excess runoff?</b>	Yes = 1 No = 0	1
<b>D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at &gt;1 residence/ac, urban, commercial, agriculture, etc.)?</b>	Yes = 1 No = 0	1
<b>Total for D 5</b>	<b>Add the points in the boxes above</b>	<b>2</b>

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

*Record the rating on the first page*

<b>D 6.0. Are the hydrologic functions provided by the site valuable to society?</b>		
<b>D 6.1. Is <u>the unit in a landscape that has flooding problems</u>? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. <u>Choose the highest score if more than one condition is met.</u></b>		
The wetland captures surface water that would otherwise flow downgradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		
• Flooding occurs in a sub-basin that is immediately downgradient of unit.	points = 2	0
• Surface flooding problems are in a sub-basin farther downgradient.	points = 1	
• Flooding from groundwater is an issue in the sub-basin.	points = 1	
• The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. <i>Explain why</i> _____	points = 0	
• <b>Deep depression, diking in greater area, water ultimately pumped to Columbia River</b>	points = 0	
• There are no problems with flooding downstream of the wetland.	points = 0	
<b>D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?</b>		
	Yes = 2 No = 0	0
<b>Total for D 6</b>	<b>Add the points in the boxes above</b>	<b>0</b>

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

*Record the rating on the first page*



**These questions apply to wetlands of all HGM classes.**

**HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat

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

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

<input type="checkbox"/> Aquatic bed	4 structures or more: points = 4	1
<input type="checkbox"/> Emergent	3 structures: points = 2	
<input type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1	
<input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover)	1 structure: points = 0	
<i>If the unit has a Forested class, check if:</i>		
<input type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/groundcover) that each cover 20% within the Forested polygon <b>No herbaceous layer</b>		


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 if the unit is < 2.5 ac, or ¼ ac if the unit is at least 2.5 ac to count (see text for descriptions of hydroperiods).

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


H 1.3. Richness of plant species  
Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>. Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle**

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


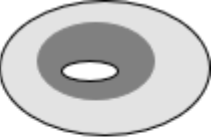
H 1.4. Interspersion of habitats  
Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. If you have four or more plant classes or three classes and open water, the rating is always high.



**None = 0 points**



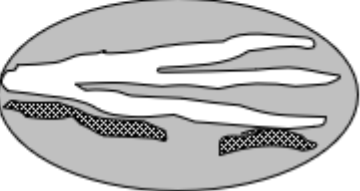


**Low = 1 point**

**Moderate = 2 points**

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

Wetland name or number Wetland E

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

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?		
<p>H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland.)</p> <p><i>Calculate:</i> % relatively undisturbed habitat ___ + [(% moderate and low intensity land uses)/2] ___ = _____%</p> <p>Total accessible habitat is:</p> <p>&gt; 1/3 (33.3%) of 1 km Polygon <span style="float: right;">points = 3</span></p> <p>20-33% of 1 km Polygon <span style="float: right;">points = 2</span></p> <p>10-19% of 1 km Polygon <span style="float: right;">points = 1</span></p> <p>&lt; 10% of 1 km Polygon <span style="float: right;">points = 0</span></p>		0
<p>H 2.2. Total habitat in 1 km Polygon around the wetland.</p> <p><i>Calculate:</i> % relatively undisturbed habitat ___ + [(% moderate and low intensity land uses)/2] ___ = _____%</p> <p>Total habitat &gt; 50% of Polygon <span style="float: right;">points = 3</span></p> <p>Total habitat 10-50% and in 1-3 patches <span style="float: right;">points = 2</span></p> <p>Total habitat 10-50% and &gt; 3 patches <span style="float: right;">points = 1</span></p> <p>Total habitat &lt; 10% of 1 km Polygon <span style="float: right;">points = 0</span></p>		0
<p>H 2.3. Land use intensity in 1 km Polygon:</p> <p>&gt; 50% of 1 km Polygon is high intensity land use <span style="float: right;">points = (- 2)</span></p> <p>≤ 50% of 1 km Polygon is high intensity <span style="float: right;">points = 0</span></p>		-2
Total for H 2	Add the points in the boxes above	-2

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

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

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

## WDFW Priority Habitats

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

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

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

- **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.
- **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- **Fresh Deepwater:** Lands permanently flooded with freshwater, including environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. Substrate does not support emergent vegetation. Do not select if Instream habitat is also present, or if the entire Deepwater feature is included in the wetland unit being rated (such as a pond with a vegetated fringe).
- **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. Do not select if Fresh Deepwater habitat is also present.
- **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore.
- **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in. (81 cm) diameter at breast height (dbh) or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in. (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

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<sup>133</sup> <http://wdfw.wa.gov/publications/00165/wdfw00165.pdf>

Wetland name or number \_\_\_\_\_

- **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important. For single oaks or oak stands <0.4 ha in urban areas, [WDFW's Management Recommendations for Oregon White Oak](#)<sup>134</sup> provides more detail for determining if they are Priority Habitats
- **Riparian:** The area adjacent to freshwater aquatic systems with flowing or standing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in. (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in. (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.
- **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie.

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<sup>134</sup> <https://wdfw.wa.gov/publications/00030/wdfw00030.pdf>

Wetland name or number \_\_\_\_\_

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
<p><b>SC 1.0. Estuarine wetlands</b></p> <p>Does the wetland meet the following criteria for Estuarine wetlands?</p> <ul style="list-style-type: none"> <li>— The dominant water regime is tidal,</li> <li>— Vegetated, and</li> <li>— With a salinity greater than 0.5 ppt</li> </ul> <p style="text-align: right;">Yes – Go to <b>SC 1.1</b>    <b>No = Not an estuarine wetland</b></p>	
<p>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?</p> <p style="text-align: right;">Yes = <b>Category I</b>    No – Go to <b>SC 1.2</b></p>	<b>Cat. I</b>
<p>SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions?</p> <ul style="list-style-type: none"> <li>— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 10% cover of non-native plant species. If non-native species are <i>Spartina</i>, see chapter 4.8 in the manual.</li> <li>— At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland.</li> <li>— The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</li> </ul> <p style="text-align: right;">Yes = <b>Category I</b>    No = <b>Category II</b></p>	<p><b>Cat. I</b></p> <p><b>Cat. II</b></p>
<p><b>SC 2.0. Wetlands of High Conservation Value (WHCV)</b></p> <p>SC 2.1. Does the wetland overlap with any known or historical rare plant or rare &amp; high-quality ecosystem polygons on the WNHP <a href="#">Data Explorer</a>?<sup>135</sup></p> <p style="text-align: right;">Yes = <b>Category I</b>    No – Go to <b>SC 2.2</b></p> <p>SC 2.2. Does the wetland have a rare plant species, rare ecosystem (e.g., plant community), or high-quality common ecosystem that may qualify the site as a WHCV? Contact WNHP for resources to help determine the presence of these elements.</p> <p style="text-align: right;">Yes – <a href="#">Submit data to WA Natural Heritage Program for determination</a>,<sup>136</sup> Go to <b>SC 2.3</b>    <b>No = Not a WHCV</b></p> <p>SC 2.3. Did WNHP review the site within 30 days and determine that it has a rare plant or ecosystem that meets their criteria?</p> <p style="text-align: right;">Yes = <b>Category I</b>    No = <b>Not a WHCV</b></p>	<b>Cat. I</b>
<p><b>SC 3.0. Bogs</b></p> <p>Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES, you will still need to rate the wetland based on its functions.</i></p> <p>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?</p> <p style="text-align: right;">Yes – Go to <b>SC 3.3</b>    No – Go to <b>SC 3.2</b></p> <p>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?</p> <p style="text-align: right;">Yes – Go to <b>SC 3.3</b>    No = <b>Not a bog</b></p> <p>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?</p> <p style="text-align: right;">Yes = <b>Category I bog</b>    No – Go to <b>SC 3.4</b></p> <p><b>NOTE:</b> 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.</p> <p>SC 3.4. Is an area with peats or mucks forested (&gt; 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?</p> <p style="text-align: right;">Yes = <b>Category I bog</b>    <b>No = Not a bog</b></p>	<b>Cat. I</b>

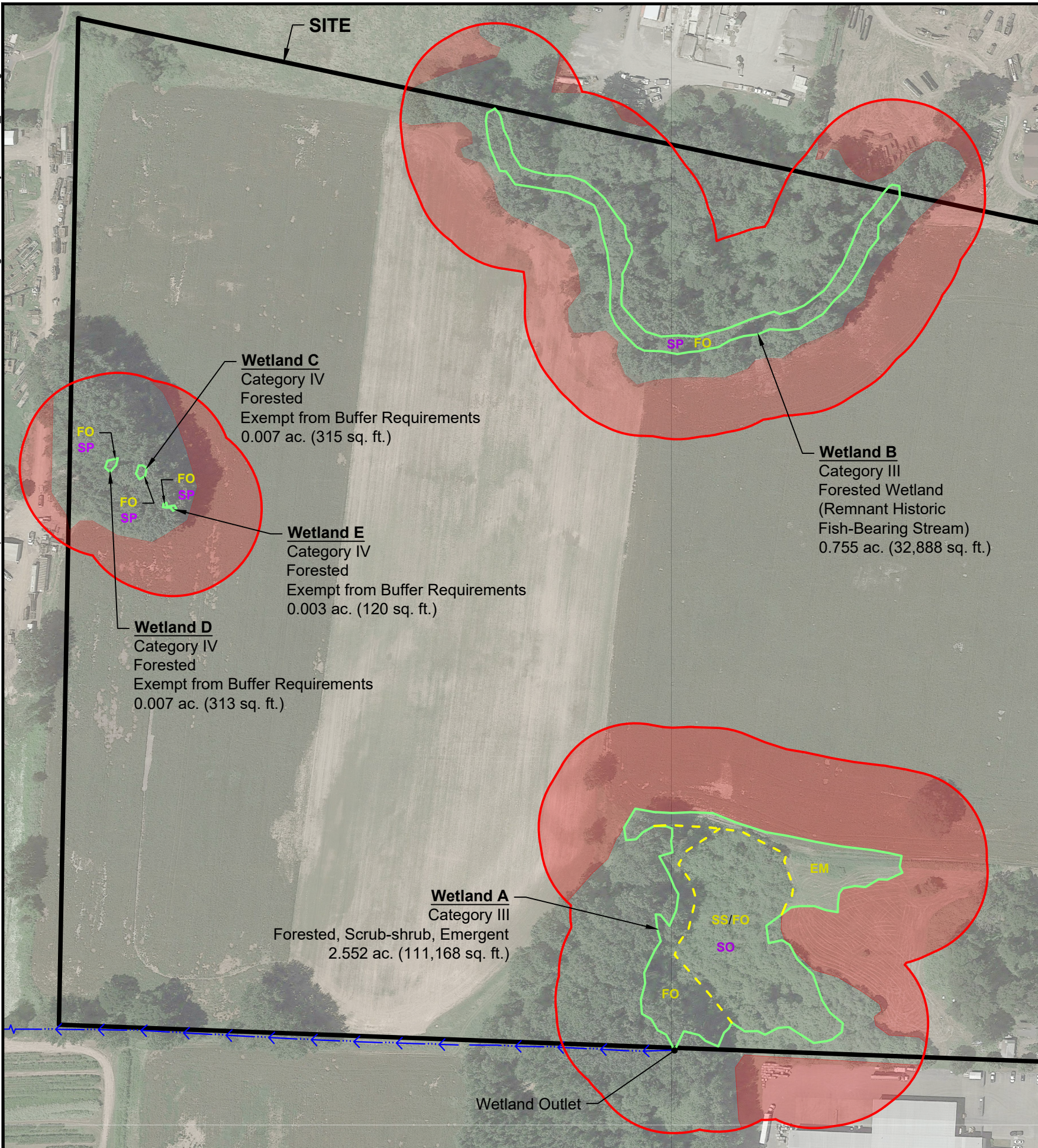
<sup>135</sup> <https://www.dnr.wa.gov/NHPdata>

<sup>136</sup> [https://www.dnr.wa.gov/Publications/amp\\_nh\\_sighting\\_form.pdf](https://www.dnr.wa.gov/Publications/amp_nh_sighting_form.pdf)

Wetland name or number \_\_\_\_\_

<p><b>SC 4.0. Forested Wetlands</b></p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife’s forests as Priority Habitats? <b><i>If you answer YES, you will still need to rate the wetland based on its functions.</i></b></p> <ul style="list-style-type: none"> <li>— <b>Old-growth forests</b> (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.</li> <li>— <b>Mature forests</b> (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).</li> </ul> <p style="text-align: right;">Yes = <b>Category I</b>    No = <b>Not a forested wetland for this section</b></p>	<p><b>Cat. I</b></p>
<p><b>SC 5.0. Wetlands in Coastal Lagoons</b></p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> <li>— 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</li> <li>— The lagoon in which the wetland is located contains ponded water that is saline or brackish (&gt; 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</li> <li>— The lagoon retains some of its surface water at low tide during spring tides</li> </ul> <p>Yes – Go to <b>SC 5.1</b>    No = <b>Not a wetland in a coastal lagoon</b></p> <p><b>SC 5.1. Does the wetland meet all of the following three conditions?</b></p> <ul style="list-style-type: none"> <li>— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species in H 1.5 in the manual).</li> <li>— 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.</li> <li>— The wetland is larger than 1/10 ac (4350 ft<sup>2</sup>)</li> </ul> <p>Yes = <b>Category I</b>    No = <b>Category II</b></p>	<p><b>Cat. I</b></p> <p><b>Cat. II</b></p>
<p><b>SC 6.0. Interdunal Wetlands</b></p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <b><i>If you answer YES, you will still need to rate the wetland based on its habitat functions.</i></b></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> <li>— Long Beach Peninsula: Lands west of SR 103</li> <li>— Grayland-Westport: Lands west of SR 105</li> <li>— Ocean Shores-Copalis: Lands west of SR 115 and SR 109 and Ocean Shores Blvd SW, including lands west of E. Oceans Shores Blvd SW.</li> </ul> <p style="text-align: right;">Yes – Go to <b>SC 6.1</b>    No = <b>Not an interdunal wetland for rating</b></p> <p><b>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)?</b>  <span style="float: right;">Yes = <b>Category I</b>    No – Go to <b>SC 6.2</b></span></p> <p><b>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</b>  <span style="float: right;">Yes = <b>Category II</b>    No – Go to <b>SC 6.3</b></span></p> <p><b>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?</b>  <span style="float: right;">Yes = <b>Category III</b>    No = <b>Category IV</b></span></p>	<p><b>Cat I</b></p> <p><b>Cat. II</b></p> <p><b>Cat. III</b></p> <p><b>Cat. IV</b></p>
<p><b>Category of wetland based on Special Characteristics</b>          If you answered No for all types, enter “Not Applicable” on Summary Form</p>	<p><b>Not Applicable</b></p>

11/9/2023 9:57 AM C:\Users\Jennifer\Box\ELSI\WVA\Cowlitz\Woodland\3665-Trammell Crow Portland Development, Inc.\3665.04-TC Woodland Site\3665.04-Figures CAD Only\3665.04\_DT.dwg Jennifer



**Wetland C**  
 Category IV  
 Forested  
 Exempt from Buffer Requirements  
 0.007 ac. (315 sq. ft.)

**Wetland E**  
 Category IV  
 Forested  
 Exempt from Buffer Requirements  
 0.003 ac. (120 sq. ft.)

**Wetland D**  
 Category IV  
 Forested  
 Exempt from Buffer Requirements  
 0.007 ac. (313 sq. ft.)

**Wetland A**  
 Category III  
 Forested, Scrub-shrub, Emergent  
 2.552 ac. (111,168 sq. ft.)

**Wetland B**  
 Category III  
 Forested Wetland  
 (Remnant Historic  
 Fish-Bearing Stream)  
 0.755 ac. (32,888 sq. ft.)

**Cowardin Classes:**

- EM** Emergent  
Wetland A - 21.5%
- SS** Scrub/shrub  
Wetland A - 28.0%
- FO** Forested  
Wetland A - 50.5%
- Wetland B - 100%
- Wetland C - 100%
- Wetland D - 100%
- Wetland E - 100%

**Hydroperiods:**

- SO** Saturated only  
Wetland A - 100%
- SP** Seasonally ponded  
Wetland B - 100%
- Wetland C - 100%
- Wetland D - 100%
- Wetland E - 100%

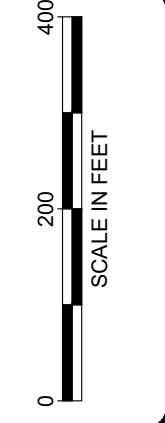
**LEGEND:**

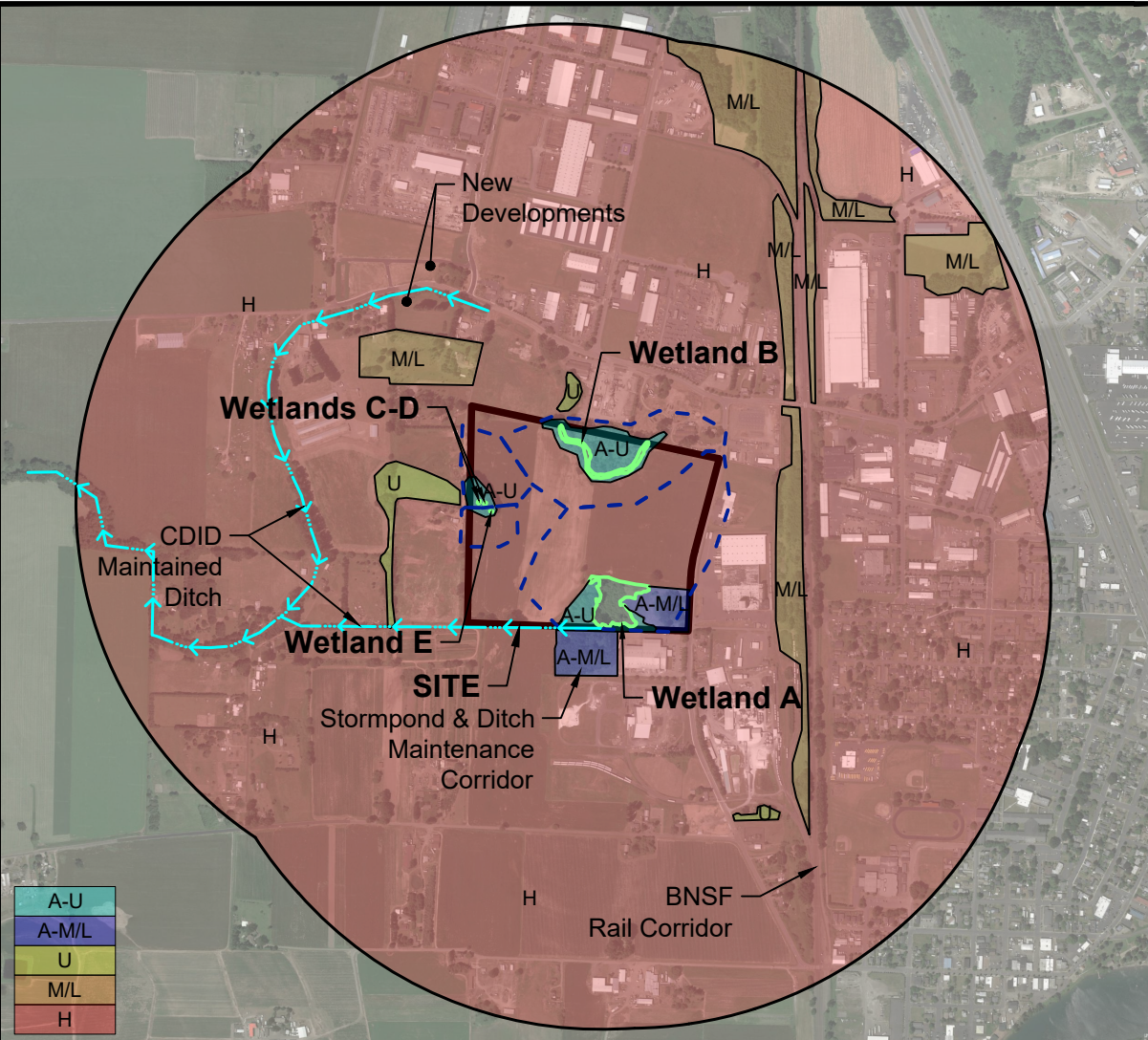
- Site Boundary
- Wetland Unit Boundary
- CDID Maintained Ditch w/ Flow Direction
- - - Vegetation Class Division
- 150' Wetland Offset
- Impervious Surfaces
  - Wetland A - 64.4%
  - Wetland B - 45.2%
  - Wetland C - 32.6%
  - Wetland D - 26.7%
  - Wetland E - 57.5%

WETLAND RATING FORM-150' OFFSET  
 N Pekin Road Site  
 Trammell Crow  
 City of Woodland, Cowlitz County, Washington  
 Sections 13 & 14, Township 5N, Range 1W, W.M.

DATE: 11/9/23  
 DWN: JKJ  
 REQ. BY: SS  
 PRJ. MGR: SS  
 CHK:  
 PROJECT NO:  
 3665.04

1157 3rd Ave., Suite 220A  
 Longview, WA 98632  
 Phone: (360) 578-1371  
 Fax: (360) 414-9305  
 www.eco-land.com





A-U
A-M/L
U
M/L
H

- LEGEND:**
- Site Boundary
  - Wetland Unit Boundary
  - CDID Maintained Ditch
  - Contributing Basin
  - 12.8x area of Wetland A
  - 28.6x area of Wetland B
  - 441.8x area of Wetlands C-D
  - 1206.8x area of Wetland E

**H2.1 Accessible Habitat**

A-U	Wetland A - 0.3%
	Wetland B - 0.6%
	Wetlands C-E - 0.2%
A-M/L	Wetland A - 0.9%
	Wetland B - 0.0%
	Wetlands C-E - 0.0%

**H2.2 Undisturbed Habitat**

U	Wetland A - 1.6%
	Wetland B - 1.4%
	Wetlands C-E - 2.2%
M/L	Wetland A - 2.9%
	Wetland B - 6.8%
	Wetlands C-E - 3.9%

**H2.3 Land Use Intensity**

H	Wetland A - 94.4%
	Wetland B - 91.2%
	Wetlands C-E - 93.7%

**Wetland A**

**H 2.1. Accessible Habitat Equation**  

$$\% \text{A-U habitat } 0.3\% + [(\% \text{A-M/L intensity land uses})/2] \text{ } 0.45\% = \underline{0.75\%}$$

**H 2.2. Total Undisturbed Habitat Equation**  

$$\% \text{A-U} + \% \text{U habitat } 1.9\% + [(\% \text{A-M/L} + \% \text{M/L land uses})/2] \text{ } 1.9\% = \underline{3.8\%}$$

**Wetland B**

**H 2.1. Accessible Habitat Equation**  

$$\% \text{A-U habitat } 0.6\% + [(\% \text{A-M/L intensity land uses})/2] \text{ } 0.0\% = \underline{0.6\%}$$

**H 2.2. Total Undisturbed Habitat Equation**  

$$\% \text{A-U} + \% \text{U habitat } 2.0\% + [(\% \text{A-M/L} + \% \text{M/L land uses})/2] \text{ } 3.4\% = \underline{5.4\%}$$

**Wetlands C-E**

**H 2.1. Accessible Habitat Equation**  

$$\% \text{A-U habitat } 0.2\% + [(\% \text{A-M/L intensity land uses})/2] \text{ } 0.0\% = \underline{0.2\%}$$

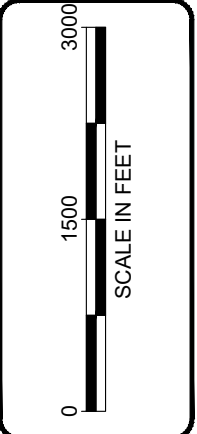
**H 2.2. Total Undisturbed Habitat Equation**  

$$\% \text{A-U} + \% \text{U habitat } 2.4\% + [(\% \text{A-M/L} + \% \text{M/L land uses})/2] \text{ } 00.0\% = \underline{1.95\%}$$

WETLAND RATING FORM-1 km OFFSET  
 N Pekin Road Site  
 Trammell Crow  
 City of Woodland, Cowlitz County, Washington  
 Section 13 & 14, Township 5N, Range 1W, W.M.

