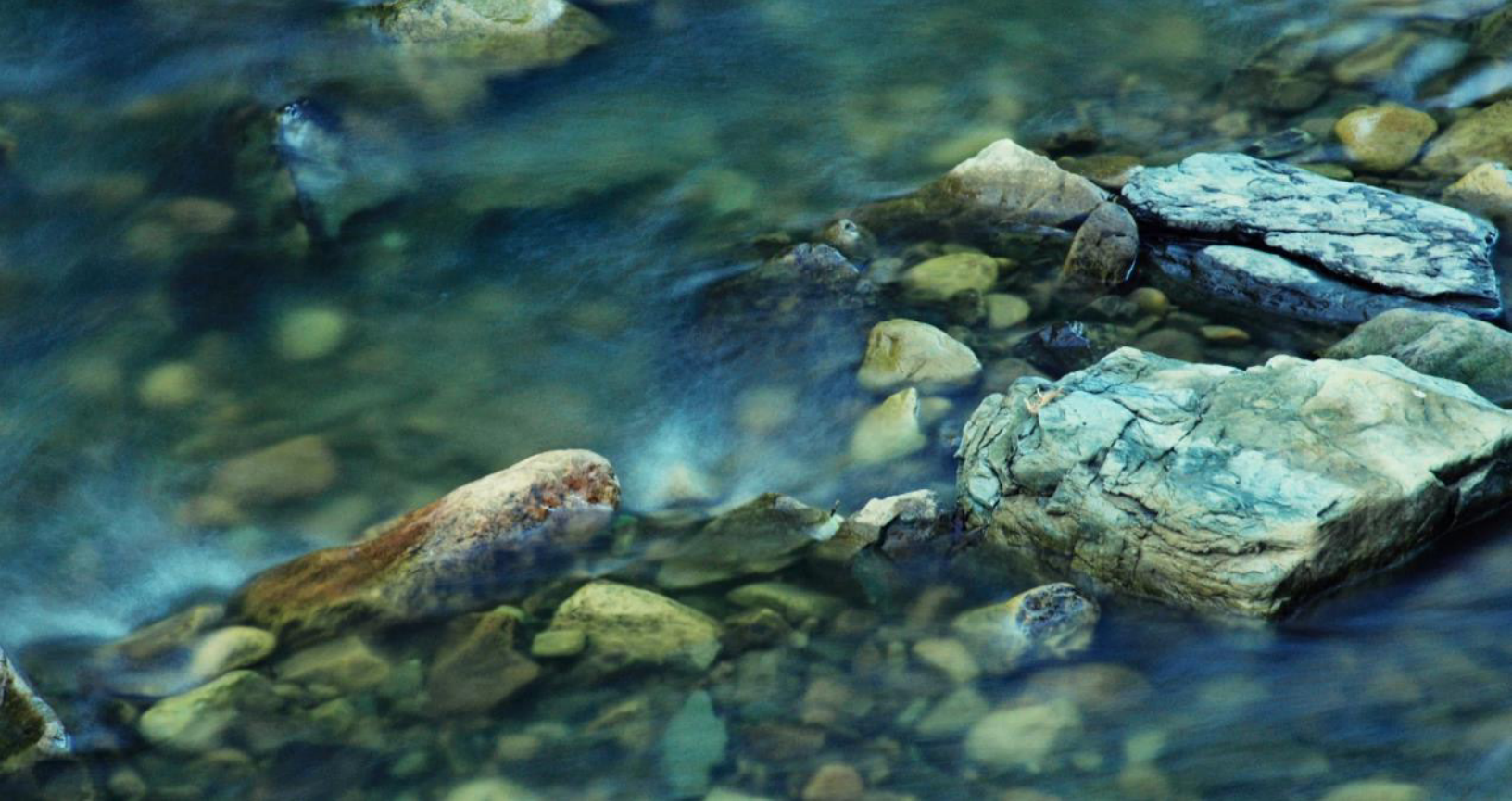

June 2024
Freeman Road Logistics

Critical Areas Report

Prepared for Vector Development Company

June 2024
Freeman Road Logistics

Critical Areas Report

Prepared for
Vector Development Company
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Project Number: 212141-02.01

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ABBREVIATIONS

2010 Regional Supplement	*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region*
Barghausen	Barghausen Engineering
BFE	base flood elevation
BMP	best management practice
CAR	*Critical Areas Report*
DP	data plot
EC	Employment Center zoning designation
Ecology	Washington State Department of Ecology
ESA	Endangered Species Act
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
FEMA	Federal Emergency Management Agency
FMC	Fife Municipal Code
FRO	Freeman Road Overlay
HGM	hydrogeomorphic
I-5	Interstate 5
LM/W	Light Manufacturing/Warehousing zoning designation
NAVD88	North American Vertical Datum of 1988
NMFS	National Marine Fisheries Service
NRCS	National Resources Conservation Service
NWI	National Wetlands Inventory
NWSA	Northwest Seaport Alliance
OBL	obligate wetland
OHWM	ordinary high water mark
PAB	palustrine aquatic bed
PEM	palustrine emergent
PFO	palustrine forested
PHS	Priority Habitats and Species
PMC	Puyallup Municipal Code
Port	Port of Tacoma
Project	Freeman Road Logistics project
PSS	palustrine scrub-shrub
redox	redoximorphic
Third-Party Review Report	Third-Party Review of Critical Areas Report