DATE: 11/9/23  
 DWN: JKJ  
 REQ. BY: SS  
 PRJ. MGR: SS  
 CHK:  
 PROJECT NO:  
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**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region**

Project/Site: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 10/27/2023  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: TP-E1  
 Investigators: S., Simpson Section, Township, Range: S48, T5N, R1W

Landform (hillslope, terrace, etc.): Diked Flood plains Local relief: (concave, convex, none): Concave Slope (%): 0-3%

Subregion (LRR): A Lat: 45.9110192 Long: -122.7659396 Datum: 83

Soil Map Unit Name: Caples silty clay loam NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hydric Soils Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: This test plot was located in the west-central portion of parcel 507350104, within Wetland E. Wetland may be an historic stockpond based on consistent round shape and depth (~4 feet deep).

**VEGETATION – Use scientific names of plants.**

<u>Tree Stratum</u> (Plot size: <u>30</u> ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test Worksheet</b>	
1. <u>Populus balsamifera</u>	<u>90%</u>	<u>yes</u>	<u>FAC</u>	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>1</u> (A)
2. _____	<u>%</u>	_____	_____	Total Number of Dominant Species Across All Strata:	<u>1</u> (B)
3. _____	<u>%</u>	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC	<u>100</u> (A/B)
4. _____	<u>%</u>	_____	_____	<b>Prevalence Index worksheet</b>	
50% = <u>45</u> 20% = <u>18</u>	<u>90%</u>	<u>=Total Cover</u>	_____	Total % Cover of:	Multiply by:
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15</u> ft. radius)				OBL species	_____ x 1= _____
1. <u>Cornus sericea</u>	<u>30%</u>	<u>yes</u>	<u>FACW</u>	FACW species	_____ x 2= _____
2. _____	<u>%</u>	_____	_____	FAC species	_____ x 3= _____
3. _____	<u>%</u>	_____	_____	FACU species	_____ x 4= _____
4. _____	<u>%</u>	_____	_____	UPL species	_____ x 5= _____
5. _____	<u>%</u>	_____	_____	Column Totals:	_____ (A) _____ (B)
50% = <u>15</u> 20% = <u>6</u>	<u>30%</u>	<u>=Total Cover</u>	_____	Prevalence Index = B/A= _____	
<u>Herb Stratum</u> (Plot size: <u>5</u> ft radius)				<b>Hydrophytic Vegetation Indicators:</b>	
1. _____	<u>%</u>	_____	_____	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation	
2. _____	<u>%</u>	_____	_____	<input checked="" type="checkbox"/> 2 – Dominance Test is >50%	
3. _____	<u>%</u>	_____	_____	<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup>	
4. _____	<u>%</u>	_____	_____	<input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
5. _____	<u>%</u>	_____	_____	<input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup>	
6. _____	<u>%</u>	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
7. _____	<u>%</u>	_____	_____	Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
8. _____	<u>%</u>	_____	_____	<b>Hydrophytic Vegetation Present?</b>	
9. _____	<u>%</u>	_____	_____	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
10. _____	<u>%</u>	_____	_____		
11. _____	<u>%</u>	_____	_____		
50% = _____ 20% = _____	<u>%</u>	<u>=Total Cover</u>	_____		
<u>Woody Vine Stratum</u> (Plot size: <u>15</u> ft radius)					
1. _____	<u>%</u>	_____	_____		
2. _____	<u>%</u>	_____	_____		
50% = _____ 20% = _____	<u>%</u>	<u>=Total Cover</u>	_____		
% Bare Ground in Herb Stratum <u>100%</u>					

Remarks:

**SOIL**

Sampling Point: TP-E1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-5	10YR 2/1	100%		%			Loam	
5-8	10YR 2/2	90%		%			Loam	
	10YR 4/2	10%		%				
8-16	10YR 4/2	80%	5YR 4/4	20%	C	M	Loam	
		%		%				
		%		%				
		%		%				
		%		%				

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>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 Minerals (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**

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

<sup>3</sup>Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

**Hydric Soil Present?** Yes  No

Remarks: Trash present within test pit and on ground surface around test plot area.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

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

Secondary Indicators (2 or more required)

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

**Field Observations:**

Surface Water Present? Yes  No  Depth (Inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (Inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (Inches): \_\_\_\_\_  
 (Includes Capillary fringe)

**Wetland Hydrology Present?** Yes  No

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

Remarks: Water appears to flow into the wetland from the field area. Small channels were observed feeding into the wetland.

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

Project/Site: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 10/27/2023  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: TP-E2  
 Investigators: S., Simpson Section, Township, Range: S48, T3N, R1E

Landform (hillslope, terrace, etc.): Diked Flood plains Local relief: (concave, convex, none): Convex Slope (%): 0-3%

Subregion (LRR): A Lat: 45.91099121 Long: -122.7659255 Datum: 83

Soil Map Unit Name: Caples silty clay loam NWI classification: None

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

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

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

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

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

Remarks: This test plot was located in the wet-central portion of parcel 507350104, upslope of Wetland E.

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet	
1. <u>Populus balsamifera</u>	90%	yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>3</u> (A)
2. _____	%			Total Number of Dominant Species Across All Strata:	<u>5</u> (B)
3. _____	%				
4. _____	%				
50% = <u>45</u> 20% = <u>18</u>	90%	=Total Cover			
Percent of Dominant Species That Are OBL, FACW, or FAC				<u>60</u>	(A/B)
Sapling/Shrub Stratum (Plot size: 15 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet	
1. <u>Symphoricarpos albus</u>	50%	yes	FACU	Total % Cover of:	Multiply by:
2. <u>Frangula purshiana</u>	30%	yes	FAC	OBL species _____ x 1= _____	
3. <u>Cornus sericea</u>	20%	no	FACW	FACW species _____ x 2= _____	
4. <u>Corylus comuta</u>	5%	no	FACU	FAC species _____ x 3= _____	
5. _____	%			FACU species _____ x 4= _____	
50% = <u>53</u> 20% = <u>21</u>	105%	=Total Cover		UPL species _____ x 5= _____	
Column Totals:				<u>(A)</u>	<u>(B)</u>
Prevalence Index = B/A= _____					
Herb Stratum (Plot size: 5 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:	
1. <u>Rubus laciniatus</u>	7%	yes	FACU	<input type="checkbox"/> 1 – Rapid Test for Hydrophytic Vegetation	
2. <u>Carex obnupta</u>	3%	yes	OBL	<input checked="" type="checkbox"/> 2 – Dominance Test is >50%	
3. _____	%			<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup>	
4. _____	%			<input type="checkbox"/> 4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
5. _____	%			<input type="checkbox"/> 5 - Wetland Non-Vascular Plants <sup>1</sup>	
6. _____	%			<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
7. _____	%				
8. _____	%				
9. _____	%				
10. _____	%				
11. _____	%				
50% = <u>5</u> 20% = <u>2</u>	10%	=Total Cover			
Woody Vine Stratum (Plot size: 15 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
1. _____	%				
2. _____	%				
50% = <u>   </u> 20% = <u>   </u>	%	=Total Cover			
% Bare Ground in Herb Stratum <u>90%</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Remarks:

**SOIL**

Sampling Point: TP-E2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-14	10YR 3/3	100%		%			Silt loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

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

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

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

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

<sup>3</sup>Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

**Restrictive Layer (if present):**

Type: Root  
 Depth (inches): 14

**Hydric Soil Present?** Yes  No

Remarks: Refusal due to roots at 14 inches below ground surface.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

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

Sparsely Vegetated Concave Surface (B8)

**Field Observations:**

Surface Water Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (Inches): _____	<b>Wetland Hydrology Present?</b>
Water Table Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (Inches): _____	
Saturation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Depth (Inches): _____	

(Includes Capillary fringe)

**Wetland Hydrology Present?** Yes  No

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

Remarks:

## APPENDIX B

---

Pacific Habitat Services Wetland Delineation Report

# **Wetland Delineation for the Bozarth Property, Woodland, Cowlitz County, Washington**

**Prepared for**  
**Holly Huber**  
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**Prepared by**  
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PHS Project Number: 7645  
**April 3, 2023**



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- Figure 7 150-Foot Offset from On-Site Wetlands
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APPENDIX C: Study Area Photos

APPENDIX D: Wetland Rating Forms

## **I. INTRODUCTION**

Pacific Habitat Services, Inc. (PHS) conducted a wetland delineation on Bozarth Property (Parcel IDs: 507350104, 507350103 and 507350102) in Woodland, Washington (Township 5 North, Range 1 West, Sections 13, 14, 23, and 24). This report presents the results of PHS's investigation of the study area. Figures, including maps depicting the locations of wetlands within the study area are in Appendix A. Data sheets documenting delineated wetland boundaries and site conditions are provided in Appendix B. Ground-level photos of the study area are included in Appendix C.

## **II. RESULTS AND DISCUSSION**

### **A. Landscape Setting and Land Use**

The study area is located west of N Pekin Road, approximately 450 feet south of W Scott Avenue in Woodland, Cowlitz County, Washington. The study area consists of three parcels, totaling approximately 69.5 acres. The study area is on all sides by a mixture of agricultural and light industrial land uses. The majority of the site consists of agricultural fields that were planted in grasses for grass seed production at the time of PHS's wetland investigation. A single-family residence and other associated structures are located on the southeastern portion of the study area. Small woodlots dominated by deciduous trees and shrubs are present in the north-central, west-central, and south-central portions of the study area.

Review of the U.S. Geological Survey topographic mapping (Figure 1) shows that the project site is located on a broad, flat terrace of the Columbia River. The USGS mapping shows an unnamed stream crossing the central and northern portions of the study area; however, the site investigation revealed that a stream channel is not present under existing conditions. The project site is within the Burris Creek-Frontal Columbia River Hydrologic Unit (HUC 170800030306).

The United States Department of Agriculture, Natural Resource Conservation Service (USDA-NRCS) maps four soil map units within the study area: Caples silty clay loam, 0 to 3 percent slopes, Clato silt loam, 0 to 3 percent slopes, Newberg fine sandy loam, 0 to 3 percent slopes; and Pilchuck loamy fine sand, 0 to 8 percent slopes. Cato silty clay loam, 0 to 3 percent slopes is classified as a hydric soil, and this map unit is mapped in portions of the northern, western, and southern parts of the study area.

### **B. Site Alterations**

Review of online aerial photographs available for viewing at <https://historicaerials.com> shows that the much of the study area has been in agricultural uses since before 1951. These photos also suggest that the drainageway shown on the USGS topographic mapping (Figure 1) may have been altered between 1951 and 1970. PHS is not aware of recent site alterations that might have affected the location and extent of wetlands within the study area.



### C. Precipitation Data and Analysis

PHS conducted the wetland delineation field work on November 23 and December 6, 2022. PHS used the Direct Antecedent Rainfall Analysis Method (DAREM) for the field date to compare observed precipitation prior to the site visits to normal climatic conditions. Table 1 compares the average monthly precipitation at the Kalama Falls Hatchery, WA WETS Station, to the observed monthly precipitation. As shown in Table 1, observed precipitation for the three months preceding the wetland delineation field work was approximately normal.

**Table 1. Comparison of Average and Observed Monthly Precipitation Prior to the Wetland Delineation Field Work**

Month	Average Precipitation <sup>1</sup>	30% Chance Will Have <sup>1</sup>		Measured Precipitation <sup>2</sup>	Condition Value <sup>3</sup> (1=dry, 2=normal, 3=wet)	Month Weight <sup>4</sup>	Condition Value x Month Weight	Sum Total <sup>5</sup>
		Less Than Average	More Than Average					
November 2022	9.90	7.28	11.92	10.54	Normal (2)	3	6	9 (drier)
October 2022	6.37	4.51	7.52	3.19	Drier (1)	2	2	
September 2022	2.67	1.13	3.16	0.44	Drier (1)	1	1	
<b>Total</b>	<b>18.94</b>	<b>12.92</b>	<b>22.60</b>	<b>14.17</b>				

<sup>1</sup> NRCS WETS Table for the Kalama Falls Hatchery, WA. Source: <http://agacis.rcc-acis.org/?fips=53015>.

<sup>2</sup> Measured rainfall is the precipitation recorded at the Kalama Falls Hatcher, WA. Source: <http://agacis.rcc-acis.org/?fips=53015>.

<sup>3</sup> Condition Value: compared to nearest WETS normal range.

<sup>4</sup> Month Weight: most recent month = 3, 2<sup>nd</sup> most recent month = 2, third most recent month = 1

<sup>5</sup> Sum Total: sum of eighth column: drier (sum 6-9), normal (sum 10-14), wetter (sum 15-18)

Precipitation in the three months preceding the wetland delineation site visit was lower than normal in September and October, and higher than average, but with normal ranges in November. Overall, precipitation was drier than normal, but within normal range for the three months preceding the wetland delineation field work. It is PHS’s best professional judgement that observed hydrologic conditions were not adversely affected by precipitation.

### D. Methods

PHS investigated the study area for the presence of jurisdictional wetlands based on observation of wetland hydrology, hydric soils, and hydrophytic vegetation indicators in accordance with the Routine On-site Determination, as described in the *Corps of Engineers Wetland Delineation Manual, Wetlands Research Program Technical Report Y 87 1* (“The 1987 Manual”) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region*. The conclusions drawn by PHS were based on the methods outlined in the regional supplement. Prior to conducting the site investigation, PHS examined applicable U.S. Geological Service (USGS) topographic mapping (Figure 1), National Wetlands Inventory (NWI) mapping (Figure 3), NRCS Soil Survey mapping (Figure 4), and a recent aerial photograph (Figure 5) to identify potential wetland areas.

At the time of the site investigation, PHS examined vegetation, soils, and hydrology within the study area to define areas that meet the three wetland parameters (hydrophytic vegetation, hydric soils, and wetland hydrology), in accordance with the USACE Wetland Delineation Manual and the Western Mountains, Valleys, and Coast Regional Supplement. PHS collected data at wetland and upland sample plots at representative locations along the wetland boundaries to document the vegetation, soil, and hydrologic characteristics used to determine the wetland boundaries. PHS also collected data at sample plots at non-wetland locations where mapped hydric soils or local topographic conditions suggested that wetlands might potentially occur. Data collected at representative sample plots were recorded on the wetland determination data forms, which are included in Appendix C. PHS conducted a functional assessment of the delineated wetlands using the *Washington State Wetland Rating System for Western Washington: 2014 Update*. Wetland Rating Forms are provided in Appendix D.

## **E. Description of all Wetlands and Non-Wetland Waters**

PHS identified and delineated four potentially jurisdictional wetlands within the study area. The total area of wetlands within the study area is approximately 144,136 square feet (3.31 acres). No non-wetland waters (i.e., streams or other waterbodies) are present within the study area. Brief descriptions of the wetlands are provided below.

### **Wetland A**

Wetland A is a palustrine, forested/scrub-shrub/emergent, seasonally flooded/saturated (PFOE/PEME) wetland with a hydrogeomorphic (HGM) class of Depressional. Wetland A is located in the southern portion of the study area. The area of Wetland A is approximately 110,811 square feet (2.54 acres).

The westernmost portion of Wetland A is forested; the northeastern portion of the wetland and the northern fringe that extends into the agricultural field are dominated by herbaceous vegetation; and the central and southern portions of the wetland are dominated by dense shrubs. Sample Point 7 characterizes the forested wetland community in the western part of Wetland A. In this area, the plant community is dominated by black cottonwood (*Populus balsamifera* ssp. *trichocarpa*, FAC) in the forest canopy and red-twig dogwood (*Cornus alba*, FACW) in the understory. No herbaceous species are present at the sample point location. The soils meet the Redox Dark Surface hydric soils indicator. The soil was not saturated at the time of the wetland delineation site visit, but oxidized rhizospheres provided evidence of wetland hydrology. In the adjacent upland (characterized by Sample Point 8), the plant community is hydrophytic. Dominant species include black cottonwood, red-twig dogwood, Douglas hawthorn (*Crataegus douglasii*; FAC), sword fern (*Polystichum munitum*; FACU), and California dewberry (*Rubus ursinus*; FACU). However, the soils are not hydric, and there are no indicators of wetland hydrology.

Sample Point 17 characterizes the scrub-shrub wetland community in the central and southern parts of Wetland A. In this area, the plant community is dominated by willow (*Salix* sp., presumed FAC or wetter) and stinging nettle (*Urtica dioica*, FAC). The soils meet the Depleted Matrix hydric soils indicator. The soil was not saturated at the time of the wetland delineation site visit, but geomorphic position and a positive FAC- provided evidence of wetland hydrology. In the adjacent upland (characterized by Sample Point 18), the plant community is hydrophytic, with dominant species including willow, stinging nettle, and California dewberry. The soils are not hydric, and there are no indicators of wetland hydrology.

Sample Point 15 characterizes the emergent wetland community in the northeastern portion of Wetland A. In this area, the plant community is dominated by reed canarygrass (*Phalaris arundinaceus*, FACW). The soils meet the Redox Dark Surface hydric soils indicator. The soil was not saturated at the time of the wetland delineation site visit, but geomorphic position and a positive FAC- provided evidence of wetland hydrology. The adjacent upland is characterized by Sample Points 14 and 16. Sample Point 14 is in the agricultural field to the north of the wetland, and Sample Point 16 is in the unmowed field to the south. The plant communities at both sample points are hydrophytic. However, the soils are not hydric, and there are no indicators of wetland hydrology.

Throughout the wetland, a seasonally high water table appears to be the primary source of hydrology for the wetland. There was no ponded water or evidence of ponding within the wetland at the time of PHS's wetland investigation. Wetland A has a narrow, constricted wetland connection to an off-site, excavated ditch that extends in an east-west orientation to the south of the southern boundary of the study area. The ditch has hydric soil, but it is not vegetated. The ditch does not have an ordinary high water mark, and there was no surface water in the ditch at the time of PHS's wetland investigation.

### **Wetland B**

Wetland B is a palustrine forested wetland in the north-central portion of the study area. Wetland B continues outside of the study area to the northeast. The Cowardin classification of each is palustrine, forested, seasonally flooded/saturated (PFOE) wetland; the HGM classification is Depressional. The area of Wetland B within the study area is approximately 32,697 square feet (0.75 acre).

Sample Points 9 and 11 characterize Wetland B. Dominant woody plant species in the wetland include Pacific willow (*Salix lasiandra*, FACW) and red-twig dogwood. The soils meet the Redox Dark Surface or Depleted Matrix hydric soils indicator. The soil was not saturated at the time of the wetland delineation site visit, but a sparsely vegetated concave surface, geomorphic position and a positive FAC- provided evidence of wetland hydrology. Sample Points 10 and 12 characterize the adjacent non-wetland communities. The plant community is hydrophytic at Sample Point 12 but non-hydrophytic at Sample Point 10. However, the soils are not hydric, and there are no indicators of wetland hydrology at either sample point.

A seasonally high water table appears to be the primary source of hydrology in Wetland B.

### **Wetlands C and D**

Wetlands C and D are very small, isolated depressions in the west-central portion of the west-central portion of the study area. The Cowardin classification of the wetlands is palustrine, forested, seasonally saturated (PFOE); the hydrogeomorphic (HGM) class is Depressional. Wetland C continues outside of the study area to the east. The area of Wetland C is approximately 315 square feet (0.007 acre), and the area of Wetland D is approximately 313 square feet (0.007 acre).

Sample Points 2 and 4 characterize Wetlands C and D. Within the wetlands, the forest canopy is dominated by black cottonwood, with red-twig dogwood and Himalayan blackberry (*Rubus armeniacus*, FAC) dominant in the forest understory. Slough sedge (*Carex obnupta*, OBL) is a dominant species in the herbaceous layer. The soils meet the Redox Dark Surface or Depleted Matrix hydric soils indicator. The soil was not saturated at the time of the wetland delineation site

visit, but oxidized rhizospheres, geomorphic position and a positive FAC- provided evidence of wetland hydrology. In the adjacent uplands (characterized by Sample Points 1 and 3), the soils are not hydric, and there are no indicators of wetland hydrology.

Throughout the wetland, a seasonally high water table appears to be the primary source of hydrology for Wetlands C and D.

## F. Deviation from National Wetland Inventory

The National Wetland Inventory (NWI) mapping shows wetlands in the vicinity of Wetlands A and B, though the location and extent of the wetlands depicted on the NWI mapping do not correspond exactly to the delineated wetlands.

## G. Mapping Method

PHS used blue flagging tape to delineate the wetland boundaries, and pink flagging tape to mark sample point locations. Locations of flagged wetland boundaries and sample points were surveyed by Gibbs & Olson, Inc. with sub-centimeter accuracy.

## H. Additional Information

### Wetland Functional Ratings and Wetland Buffers

PHS evaluated the functions and values of wetlands within the study area based on the methodology prescribed by Washington State Wetland Rating System for Western Washington: 2014 Update. The results of the functions and values evaluation are summarized in Table 2, below. Wetland Rating Forms are provided in Appendix D.

**Table 2. Summary of Wetland Functional Rating Results**

Wetland ID	Wetland Rating Score				Wetland Category	Land Use Intensity	Buffer Width
	Water Quality	Hydrologic	Habitat	Total			
Wetland A	6	5	5	16	III	High	150 ft
Wetland B	6	5	4	15	IV	High	50 ft
Wetland C	6	5	4	15	IV	High	n/a
Wetland D	6	5	4	15	IV	High	n/a/office

Based on the results of the functional assessment, Wetland A is classified as a Category III wetland, and Wetlands B, C, and D are classified as Category IV wetlands. In accordance with Chapter 15.08.400 of the Woodland Municipal Code, wetland buffers for Category III wetlands are based on the category of wetland, the intensity of the proposed land use, and the level of function for habitat. Wetland buffers for Category IV wetlands are based on the category of wetland and the intensity of the proposed land use. The level of function for habitat does not figure into the buffer width determination for Category IV wetlands. Because the proposed land use is commercial/industrial, the land use intensity used to determine the buffer widths is “high”, in accordance with Chapter 15.08.400 of the Municipal Code. Wetland A is a Category III wetland with a moderate function for habitat; therefore, Wetland A has a 150-foot buffer in accordance with Table 15.08.400-1 in Chapter 15.08.400. Wetlands B is a Category IV wetland with a “high” land use intensity rating; therefore, it has a 50-foot buffer. Because Wetlands C and D are less than 1000 square feet each and

do not contain federally listed species or critical habitat, they are exempt from the buffer provisions contained in Chapter 15.08.400 of the Woodland Municipal Code. The buffers associated with wetlands within the study area are depicted on Figures 6, 6A, 6B, and 6C.

## **I. Results and Conclusions**

PHS delineated four potentially jurisdictional wetlands within the study area. The total area of wetlands within the study area is approximately 144,136 square feet (3.31 acres). All wetlands within the study area are Category IV wetlands based on the Washington State Wetland Rating System for Western Washington. In accordance with City of Woodland Municipal Code Chapter 15.08.400, all of the wetlands within the study area have a 50-foot buffer.

## **J. Disclaimer**

This report documents the investigation, best professional judgment, and conclusions of the investigators. It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk unless it has been reviewed and approved in writing by the Washington Department of Ecology in accordance with Chapter 90.48 RCW or the U.S. Army Corps of Engineers.

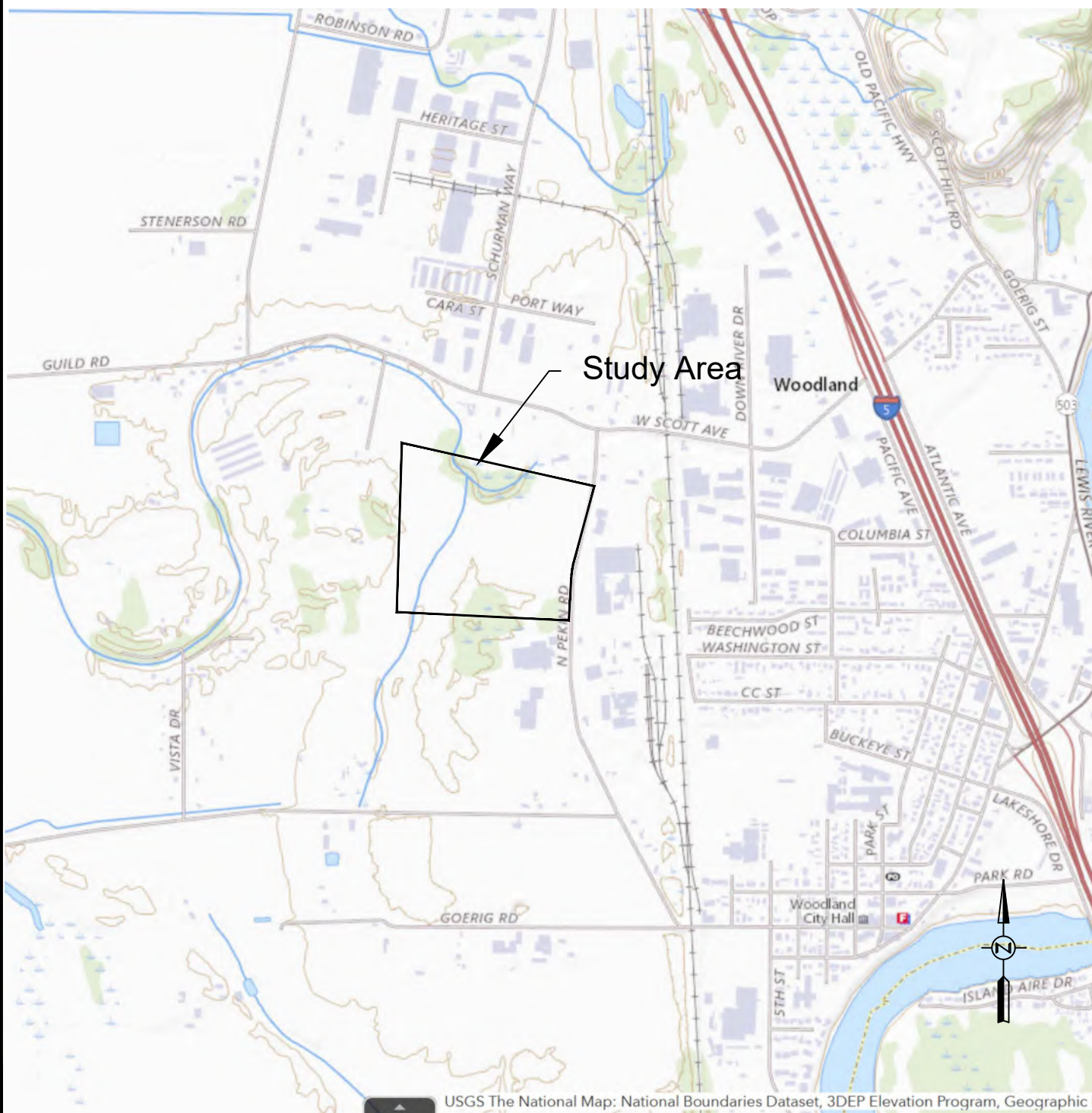
### III. REFERENCES

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# Appendix A

## Figures





Source: The National Map Advanced Viewer  
 (<https://apps.nationalmap.gov/viewer/>)



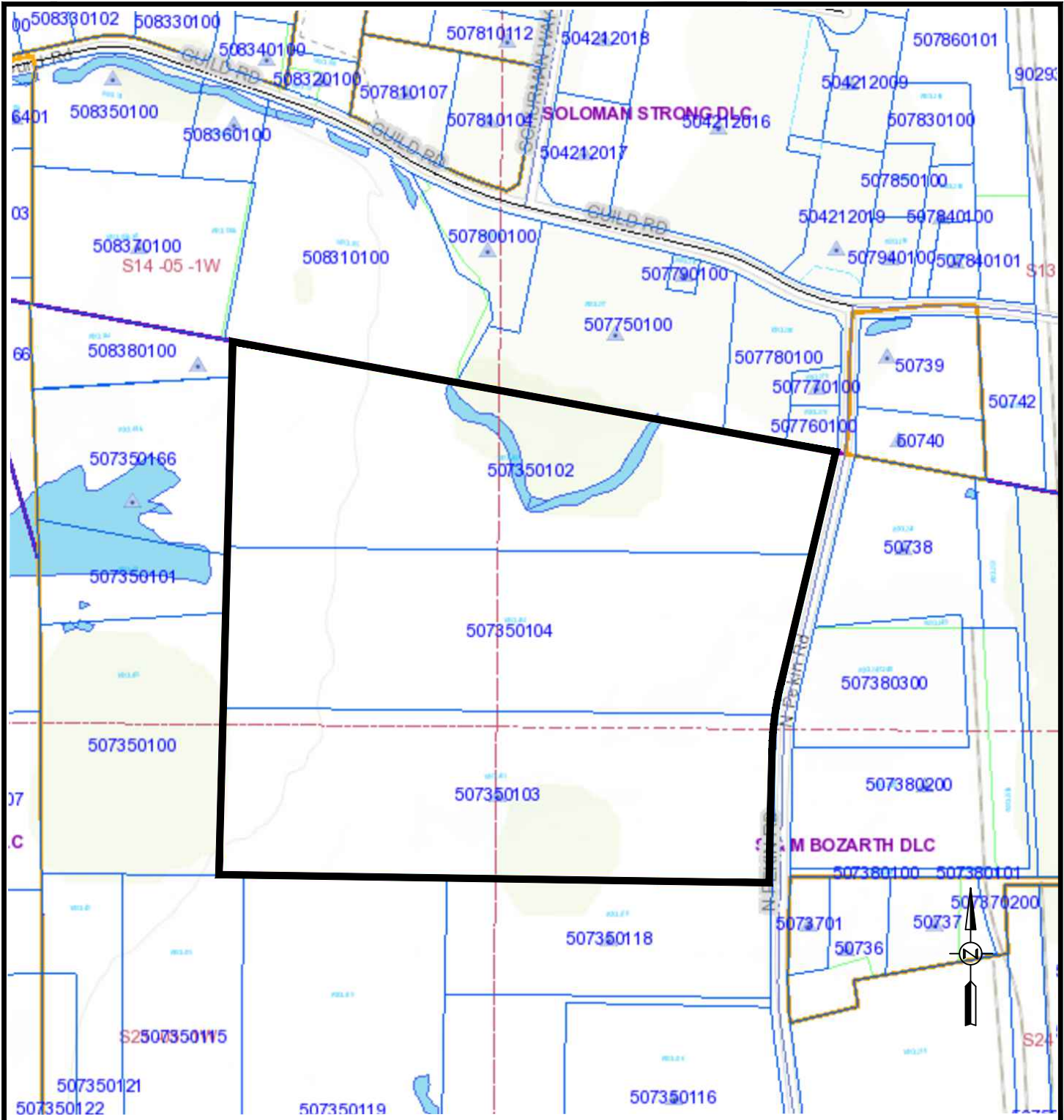
Pacific Habitat Services, Inc.  
 9450 SW Commerce Circle, Suite 180 Wilsonville, Oregon 97070  
 Phone: (503) 570-0800 Fax: (503) 570-0855

Project Location and Topography  
 Bozarth Property - Woodland, Washington

FIGURE  
**1**

3/20/2023





Source: Cowlitz County NetMaps  
<https://cowlitz.maps.arcgis.com/apps/webappviewer/index.htm>



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Tax Lot Map

Bozarth Property - Woodland, Washington

FIGURE  
**2**

3/20/2023



Source: USFWS, National Wetlands  
Inventory Wetlands Mapper  
(<https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/>)

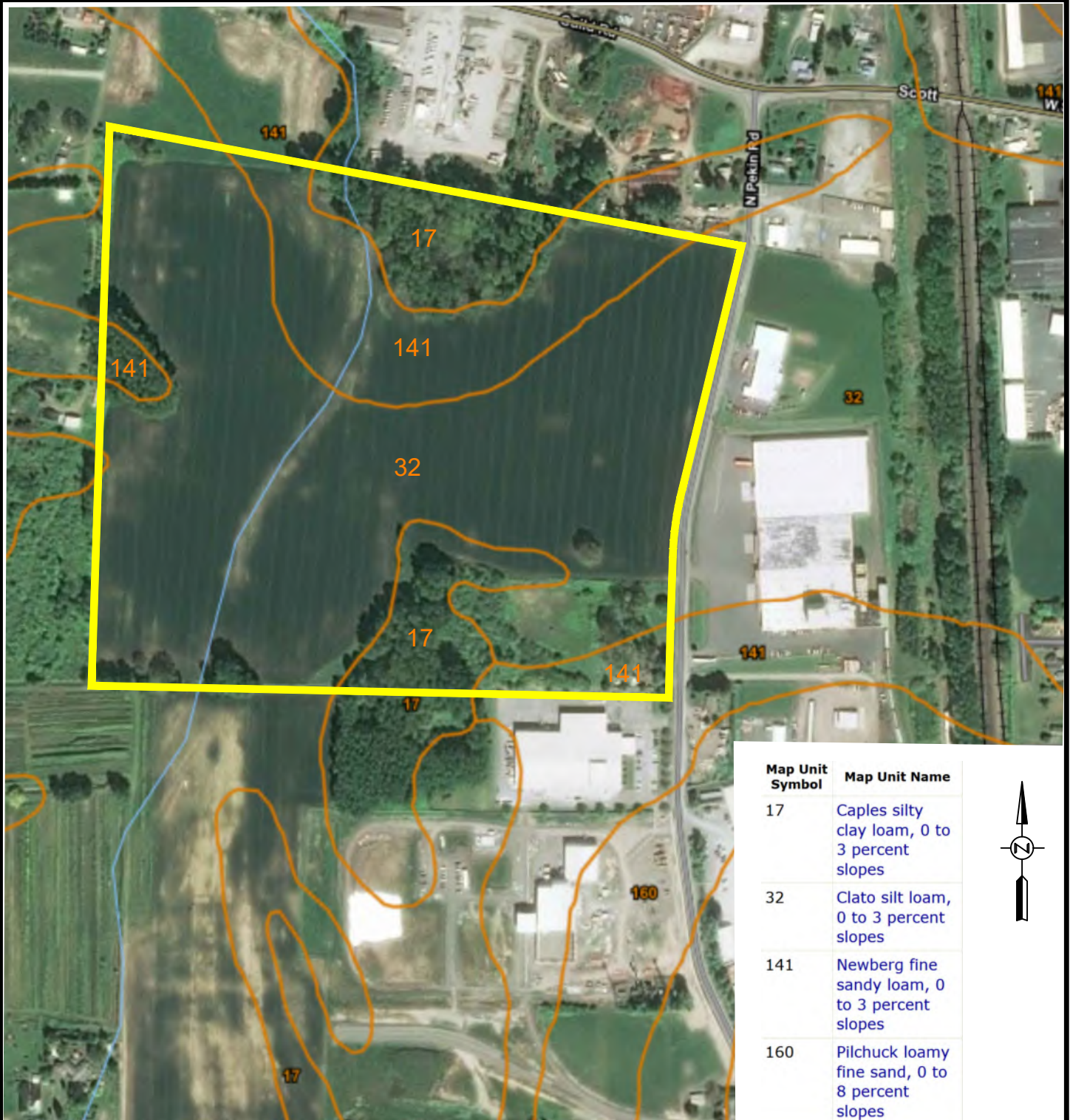


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National Wetlands Inventory Map  
Bozarth Property - Woodland, Washington

FIGURE  
**3**

3/20/2023



Source: Web Soil Survey  
 (<https://websoilsurvey.sc.egov.usda.gov/app/WebSoilSurvey.aspx>)



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Soil Survey Map

Bozarth Property - Woodland, Washington

FIGURE

4

3/20/2023



Source: Google Earth 2023

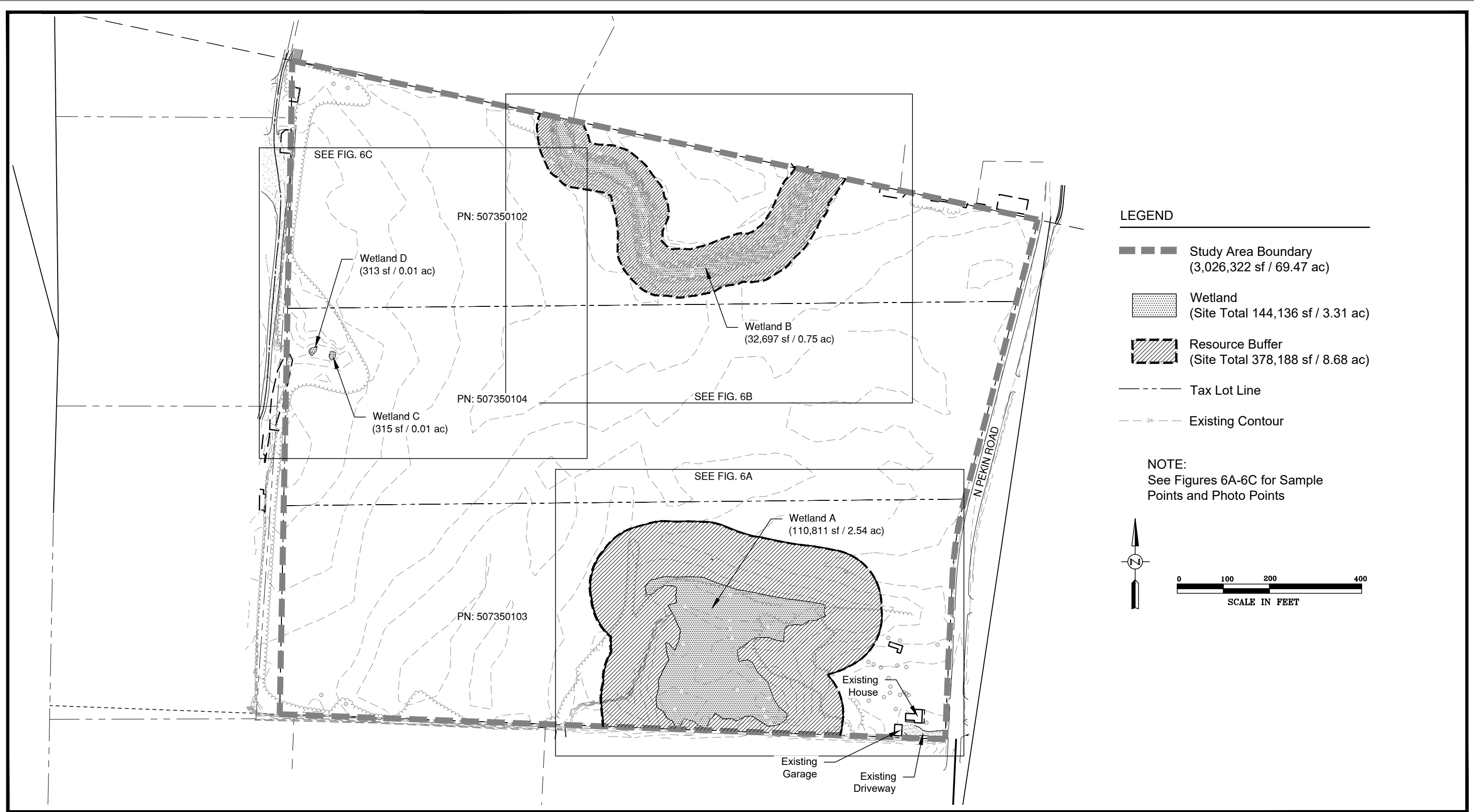



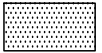

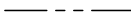

Pacific Habitat Services, Inc.  
9450 SW Commerce Circle, Suite 180 Wilsonville, Oregon 97070  
Phone: (503) 570-0800 Fax: (503) 570-0855

Recent Aerial Photograph  
Bozarth Property - Woodland, Washington

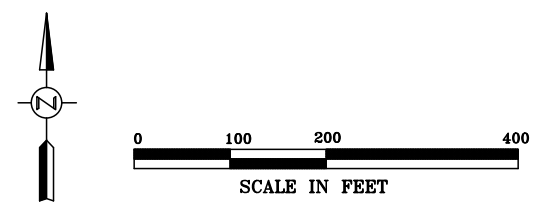
FIGURE  
**5**

3/20/2023



- LEGEND**
-  Study Area Boundary  
(3,026,322 sf / 69.47 ac)
  -  Wetland  
(Site Total 144,136 sf / 3.31 ac)
  -  Resource Buffer  
(Site Total 378,188 sf / 8.68 ac)
  -  Tax Lot Line
  -  Existing Contour

**NOTE:**  
See Figures 6A-6C for Sample  
Points and Photo Points



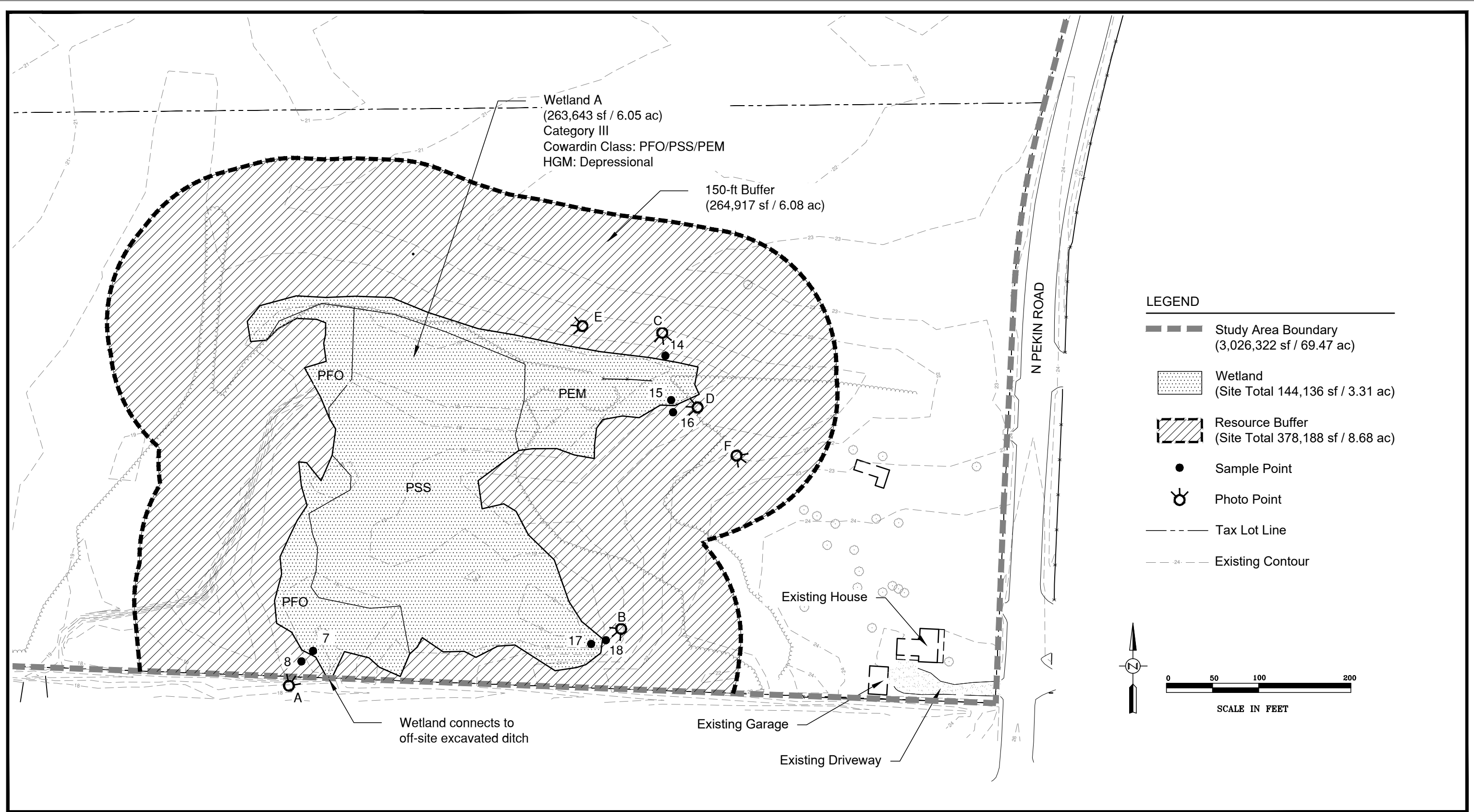
Survey provided by  
Gibbs & Olson, Inc.  
Survey and Sample point accuracy  
is sub-centimeter.

Wetland Delineation Overview  
Bozarth Property - Woodland, Washington

FIGURE  
**6**

2-9-2023

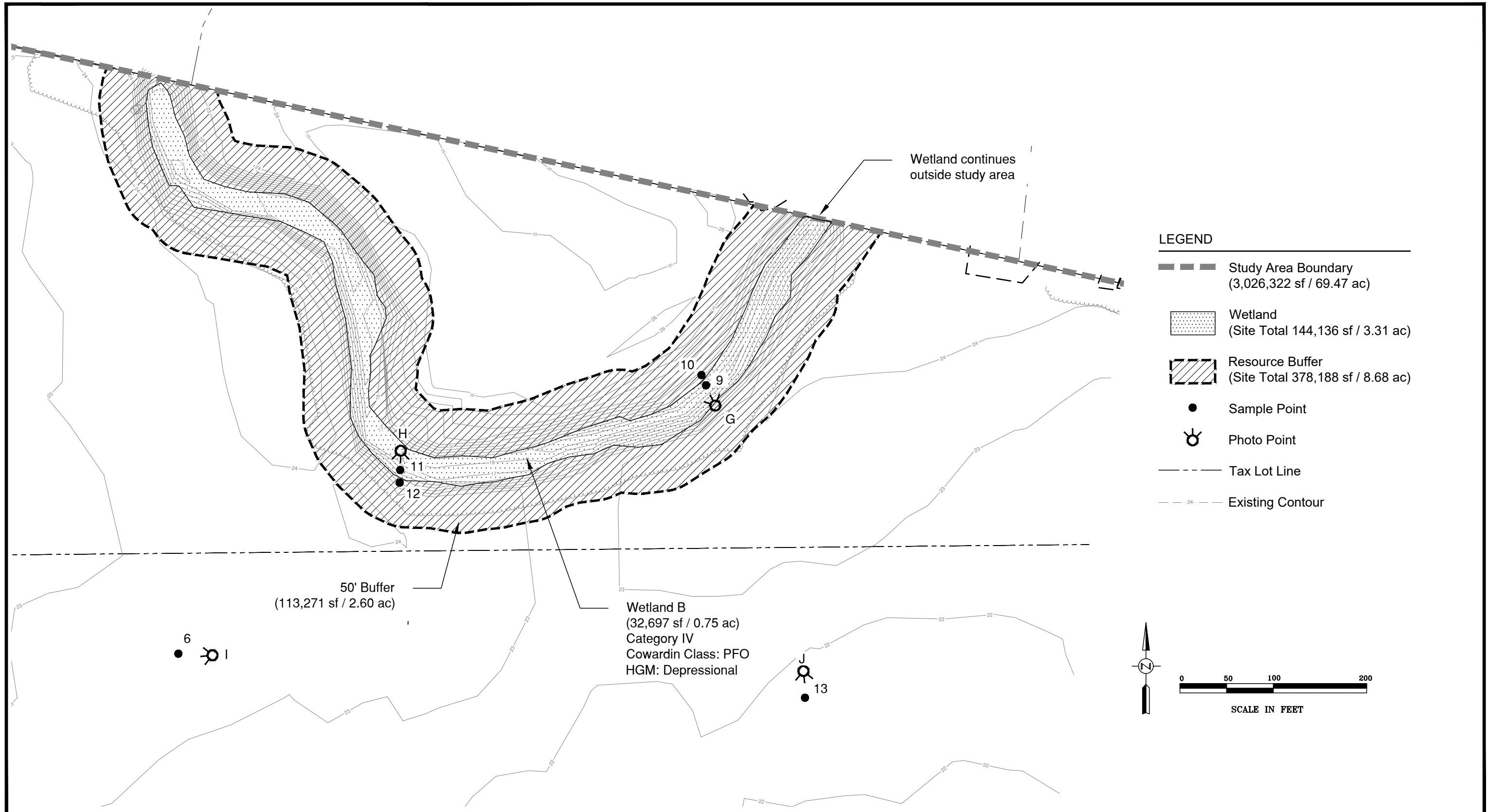
Pacific Habitat Services, Inc.  
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Survey provided by  
 Gibbs & Olson, Inc.  
 Survey and sample point accuracy  
 is sub-centimeter.