Third-Party Second Review Report	Third-Party Second Review of Critical Areas Report
UPL	obligate upland
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
Washington rating system	*Washington State Wetland Rating System for Western Washington: 2014 Update*
WDFW	Washington Department of Fish and Wildlife
WSDOT	Washington State Department of Transportation
WWHM	Western Washington Hydraulic Model

1 Introduction

Vector Development Company is proposing construction of two new warehouse buildings as part of the Freeman Road Logistics Project (Project), east of Freeman Road East and west of the future Washington State Department of Transportation (WSDOT) State Route 167 Completion Project. The Project includes redevelopment of 15 adjacent parcels, henceforth referred to as the Main Development Area (parcels 0420174075, 0420201040, 0420201039, 0420201045, 0420201066, 0420201101, 0420205003, 0420205017, 0420201027, 0420201052, 0420201034, 0420201036, 0420201042, 0420205004, 0420205016) in Puyallup, Washington. Eight other parcels (0420173049, 0420174707, 0420174032, 0420201008, 0420201104, 0420201114, 0420201115, and 0420212073), as well as 48th Street East and 78th Avenue East within the City of Fife, will support the development through transportation or utility improvements, henceforth referred to as the Transportation and Utility parcels. A vicinity map is shown in Figure 1, and an aerial photograph of existing conditions at the Study Area, which includes the WSDOT-owned parcels and Transportation and Utility parcels is shown in Figure 2.

The proposed development would include two warehouses, associated utilities, vehicle and truck parking and maneuvering space, widening of access roads, stormwater management, landscaping, and improvements along Freeman Road East (Appendix A). The Project has been designed to be consistent with local regulations, including the City of Fife and City of Puyallup Shoreline Master Plans.

This *Critical Areas Report* (CAR) has been prepared by Anchor QEA scientists to support the local permitting and land use review of the Project. The CAR evaluates the presence of critical areas within the Main Development Area, Transportation and Utility parcels, and WSDOT-owned parcels and addresses potential impacts to existing critical areas and associated regulated buffers, as defined in the City of Puyallup Municipal Code (PMC) Chapter 21 (City of Puyallup 2024a). The format of this CAR has been prepared consistent with PMC 21.06. Critical areas regulated under PMC Chapter 21 include wetlands, streams, fish and wildlife habitat conservation areas, frequently flooded areas, and minor lakes.

Additionally, the CAR evaluates the presence of critical areas within the Transportation and Utility parcels and roadways and addresses potential impacts to existing critical areas and associated regulated buffers, as defined in the City of Fife Municipal Code (FMC) Chapter 17 (City of Fife 2024a). The format of this CAR has been prepared consistent with FMC 17.05. Critical Areas regulated under FMC Chapter 17 include wetlands and wildlife habitat conservation areas.

Anchor QEA scientists gathered and reviewed existing information consistent with PMC Chapter 21 and FMC Chapter 17 to identify and assess existing critical areas. To support this review, Anchor QEA biologists performed critical areas site visits to the Study Area on April 1 and September 28, 2021;

March 11, 2022; March 23, 2023; May 19, 2023; April 12, 2024; and May 17, 2024. The information provided in this CAR has been prepared by professional biologists using the best available science to provide an accurate evaluation of critical areas and potential impacts.

1.1 Review of Existing Information

As part of the analysis to identify critical areas, Anchor QEA biologists reviewed the following sources of information to support field observations:

- PMC (City of Puyallup 2024a)
- City of Puyallup GIS Portal Wetland and Stream Maps (City of Puyallup 2024b)
- FMC (City of Fife 2024a)
- City of Fife Wetlands Map (City of Fife 2024b)
- Pierce County PublicGIS Interactive Mapping Tool (Pierce County 2024)
- U.S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey (USDA 2024)
- National Marine Fisheries Service (NMFS) Endangered Species Act (ESA) status reviews and listing information (NMFS 2024)
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Wetlands Mapper (USFWS 2024a)
- USFWS ESA Status Reviews and Listing Information (USFWS 2024b)
- Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) Maps (WDFW 2024a)
- WDFW SalmonScape Mapping System (WDFW 2024b)
- Aerial photographs publicly available
- Third-Party Review of Critical Areas Report (Third-Party Review Report) and Third-Party Second Review of Critical Areas Report (Third-Party Second Review Report) produced by Confluence Environmental Group (2022, 2024)

1.2 Qualifications

This CAR was prepared following site visits conducted by Anchor QEA on the following dates:

- April 1, 2021
- September 28, 2021
- March 11, 2022
- March 23, 2023
- May 19, 2023
- April 12, 2024
- May 17, 2024