Wetland Delineation  
 Bozarth Property - Woodland, Washington

FIGURE  
**6A**

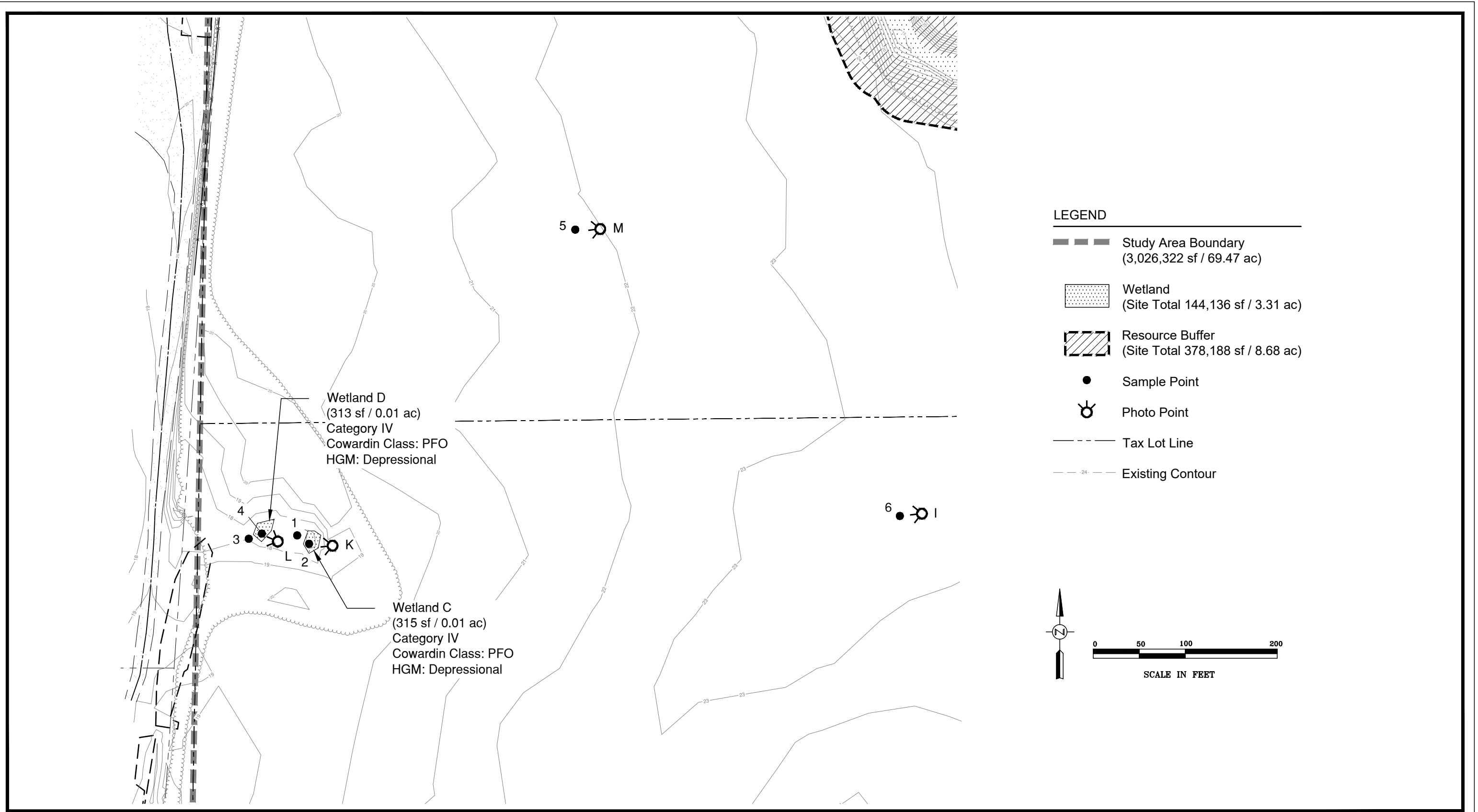


Survey provided by  
Gibbs & Olson, Inc.  
Survey and sample point accuracy  
is sub-centimeter.

Wetland Delineation  
Bozarth Property - Woodland, Washington

FIGURE  
**6B**

2-9-2023



Survey provided by  
 Gibbs & Olson, Inc.  
 Survey and Sample point accuracy  
 is sub-centimeter.





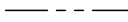

Wetland Delineation  
 Bozarth Property - Woodland, Washington

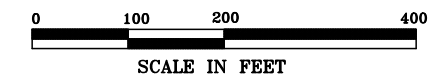
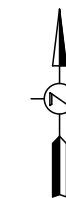
FIGURE  
**6C**

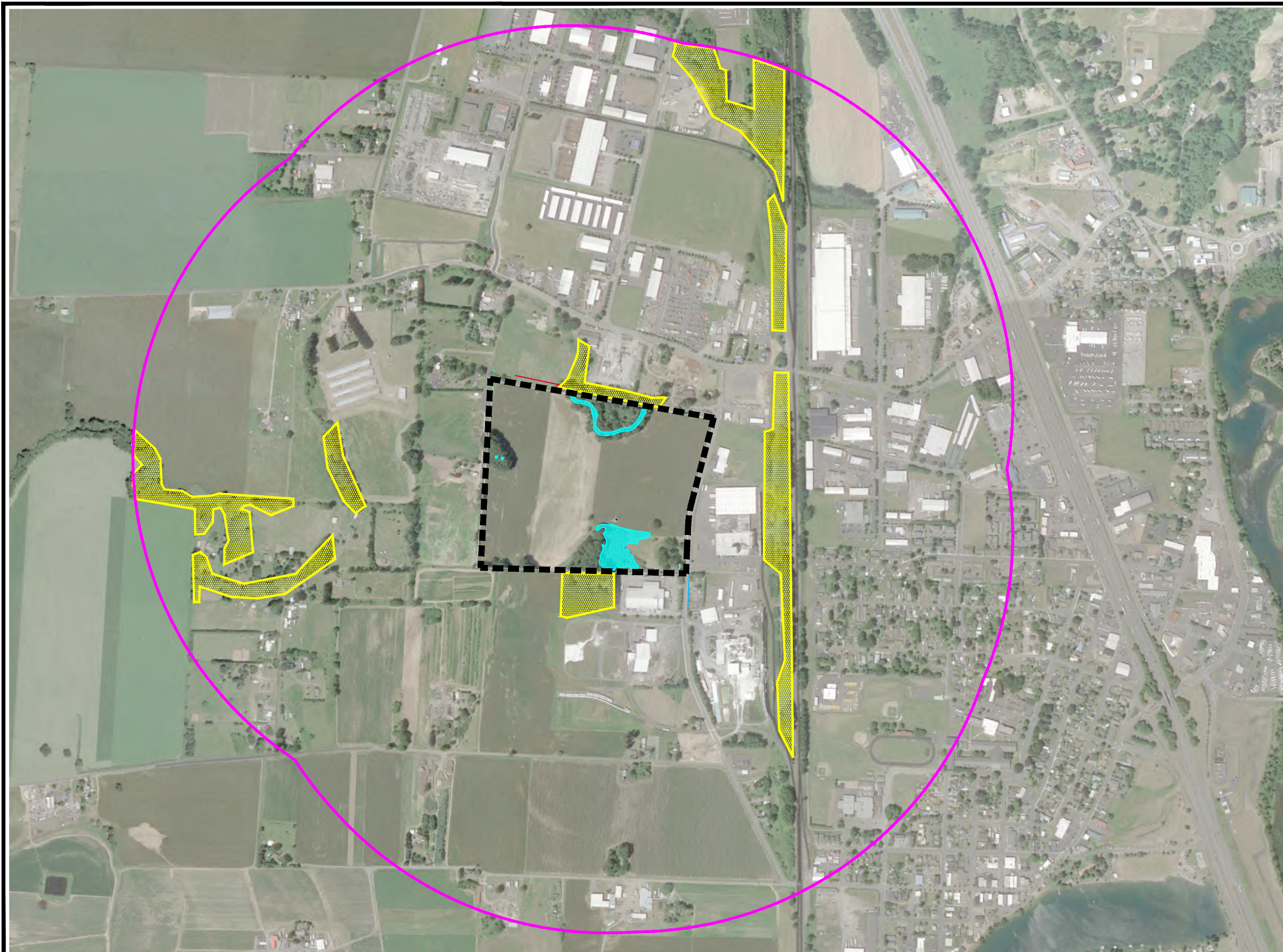




**LEGEND**

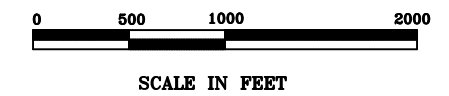
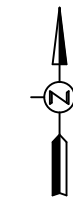
-  Study Area Boundary  
(3,026,322 sf / 69.47 ac)
-  Wetland  
(Site Total 144,136 sf / 3.31 ac)
-  50 Foot Resource Buffer  
(Site Total 224,172 sf / 5.15 ac)
-  150 Foot Offset
-  Tax Lot Line
-  Existing Contour

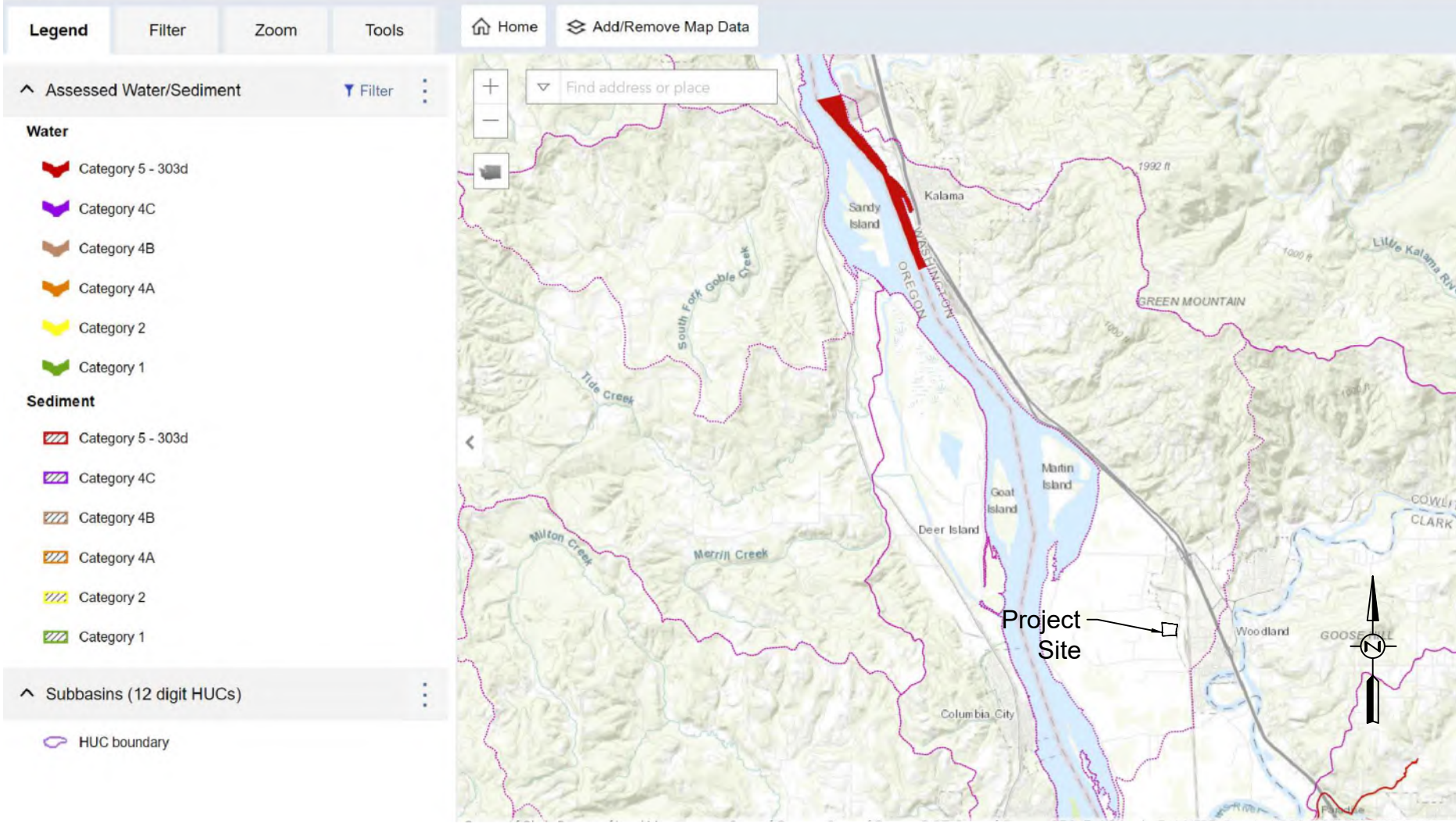




**LEGEND**

-  Study Area Boundary
-  Wetland
-  Relatively Undisturbed Habitat
-  1-kilometer Offset





Pacific Habitat Services, Inc.  
9450 SW Commerce Circle, Suite 180 Wilsonville, Oregon 97070  
Phone: (503) 570-0800   Fax: (503) 570-0855

Source: Washington Department of Ecology, Water Quality Atlas (<https://apps.ecology.wa.gov/waterqualityatlas/wqa/map>)

303(d)-Listed Waters in the Basin  
Bozarth Property - Woodland, Washington

**FIGURE**  
**9**

3/23/2023

# Appendix B

## Wetland Determination Data Sheets



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

Project/Site: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 11/23/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 1  
 Investigator(s): TF/MS Section, Township, Range: Section 14, Township 5N, Range 1W  
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 1%  
 Subregion (LRR): LRR A Lat: 45.9112 Long: -122.7664 Datum: WGS84  
 Soil Map Unit Name: Caples silty clay loam 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 N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N 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 <u>X</u>	Is Sampled Area within a Wetland?	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			
Remarks:					

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (plot size: <u>30</u> )				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That are OBL, FACW, or FAC: <u>50%</u> (A/B)
1 <u>Populus balsamifera</u>	<u>70</u>	<u>X</u>	<u>FAC</u>	
2 _____				
3 _____				
4 _____				
	<u>70</u>	= Total Cover		
<b>Sapling/Shrub Stratum</b> (plot size: <u>15</u> )				
1 <u>Cornus alba</u>	<u>80</u>	<u>X</u>	<u>FACW</u>	
2 <u>Symphoricarpos albus</u>	<u>20</u>	<u>X</u>	<u>FACU</u>	
3 _____				
4 _____				
5 _____				
	<u>100</u>	= Total Cover		
<b>Herb Stratum</b> (plot size: <u>5</u> )				
1 <u>Rubus ursinus</u>	<u>80</u>	<u>X</u>	<u>FACU</u>	
2 _____				
3 _____				
4 _____				
5 _____				
6 _____				
7 _____				
8 _____				
	<u>80</u>	= Total Cover		
<b>Woody Vine Stratum</b> (plot size: _____)				
1 _____				
2 _____				
	<u>0</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>20</u>				
<b>Prevalence Index Worksheet:</b> Total % Cover of _____ Multiply by: OBL Species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC Species _____ x 3 = <u>0</u> FACU Species _____ x 4 = <u>0</u> UPL Species _____ x 5 = <u>0</u> Column Totals <u>0</u> (A) <u>0</u> (B)  Prevalence Index =B/A = <u>#DIV/0!</u>				
<b>Hydrophytic Vegetation Indicators:</b> _____ 1- Rapid Test for Hydrophytic Vegetation _____ 2- Dominance Test is >50% _____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup> _____ 4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet) _____ 5- Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>X</u>				
Remarks:				

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-11	10YR 2/2	100					Silt Loam	
11-14	10YR 3/2	60	7.5YR 3/4	10	C	M	Silty Clay Loam	Medium
11-14	10YR 4/2	30					Silty Clay Loam	
14-18	10YR 5/2	80	7.5YR 3/4	20	C	M	Silty Clay Loam	Medium

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p> <p>Remarks: _____</p>	<p><b>Hydric Soil Present?</b> Yes _____ No <u>X</u></p>
---	--

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> Fac-Neutral Test (D5)
	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>&gt;18</u></p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>&gt;18</u> (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u></p>
--	--

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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 11/23/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 2  
 Investigator(s): MS/TF Section, Township, Range: Section 14, Township 5N, Range 1W  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 1%  
 Subregion (LRR): LRR A Lat: 45.9112 Long: -122.7664 Datum: WGS84  
 Soil Map Unit Name: Caples silty clay loam 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 N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is Sampled Area within a Wetland?</b>	Yes <u>X</u>	No _____
Hydric Soil Present? Yes <u>X</u> No _____		Yes <u>X</u>	No _____
Wetland Hydrology Present? Yes <u>X</u> No _____			
Remarks:			

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (plot size: <u>30</u> )				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That are OBL, FACW, or FAC: <u>67%</u> (A/B)
1 <u>Populus balsamifera</u>	<u>65</u>	<u>X</u>	<u>FAC</u>	
2 _____				
3 _____				
4 _____				
	<u>65</u>	= Total Cover		
<b>Sapling/Shrub Stratum</b> (plot size: <u>15</u> )				
1 <u>Cornus alba</u>	<u>80</u>	<u>X</u>	<u>FACW</u>	
2 <u>Rubus ursinus</u>	<u>30</u>	<u>X</u>	<u>FACU</u>	
3 _____				
4 _____				
5 _____				
	<u>110</u>	= Total Cover		
<b>Herb Stratum</b> (plot size: _____)				
1 _____				
2 _____				
3 _____				
4 _____				
5 _____				
6 _____				
7 _____				
8 _____				
	<u>0</u>	= Total Cover		
<b>Woody Vine Stratum</b> (plot size: _____)				
1 _____				
2 _____				
	<u>0</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>0</u>				
<b>Prevalence Index Worksheet:</b> Total % Cover of _____ Multiply by: OBL Species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC Species _____ x 3 = <u>0</u> FACU Species _____ x 4 = <u>0</u> UPL Species _____ x 5 = <u>0</u> Column Totals <u>0</u> (A) <u>0</u> (B)  Prevalence Index =B/A = <u>#DIV/0!</u>				
<b>Hydrophytic Vegetation Indicators:</b> _____ <u>X</u> 1- Rapid Test for Hydrophytic Vegetation _____ 2- Dominance Test is >50% _____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup> _____ 4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet) _____ 5- Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____				
Remarks:				

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR 4/2	90	7.5YR 3/4	10	C	M	Silt Loam	
4-14	10YR 4/2	80	5YR 4/6	20	C	M,PL	Silty Clay Loam	Medium

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

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

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: _____	

**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

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

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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 11/23/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 3  
 Investigator(s): TF/MS Section, Township, Range: Section 14, Township 5N, Range 1W  
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 1%  
 Subregion (LRR): LRR A Lat: 45.9112 Long: -122.7664 Datum: WGS84  
 Soil Map Unit Name: Caples silty clay loam 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 N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks:			

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
Tree Stratum (plot size: <u>30</u> )				Number of Dominant Species
1 <u>Populus balsamifera</u>	<u>70</u>	<u>X</u>	<u>FAC</u>	That are OBL, FACW, or FAC: <u>3</u> (A)
2 <u>Salix lasiandra</u>	<u>15</u>		<u>FACW</u>	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3 <u>Acer macrophyllum</u>	<u>15</u>		<u>FACU</u>	Percent of Dominant Species That are OBL, FACW, or FAC: <u>75%</u> (A/B)
4 _____				Prevalence Index Worksheet: Total % Cover of _____ Multiply by: _____ OBL Species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC Species _____ x 3 = <u>0</u> FACU Species _____ x 4 = <u>0</u> UPL Species _____ x 5 = <u>0</u> Column Totals <u>0</u> (A) <u>0</u> (B)  Prevalence Index =B/A = <u>#DIV/0!</u>
	<u>100</u>	= Total Cover		
Sapling/Shrub Stratum (plot size: <u>15</u> )				
1 <u>Cornus alba</u>	<u>60</u>	<u>X</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: _____ 1- Rapid Test for Hydrophytic Vegetation <u>X</u> 2- Dominance Test is >50% _____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup> _____ 4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet) _____ 5- Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2 <u>Ribes sp</u>	<u>10</u>		<u>(FAC)</u>	
3 <u>Symphoricarpos albus</u>	<u>10</u>		<u>FACU</u>	
4 _____				
5 _____				
	<u>80</u>	= Total Cover		
Herb Stratum (plot size: <u>5</u> )				
1 <u>Rubus ursinus</u>	<u>70</u>	<u>X</u>	<u>FACU</u>	
2 <u>Urtica dioica</u>	<u>20</u>	<u>X</u>	<u>FAC</u>	
3 _____				
4 _____				
5 _____				
6 _____				
7 _____				
8 _____				
	<u>90</u>	= Total Cover		
Woody Vine Stratum (plot size: _____)				
1 _____				
2 _____				
	<u>0</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>10</u>				

Remarks:

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-11	10YR 2/2	100					Silty Clay Loam	
11-18	10YR 3/2	90	7.5YR 3/4	10	C	M	Silty Clay Loam	Medium

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p> <p>Remarks: _____</p>	<p><b>Hydric Soil Present?</b> Yes _____ No <u>X</u></p>
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**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> Fac-Neutral Test (D5)
	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>&gt;18</u></p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>&gt;18</u> (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b></p> <p>Yes _____ No <u>X</u></p>
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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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 11/23/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 4  
 Investigator(s): MS/TF Section, Township, Range: Section 14, Township 5N, Range 1W  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): 1%  
 Subregion (LRR): \_\_\_\_\_ Lat: 45.9112 Long: -122.7664 Datum: WGS84  
 Soil Map Unit Name: Caples silty clay loam 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 N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u>	No _____	
Wetland Hydrology Present?	Yes <u>X</u>	No _____	
Remarks:			

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (plot size: _____)				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That are OBL, FACW, or FAC: <u>100%</u> (A/B)
1 _____	_____	_____	_____	
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>Sapling/Shrub Stratum</b> (plot size: <u>15</u> )				
1 <u>Cornus alba</u>	<u>80</u>	<u>X</u>	<u>FACW</u>	
2 <u>Rubus ursinus</u>	<u>10</u>	_____	<u>FACU</u>	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
	<u>90</u>	= Total Cover		
<b>Herb Stratum</b> (plot size: <u>5</u> )				
1 <u>Carex obnupta</u>	<u>30</u>	<u>X</u>	<u>OBL</u>	
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
6 _____	_____	_____	_____	
7 _____	_____	_____	_____	
8 _____	_____	_____	_____	
	<u>30</u>	= Total Cover		
<b>Woody Vine Stratum</b> (plot size: _____)				
1 _____	_____	_____	_____	
2 _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>% Bare Ground in Herb Stratum</b> <u>70</u>				
<b>Prevalence Index Worksheet:</b> Total % Cover of _____ Multiply by: _____ OBL Species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC Species _____ x 3 = <u>0</u> FACU Species _____ x 4 = <u>0</u> UPL Species _____ x 5 = <u>0</u> Column Totals <u>0</u> (A) <u>0</u> (B) Prevalence Index =B/A = <u>#DIV/0!</u>				
<b>Hydrophytic Vegetation Indicators:</b> _____ 1- Rapid Test for Hydrophytic Vegetation <u>X</u> 2- Dominance Test is >50% _____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup> _____ 4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet) _____ 5- Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____				
Remarks:				

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
<b>0-4</b>	<b>10YR 3/2</b>	<b>100</b>						
<b>4-15</b>	<b>10YR 3/1</b>	<b>90</b>	<b>7.5YR 4/6</b>	<b>10</b>	<b>C</b>	<b>M,PL</b>		

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

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)** **Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

**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)		Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input checked="" type="checkbox"/> Fac-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No \_\_\_\_\_ Depth (inches): \_\_\_\_\_

Water Table Present? Yes \_\_\_\_\_ No \_\_\_\_\_ Depth (inches): \_\_\_\_\_

Saturation Present? Yes \_\_\_\_\_ No \_\_\_\_\_ Depth (inches): \_\_\_\_\_  
(includes capillary fringe)

**Wetland Hydrology Present? Yes X No \_\_\_\_\_**

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

Remarks: \_\_\_\_\_

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

Project/Site: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 11/23/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 5  
 Investigator(s): MS/TF Section, Township, Range: Section 14, Township 5N, Range 1W  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 1%  
 Subregion (LRR): LRR A Lat: 45.9118 Long: -122.7648 Datum: WGS84  
 Soil Map Unit Name: Cato silt loam 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 N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			

Remarks:

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
<b>Tree Stratum</b> (plot size: _____)				Number of Dominant Species	
1	_____	_____	_____	That are OBL, FACW, or FAC: <u>1</u> (A)	
2	_____	_____	_____	Total Number of Dominant	
3	_____	_____	_____	Species Across All Strata: <u>1</u> (B)	
4	_____	_____	_____	Percent of Dominant Species	
	<u>0</u>	= Total Cover		That are OBL, FACW, or FAC: <u>100%</u> (A/B)	
<b>Sapling/Shrub Stratum</b> (plot size: _____)				<b>Prevalence Index Worksheet:</b>	
1	_____	_____	_____	Total % Cover of _____ Multiply by: _____	
2	_____	_____	_____	OBL Species _____ x 1 = <u>0</u>	
3	_____	_____	_____	FACW species _____ x 2 = <u>0</u>	
4	_____	_____	_____	FAC Species _____ x 3 = <u>0</u>	
5	_____	_____	_____	FACU Species _____ x 4 = <u>0</u>	
	<u>0</u>	= Total Cover		UPL Species _____ x 5 = <u>0</u>	
<b>Herb Stratum</b> (plot size: <u>5</u> )				Column Totals <u>0</u> (A) <u>0</u> (B)	
1	<u>80</u>	<u>X</u>	<u>FAC</u>	Prevalence Index =B/A = <u>#DIV/0!</u>	
2	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b>	
3	_____	_____	_____	_____ 1- Rapid Test for Hydrophytic Vegetation	
4	_____	_____	_____	<u>X</u> 2- Dominance Test is >50%	
5	_____	_____	_____	_____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup>	
6	_____	_____	_____	_____ 4-Morphological Adaptations <sup>1</sup> (provide supporting	
7	_____	_____	_____	data in Remarks or on a separate sheet)	
8	_____	_____	_____	_____ 5- Wetland Non-Vascular Plants <sup>1</sup>	
	<u>80</u>	= Total Cover		_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
<b>Woody Vine Stratum</b> (plot size: _____)				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless	
1	_____	_____	_____	disturbed or problematic.	
2	_____	_____	_____	<b>Hydrophytic</b>	
	<u>0</u>	= Total Cover		<b>Vegetation Present?</b> Yes <u>X</u> No _____	
% Bare Ground in Herb Stratum <u>20</u>					

Remarks:

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-14	10YR 3/3	100					Silt Loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p> <p>Remarks: _____</p>	<p><b>Hydric Soil Present?</b> Yes _____ No <u>X</u></p>
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**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> Fac-Neutral Test (D5)
	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes _____ No <u>X</u>      Depth (inches): <u>n/a</u></p> <p>Water Table Present? Yes _____ No <u>X</u>      Depth (inches): <u>&gt;14</u></p> <p>Saturation Present? Yes _____ No <u>X</u>      Depth (inches): <u>&gt;14</u> (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b></p> <p>Yes _____ No <u>X</u></p>
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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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 11/23/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 6  
 Investigator(s): MS/TF Section, Township, Range: Section 14, Township 5N, Range 1W  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 1%  
 Subregion (LRR): LRR A Lat: 45.9019 Long: -122.7636 Datum: WGS84  
 Soil Map Unit Name: Newberg fine sandy loam NWI Classification: \_\_\_\_\_  
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks)  
 Are vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>			
Wetland Hydrology Present? Yes _____ No <u>X</u>			
Remarks: _____			

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (plot size: _____)				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That are OBL, FACW, or FAC: <u>100%</u> (A/B)
1	_____	_____	_____	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>Sapling/Shrub Stratum</b> (plot size: _____)				
1	_____	_____	_____	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
5	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>Herb Stratum</b> (plot size: <u>5</u> )				<b>Prevalence Index Worksheet:</b> Total % Cover of _____ Multiply by: _____ OBL Species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC Species _____ x 3 = <u>0</u> FACU Species _____ x 4 = <u>0</u> UPL Species _____ x 5 = <u>0</u> Column Totals <u>0</u> (A) <u>0</u> (B) Prevalence Index =B/A = <u>#DIV/0!</u>
1	<u>65</u>	<u>X</u>	<u>FAC</u>	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
5	_____	_____	_____	
6	_____	_____	_____	
7	_____	_____	_____	
8	_____	_____	_____	
	<u>65</u>	= Total Cover		
<b>Woody Vine Stratum</b> (plot size: _____)				
1	_____	_____	_____	
2	_____	_____	_____	
	<u>0</u>	= Total Cover		
% Bare Ground in Herb Stratum	<u>35</u>			
Remarks: _____				

**Hydrophytic Vegetation Indicators:**

\_\_\_\_\_ 1- Rapid Test for Hydrophytic Vegetation  
X 2- Dominance Test is >50%  
 \_\_\_\_\_ 3-Prevalence Index is ≤ 3.0<sup>1</sup>  
 \_\_\_\_\_ 4-Morphological Adaptations<sup>1</sup> (provide supporting data in Remarks or on a separate sheet)  
 \_\_\_\_\_ 5- Wetland Non-Vascular Plants<sup>1</sup>  
 \_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-11	10YR 3/3	100					Silt Loam	
11-16	10YR 3/2	100					Fine Sandy Loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p> <p>Remarks: _____</p>	<p><b>Hydric Soil Present?</b> Yes _____ No <u>X</u></p>
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**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)
	<input type="checkbox"/> Dry-Season Water Table (C2)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input type="checkbox"/> Fac-Neutral Test (D5)
	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): <u>n/a</u></p> <p>Water Table Present? Yes _____ No <u>X</u> Depth (inches): <u>&gt;16</u></p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): <u>&gt;16</u> (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b></p> <p>Yes _____ No <u>X</u></p>
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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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 7  
 Investigator(s): CT/TF Section, Township, Range: Sect. 23, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 1%  
 Subregion (LRR): LRR A Lat: 45.9085 Long: -122.7624 Datum: WGS84  
 Soil Map Unit Name: Caples silty clay loam NWI Classification: PFOA  
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks)  
 Are vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	<b>Is Sampled Area within a Wetland?</b>	Yes <u>X</u>	No _____
Hydric Soil Present?	Yes <u>X</u>	No _____			
Wetland Hydrology Present?	Yes <u>X</u>	No _____			

Remarks:

**VEGETATION - Use scientific names of plants.**

Tree Stratum (plot size: <u>30</u> )	absolute % cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1 <u>Populus balsamifera</u>	<u>30</u>	<u>X</u>	<u>FAC</u>		Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A)
2 _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3 _____	_____	_____	_____	Percent of Dominant Species That are OBL, FACW, or FAC: <u>100%</u> (A/B)	
4 _____	_____	_____	_____	<b>Prevalence Index Worksheet:</b>	
5 _____	<u>30</u>	= Total Cover			Total % Cover of _____ Multiply by: _____
Sapling/Shrub Stratum (plot size: <u>15</u> )				OBL Species _____ x 1 = <u>0</u>	
1 <u>Cornus alba</u>	<u>70</u>	<u>X</u>	<u>FACW</u>	FACW species _____ x 2 = <u>0</u>	
2 <u>Rubus armeniacus</u>	<u>1</u>	_____	<u>FAC</u>	FAC Species _____ x 3 = <u>0</u>	
3 _____	_____	_____	_____	FACU Species _____ x 4 = <u>0</u>	
4 _____	_____	_____	_____	UPL Species _____ x 5 = <u>0</u>	
5 _____	_____	_____	_____	Column Totals <u>0</u> (A) <u>0</u> (B)	
Herb Stratum (plot size: _____)				Prevalence Index =B/A = <u>#DIV/0!</u>	
1 _____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b>	
2 _____	_____	_____	_____		_____ 1- Rapid Test for Hydrophytic Vegetation
3 _____	_____	_____	_____		<u>X</u> 2- Dominance Test is >50%
4 _____	_____	_____	_____		_____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup>
5 _____	_____	_____	_____		_____ 4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet)
6 _____	_____	_____	_____		_____ 5- Wetland Non-Vascular Plants <sup>1</sup>
7 _____	_____	_____	_____		_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
8 _____	<u>0</u>	= Total Cover			<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Woody Vine Stratum (plot size: <u>5</u> )				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____	
1 <u>Rubus ursinus</u>	<u>1</u>	_____	<u>FACU</u>		
2 _____	_____	_____	_____		
% Bare Ground in Herb Stratum <u>100</u>					

Remarks:

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-7	7.5YR 3/2	100					Silt Loam	
7-12	7.5YR 3/2	90	7.5YR 4/6	5	OR	PL	Silt Loam	
			7.5YR 4/6	5	C	M	Silt Loam	Medium
12-18	7.5YR 3/2	80	7.5YR 4/4	15	C	M	Silty Clay Loam	Coarse
			7.5YR 4/6	5	C	M		Medium

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

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

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

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

**Secondary Indicators (2 or more required)**

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input checked="" type="checkbox"/> Fac-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): N/A  
 Water Table Present? Yes  No  Depth (inches): >18  
 Saturation Present? Yes  No  Depth (inches): >18  
 (includes capillary fringe)

Wetland Hydrology Present? Yes  No

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

Remarks:

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

Project/Site: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 8  
 Investigator(s): TF/CT Section, Township, Range: Sect. 23, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 2%  
 Subregion (LRR): LRR A Lat: 45.9085 Long: -122.7624 Datum: WGS84  
 Soil Map Unit Name: Caples silty clay loam NWI Classification: PFOA  
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks)  
 Are vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks:

**VEGETATION - Use scientific names of plants.**

Tree Stratum (plot size: <u>30</u> )	absolute % cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That are OBL, FACW, or FAC: <u>3</u> (A)  Total Number of Dominant Species Across All Strata: <u>5</u> (B)  Percent of Dominant Species That are OBL, FACW, or FAC: <u>60%</u> (A/B)
1 <u>Populus balsamifera</u>	<u>70</u>	<u>X</u>	<u>FAC</u>	
2 _____	_____	_____	_____	Prevalence Index Worksheet: Total % Cover of _____ Multiply by: OBL Species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC Species _____ x 3 = <u>0</u> FACU Species _____ x 4 = <u>0</u> UPL Species _____ x 5 = <u>0</u> Column Totals <u>0</u> (A) <u>0</u> (B)  Prevalence Index =B/A = <u>#DIV/0!</u>
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
= Total Cover <u>70</u>				
Sapling/Shrub Stratum (plot size: <u>15</u> )				
1 <u>Cornus alba</u>	<u>30</u>	<u>X</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ____ 1- Rapid Test for Hydrophytic Vegetation <u>X</u> 2- Dominance Test is >50% ____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup> ____ 4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet) ____ 5- Wetland Non-Vascular Plants <sup>1</sup> ____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
2 <u>Crataegus douglasii</u>	<u>20</u>	<u>X</u>	<u>FAC</u>	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
= Total Cover <u>50</u>				
Herb Stratum (plot size: <u>5</u> )				
1 <u>Polystichum munitum</u>	<u>5</u>	<u>X</u>	<u>FACU</u>	
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
6 _____	_____	_____	_____	
7 _____	_____	_____	_____	
8 _____	_____	_____	_____	
= Total Cover <u>5</u>				
Woody Vine Stratum (plot size: <u>5</u> )				
1 <u>Rubus ursinus</u>	<u>80</u>	<u>X</u>	<u>FACU</u>	
2 <u>Hedera helix</u>	<u>10</u>	_____	<u>FACU</u>	
= Total Cover <u>90</u>				
% Bare Ground in Herb Stratum <u>85</u>				

Remarks:

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	10YR 2/2	100					Silt Loam	
10-16	10YR 3/2	98	10YR 3/4	2			Silt Loam	

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

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>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)**

**Secondary Indicators (2 or more required)**

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Fac-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No X Depth (inches): >16  
 Saturation Present? Yes \_\_\_\_\_ No X Depth (inches): >16  
 (includes capillary fringe)

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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 9  
 Investigator(s): CT/TF Section, Township, Range: Sect. 13, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): Swale/Depression Local relief (concave, convex, none): concave Slope (%): 3%  
 Subregion (LRR): LRR A Lat: 45.9122 Long: -122.7615 Datum: WGS84  
 Soil Map Unit Name: Clato silt loam NWI Classification: PFOA  
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks)  
 Are vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is Sampled Area within a Wetland?</b>	Yes <u>X</u>	No _____
Hydric Soil Present? Yes <u>X</u> No _____		Yes <u>X</u>	No _____
Wetland Hydrology Present? Yes <u>X</u> No _____			
Remarks:			

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (plot size: _____)				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That are OBL, FACW, or FAC: <u>100%</u> (A/B)
1	_____	_____	_____	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>Sapling/Shrub Stratum</b> (plot size: <u>15</u> )				
1	<u>Cornus alba</u> <u>75</u>	<u>X</u>	<u>FACW</u>	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
5	_____	_____	_____	
	<u>75</u>	= Total Cover		
<b>Herb Stratum</b> (plot size: _____)				<b>Prevalence Index Worksheet:</b> Total % Cover of _____ Multiply by: _____ OBL Species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC Species _____ x 3 = <u>0</u> FACU Species _____ x 4 = <u>0</u> UPL Species _____ x 5 = <u>0</u> Column Totals <u>0</u> (A) <u>0</u> (B) Prevalence Index =B/A = <u>#DIV/0!</u>
1	_____	_____	_____	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
5	_____	_____	_____	
6	_____	_____	_____	
7	_____	_____	_____	
8	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>Woody Vine Stratum</b> (plot size: _____)				
1	_____	_____	_____	
2	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>% Bare Ground in Herb Stratum</b> <u>100</u>				
Remarks:				

**Hydrophytic Vegetation Indicators:**

- \_\_\_\_\_ 1- Rapid Test for Hydrophytic Vegetation
- X 2- Dominance Test is >50%
- \_\_\_\_\_ 3-Prevalence Index is ≤ 3.0<sup>1</sup>
- \_\_\_\_\_ 4-Morphological Adaptations<sup>1</sup> (provide supporting data in Remarks or on a separate sheet)
- \_\_\_\_\_ 5- Wetland Non-Vascular Plants<sup>1</sup>
- \_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

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

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-2	7.5YR 2.5/2	100					Silt Loam	
2-4	7.5YR 3/2	98	7.5YR 4/4	2	C	M	Silt Loam	Fine
4-18	7.5YR 4/2	90	7.5YR 4/6	10	C	M	Silt Loam	Medium

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :	
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)		
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)		
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)		
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)		

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

<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p> <p>Remarks: _____</p>	<p><b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Iron Deposits (B5)	<input checked="" type="checkbox"/> Fac-Neutral Test (D5)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>N/A</u></p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;18</u></p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;18</u> (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 10  
 Investigator(s): TF/CT Section, Township, Range: Sect. 13, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 5%  
 Subregion (LRR): LRR A Lat: 45.9122 Long: -122.7615 Datum: WGS84  
 Soil Map Unit Name: Clato silt loam NWI Classification: PFOA  
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes        No        (if no, explain in Remarks)  
 Are vegetation        Soil        or Hydrology        significantly disturbed? Are "Normal Circumstances" present? (Y/N)         
 Are vegetation        Soil        or Hydrology        naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>      </u>	No <u>X</u>	Is Sampled Area within a Wetland?	Yes <u>      </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>      </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u>      </u>	No <u>X</u>			

Remarks:

**VEGETATION - Use scientific names of plants.**

Tree Stratum (plot size: <u>30</u> )	absolute % cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1 <u>Populus balsamifera</u>	<u>65</u>	<u>X</u>	<u>FAC</u>	Number of Dominant Species That are OBL, FACW, or FAC:	<u>3</u> (A)
2 _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>6</u> (B)
3 _____	_____	_____	_____	Percent of Dominant Species That are OBL, FACW, or FAC:	<u>50%</u> (A/B)
4 _____	_____	_____	_____	Prevalence Index Worksheet:	
5 _____	<u>65</u>	= Total Cover		Total % Cover of	Multiply by:
Sapling/Shrub Stratum (plot size: <u>15</u> )				OBL Species	x 1 = <u>0</u>
1 <u>Crataegus douglasii</u>	<u>25</u>	<u>X</u>	<u>FAC</u>	FACW species	x 2 = <u>0</u>
2 <u>Symphoricarpos albus</u>	<u>20</u>	<u>X</u>	<u>FACU</u>	FAC Species	x 3 = <u>0</u>
3 <u>Cornus alba</u>	<u>15</u>	<u>X</u>	<u>FACW</u>	FACU Species	x 4 = <u>0</u>
4 _____	_____	_____	_____	UPL Species	x 5 = <u>0</u>
5 _____	<u>60</u>	= Total Cover		Column Totals	<u>0</u> (A) <u>0</u> (B)
Herb Stratum (plot size: <u>5</u> )				Prevalence Index = B/A =	<u>#DIV/0!</u>
1 <u>Hedera helix</u>	<u>80</u>	<u>X</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators:	
2 <u>Pteridium aquilinum</u>	<u>20</u>	<u>X</u>	<u>FACU</u>	_____ 1- Rapid Test for Hydrophytic Vegetation	
3 _____	_____	_____	_____	_____ 2- Dominance Test is >50%	
4 _____	_____	_____	_____	_____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup>	
5 _____	_____	_____	_____	_____ 4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet)	
6 _____	_____	_____	_____	_____ 5- Wetland Non-Vascular Plants <sup>1</sup>	
7 _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
8 _____	<u>100</u>	= Total Cover		<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Woody Vine Stratum (plot size: _____)				Hydrophytic Vegetation Present?	Yes <u>      </u> No <u>X</u>
1 _____	_____	_____	_____		
2 _____	_____	_____	_____		
	<u>0</u>	= Total Cover			
% Bare Ground in Herb Stratum <u>0</u>					

Remarks:

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	10YR 2/2	100					Silty Clay Loam	
10-16	10YR 3/2	90	10YR 3/4	10	C	M	Silt Loam	Medium

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

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>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)**

**Secondary Indicators (2 or more required)**

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Fac-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No X Depth (inches): >16  
 Saturation Present? Yes \_\_\_\_\_ No X Depth (inches): >16  
 (includes capillary fringe)

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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 11  
 Investigator(s): TF/CT Section, Township, Range: Sect. 14, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): concave Slope (%): 3%  
 Subregion (LRR): LRR A Lat: 45.9121 Long: -122.7626 Datum: WGS84  
 Soil Map Unit Name: Clato silt loam NWI Classification: PFOA  
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks)  
 Are vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is Sampled Area within a Wetland?</b>	Yes <u>X</u>	No _____
Hydric Soil Present? Yes <u>X</u> No _____		Yes <u>X</u>	No _____
Wetland Hydrology Present? Yes <u>X</u> No _____			
Remarks:			

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (plot size: <u>30</u> )				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A)  Total Number of Dominant Species Across All Strata: <u>2</u> (B)  Percent of Dominant Species That are OBL, FACW, or FAC: <u>100%</u> (A/B)
1 <u>Salix lasiandra</u>	<u>25</u>	<u>X</u>	<u>FACW</u>	
2 _____				
3 _____				
4 _____				
	<u>25</u>	= Total Cover		
<b>Sapling/Shrub Stratum</b> (plot size: <u>15</u> )				
1 <u>Cornus alba</u>	<u>60</u>	<u>X</u>	<u>FACW</u>	
2 <u>Rubus armeniacus</u>	<u>10</u>		<u>FAC</u>	
3 _____				
4 _____				
5 _____				
	<u>70</u>	= Total Cover		
<b>Herb Stratum</b> (plot size: _____)				
1 _____				
2 _____				
3 _____				
4 _____				
5 _____				
6 _____				
7 _____				
8 _____				
	<u>0</u>	= Total Cover		
<b>Woody Vine Stratum</b> (plot size: _____)				
1 _____				
2 _____				
	<u>0</u>	= Total Cover		
<b>% Bare Ground in Herb Stratum</b> <u>100</u>				
<b>Prevalence Index Worksheet:</b> Total % Cover of _____ Multiply by: _____ OBL Species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC Species _____ x 3 = <u>0</u> FACU Species _____ x 4 = <u>0</u> UPL Species _____ x 5 = <u>0</u> Column Totals <u>0</u> (A) <u>0</u> (B)  Prevalence Index =B/A = <u>#DIV/0!</u>				
<b>Hydrophytic Vegetation Indicators:</b> _____ 1- Rapid Test for Hydrophytic Vegetation <u>X</u> 2- Dominance Test is >50% _____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup> _____ 4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet) _____ 5- Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____				
Remarks:				

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-7	10YR 2/1	100					Silt Loam	
7-12	10YR 4/1	90	10YR 3/6	10	C	M	Silty Clay Loam	Medium
12-16	10YR 4/1	75	10YR 3/6	25	C	M	Silty Clay Loam	Medium-Coarse

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

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

<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p> <p>Remarks: _____</p>	<p><b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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**HYDROLOGY**

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input checked="" type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> Shallow Aquitard (D3)
	<input checked="" type="checkbox"/> Fac-Neutral Test (D5)
	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
	<input type="checkbox"/> Frost-Heave Hummocks (D7)

<p><b>Field Observations:</b></p> <p>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____</p> <p>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;16</u></p> <p>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>&gt;16</u> (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 12  
 Investigator(s): CT/TF Section, Township, Range: Sect. 14, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 5%  
 Subregion (LRR): LRR A Lat: 45.9121 Long: -122.7626 Datum: WGS84  
 Soil Map Unit Name: Clato silt loam 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 N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks:			

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	
Tree Stratum (plot size: <u>30</u> )				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That are OBL, FACW, or FAC: <u>80%</u> (A/B)
1	<u>30</u>	<u>X</u>	<u>FAC</u>	
2	<u>20</u>	<u>X</u>	<u>FACU</u>	
3	<u>10</u>		<u>FACW</u>	
4				
	<u>60</u>	= Total Cover		
Sapling/Shrub Stratum (plot size: <u>15</u> )				
1	<u>25</u>	<u>X</u>	<u>FACW</u>	
2	<u>10</u>	<u>X</u>	<u>FAC</u>	
3				
4				
5				
	<u>35</u>	= Total Cover		
Herb Stratum (plot size: <u>5</u> )				
1	<u>50</u>	<u>X</u>	<u>FAC</u>	
2				
3				
4				
5				
6				
7				
8				
	<u>50</u>	= Total Cover		
Woody Vine Stratum (plot size: <u>5</u> )				
1	<u>2</u>		<u>FACU</u>	
2				
	<u>2</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>50</u>				
Remarks:				

**Prevalence Index Worksheet:**

Total % Cover of	Multiply by:	
OBL Species	x 1 =	<u>0</u>
FACW species	x 2 =	<u>0</u>
FAC Species	x 3 =	<u>0</u>
FACU Species	x 4 =	<u>0</u>
UPL Species	x 5 =	<u>0</u>
Column Totals	<u>0</u> (A)	<u>0</u> (B)
Prevalence Index =B/A =		<u>#DIV/0!</u>

**Hydrophytic Vegetation Indicators:**

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

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

**Hydrophytic Vegetation Present?** Yes X No \_\_\_\_\_

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	7.5YR 3/2	100					Silt Loam	
3-20	7.5YR 4/2	100					Silt Loam	

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

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>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)**

**Secondary Indicators (2 or more required)**

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Fac-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No X Depth (inches): >20  
 Saturation Present? Yes \_\_\_\_\_ No X Depth (inches): >20  
 (includes capillary fringe)

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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 13  
 Investigator(s): TF/CT Section, Township, Range: Sect. 13, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 1%  
 Subregion (LRR): LRR A Lat: 45.9110 Long: -122.7601 Datum: WGS84  
 Soil Map Unit Name: Clato silt loam 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 N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is Sampled Area within a Wetland?</b>	Yes _____	No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>			
Wetland Hydrology Present? Yes _____ No <u>X</u>			
Remarks:			

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (plot size: _____)				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)  Total Number of Dominant Species Across All Strata: <u>1</u> (B)  Percent of Dominant Species That are OBL, FACW, or FAC: <u>100%</u> (A/B)
1	_____	_____	_____	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>Sapling/Shrub Stratum</b> (plot size: _____)				
1	_____	_____	_____	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
5	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>Herb Stratum</b> (plot size: <u>5</u> )				
1	<u>90</u>	<u>X</u>	<u>FAC</u>	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
5	_____	_____	_____	
6	_____	_____	_____	
7	_____	_____	_____	
8	_____	_____	_____	
	<u>90</u>	= Total Cover		
<b>Woody Vine Stratum</b> (plot size: _____)				
1	_____	_____	_____	
2	_____	_____	_____	
	<u>0</u>	= Total Cover		
% Bare Ground in Herb Stratum	<u>10</u>			
Remarks:				<b>Prevalence Index Worksheet:</b> Total % Cover of _____ Multiply by: _____ OBL Species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC Species _____ x 3 = <u>0</u> FACU Species _____ x 4 = <u>0</u> UPL Species _____ x 5 = <u>0</u> Column Totals <u>0</u> (A) <u>0</u> (B)  Prevalence Index =B/A = <u>#DIV/0!</u>
<b>Hydrophytic Vegetation Indicators:</b>				
_____ 1- Rapid Test for Hydrophytic Vegetation				
<u>X</u> 2- Dominance Test is >50%				
_____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup>				
_____ 4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet)				
_____ 5- Wetland Non-Vascular Plants <sup>1</sup>				
_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____				
Remarks:				