Personnel who contributed to the surveys and preparation of this CAR are listed as follows:

- Laura Caron: Former Anchor QEA Natural Resource Scientist now working as a Fisheries and Wetlands Biologist at WSDOT. Responsible for 2021 and 2022 field investigations and reporting; BA Environmental Studies and Geology, University of Colorado; MNRS Natural Resource Management and Ecological Restoration, Colorado State University; Certified Wetland Delineator, U.S. Army Corps of Engineers (USACE); Certified Wetland Rater, Washington State Department of Ecology (Ecology); Qualified Junior Author for Biological Assessment, WSDOT, through 2028; Qualified Biologist for Preliminary Hydraulic Stream Design and Restoration, WSDOT.
- Calvin Douglas: Former Anchor QEA Wetland Scientist, now working as a Senior Ecologist at Confluence Environmental Group. Responsible for 2021 and 2022 field investigations and reporting; BS Wildlife Biology, University of Washington; Pierce County Certified Wetland Scientist and Wildlife Biologist; Qualified Senior Writer for Biological Assessment, WSDOT, through 2024.
- Hannah Fotherby: Anchor QEA Wetland Biologist supporting 2023 and 2024 field investigation and reporting; BA Environmental Studies, University of Washington; MEH Restoration Ecology and Environmental Horticulture, University of Washington; Pierce County Certified Wetland Scientist.
- Jakob Rowny: Anchor QEA Senior Wetland Biologist and Environmental Scientist responsible for 2023 and 2024 field investigations and reporting; BS Ecology and Evolutionary Biology, University of California; MS Environmental Sciences and Engineering, University of North Carolina; Pierce County Certified Wetland Scientist; 9 years of wetland delineation, categorization, and critical area assessment and reporting experience in Washington State and Oregon.
- Josh Jensen: Anchor QEA Senior Managing Planner responsible for field oversight and code compliance; BS Economics and Environmental Studies, Western Washington University; MEM, Duke University.
- Dan Berlin, PWS: Anchor QEA Principal Scientist responsible for directing and reviewing all field work and documentation; BA Biology, Kalamazoo College; MEM Wetland Science, Duke University.

2 Project Purpose and Need

2.1 Project Purpose

The overall purpose of the Project is to provide 500,000 square feet of warehouse capacity and logistical support for receiving and distribution. The Project is intended to use existing and planned transportation infrastructure, including the WSDOT State Route 167 Completion Project, a portion of which is located just east of the Main Development Area, and includes construction of 4 miles of new highway between Meridian Avenue and Interstate 5 (I-5) and several new interchanges. The State Route 167 Completion Project will provide east-west linkages between the Port of Tacoma (Port) and manufacturing and industrial areas in Pierce County and will improve overall regional mobility by reducing congestion on surrounding local roads and highways.

The Project is also intended to use the nearby Pierce County Canyon Road Regional Connection Project that will extend Canyon Road East from Pioneer Way East to 70th Avenue East in Fife by constructing a new bridge across the Puyallup River. This Project will also improve regional mobility by providing freight haulers and other traffic faster, safer, and more direct access to State Route 167, I-5, and Port facilities.

The Project is situated in an area that was recently rezoned to support the planned receiving and distribution use by the City of Puyallup, as documented in the Freeman Road Comprehensive Plan Map Amendment, Case Number L-20-0001, and the Freeman Road Overlay (FRO), which was adopted by City of Puyallup Ordinance No 3278, passed June 27, 2023. The Freeman Road Comprehensive Plan Map Amendment and FRO annexed and provided Light Manufacturing/Warehousing (LM/W) zoning for 11 previously unincorporated parcels east of Freeman Road East and west of the WSDOT State Route 167 Completion Project. The proposed Project layout satisfies City of Puyallup requirements and achieves the applicant's purpose of providing additional warehouse capacity and logistical support in an area zoned for those uses and will be consistent with current and anticipated future land uses of the surrounding areas.

In the context of Pierce County and WSDOT projects—and the City of Puyallup's goals of bolstering a vibrant local economy by supporting land supply for business opportunities, and providing a safe, livable, and healthy community—the Project purpose provides an appropriate land use solution. The Project will create safer neighborhoods by separating truck activity away from residential uses, support the local economy by providing well-paying jobs, and protect and enhance environmental functions and values as part of the Project.

2.2 Project Need

The overall need of the Project is to address an existing shortage of receiving and distribution facilities east of Tacoma, which is expected to be more significant considering projected growth in

the region and associated shipping though the Port and other regional ports. The Northwest Seaport Alliance (NWSA), which includes Port shipping activities, is one of the largest marine cargo gateways in the United States. More than 3.7 million 20-foot equivalent units carrying 26.1 million metric tons of containerized cargo were handled at NWSA facilities (NWSA 2019). Shipping at the Port is anticipated to increase above pre-pandemic tonnages and will continue to be a primary driver of the regional economy (Pierce County 2023). To support this growing demand for shipping and distribution, USACE, and NWSA plan to deepen the Port's Blair Waterway, which will allow extra-large container ships access to the Port. The Port is also planning future redevelopment to support economic growth, job creation, and trade, including several cleanup projects, completion of habitat and wetland mitigation bank projects, and ongoing maintenance and improvements to stormwater systems and Port-specific infrastructure such as dock, pier, and fender system upgrades (Port 2023).