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16	10YR 3/2	100					Silt Loam	
16-18	10YR 5/2	95	7.5YR 5/6	5	C	M	Silt Loam	Fine

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

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>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)**

**Secondary Indicators (2 or more required)**

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Fac-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No X Depth (inches): >18  
 Saturation Present? Yes \_\_\_\_\_ No X Depth (inches): >18  
 (includes capillary fringe)

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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 14  
 Investigator(s): TF/CT Section, Township, Range: Sect. 24, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 2%  
 Subregion (LRR): LRR A Lat: 45.9093 Long: -122.7609 Datum: WGS84  
 Soil Map Unit Name: Caples silty clay loam 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 N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is Sampled Area within a Wetland?	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			

Remarks:

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
<b>Tree Stratum</b> (plot size: _____)				Number of Dominant Species	
1	_____	_____	_____	That are OBL, FACW, or FAC: <u>1</u> (A)	
2	_____	_____	_____	Total Number of Dominant	
3	_____	_____	_____	Species Across All Strata: <u>1</u> (B)	
4	_____	_____	_____	Percent of Dominant Species	
	<u>0</u>	= Total Cover		That are OBL, FACW, or FAC: <u>100%</u> (A/B)	
<b>Sapling/Shrub Stratum</b> (plot size: _____)				<b>Prevalence Index Worksheet:</b>	
1	_____	_____	_____	Total % Cover of _____ Multiply by: _____	
2	_____	_____	_____	OBL Species _____ x 1 = <u>0</u>	
3	_____	_____	_____	FACW species _____ x 2 = <u>0</u>	
4	_____	_____	_____	FAC Species _____ x 3 = <u>0</u>	
5	_____	_____	_____	FACU Species _____ x 4 = <u>0</u>	
	<u>0</u>	= Total Cover		UPL Species _____ x 5 = <u>0</u>	
<b>Herb Stratum</b> (plot size: <u>5</u> )				Column Totals <u>0</u> (A) <u>0</u> (B)	
1	<u>95</u>	<u>X</u>	<u>FAC</u>	Prevalence Index =B/A = <u>#DIV/0!</u>	
2	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b>	
3	_____	_____	_____	_____ 1- Rapid Test for Hydrophytic Vegetation	
4	_____	_____	_____	<u>X</u> 2- Dominance Test is >50%	
5	_____	_____	_____	_____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup>	
6	_____	_____	_____	_____ 4-Morphological Adaptations <sup>1</sup> (provide supporting	
7	_____	_____	_____	data in Remarks or on a separate sheet)	
8	_____	_____	_____	_____ 5- Wetland Non-Vascular Plants <sup>1</sup>	
	<u>95</u>	= Total Cover		_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
<b>Woody Vine Stratum</b> (plot size: _____)				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless	
1	_____	_____	_____	disturbed or problematic.	
2	_____	_____	_____	<b>Hydrophytic</b>	
	<u>0</u>	= Total Cover		<b>Vegetation</b> Yes <u>X</u> No _____	
% Bare Ground in Herb Stratum <u>5</u>				<b>Present?</b>	

Remarks:

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16	7.5YR 3/2	100					Silt Loam	
16-18	10YR 4/1	73	10YR 4/4	2	C	M	Silty Clay Loam	Medium
			10YR 3/4	5	C	M		Medium-Coarse
			10YR 5/1	20	R	M		Coarse

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>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)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches): \_\_\_\_\_

Water Table Present? Yes \_\_\_\_\_ No X Depth (inches): >18

Saturation Present? Yes \_\_\_\_\_ No X Depth (inches): >18  
(includes capillary fringe)

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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 15  
 Investigator(s): CT/TF Section, Township, Range: Sect. 24, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): concave Slope (%): 2%  
 Subregion (LRR): LRR A Lat: 45.9093 Long: -122.7609 Datum: WGS84  
 Soil Map Unit Name: Caples silty clay loam 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 N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is Sampled Area within a Wetland?</b>	Yes <u>X</u>	No _____
Hydric Soil Present? Yes <u>X</u> No _____		Yes <u>X</u>	No _____
Wetland Hydrology Present? Yes <u>X</u> No _____			
Remarks:			

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (plot size: _____)				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That are OBL, FACW, or FAC: <u>100%</u> (A/B)
1	_____	_____	_____	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>Sapling/Shrub Stratum</b> (plot size: _____)				
1	_____	_____	_____	
2	_____	_____	_____	
3	_____	_____	_____	
4	_____	_____	_____	
5	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>Herb Stratum</b> (plot size: <u>5</u> )				
1	<u>100</u>	<u>X</u>	<u>FACW</u>	
2	<u>2</u>		<u>(FAC)</u>	
3	<u>2</u>		<u>FAC</u>	
4	_____	_____	_____	
5	_____	_____	_____	
6	_____	_____	_____	
7	_____	_____	_____	
8	_____	_____	_____	
	<u>104</u>	= Total Cover		
<b>Woody Vine Stratum</b> (plot size: _____)				
1	_____	_____	_____	
2	_____	_____	_____	
	<u>0</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>0</u>				
<b>Prevalence Index Worksheet:</b> Total % Cover of _____ Multiply by: _____ OBL Species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC Species _____ x 3 = <u>0</u> FACU Species _____ x 4 = <u>0</u> UPL Species _____ x 5 = <u>0</u> Column Totals <u>0</u> (A) <u>0</u> (B) Prevalence Index =B/A = <u>#DIV/0!</u>				
<b>Hydrophytic Vegetation Indicators:</b> _____ 1- Rapid Test for Hydrophytic Vegetation <u>X</u> 2- Dominance Test is >50% _____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup> _____ 4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet) _____ 5- Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)				
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. <b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____				

Remarks:  
**The unidentified Carex is presumed to have an indicator status of FAC or wetter.**

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
<b>0-8</b>	<b>7.5YR 3/2</b>	<b>100</b>					<b>Silt Loam</b>	
<b>8-18</b>	<b>7.5YR 3/2</b>	<b>95</b>	<b>7.5YR 4/6</b>	<b>5</b>	<b>C</b>	<b>M</b>	<b>Silt Loam</b>	<b>Medium</b>

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

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

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

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

**Secondary Indicators (2 or more required)**

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input checked="" type="checkbox"/> Fac-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): N/A  
 Water Table Present? Yes  No  Depth (inches): >18  
 Saturation Present? Yes  No  Depth (inches): >18  
 (includes capillary fringe)

Wetland Hydrology Present? Yes  No

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

Remarks:

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

Project/Site: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 16  
 Investigator(s): CT/TF Section, Township, Range: Sect. 24, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 2%  
 Subregion (LRR): LRR A Lat: 45.9093 Long: -122.7609 Datum: WGS84  
 Soil Map Unit Name: Clato silt loam 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 N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is Sampled Area within a Wetland?	Yes _____	No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>			
Wetland Hydrology Present?	Yes _____	No <u>X</u>			

Remarks:

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
<b>Tree Stratum</b> (plot size: _____)				Number of Dominant Species	
1	_____	_____	_____	That are OBL, FACW, or FAC: <u>3</u> (A)	
2	_____	_____	_____	Total Number of Dominant	
3	_____	_____	_____	Species Across All Strata: <u>3</u> (B)	
4	_____	_____	_____	Percent of Dominant Species	
	<u>0</u>	= Total Cover		That are OBL, FACW, or FAC: <u>100%</u> (A/B)	
<b>Sapling/Shrub Stratum</b> (plot size: _____)				<b>Prevalence Index Worksheet:</b>	
1	_____	_____	_____	Total % Cover of _____ Multiply by: _____	
2	_____	_____	_____	OBL Species _____ x 1 = <u>0</u>	
3	_____	_____	_____	FACW species _____ x 2 = <u>0</u>	
4	_____	_____	_____	FAC Species _____ x 3 = <u>0</u>	
5	_____	_____	_____	FACU Species _____ x 4 = <u>0</u>	
	<u>0</u>	= Total Cover		UPL Species _____ x 5 = <u>0</u>	
<b>Herb Stratum</b> (plot size: <u>5</u> )				Column Totals <u>0</u> (A) <u>0</u> (B)	
1	<u>40</u>	<u>X</u>	<u>FACW</u>	Prevalence Index =B/A = <u>#DIV/0!</u>	
2	<u>25</u>	<u>X</u>	<u>(FAC)</u>		
3	<u>25</u>	<u>X</u>	<u>(FAC)</u>		
4	<u>5</u>		<u>FAC</u>		
5	_____	_____	_____		
6	_____	_____	_____		
7	_____	_____	_____		
8	_____	_____	_____		
	<u>95</u>	= Total Cover			
<b>Woody Vine Stratum</b> (plot size: <u>5</u> )				<b>Hydrophytic Vegetation Indicators:</b>	
1	<u>2</u>		<u>FACU</u>	_____ 1- Rapid Test for Hydrophytic Vegetation	
2	_____	_____	_____	_____ 2- Dominance Test is >50%	
	<u>2</u>	= Total Cover		_____ 3-Prevalence Index is ≤ 3.0 <sup>1</sup>	
% Bare Ground in Herb Stratum <u>5</u>				_____ 4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet)	
Remarks:				_____ 5- Wetland Non-Vascular Plants <sup>1</sup>	
<b>The unidentified Carex and Agrostis are presumed to have an indicator status of FAC or wetter.</b>				_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____	

Remarks:

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	7.5YR 3/2	100					Silt Loam	
10-20	7.5YR 3/2	95	7.5YR 4/6	5	C	M	Silt Loam	Medium

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

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

<sup>3</sup>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)**

**Secondary Indicators (2 or more required)**

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input checked="" type="checkbox"/> Fac-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches): N/A  
 Water Table Present? Yes \_\_\_\_\_ No X Depth (inches): >20  
 Saturation Present? Yes \_\_\_\_\_ No X Depth (inches): >20  
 (includes capillary fringe)

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: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 17  
 Investigator(s): TF/CT Section, Township, Range: Sect. 24, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 2%  
 Subregion (LRR): LRR A Lat: 45.9085 Long: -122.7612 Datum: WGS84  
 Soil Map Unit Name: Newberg fine sandy loam NWI Classification: PFOA  
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks)  
 Are vegetation N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is Sampled Area within a Wetland?	Yes <u>X</u>	No _____
Hydric Soil Present?	Yes <u>X</u>	No _____			
Wetland Hydrology Present?	Yes <u>X</u>	No _____			

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (plot size: _____)	absolute % cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1 _____	_____	_____	_____	Number of Dominant Species	
2 _____	_____	_____	_____	That are OBL, FACW, or FAC: <u>2</u> (A)	
3 _____	_____	_____	_____	Total Number of Dominant	
4 _____	_____	_____	_____	Species Across All Strata: <u>2</u> (B)	
	<u>0</u>	= Total Cover		Percent of Dominant Species	
Sapling/Shrub Stratum (plot size: <u>15</u> )				That are OBL, FACW, or FAC: <u>100%</u> (A/B)	
1 <u>Salix sp</u>	<u>90</u>	<u>X</u>	<u>(FAC)</u>	Prevalence Index Worksheet:	
2 <u>Cornus alba</u>	<u>10</u>	_____	<u>FACW</u>	Total % Cover of _____ Multiply by: _____	
3 _____	_____	_____	_____	OBL Species _____ x 1 = <u>0</u>	
4 _____	_____	_____	_____	FACW species _____ x 2 = <u>0</u>	
5 _____	_____	_____	_____	FAC Species _____ x 3 = <u>0</u>	
	<u>100</u>	= Total Cover		FACU Species _____ x 4 = <u>0</u>	
Herb Stratum (plot size: <u>5</u> )				UPL Species _____ x 5 = <u>0</u>	
1 <u>Urtica dioica</u>	<u>10</u>	<u>X</u>	<u>FAC</u>	Column Totals <u>0</u> (A) <u>0</u> (B)	
2 _____	_____	_____	_____	Prevalence Index =B/A = <u>#DIV/0!</u>	
3 _____	_____	_____	_____	Hydrophytic Vegetation Indicators:	
4 _____	_____	_____	_____	1- Rapid Test for Hydrophytic Vegetation	
5 _____	_____	_____	_____	<u>X</u> 2- Dominance Test is >50%	
6 _____	_____	_____	_____	3-Prevalence Index is ≤ 3.0 <sup>1</sup>	
7 _____	_____	_____	_____	4-Morphological Adaptations <sup>1</sup> (provide supporting data in Remarks or on a separate sheet)	
8 _____	_____	_____	_____	5- Wetland Non-Vascular Plants <sup>1</sup>	
	<u>10</u>	= Total Cover		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
Woody Vine Stratum (plot size: <u>5</u> )				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
1 <u>Rubus ursinus</u>	<u>2</u>	_____	<u>FACU</u>	Hydrophytic Vegetation Present? Yes <u>X</u> No _____	
2 _____	_____	_____	_____		
	<u>2</u>	= Total Cover			
% Bare Ground in Herb Stratum <u>90</u>					

Remarks:  
 The unidentified Salix is presumed to have an indicator status of FAC or wetter.

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	10YR 3/1	100					Silty Clay Loam	
10-16	10YR 3/1	70	10YR 3/6	10	C	M	Silty Clay Loam	Medium
			10YR 5/2	20	D	M	Silty Clay Loam	Medium-Coarse

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

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> Other (explain in Remarks)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

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

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

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

**Secondary Indicators (2 or more required)**

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input checked="" type="checkbox"/> Fac-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): >16  
 Saturation Present? Yes  No  Depth (inches): >16  
 (includes capillary fringe)

Wetland Hydrology Present?  
 Yes  No

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

Remarks:

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

Project/Site: N Pekin Road City/County: Woodland/Cowlitz Sampling Date: 12/6/2022  
 Applicant/Owner: Trammell Crow Company State: WA Sampling Point: 18  
 Investigator(s): CT/TF Section, Township, Range: Sect. 24, T 5N, R 1W  
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): none Slope (%): 2%  
 Subregion (LRR): LRR A Lat: 45.9085 Long: -122.7612 Datum: WGS84  
 Soil Map Unit Name: Newberg fine sandy loam 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 N Soil N or Hydrology N significantly disturbed? Are "Normal Circumstances" present? (Y/N) Y  
 Are vegetation N Soil N or Hydrology N naturally problematic? If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks:	

**VEGETATION - Use scientific names of plants.**

	absolute % cover	Dominant Species?	Indicator Status	
<b>Tree Stratum</b> (plot size: _____)				<b>Dominance Test worksheet:</b> Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That are OBL, FACW, or FAC: <u>67%</u> (A/B)
1 _____	_____	_____	_____	
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
<b>Sapling/Shrub Stratum</b> (plot size: <u>15</u> )				
1 <u>Salix sp</u>	<u>100</u>	<u>X</u>	<u>(FAC)</u>	
2 <u>Rubus armeniacus</u>	<u>10</u>	_____	<u>FAC</u>	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
	<u>110</u>	= Total Cover		
<b>Herb Stratum</b> (plot size: <u>5</u> )				<b>Prevalence Index Worksheet:</b> Total % Cover of _____ Multiply by: _____ OBL Species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC Species _____ x 3 = <u>0</u> FACU Species _____ x 4 = <u>0</u> UPL Species _____ x 5 = <u>0</u> Column Totals <u>0</u> (A) <u>0</u> (B) Prevalence Index =B/A = <u>#DIV/0!</u>
1 <u>Urtica dioica</u>	<u>20</u>	<u>X</u>	<u>FAC</u>	
2 _____	_____	_____	_____	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
6 _____	_____	_____	_____	
7 _____	_____	_____	_____	
8 _____	_____	_____	_____	
	<u>20</u>	= Total Cover		
<b>Woody Vine Stratum</b> (plot size: <u>5</u> )				
1 <u>Rubus ursinus</u>	<u>5</u>	<u>X</u>	<u>FACU</u>	
2 _____	_____	_____	_____	
	<u>5</u>	= Total Cover		
% Bare Ground in Herb Stratum <u>80</u>				

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

Remarks:  
**The unidentified Salix is presumed to have an indicator status of FAC or wetter.**

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
<b>0-8</b>	<b>7.5YR 3/2</b>	<b>100</b>					<b>Silt Loam</b>	
<b>8-12</b>	<b>7.5YR 4/2</b>	<b>100</b>					<b>Silt Loam</b>	
<b>12-20</b>	<b>7.5YR 5/2</b>	<b>90</b>	<b>7.5YR 4/6</b>	<b>10</b>	<b>C</b>	<b>M</b>	<b>Silt Loam</b>	

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

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

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

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

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

**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)**

**Secondary Indicators (2 or more required)**

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water stained Leaves (B9) (Except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water stained Leaves (B9) (MLRA1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)	<input type="checkbox"/> Fac-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches): N/A  
 Water Table Present? Yes \_\_\_\_\_ No X Depth (inches): >20  
 Saturation Present? Yes \_\_\_\_\_ No X Depth (inches): >20  
 (includes capillary fringe)

Wetland Hydrology Present? Yes \_\_\_\_\_ No X

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

Remarks:



# Appendix C

## Study Area Photos (ground level)





**Photo A**

Looking northeast at  
Sample Points 8 and 7 on  
the southwestern  
boundary of Wetland A.

Photo taken December 6,  
2022.

**Photo B**

Looking southwest at  
Sample Points 18 and 17  
on the southeastern  
boundary of Wetland A

Photo taken December 6,  
2022.



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Photo documentation  
Bozarth Property, Woodland, Washington



**Photo C**

Looking south at Sample Points 14, 15, and 16, which characterize the northwestern boundary of Wetland A.

Photo taken December 6, 2022.

**Photo D**

Looking west at Sample Points 15 and 16 in the northeastern portion of Wetland A.

Photo taken December 6, 2022.



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Photo documentation  
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**Photo E**

Looking west along the northern boundary of Wetland A.

Photo taken December 6, 2022.

**Photo F**

Looking southeast across the southeastern portion of the study area.

Photo taken December 6, 2022.



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**Photo G**

Looking northwest at Sample Points 9 and 10.

Photo taken December 6, 2022.

**Photo H**

Looking south at Sample Points 11 and 12.

Photo taken December 6, 2022.



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**Photo I**

Looking west at sample Point 6.

Photo taken November 23, 2022.

**Photo J**

Looking south at Sample Points 13.

Photo taken December 6, 2022.



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**Photo K**

Looking northwest at Sample Point 2.

Photo taken November 23, 2022.

**Photo L**

Looking west at Sample Points 4.

Photo taken November 23, 2022.



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**Photo M**

Looking west at Sample Point  
5.

Photo taken November 23,  
2022.

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# 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:  12/6/23

Rated by  Craig Tumer  Trained by Ecology?  Yes  No Date of training \_\_\_\_\_

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

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

Source of base aerial photo/map \_\_\_\_\_

**OVERALL WETLAND CATEGORY** \_\_\_\_\_ (based on functions \_\_\_\_\_ or special characteristics \_\_\_\_\_)

### 1. Category of wetland based on FUNCTIONS

\_\_\_\_\_ Category I – Total score = 23 - 27

\_\_\_\_\_ Category II – Total score = 20 - 22

X  Category III – Total score = 16 - 19

\_\_\_\_\_ Category IV – Total score = 9 - 15

FUNCTION	Improving Water Quality		Hydrologic		Habitat					
<i>Circle the appropriate ratings</i>										
Site Potential	H	<b>M</b>	L	H	<b>M</b>	L	H	<b>M</b>	L	
Landscape Potential	H	<b>M</b>	L	H	<b>M</b>	L	H	M	<b>L</b>	
Value	H	<b>M</b>	L	H	M	<b>L</b>	H	<b>M</b>	L	<b>TOTAL</b>
<b>Score Based on Ratings</b>	<b>6</b>		<b>5</b>		<b>5</b>		<b>16</b>			

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

9 = H,H,H

8 = H,H,M

7 = H,H,L

7 = H,M,M

6 = H,M,L

6 = M,M,M

5 = H,L,L

5 = M,M,L

4 = M,L,L

3 = L,L,L

### 2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number  A

## Maps and figures required to answer questions correctly for Western Washington

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	6A
Hydroperiods	D 1.4, H 1.2	n/a
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	n/a
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	7
Map of the contributing basin	D 4.3, D 5.3	n/a
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	8
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	9
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	n/a

### Riverine Wetlands

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

### Lake Fringe Wetlands

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

### Slope Wetlands

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

## HGM Classification of Wetlands in Western Washington

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

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

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

**NO** – go to 2

**YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

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

**YES** – **Freshwater Tidal Fringe**

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

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

**NO** – go to 3

**YES** – The wetland class is **Flats**

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

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

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

**NO** – go to 4

**YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

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

**NO** – go to 5

**YES** – The wetland class is **Slope**

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

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

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

Wetland name or number   A  

**NO** – go to 6

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

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

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

NO – go to 7

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

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

NO – go to 8

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

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

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

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

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

Wetland name or number  A

**DEPRESSIONAL AND FLATS WETLANDS**

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

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

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

<b>D 2.0. Does the landscape have the potential to support the water quality function of the site?</b>		
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	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source _____	Yes = 1 No = 0	0
<b>Total for D 2</b>	<b>Add the points in the boxes above</b>	<b>1</b>

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

<b>D 3.0. Is the water quality improvement provided by the site valuable to society?</b>		
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	0
<b>Total for D 3</b>	<b>Add the points in the boxes above</b>	<b>1</b>

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

Wetland name or number  A

**DEPRESSIONAL AND FLATS WETLANDS**

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

<b>D 4.0. Does the site have the potential to reduce flooding and erosion?</b>		
<b>D 4.1. Characteristics of surface water outflows from the wetland:</b>		
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	2
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
<b>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.</b>		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	0
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	
<b>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.</b>		
The area of the basin is less than 10 times the area of the unit	points = 5	0
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
<b>Total for D 4</b>	<b>Add the points in the boxes above</b>	<b>2</b>

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

<b>D 5.0. Does the landscape have the potential to support hydrologic functions of the site?</b>		
<b>D 5.1. Does the wetland receive stormwater discharges?</b>	Yes = 1 No = 0	0
<b>D 5.2. Is &gt;10% of the area within 150 ft of the wetland in land uses that generate excess runoff?</b>	Yes = 1 No = 0	1
<b>D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at &gt;1 residence/ac, urban, commercial, agriculture, etc.)?</b>	Yes = 1 No = 0	1
<b>Total for D 5</b>	<b>Add the points in the boxes above</b>	<b>2</b>

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

<b>D 6.0. Are the hydrologic functions provided by the site valuable to society?</b>		
<b>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.</b>		
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):		0
• 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	
<b>D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?</b>	Yes = 2 No = 0	0
<b>Total for D 6</b>	<b>Add the points in the boxes above</b>	<b>0</b>

**Rating of Value** If score is:  2-4 = H   1 = M   X   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.*

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

H 1.2. Hydroperiods

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

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

H 1.3. Richness of plant species

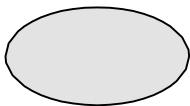
Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>.

*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*

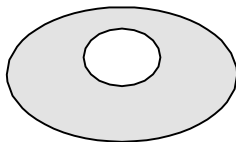
- |                              |            |   |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 2 |
| 5 - 19 species               | points = 1 |   |
| < 5 species                  | points = 0 |   |

H 1.4. Interspersion of habitats

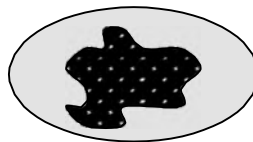
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



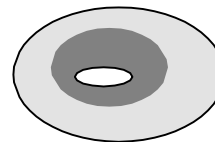
**None** = 0 points



**Low** = 1 point

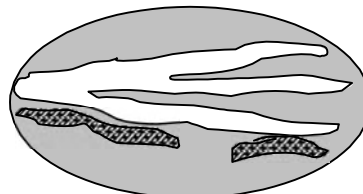
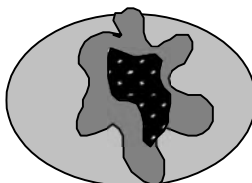
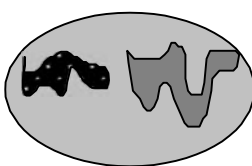


**Moderate** = 2 points



2

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





Wetland name or number  A

<p>H 1.5. Special habitat features:          Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>  <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt; 4 in diameter and 6 ft long).  <input type="checkbox"/> Standing snags (dbh &gt; 4 in) within the wetland  <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)  <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt; 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)  <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)  <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>	1
<p>Total for H 1</p>	<p>Add the points in the boxes above</p> <p style="text-align: center;"><b>9</b></p>

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

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

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

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

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

## WDFW Priority Habitats

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

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

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

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

Wetland name or number  B

# RATING SUMMARY – Western Washington

Name of wetland (or ID #):  Wetland B  Date of site visit:  12/6/23   
 Rated by  Craig Tumer  Trained by Ecology?  Yes  No Date of training \_\_\_\_\_  
 HGM Class used for rating  Depressional  Wetland has multiple HGM classes?  Y  **X**  N

**NOTE: Form is not complete without the figures requested (figures can be combined).**  
 Source of base aerial photo/map \_\_\_\_\_

**OVERALL WETLAND CATEGORY** \_\_\_\_\_ (based on functions \_\_\_\_\_ or special characteristics \_\_\_\_\_)

## 1. Category of wetland based on FUNCTIONS

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

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

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

FUNCTION	Improving Water Quality			Hydrologic			Habitat			
<i>Circle the appropriate ratings</i>										
Site Potential	H	<b>M</b>	L	H	<b>M</b>	L	H	M	<b>L</b>	
Landscape Potential	H	<b>M</b>	L	H	<b>M</b>	L	H	M	<b>L</b>	
Value	H	<b>M</b>	L	H	M	<b>L</b>	H	<b>M</b>	L	
<b>Score Based on Ratings</b>	<b>6</b>			<b>5</b>			<b>4</b>			<b>TOTAL</b> <b>15</b>

## 2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number  B

## Maps and figures required to answer questions correctly for Western Washington

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	6B
Hydroperiods	D 1.4, H 1.2	n/a
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	n/a
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	7
Map of the contributing basin	D 4.3, D 5.3	n/a
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	8
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	9
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	n/a

### Riverine Wetlands

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

### Lake Fringe Wetlands

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

### Slope Wetlands

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

## HGM Classification of Wetlands in Western Washington

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

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

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

**NO** – go to 2

**YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

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

**YES** – **Freshwater Tidal Fringe**

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

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

**NO** – go to 3

**YES** – The wetland class is **Flats**

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

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

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

**NO** – go to 4

**YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

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

**NO** – go to 5

**YES** – The wetland class is **Slope**

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

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

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

Wetland name or number   B  

**NO** – go to 6

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

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

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

NO – go to 7

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

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

NO – go to 8

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

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

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

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

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

Wetland name or number  B

**DEPRESSIONAL AND FLATS WETLANDS**  
**Water Quality Functions - Indicators that the site functions to improve water quality**

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

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

<b>D 2.0. Does the landscape have the potential to support the water quality function of the site?</b>		
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	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source _____	Yes = 1 No = 0	0
Total for D 2		<b>1</b>

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

<b>D 3.0. Is the water quality improvement provided by the site valuable to society?</b>		
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	0
Total for D 3		<b>0</b>

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

Wetland name or number  B

**DEPRESSIONAL AND FLATS WETLANDS**

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

<b>D 4.0. Does the site have the potential to reduce flooding and erosion?</b>		
<b>D 4.1. Characteristics of surface water outflows from the wetland:</b>		
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	4
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
<b>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.</b>		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	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	
<b>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.</b>		
The area of the basin is less than 10 times the area of the unit	points = 5	0
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
<b>Total for D 4</b>	<b>Add the points in the boxes above</b>	<b>11</b>

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

<b>D 5.0. Does the landscape have the potential to support hydrologic functions of the site?</b>		
<b>D 5.1. Does the wetland receive stormwater discharges?</b>	Yes = 1 No = 0	0
<b>D 5.2. Is &gt;10% of the area within 150 ft of the wetland in land uses that generate excess runoff?</b>	Yes = 1 No = 0	0
<b>D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at &gt;1 residence/ac, urban, commercial, agriculture, etc.)?</b>	Yes = 1 No = 0	1
<b>Total for D 5</b>	<b>Add the points in the boxes above</b>	<b>1</b>

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

<b>D 6.0. Are the hydrologic functions provided by the site valuable to society?</b>		
<b>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.</b>		
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):		0
• 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	
<b>D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?</b>	Yes = 2 No = 0	0
<b>Total for D 6</b>	<b>Add the points in the boxes above</b>	<b>0</b>

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



Wetland name or number  B

**These questions apply to wetlands of all HGM classes.**

**HABITAT FUNCTIONS - Indicators that site functions to provide important habitat**

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

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

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

0

H 1.2. Hydroperiods

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

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

1

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>.

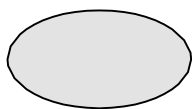
*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*

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

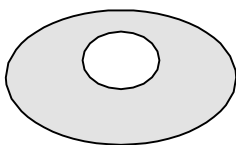
1

H 1.4. Interspersion of habitats

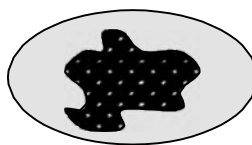
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



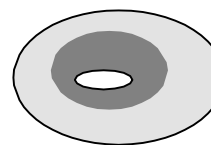
None = 0 points



Low = 1 point

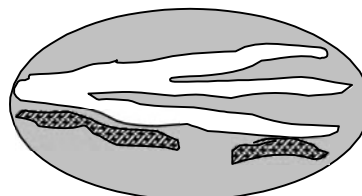
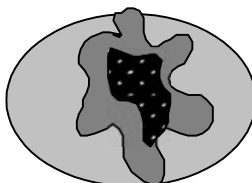
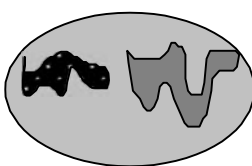


Moderate = 2 points



0

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



Wetland name or number  B

<p>H 1.5. Special habitat features:          Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>  <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt; 4 in diameter and 6 ft long).  <input type="checkbox"/> Standing snags (dbh &gt; 4 in) within the wetland  <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)  <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt; 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)  <input checked="" type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)  <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>	3
<p>Total for H 1</p>	<p style="text-align: right;">Add the points in the boxes above</p> <p style="text-align: center;"><b>5</b></p>

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

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

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

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

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

## WDFW Priority Habitats

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

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

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

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

Wetland name or number  C

## RATING SUMMARY – Western Washington

Name of wetland (or ID #):  Wetland C  Date of site visit:  12/6/23

Rated by  Craig Tumer  Trained by Ecology?  Yes  No Date of training \_\_\_\_\_

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

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

Source of base aerial photo/map \_\_\_\_\_

**OVERALL WETLAND CATEGORY** \_\_\_\_\_ (based on functions \_\_\_\_\_ or special characteristics \_\_\_\_\_)

### 1. Category of wetland based on FUNCTIONS

\_\_\_\_\_ **Category I** – Total score = 23 - 27

\_\_\_\_\_ **Category II** – Total score = 20 - 22

\_\_\_\_\_ **Category III** – Total score = 16 - 19

**X** \_\_\_\_\_ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	H <b>M</b> L	H <b>M</b> L	H M <b>L</b>	
Landscape Potential	H <b>M</b> L	H <b>M</b> L	H M <b>L</b>	
Value	H <b>M</b> L	H M <b>L</b>	H <b>M</b> L	<b>TOTAL</b>
<b>Score Based on Ratings</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>15</b>

**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	<b>I II</b>
Wetland of High Conservation Value	<b>I</b>
Bog	<b>I</b>
Mature Forest	<b>I</b>
Old Growth Forest	<b>I</b>
Coastal Lagoon	<b>I II</b>
Interdunal	<b>I II III IV</b>
None of the above	

Wetland name or number   C  

## Maps and figures required to answer questions correctly for Western Washington

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	6C
Hydroperiods	D 1.4, H 1.2	n/a
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	n/a
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	7
Map of the contributing basin	D 4.3, D 5.3	n/a
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	8
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	9
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	n/a

### Riverine Wetlands

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

### Lake Fringe Wetlands

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

### Slope Wetlands

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

## HGM Classification of Wetlands in Western Washington

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

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

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

**NO** – go to 2

**YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

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

**YES – Freshwater Tidal Fringe**

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

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

**NO** – go to 3

**YES** – The wetland class is **Flats**

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

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

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

**NO** – go to 4

**YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

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

**NO** – go to 5

**YES** – The wetland class is **Slope**

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

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

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

Wetland name or number   C  

**NO** – go to 6

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

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

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

NO – go to 7

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

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

NO – go to 8

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

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

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

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

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

Wetland name or number  C

**DEPRESSIONAL AND FLATS WETLANDS**

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

<b>D 1.0. Does the site have the potential to improve water quality?</b>		
D 1.1. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 3 points = 2 points = 1 points = 1	3
D 1.2. <u>The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0		0
D 1.3. <u>Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</u> Wetland has persistent, ungrazed, plants > 95% of area Wetland has persistent, ungrazed, plants > ½ of area Wetland has persistent, ungrazed plants > 1/10 of area Wetland has persistent, ungrazed plants < 1/10 of area	points = 5 points = 3 points = 1 points = 0	5
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > ½ total area of wetland Area seasonally ponded is > ¼ total area of wetland Area seasonally ponded is < ¼ total area of wetland	points = 4 points = 2 points = 0	0
Total for D 1	Add the points in the boxes above	<b>8</b>

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

<b>D 2.0. Does the landscape have the potential to support the water quality function of the site?</b>		
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	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source _____	Yes = 1 No = 0	0
Total for D 2	Add the points in the boxes above	<b>1</b>

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

<b>D 3.0. Is the water quality improvement provided by the site valuable to society?</b>		
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	0
Total for D 3	Add the points in the boxes above	<b>0</b>

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



Wetland name or number  C

**DEPRESSIONAL AND FLATS WETLANDS**

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

<b>D 4.0. Does the site have the potential to reduce flooding and erosion?</b>		
<b>D 4.1. Characteristics of surface water outflows from the wetland:</b>		
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	4
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
<b>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.</b>		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	0
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	
<b>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.</b>		
The area of the basin is less than 10 times the area of the unit	points = 5	0
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
<b>Total for D 4</b>	<b>Add the points in the boxes above</b>	<b>4</b>

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

<b>D 5.0. Does the landscape have the potential to support hydrologic functions of the site?</b>		
<b>D 5.1. Does the wetland receive stormwater discharges?</b>	Yes = 1 No = 0	0
<b>D 5.2. Is &gt;10% of the area within 150 ft of the wetland in land uses that generate excess runoff?</b>	Yes = 1 No = 0	1
<b>D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at &gt;1 residence/ac, urban, commercial, agriculture, etc.)?</b>	Yes = 1 No = 0	1
<b>Total for D 5</b>	<b>Add the points in the boxes above</b>	<b>2</b>

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

<b>D 6.0. Are the hydrologic functions provided by the site valuable to society?</b>		
<b>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.</b>		
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):		0
• 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	
<b>D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?</b>	Yes = 2 No = 0	0
<b>Total for D 6</b>	<b>Add the points in the boxes above</b>	<b>0</b>

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

Wetland name or number  C

**These questions apply to wetlands of all HGM classes.**

**HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat

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

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

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

1

H 1.2. Hydroperiods

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

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

0

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>.

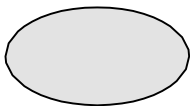
*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*

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

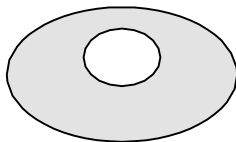
1

H 1.4. Interspersion of habitats

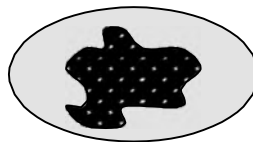
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



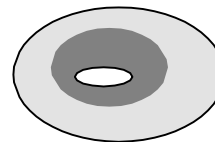
None = 0 points



Low = 1 point

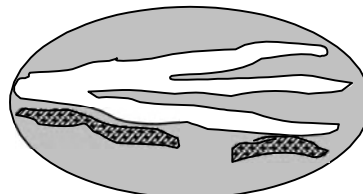
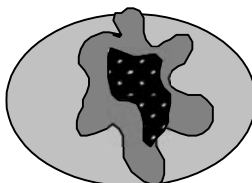
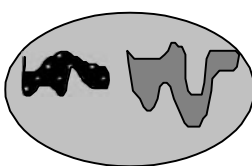


Moderate = 2 points



0

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



Wetland name or number  C

<p>H 1.5. Special habitat features:          Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>  <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt; 4 in diameter and 6 ft long).  <input type="checkbox"/> Standing snags (dbh &gt; 4 in) within the wetland  <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)  <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt; 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)  <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)  <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>	1
<p>Total for H 1</p>	<p style="text-align: right;">Add the points in the boxes above</p> <p style="text-align: center;"><b>3</b></p>

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

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

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

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

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

Wetland name or number   C  

## WDFW Priority Habitats

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

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

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

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

Wetland name or number  D

## RATING SUMMARY – Western Washington

Name of wetland (or ID #):  Wetland D  Date of site visit:  12/6/23

Rated by  Craig Tumer  Trained by Ecology?  Yes  No Date of training \_\_\_\_\_

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

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

Source of base aerial photo/map \_\_\_\_\_

**OVERALL WETLAND CATEGORY** \_\_\_\_\_ (based on functions \_\_\_\_\_ or special characteristics \_\_\_\_\_)

### 1. Category of wetland based on FUNCTIONS

\_\_\_\_\_ **Category I** – Total score = 23 - 27

\_\_\_\_\_ **Category II** – Total score = 20 - 22

\_\_\_\_\_ **Category III** – Total score = 16 - 19

**X** \_\_\_\_\_ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	H <b>M</b> L	H <b>M</b> L	H M <b>L</b>	
Landscape Potential	H <b>M</b> L	H <b>M</b> L	H M <b>L</b>	
Value	H <b>M</b> L	H M <b>L</b>	H <b>M</b> L	<b>TOTAL</b>
<b>Score Based on Ratings</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>15</b>

**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	<b>I II</b>
Wetland of High Conservation Value	<b>I</b>
Bog	<b>I</b>
Mature Forest	<b>I</b>
Old Growth Forest	<b>I</b>
Coastal Lagoon	<b>I II</b>
Interdunal	<b>I II III IV</b>
None of the above	

Wetland name or number  D

## 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	6C
Hydroperiods	D 1.4, H 1.2	n/a
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	n/a
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	7
Map of the contributing basin	D 4.3, D 5.3	n/a
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	8
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	9
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	n/a

### Riverine Wetlands

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

### Lake Fringe Wetlands

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

### Slope Wetlands

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

## HGM Classification of Wetlands in Western Washington

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

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

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

**NO** – go to 2

**YES** – the wetland class is **Tidal Fringe** – go to 1.1

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

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

**YES** – **Freshwater Tidal Fringe**

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

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

**NO** – go to 3

**YES** – The wetland class is **Flats**

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

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

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

**NO** – go to 4

**YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

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

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

**NO** – go to 5

**YES** – The wetland class is **Slope**

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

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

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

Wetland name or number   D  

**NO** – go to 6

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

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

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

NO – go to 7

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

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

NO – go to 8

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

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

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

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

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



Wetland name or number  D

**DEPRESSIONAL AND FLATS WETLANDS**

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

<b>D 1.0. Does the site have the potential to improve water quality?</b>		
D 1.1. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 3 points = 2 points = 1 points = 1	3
D 1.2. <u>The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0		0
D 1.3. <u>Characteristics and distribution of persistent plants</u> (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area Wetland has persistent, ungrazed, plants > ½ of area Wetland has persistent, ungrazed plants > 1/10 of area Wetland has persistent, ungrazed plants < 1/10 of area	points = 5 points = 3 points = 1 points = 0	5
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > ½ total area of wetland Area seasonally ponded is > ¼ total area of wetland Area seasonally ponded is < ¼ total area of wetland	points = 4 points = 2 points = 0	0
Total for D 1	Add the points in the boxes above	<b>8</b>

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

<b>D 2.0. Does the landscape have the potential to support the water quality function of the site?</b>		
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	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source _____	Yes = 1 No = 0	0
Total for D 2	Add the points in the boxes above	<b>1</b>

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

<b>D 3.0. Is the water quality improvement provided by the site valuable to society?</b>		
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 ( <i>answer YES if there is a TMDL for the basin in which the unit is found</i> )?	Yes = 2 No = 0	0
Total for D 3	Add the points in the boxes above	<b>0</b>

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

Wetland name or number  D

**DEPRESSIONAL AND FLATS WETLANDS**

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

<b>D 4.0. Does the site have the potential to reduce flooding and erosion?</b>		
<b>D 4.1. Characteristics of surface water outflows from the wetland:</b>		
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	4
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
<b>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.</b>		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	0
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	
<b>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.</b>		
The area of the basin is less than 10 times the area of the unit	points = 5	0
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
<b>Total for D 4</b>	<b>Add the points in the boxes above</b>	<b>4</b>

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

<b>D 5.0. Does the landscape have the potential to support hydrologic functions of the site?</b>		
<b>D 5.1. Does the wetland receive stormwater discharges?</b>	Yes = 1 No = 0	0
<b>D 5.2. Is &gt;10% of the area within 150 ft of the wetland in land uses that generate excess runoff?</b>	Yes = 1 No = 0	1
<b>D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at &gt;1 residence/ac, urban, commercial, agriculture, etc.)?</b>	Yes = 1 No = 0	1
<b>Total for D 5</b>	<b>Add the points in the boxes above</b>	<b>2</b>

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

<b>D 6.0. Are the hydrologic functions provided by the site valuable to society?</b>		
<b>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.</b>		
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):		0
• 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	
<b>D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?</b>	Yes = 2 No = 0	0
<b>Total for D 6</b>	<b>Add the points in the boxes above</b>	<b>0</b>

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

Wetland name or number  D

**These questions apply to wetlands of all HGM classes.**

**HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat

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

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

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

1

H 1.2. Hydroperiods

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

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

0

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>.

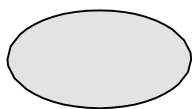
*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*

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

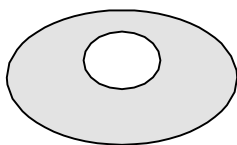
1

H 1.4. Interspersion of habitats

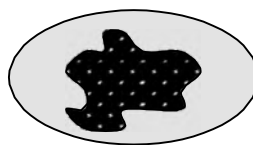
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



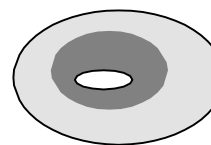
None = 0 points



Low = 1 point

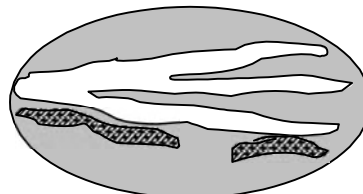
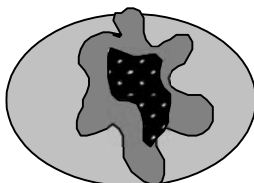
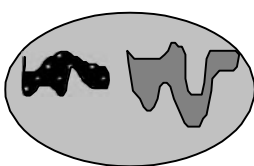


Moderate = 2 points



0

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



Wetland name or number  D

<p>H 1.5. Special habitat features:          Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>  <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt; 4 in diameter and 6 ft long).  <input type="checkbox"/> Standing snags (dbh &gt; 4 in) within the wetland  <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)  <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt; 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)  <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)  <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>	1
<p>Total for H 1</p>	<p>Add the points in the boxes above</p> <p style="text-align: center;"><b>3</b></p>

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

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

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

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

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

Wetland name or number   D  

## WDFW Priority Habitats

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

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

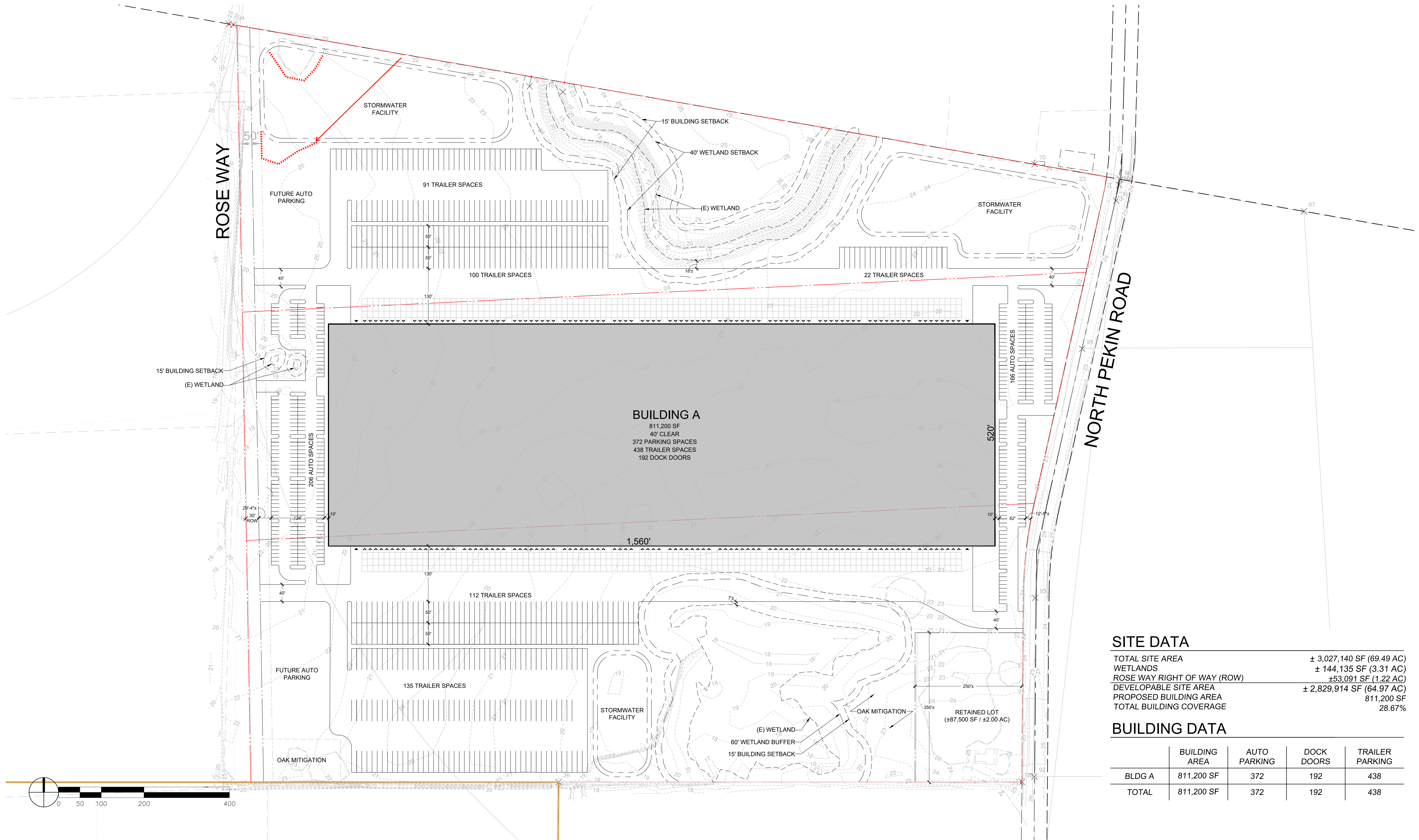
- **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- **Herbaceous Balds:** Variable size patches of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

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

## APPENDIX C

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Site Plan Alternatives



**SITE DATA**

TOTAL SITE AREA	± 3,027,140 SF (69.49 AC)
WETLANDS	± 144,135 SF (3.31 AC)
ROSE WAY RIGHT OF WAY (ROW)	±53,091 SF (1.22 AC)
DEVELOPABLE SITE AREA	± 2,829,914 SF (64.97 AC)
PROPOSED BUILDING AREA	811,200 SF
TOTAL BUILDING COVERAGE	28.67%