The Freeman Road Logistics Project is designed to provide needed warehouse capacity and logistical receiving and distribution support in an area that is regionally important to continued economic growth and resiliency. The rezone of the properties within the Main Development Area acknowledges the need for more warehouse and logistical projects within the City of Puyallup, as described in the City of Puyallup's Freeman Road Comprehensive Plan Map Amendment and FRO. The design elements and standards included in the Freeman Road Comprehensive Plan Map Amendment and FRO were developed through a multiyear, multi-stakeholder planning process to achieve appropriate land use zoning for the area, provide high-quality amenities, support regional transportation, water, sewer, and stormwater infrastructure, and include reasonable setbacks for the neighborhood residents to retain the aesthetic character of the area and improve the safety of residents and visitors.

While meeting the specific purpose and need of the Project by supplying improved warehousing capacity and logistical support in the area, the Project is expected to result in no net loss of ecological function to the critical areas evaluated in this report. The Project will comply with federal, state, and local regulations that require mitigation for unavoidable net adverse impacts to fish and wildlife species that rely on highly functioning shoreline, stream, and wetland areas.

3 Study Area Description

The Study Area of this CAR encompasses 96.40 acres and is composed of the following sections (Figure 2):

- The Main Development Area, which is made up of the 15 adjacent parcels where the Project is located and encompasses 24.04 acres
- The Transportation and Utility parcels, which are eight parcels in total, with four in the City of Puyallup and four in the City of Fife. The four parcels in the City of Puyallup are located south of the Main Development Area and include three undeveloped parcels (parcels 0420201008, 0420201114, and 0420201115) and the O'Reily-owned parcel 040212073. The four parcels in the City of Fife include the two parcels located immediately west of the Main Development Area and Freeman Road East (parcels 0420201104 and 0420174032), and the two parcels north of 48th Street East. In total, the Transportation and Utility parcels encompass 105.26 acres. This area also includes portions of 48th Street East and 78th Avenue East in the City of Fife
- The five WSDOT-owned parcels located north and east of the Main Development Area (parcels 0420201110, 0420201111, 0420174028, 0420174054, and 0420178009) that encompass 25.03 acres

The Main Development Area is currently developed for residential and agricultural uses and consists of open lawn areas, residential housing, agricultural fields, and paved and gravel roadways. Many of the residential buildings were demolished and removed prior to Anchor QEA's May 2023 site visit. An agricultural drainage ditch is located off site on WSDOT properties, adjacent to the undeveloped northeast corner of the Main Development Area. The west boundary of the Main Development Area is bounded by Freeman Road East. Photographs of the Study Area are included in Appendix B. One wetland, Wetland A, was identified off site to the south and one wetland, Wetland B, was identified on site. WSDOT and WDFW have provided a preliminary jurisdictional determination for the agricultural ditch, and WSDOT has provided boundary delineations and categorizations for wetlands located on their property off site to the north and east. Regulated buffers associated with the off-site ditch and wetland areas partially extend into the Main Development Area (per PMC 21.06). An area mapped as unverified wetland by the City of Puyallup located at Transportation and Utility parcel 0420201104 within the City of Fife was investigated by Anchor QEA biologists in May 2023 and was determined to be an upland area.

3.1 Soils

Natural Resources Conservation Service (NRCS)-mapped soils are shown in Figure 3. The underlying soils in the Study Area consist of Sultan silt loam and Puyallup fine sandy loam, with Pilchuck fine

sand mapped at the Transportation and Utility parcels to the south (USDA 2024). The NRCS Web Soil Survey (Figure 3; USDA 2024) identifies the following soil series in the vicinity of the Study Area:

- Pilchuck fine sand: This soil is very deep, excessively drained, and formed in recent sandy and gravelly alluvium on floodplains and moderate hill slopes. Pilchuck fine sand is not listed as hydric (USDA 2024). Permeability is very fast, and it has very low water table. Typically, the surface layer to 10 inches is very dark gray fine sand and the subsurface layer to 60 inches is black and very dark gray gravelly sand.
- Puyallup fine sandy loam: This soil is very deep, well drained with high saturated hydraulic conductivity and formed in mixed recent alluvium on floodplains and low stream terraces. Puyallup fine sandy loam is not listed as hydric (USDA 2024). Permeability is fast and it has a low water table. Typically, the surface layer to 10 inches is dark brown fine sandy loam and the subsurface layer to 60 inches is very dark grayish brown gravelly sand.
- Sultan silt loam: This soil is very deep, moderately well drained formed in recent alluvium on floodplains. Sultan silt loam is not listed as hydric (USDA 2024). Permeability is moderately slow, and it has a moderately high water table. Typically, the surface layer to 10 inches is very dark grayish brown silt loam and the subsurface layer to 60 inches is olive gray very fine sandy loam stratified with light gray medium sand.