**BUILDING DATA**

	BUILDING AREA	AUTO PARKING	DOCK DOORS	TRAILER PARKING
BLDG A	811,200 SF	372	192	438
TOTAL	811,200 SF	372	192	438

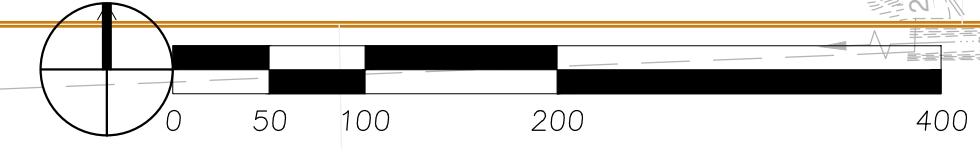
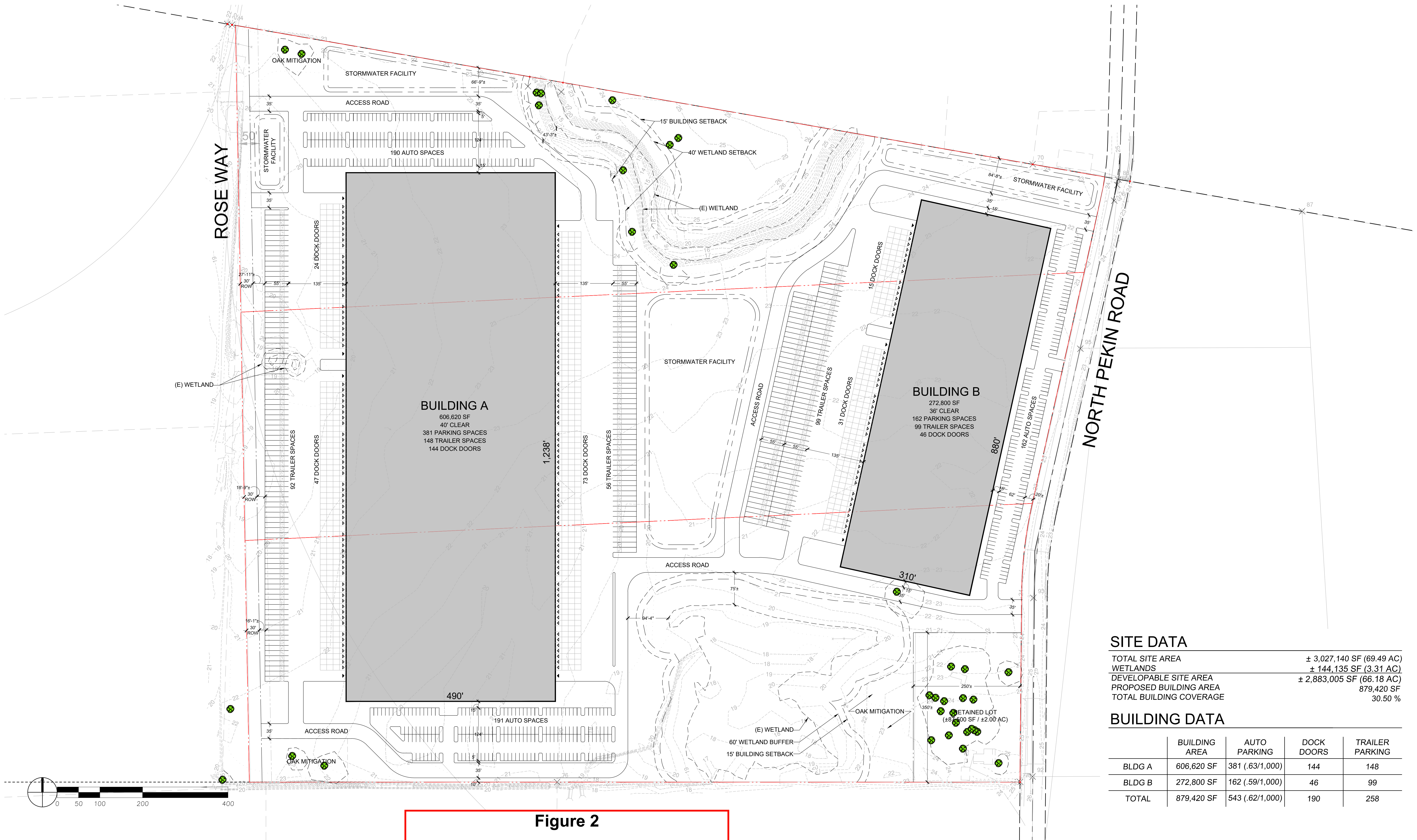


Figure 1



**Figure 2**

**SITE DATA**

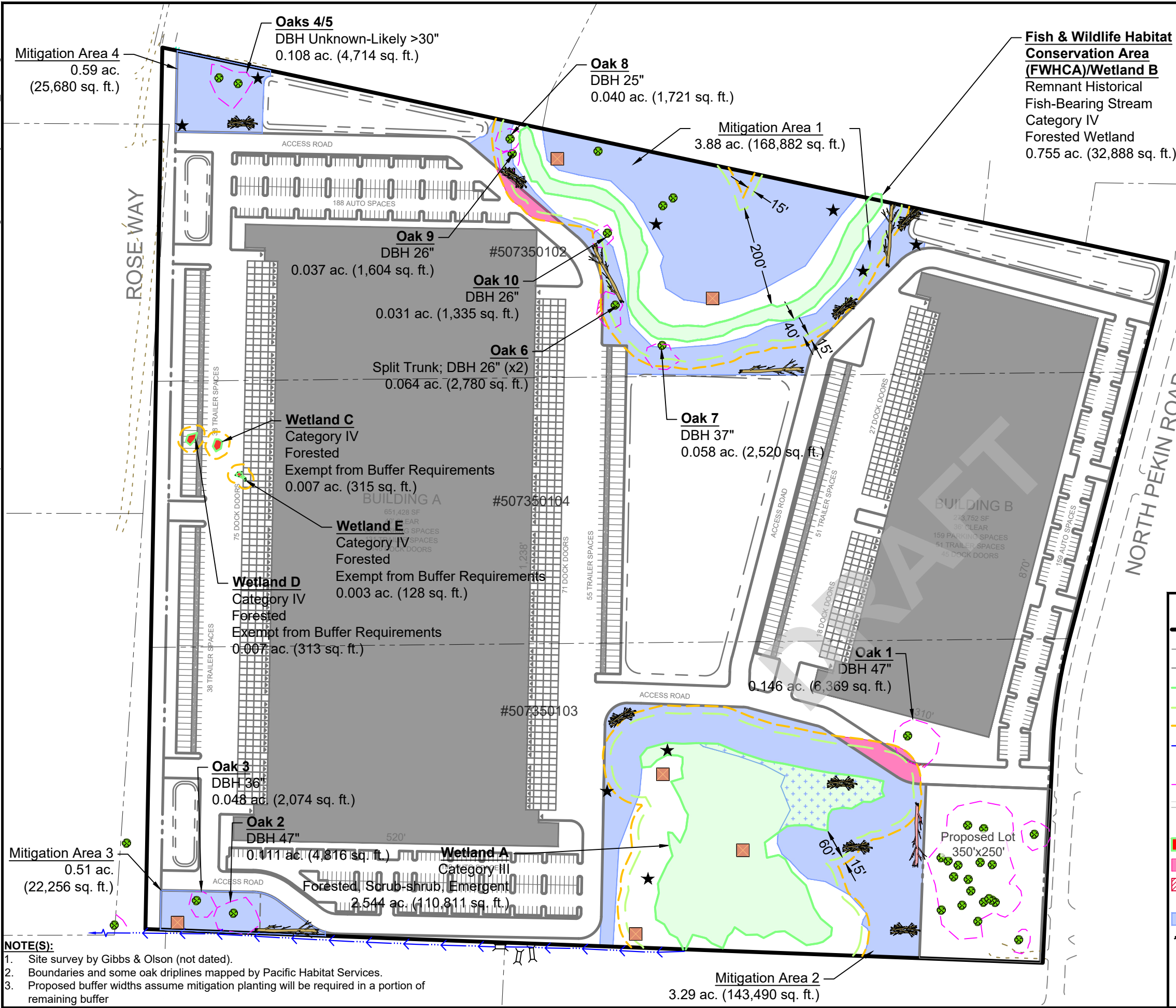
TOTAL SITE AREA	± 3,027,140 SF (69.49 AC)
WETLANDS	± 144,135 SF (3.31 AC)
DEVELOPABLE SITE AREA	± 2,883,005 SF (66.18 AC)
PROPOSED BUILDING AREA	879,420 SF
TOTAL BUILDING COVERAGE	30.50 %

**BUILDING DATA**

	BUILDING AREA	AUTO PARKING	DOCK DOORS	TRAILER PARKING
BLDG A	606,620 SF	381 (.63/1,000)	144	148
BLDG B	272,800 SF	162 (.59/1,000)	46	99
TOTAL	879,420 SF	543 (.62/1,000)	190	258



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**Figure 3**

**NOTE(S):**  
 1. Site survey by Gibbs & Olson (not dated).  
 2. Boundaries and some oak driplines mapped by Pacific Habitat Services.  
 3. Proposed buffer widths assume mitigation planting will be required in a portion of remaining buffer

**LEGEND:**

- Site Boundary
- - - Parcel Boundary
- - - Proposed Lot Boundary
- Wetland Boundary
- Wetland Buffer
- - - 15' Building Setback
- Agricultural Ditch w/ Flow Direction
- Oak Tree
- - - Oak Dripline
- - - 1' Contours
- Culvert
- Wetland Impact (0.02 ac./756 sq. ft.)
- Buffer Impact (0.24 ac./10,392 sq. ft.)
- Oak Dripline Impact (0.01 ac./558 sq. ft.)
- Mitigation Areas (8.27 ac./360,307 sq. ft.)
- Downed Log
- Brush Pile
- Bird Box
- ★ Bat Box

**Option 3**  
**PROPOSED SITE PLAN**  
 N Pekin Road Site  
 Trammell Crow  
 City of Woodland, Cowitz County, Washington  
 Sections 13 & 14, Township 5N, Range 1W, W.M.

DATE: 11/1/23  
 DWN: JJK  
 REQ. BY: SS  
 PRJ. MGR: SS  
 CHK:  
 PROJECT NO: 3665.04

1157 3rd Ave., Suite 220A  
 Longview, WA 98632  
 Phone: (360) 578-1371  
 Fax: (360) 414-9305  
 www.eco-land.com

**Ecological Land Services**

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SCALE IN FEET

## APPENDIX D

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WDFW Functional Assessment for Individual Oregon White Oak Trees

Supplemental Table 2: Functional Assessment for Individual Oregon White Oak Trees

**Oak 1: Total Area of Canopy (square feet) = 6,369**

Metric	Present?	Multiplier	Section Score	
<b>Size of Oak Trees</b>				
>76cm (30 in) dbh	1	6		<b>6</b>
50-76 cm (24 – 30 in) dbh		5		
30 – 50 cm (12 - 24 in) dbh		3		
<30 cm (12 in) dbh		1		
<b>Condition of Crown</b>				
Well-formed/dominant	1	3		<b>3</b>
Suppressed/stunted		2		
Seedling/Sapling		1		
<b>Wildlife Value</b>				
Acorn production	1	2	2	<b>6</b>
Leaves available for wildlife browsing	1	1	1	
Presence of cavities	0	2	0	
Presence of dead branches	1	1	1	
Presence of galls or fungi	1	1	1	
Presence of heart rot or carpenter ants	0	1	0	
Proximity to other Oregon white oaks (<0.5 km)	1	1	1	
			<b>Total Score</b>	
* High Function = Score > 10; Medium Function = Score of 6 – 10; Low Function = Score 4-6, Minimal Functional = <4				

**Oak 6: Total Area of Canopy (square feet) = 2,780**

Metric	Present?	Multiplier	Section Score	
<b>Size of Oak Trees</b>				
>76cm (30 in) dbh		6		<b>5</b>
50-76 cm (24 – 30 in) dbh	1	5		
30 – 50 cm (12 - 24 in) dbh		3		
<30 cm (12 in) dbh		1		
<b>Condition of Crown</b>				
Well-formed/dominant		3		<b>2</b>
Suppressed/stunted	1	2		
Seedling/Sapling		1		
<b>Wildlife Value</b>				
Acorn production	1	2	2	<b>5</b>
Leaves available for wildlife browsing	1	1	1	
Presence of cavities	0	2	0	
Presence of dead branches	1	1	1	
Presence of galls or fungi	0	1	0	
Presence of heart rot or carpenter ants	0	1	0	
Proximity to other Oregon white oaks (<0.5 km)	1	1	1	
			<b>Total Score</b>	
* High Function = Score > 10; Medium Function = Score of 6 – 10; Low Function = Score 4-6, Minimal Functional = <4				

## APPENDIX E

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Columbia River Wetland Mitigation Bank Functional Analysis

## COLUMBIA RIVER WETLAND MITIGATION BANK FUNCTIONAL ANALYSIS

### WETLAND FUNCTIONS PROVIDED AT COLUMBIA RIVER WETLAND MITIGATION BANK

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The following is excerpted from the CRMB Mitigation Banking Instrument (MBI):

The CRWMB's excavation and earth-moving was completed in September 2011 and plant installation was completed in spring 2013, with the broad ecological goals of:

- Creating additional wetland area by excavating a portion of the site.
- Creating and enhancing a variety of habitat types (forested, scrub-shrub, emergent, aquatic bed wetlands) interspersed throughout the site.
- Controlling onsite invasive species such as reed canarygrass (*Phalaris arundinacea*), tansy ragwort (*Senecio jacobea*), and Himalayan blackberry (*Rubus armeniacus*).
- Creating and enhancing wildlife habitat structure and function of the site.

It is anticipated that within 50 to 80 years, the site will be a cottonwood forest typical of historic conditions within the Columbia River floodplain. Open rolling grassy areas interspersed with open water will decrease on site as a result of the proposed Bank site design, which is anticipated to restore the site to a riparian forested floodplain wetland over time. The existing grazed fields will gradually convert to a forested scrub-shrub wetland complex, interspersed with the existing emergent and aquatic bed habitats on site (Clark County Mitigation Partners, LLC and ELS 2009).

### ANTICIPATED FUNCTIONAL LIFT

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#### WATER QUALITY

As a result of implementing the Bank, the vegetative roughness on the site has increased over existing conditions. Functions related to water quality, such as sediment removal, nutrient removal, and removing toxins and organics have increased post construction, both because of increased vegetated species roughness and structure, and because of the additional vegetated wetland area added are flooded and remain aerobic. These types of areas are thought to contribute to the removal of toxic organic compounds (Hruby *et al.* 1999).

#### WATER QUANTITY

Excavating to create 27.10 acres of new wetland area has increased floodwater storage available onsite and contributes to reducing peak flows within the immediate vicinity of the Bank. The Bank site is a part of the Vancouver Lake Lowlands and is in a landscape position to receive and retain floodwaters from the Vancouver Lake sub-basin and the Lake River sub-basin before the waters draw down and exit to Vancouver Lake, Lake River, and the Columbia River; As Vancouver Lake fills, it backwaters into the Bank site. Sediments in floodwaters may settle out and be absorbed by emergent vegetation onsite. The Bank also provides additional peak flow storage, but since the floodwaters entering the site are backwater from Vancouver Lake, as well as hyporheic flow from the Columbia River, the Bank site is not likely to decrease downstream erosion.

The Bank site's hydrology is directly correlated to Columbia River flows. As such, it contributes to, and is directly affected by maintaining seasonal flow associated with the Columbia River. Excavation to create new wetland area increases the site's capacity to store surface water, provides additional baseflow support, and contributes to groundwater recharge.

#### **HABITAT**

In general, because of the increase in vegetative structure and function, and the increase in habitat interspersion, functions associated with general habitat have increased onsite as a result of Bank establishment.

Overall general habitat suitability at the Bank site has increased as a result of Bank establishment, which results in more wetlands onsite, a much higher degree of wetland structure, habitat interspersion, and native species richness, and higher function than pre-construction conditions. Implementing the Bank has removed existing stressors on wetland function – the grazing cattle were removed, and the site is managed much more intensively to remove existing invasive species and to favor native plant establishment.

#### **BUFFERS**

The buffer surrounding the mitigation bank varies from 100 to 150 feet at the east and south boundaries, which consists of active floodplain forest and scrub area interspersed with the existing wetland. The west and north boundaries of the Bank site are adjacent to Vancouver Lake Wildlife area, which provides a buffer of forested and scrub-shrub active floodplain to the site, allowing protection from intensive human activity and development.

## APPENDIX F

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Arbor Science Tree Care Tree Management Recommendations



# ARBOR SCIENCE TREE CARE

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OR CCB# 216351

September 13, 2023

Trammell Crow Portland Development Inc.  
1300 SW Fifth Ave, Suite 3350  
Portland, OR 97201

345 North Pekin Rd  
Woodland WA, 98674  
Cowlitz County Parcels : 507350104, 507350102, and 507350103  
69.5 acres

**Re:** Oak tree protection plan and conservation guidelines.

**Outline:**

There are 10 Oregon white oak trees (*quercus garryana*) on this development site that are outlined for protection and retention.

The majority of these trees will see very little disruption to their critical root zone with the currently proposed site plan. There is one oak tree that may see subtle impact to its critical root zone due to proximity and placement of buildings and site improvements. Tree specific protection guidelines will be detailed. (See tree specific protection guidelines section G below.) Said tree is located in the SE corner of this site and is detailed on the provided site survey map as oak tree #1.

**Standardized Tree, Vegetation and Soil Protection During Construction:**



**During construction:**

Prior to initiating construction or tree removal on the site, soils, vegetated areas and individual trees to be preserved shall be protected from potentially damaging activities pursuant to the following standards.

**A. Placing Materials Near Trees.** No person may conduct any activity within the protected area of any tree designated to remain, including, but not limited to:

- parking equipment or driving over with equipment,
- placing solvents,
- storing building material and soil deposits,
- dumping concrete washout.

1. During construction, no person shall attach any object to any tree designated for protection.

**B. Protective Barrier.** Before development, land clearing, filling or any land alteration for which a tree removal permit or protection plan is required, the developer:

1. Shall erect and maintain readily visible protective tree fencing along the outer edge and completely surrounding the protected area of all protected trees or groups of trees that are to remain undisturbed. Fences shall be constructed of chain link and at least four feet high, unless other type of fencing is authorized by the planning official.

2. Shall prohibit excavation or compaction of earth or other potentially damaging activities within the barriers.

3. Shall maintain the protective barriers in place until the planning official authorizes their removal or a final certificate of occupancy is issued, whichever occurs first

4. Shall ensure that any landscaping done in the protected zone subsequent to the removal of the barriers shall be accomplished with light machinery or hand labor. No turf or lawn areas are to be installed within protected area.

5. In addition to the above, the planning official may require the following:

- Cover with mulch to a depth of at least six (6) inches or with plywood or similar material the areas adjoining the critical root zone of a tree in order to protect roots from damage caused by heavy equipment.

- Minimize root damage by excavating a two (2) foot deep trench, at edge of critical root zone, to cleanly sever the roots of trees to be retained.
- Have corrective pruning performed on protected trees in order to avoid damage from machinery or building activity.
- Maintain trees throughout construction period by watering and fertilizing if recommended by Arborist.

### **C. Grade:**

1. The grade shall not be elevated or reduced within the critical root zone of trees to be preserved without the planning official's authorization. The planning official may allow coverage of up to one half of the area of the tree's critical root zone with light soils (no clay) to the minimum depth necessary to carry out grading or landscaping plans, if it will not imperil the survival of the tree. Aeration devices may be required to ensure the tree's survival.

2. If the grade adjacent to a preserved tree is raised such that it could slough or erode into the tree's critical root zone, it shall be permanently stabilized to prevent suffocation of the roots.

3. The developer shall not install an impervious surface within the critical root zone of any tree to be retained without the authorization of the planning official. The planning official may require specific construction methods and/or use of aeration devices to ensure the tree's survival and to minimize the potential for root induced damage to the impervious surface.

4. To the greatest extent practical, utility trenches shall be located outside of the critical root zone of trees to be retained. The planning official may require that utilities be tunneled under the roots of trees to be retained if the planning official determines that trenching would significantly reduce the chances of the tree's survival.

5. Trees and other vegetation to be retained shall be protected from erosion and sedimentation. Clearing operations shall be conducted so as to expose the smallest practical area of soil to erosion for the least possible time. To control erosion, shrubs, ground cover and stumps shall be maintained on the individual lots, where feasible. Where not feasible appropriate erosion control practices shall be implemented pursuant to best management practices within industry standards.

**D. Directional felling.** Directional felling of trees shall be used to avoid damage to trees designated for retention and shall be conducted so as to expose the smallest practical area of soil to erosion for the least possible time. To control erosion, shrubs, ground cover and stumps shall be retained where feasible. Where not feasible, appropriate erosion control practices shall be implemented pursuant to industry standards.

## **E . Landscape plantings and removal of competitive trees or vegetation with in the critical root zone.**

1. Care must be taken to avoid root damage and soil compression during the removal of competitive or invasive vegetation with in the critical root zone. Removal of vegetation and small shrubs should be completed with hand tools or light machinery. If light machinery is to be used (ie mini excavator or low ground psi machine) the machine should be placed outside the critical area if possible. Plants should be pulled out by means of cable choker or strap around stem not dug out.
2. For larger tree and plant removal see above section D. directional felling. It is suggested that stumps be cut flush with grade and left in place. If the removal of stumps is necessary only the immediate surface of stump to no > 2" below grade should be ground. Care should be take to not grind outside the immediate stump circumference area. Stump grinding mulch can be left in place.
3. New landscape plantings can be placed as part of the landscape design. Installed plantings should be small native under story plants or grasses with light watering requirements . Smaller sized installations that do not require a large planting hole is recommended. Tree plantings are not suggested within the critical root zone.
4. Post planting mulch and irrigation around the entire root zone and new planting is highly suggested for trees with in the developed areas. (Specifically tree #1)

**F. Additional requirements.** The planning official or Arborist may require additional tree, vegetation and soil protection measures which are consistent with accepted best management practices.

## **Tree Specific Protection Guidelines for Oak Tree #1:**

### **G. Observations and Assessment:**

#### 1. Oregon White Oak

- DBH 47" (diameter at breast height)
- Crown coverage area of approximately 6300 square feet.
- Full healthy crown with past witness of branch failure likely due to weather events.
- Predominate growth habit and list towards the SW, S and SE.
- Witness of minimal listing.
- Well drained sandy loam soils

2. This well aged specimen exhibits a highly phototropic (growth toward the predominate sunlight) habit toward the S, SE, SW. Coupled with this habit it appears that this tree has seen stem listing with slight root system upheaval. This event likely happened many years back during an inclement weather or loading event. There is little concern from this issue as the tree has since corrected itself and seen very little root loss. It also appears that some reactive pruning has taken place to presumably reduce load potential and gain clearance for agricultural activities around the tree.

### **H. Tree Specific Arborist Recommendations:**

1. The recommendations that follow should be completed prior to any soil movement, grading, construction or development related activities.

- Suppression of invasive and heavy vegetation within the critical root zone (area below the canopy out to drip line). Removal of vegetation shall be completed with light equipment and or hand tools.
- Place a 2-3" layer of mulch consisting of an organic media such as arborist wood chips or bark mulch. To prevent soil compression mulch with soil or sand should not be used. Do not use landscape fabrics or geo-textile fabrics to cover area.
- Install protective fencing and prohibit any equipment access or storage to area.
- Basic clearance for construction traffic can be completed at this time. All care shall be completed by an ISA Certified Arborist

2. Post development recommendations

- Retain a complete mulch volume below tree as part of the landscape design. Do not plant grass.
- Incorporate turf grass irrigation into tree specific watering system.
- Crown clean tree for dead declining or broken branches to maintain health.
- Light distal reduction on loaded side of tree to reduce load potential and reduce future failure potential. Care to be carried out by an ISA Certified Arborist.

### **Arborist Recommendation Summary:**

The current site plan places site improvements and development outside this tree's (tree #1 ) drip line and the assumed critical root zone. This site has been in agricultural use for numerous years and has seen annual plowing outside this specimens drip line. This activity has undoubtedly reduced the ability for this tree to develop critical root mass beyond the drip line within the plow zone. This cultural habit would likely promote an abundance of absorbing and critical root mass closer to the tree within the drip line. This concentration of close proximity root masses should benefit this trees ability to acclimate to its new environment post development.

The remaining trees on this site will see very little if any disturbance with this site plan.

White oak trees as a whole have strong ability for adaptation and can still thrive in newly developed urban settings. With proper planning and awareness before, during and after development as well as following protection guidelines these tree will continue to be and asset for years to come.

Prepared by Brandon Cheney  
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Tree Risk Assessment Qualified