Table 1 summarizes the soil mapping information for the Study Area. Puyallup silt loam, Puyallup fine sandy loam, and Sultan silt loam are not classified as hydric soils. but all three include minor hydric soil inclusions.

Table 1
Soils Mapped Within the Study Area by the NRCS Web Soil Survey

Map Unit	Soil Type Name	Drainage Class	Hydrologic Soil Group[1]	Hydric Soil Rating[2]	Hydric Inclusions[3]	Approx. % of Study Area
29A	Pilchuck silt loam	Excessively drained	A	No	Yes	45%
31A	Puyallup fine sandy loam	Well drained	A	No	Yes	25%
42A	Sultan silt loam	Moderately well drained	C/D	No	Yes	30%

Notes:

1. Hydrologic soil groups are based on runoff potential according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.
   i. Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They chiefly consist of deep, well- to excessively drained sands or gravels and have a high rate of water transmission.
   ii. Group B soils have moderately low runoff potential when thoroughly wet, and water transmission through the soil is unimpeded.
   iii. Group C soils have slow infiltration rates when thoroughly wet, caused by either an underlying layer that impedes the downward movement of water or soils of moderately fine or fine texture.

iv. Group D soils have a very slow infiltration rate (high runoff potential) when thoroughly wet and include soils consisting of clays with high shrink-swell potential, soils that have a high water table, soils that have a clay or claypan layer at or near the surface, and soils that are shallow over nearly impervious material.

2. Hydric soil rating indicates the components of soil map units that meet the criteria for hydric soils.
3. Non-hydric soils may have inclusions of hydric soil in the lower positions on the landform.

3.2 Hydrology

The Study Area is located within Water Resource Inventory Area 10, the Puyallup-White Watershed, in the Puyallup subbasin (Hydrologic Unit Code [HUC] 17110014); the Lower Puyallup River Watershed (HUC 1711001405); and the Puyallup River Subwatershed (HUC 171100140502; Ecology 2023). Hydrologic characteristics within the property are influenced primarily by local precipitation, surface water runoff, and a high groundwater table, the areas that drain to the Puyallup River, which originates on Mount Rainier, and Wapato Creek, which is located several thousand feet to the north.

Two streams, Stream 14 and Stream 15, were identified within an off-site WSDOT-owned portion of the Study Area. Both Streams 14 and 15 are categorized as non-fish, perennial waters in the WSDOT Critical Areas Report (WSDOT 2023). One wetland, Wetland A, was identified to the south of the Main Development Area at parcels 0420201008, 0420201114, and 0420201115, and has been delineated and categorized as a Category II wetland (Section 4.2.2). During our March 2022 field investigation, a small, disturbed area containing ponded water approximately 3 inches deep was identified at the east side of parcel 0420174075. This area has since been delineated and categorized as a Category III wetland (Wetland B; Section 4.2.2). WDFW PHS and SalmonScape data do not identify any freshwater surface stream channels to the Puyallup River or Wapato Creek within the Study Area (WDFW 2024a, 2024b).

3.3 Plant Communities

Some undisturbed native vegetation communities are located within the Study Area, but most of the vegetation is composed of open lawn areas, residential homes, grazing pastures, and paved and gravel roads, with small patches of planted native and ornamental trees and shrubs. The majority of the plantings are shrubs and ground cover species appear to receive regular maintenance. Areas of native vegetation are present within the undeveloped portions of the Transportation and Utility parcels located off site to the south and within the undeveloped portions of the WSDOT-owned parcels off site to the east of the Main Development Area. Photographs of the Study Area are included in Appendix B. Existing plant species within the Study Area are described in Section 3.4.1.

The Pierce County critical area maps (Figure 4; Pierce County 2024), USFWS NWI Wetlands Mapper (Figure 5; USFWS 2024a), and City of Puyallup wetland and stream maps (Figure 5; City of Puyallup 2024b) do not identify any freshwater wetland habitat within the Main Development Area (see

Figures 5, 6, and 7). Anchor QEA biologists did not identify any wetlands in the Main Development Area during the field investigation in October 2021. During our March 2022 field investigation, Anchor QEA biologists identified and delineated Wetland B in a disturbed area at the east side of parcel 0420174075. Wetland B has since been rated as a Category III emergent, depressional wetland. Additional wetlands information is provided in Section 4.2. Buffers in association with the off-site wetlands and ditch in the WSDOT right-of-way are depicted in Figure 6.

4 Critical Areas Assessment

This section describes and assesses critical areas within and near the Study Area as defined per PMC Chapter 21 (City of Puyallup 2024a) and FMC Chapter 17 (City of Fife 2024a) including wetlands, streams, fish and wildlife habitat conservation areas, and frequently flooded areas.

4.1 Methods

To document and describe wetlands, streams, fish and wildlife habitat conservation areas, and frequently flooded areas within the Study Area, Anchor QEA reviewed existing information (Section 1.1) and performed an aerial photograph assessment. Anchor QEA biologists performed critical areas site visits to the Study Area on April 1 and September 28, 2021; March 11, 2022; May 19, 2023; April 12, 2024; and May 17, 2024, as part of the analysis for the Project. The entire Study Area was accessible during the investigation. During the site visits, Anchor QEA biologists documented general information regarding habitats and dominant plant species and communities. Potential wetland features were evaluated according to methods presented in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987); the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (2010 Regional Supplement; USACE 2010); and *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 8.1, 2017* (USDA and NRCS 2016). Soil colors were classified by their numerical description as identified on a *Munsell Soil Color Chart* (Munsell 2000).

The ordinary high water mark (OHWM) of the streams—located off site in the WSDOT-owned portion of the Study Area to the east of the Main Development Area—was not delineated during the site visits. Additional information about the off-site streams was provided by WSDOT consultants (Herrera 2022; WSDOT 2023). All wildlife species, tracks, and other signs observed during the site visits were documented. These observations were qualitative; no quantitative wildlife surveys were performed. Photographs taken to document vegetation and habitat conditions are included in Appendix B.

This CAR evaluates terrestrial and aquatic habitats and plant communities based on physical observations. Existing information described in WDFW-documented species and priority habitats and ESA-listed species and critical habitats, within and near the Study Area, are also evaluated.

4.2 Wetlands

4.2.1 Main Development Area

One on-site wetland (Wetland B) was identified by Anchor QEA biologists at the east side of parcel 0420174075 and within the Main Development Area during the September 2021 and March 2022 site visits and categorized following the May 2023 site visit. Wetland data sheets for two data plots

(DPs) explored during the March 2022 site visits are provided in Appendix C. At DP-13, located at the center and at the lowest elevation of Wetland B, hydric soil and wetland hydrology were identified, but the area had no vegetation. However, during Anchor QEA's May 2023 site visit, it was observed that the previously unvegetated area had been recolonized by typical pasture grasses and other locally common emergent species.

Wetland conditions in this area are not documented by the City of Puyallup sensitive areas maps (City of Puyallup 2024b), Pierce County critical area maps (Figure 4; Pierce County 2024), USFWS NWI data (Figure 5; USFWS 2024a), or WDFW PHS data (WDFW 2024a), and do not identify wetland areas within at least 1,500 feet of the Study Area, except to the south of 19th Avenue Northwest at Transportation and Utility parcels 0420201008 and 0420201114.

Wetland B was previously thought to be regulated as an artificial wetland, based on excavation conducted by the previous landowner prior to the sale in November 2021. While the excavation was intentional, the creation of wetland conditions was not intentional. Ecology has determined that Wetland B will not be treated as an artificial wetland and is therefore regulated by state and local protections. An approved jurisdictional determination request was made to USACE and their decision (USACE 2024) is that "Wetland B is not a water of the U.S. and as such, work that would occur within these areas does not require Department of the Army authorization under Section 404 of the Clean Water Act" because it has no surface water connection to other known waters of the United States, meaning no permit from USACE is required to fill Wetland B.

4.2.2 Transportation and Utility Parcels 0420201008, 0420201114 and 0420201115

Transportation and Utility parcels 0420201008, 0420201114, and 042021115, located south of 19th Avenue Northwest and east of Freeman Road East in the City of Puyallup contain Wetland A and associated buffers (Figures 7 and 8). These buffers do not extend onto the Main Development Area north of 19th Avenue Northwest or west of Freeman Road East, because the buffer area is interrupted by the existing 19th Avenue Northwest and Freeman Road East roadways. Regulatory buffers only occur on the same side of an existing roadway as the wetland and do not extend to the opposite side from the sensitive area.

4.2.2.1 Sewer and Water Line Improvements

Sewer and water lines will be installed in an easement located north of and along 19th Avenue Northwest that extends to the east to parcels 0420201114 and 0420212073. During the March 2022, May 2023, and May 2024 site investigations, Anchor QEA conducted additional wetland delineation work at Wetland A located south of 19th Avenue Northwest to confirm the utility easement would not extend into the Wetland A or Wetland A buffer area. Anchor QEA Wetland A findings are recorded in eleven Wetland Determination Data Forms, and a preliminary rating is provided in

Appendix C. The wetland delineation and data plot locations are depicted in Figure 7. Off-site Wetland A buffers will be avoided during construction of sewer and water utilities.

4.2.2.2 Freeman Road, Levee Road and Intersection Improvements

The Project proposes to widen Freeman Road onto parcel 0420201104 from two 11-foot-wide lanes to two 14-foot-wide lanes. The proposed east edge alignment of Freeman Road will match the current location (with no impacts to parcel 0420201008), and all widening will occur on the west side of Freeman Road. The roadway widening will not impact Wetland A or the Wetland A buffer.

4.2.3 Transportation and Utility Parcel 0420201104

During the May 2023 site investigation, the full extent of Transportation and Utility parcel 040201104 in the City of Fife was walked by Anchor QEA biologists, and wetland conditions were not observed. Vegetation at Transportation and Utility parcel 040201104 is dominated by black cottonwood (*Populus balsamifera*), common snowberry (*Symphoricarpos albus*), osoberry (*Oemleria cerasiformis*), stinging nettle (*Urtica dioica*), Himalayan blackberry (*Rubus armeniacus*), and Japanese knotweed (*Reynoutria japonica*). Although the City of Fife (2024b) maps no wetlands on this parcel, the City of Puyallup maps a small low-lying portion near the southwest corner of parcel 040201104 as an unverified wetland (City of Puyallup 2024b). Anchor QEA biologists established DP-12 at this location (Figure 7) during the growing season and determined that hydrophytic vegetation was present, but that hydric soils and wetland hydrology were absent, and that the area is not a wetland. A Wetland Determination Data Form for this location is included in Appendix C, and Site Photography is provided in Appendix B.

4.2.4 Transportation and Utility Parcel 0420174032

The Third-Party Review Report (2022) also indicates an additional off-site wetland located to the northwest of the Main Development Area on the western edge of Freeman Road East at parcel 0420174032. Because Anchor QEA did not have permission to access the property, no delineation or rating information is provided in this report. A review of historical aerial imagery and observations from Freeman Road East made during the March 2022, May 2023, and April 2024 site investigations support the likely presence of wetlands at this location. The wetlands may cover much of the central portion of the parcel, and it likely contains PM1C and PSS1C Cowardin components. Any wetland buffers associated with this wetland are interrupted by Freeman Road East, which lies between the off-site wetland and the Main Development Area, and 48th Street East which would interrupt any wetland buffer at the northern edge of the existing roadway.

4.2.5 WSDOT-Owned Parcels 0420178009, 0420201110, 0420201111, 0420174028, and 0420174054

WSDOT provided documentation that show four off-site wetlands, identified as Wetland 87, Wetland 89, Wetland 93, and Wetland 146/148, located to the north and east of the Main Development Area at parcels 0420178009, 0420201110, 0420201111, 0420174028, 0420174054 and within the WSDOT right-of-way (Herrera 2022; WSDOT 2023; Figure 6). Wetland 87 is located east of Main Development Area parcel 0420205016 on WSDOT-owned parcel 0420201110. Wetland 89 is located on WSDOT-owned parcel 0420201111 and is about 300 feet directly east of Main Development Area parcel 0420201027. Wetland 93 is an emergent wetland within an agricultural field located northeast of Main Development Area parcel 0420174075 and covers much of WSDOT-owned parcel 0420178009. Wetland 146/148 is located north of Main Development Area parcel 0420174075 and covers the southern portion of WSDOT-owned parcels 0420174028 and 0420174054. Rating and buffer information for Wetlands 87, 89, 93, and 146/148 is provided in Section 5.2.3, and rating forms and figures are provided in Appendix C.

4.2.6 48th Street East and 78th Avenue East Right-of-Ways

Utility improvements are planned within the right-of-ways of 48th Street East and 78th Avenue East. Wetland may be present east and west of 78th Avenue East and north of 48th Street East, but work will be within the raised roadway areas, and any wetland buffer is interrupted by the roadway.

4.3 Streams

No streams, drainage channels, seeps, or associated riparian habitats were observed by Anchor QEA biologists within the Main Development Area during the 2021, 2022, 2023, and 2024 site visits. Additionally, WDFW PHS data (WDFW 2024a), SalmonScape data (WDFW 2024b), and City of Puyallup sensitive areas maps (City of Puyallup 2024b) do not identify any stream channels other than the Puyallup River within 2,000 feet of the Study Area. Pierce County critical area maps (Pierce County 2024) identify Wapato Creek north of the Study Area and the Puyallup River south of the Main Development Area, but they are not located within the Study Area and will not be affected by the Project.

Two streams (Streams 14 and 15) are located adjacent to the Main Development Area within the off-site WSDOT-owned parcels. They appear to be artificially created linear features that join off site to the east of parcel 0420174075. Our review of the preliminary WSDOT State Route 167 Completion Project critical area assessment indicates that Streams 14 and 15 will be regulated as Type III streams protected by 50-foot-wide buffers, per PMC Chapter 21 (City of Puyallup 2023a), which will partially project onto parcel 0420174075 and 0420205016. For the purposes of this assessment, a 50-foot-wide stream buffer has been applied to the off-site Streams 14 and 15. Preliminary mitigation planning for the WSDOT State Route 167 Completion Project provided in Appendix D indicates that

the streams will be relocated further to the east within the WSDOT- owned parcels and that the riparian buffer areas will no longer project into the Main Development Area parcels (WSDOT 2023).

The City of Puyallup and Third-Party Review Reports (Confluence Environmental Group 2022, 2024) indicated in previous comments that a potential stream or ditch was present along the west side of Freeman Road on or adjacent to parcel 0420174032. During the May 2023 and April 2024 site visits, Anchor QEA biologists inspected this area and found no evidence of an OHWM or other indicators that suggested the presence of flowing water along the west side of Freeman Road East. The area includes a narrow swale at lower elevation, but this does not necessarily qualify as a stream.

4.4 Fish and Wildlife Habitat Conservation Areas

Per PMC 21.06.210 fish and wildlife habitat conservation areas are areas that serve a critical role in sustaining needed habitats and species for the functional integrity of the ecosystem, and which, if altered, may reduce the likelihood that the species will persist over the long term. These areas may include, but are not limited to, rare or vulnerable ecological systems, communities, and habitat or habitat elements including seasonal ranges, breeding habitat, winter range, and movement corridors, and areas with high relative population density or species richness. These areas also include locally important habitats and species as determined by the City of Puyallup. These areas do not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of and are maintained by a port district or an irrigation district, unless these features are documented as being used by salmonids for habitat.

4.4.1 Streams

Streams 14 and 15 are located outside of the Main Development Area off site to the north, east, and southeast of parcel 0420174075. The preliminary WSDOT State Route 167 Completion Project critical area assessment indicates that Streams 14 and 15 are degraded ditches with poor riparian buffer conditions that convey water through off-site WSDOT-owned parcels 0420201111, 0420201110, 0420178009, and 0420174028, from the southeast to the northwest. Instream conditions in Streams 14 and 15 are poor with a lack of channel complexity and substrate dominated by mud and silt. WDFW fish passage data indicates that a culvert crossing beneath Freeman Road East about 650 feet downstream of Streams 14 and 15 prevents fish passage onto the WSDOT-owned parcels in the vicinity of the Study Area (Herrera 2022; WDFW 2021). The preliminary WSDOT State Route 167 Completion Project critical area assessment indicates that Streams 14 and 15 are Type III Streams and are protected by a standard 50-foot-wide buffer per PMC 21.06.1050. A 3,447-square-foot portion of Stream 14 and 15 buffers extends onto the Main Development Area parcel 0420174075 and 0420205016.

4.4.2 Vegetation

Some undisturbed native vegetation communities are located within the Study Area. Areas of native vegetation occur east and south of the Main Development Area. Native plant species observed include black cottonwood (*Populus balsamifera*), red alder (*Alnus rubra*), red osier dogwood (*Cornus sericea*), Oregon ash (*Fraxinus latifolia*), Pacific crabapple (*Malus fusca*), common snowberry (*Symphoricarpos albus*), Nootka rose (*Rosa nutkana*), salal (*Gaultheria shallon*), northern bracken fern (*Pteridium aquilinum*), and field horsetail (*Equisetum arvense*). Many invasive species or noxious weeds were also noted as present, including include English ivy (*Hedera helix*), English holly *(Ilex aquifolium*), Himalayan blackberry (*Rubus armeniacus*), evergreen blackberry (*Rubus laciniatus*), Canada thistle (*Cirsium arvense*), and reed canary grass *(Phalarais arundinacea*).

Areas located west of the fence line in the agricultural pastures included varieties of *Agrostis* and *Fescue* grasses, which appeared to be regularly mowed or were previously grazed by sheep and llamas. Photographs of vegetation in the Study Area are included in Appendix B.

4.4.3 Wildlife and Habitat

The majority of the Study Area includes a managed landscape with mowed grass and ornamental vegetation. Potential habitat is limited to the small patches of native vegetation along the eastern and southern property boundaries. Wildlife use of the terrestrial habitat is likely dominated by disturbance-tolerant species typical of urban areas. Habitat surrounding the Study Area includes fragmented and disturbed areas associated with residential and industrial development. Wildlife species observed during the site visits included bird species common in urban areas of Pierce County, including crows (*Corvus brachyrhynchos*), house sparrows (*Passer domesticus*), and gull species (*Larus* spp.). No amphibian, reptile, or mammal species; tracks or other signs were observed during the site visits.

The Study Area hydrology provides limited habitat for aquatic species. The habitat within Wetland B and Streams 14 and 15 located on the WSDOT-owned parcels north and east of the Main Development Area are dominated by shallow standing water with little to no noticeable flow, degraded riparian areas and do not provide habitat for salmonid species due to a downstream culvert crossing at Freeman Road East that blocks fish passage further upstream.

Streams 14 and 15 are regulated as Type III streams because they are not used by anadromous fish (no fish species have been documented in the streams; WDFW 2021; Herrera 2022; WSDOT 2023) and it is wider than 2 feet. According to PMC 21.06.1050, Type III, streams require buffers of 50 feet.

4.4.4 Priority Species and Habitats

The WDFW PHS data (WDFW 2024a) do not document occurrences of any terrestrial species or priority habitats in the Study Area. No fish species have been documented in off-site Streams 14 and 15 according to the WDFW PHS and SalmonScape (WDFW 2024b) websites.

4.4.4.1 ESA-Listed Species and Critical Habitat

The assessment for ESA-listed species and critical habitats for this Project was performed based on data provided for the Study Area. The following subsections describe ESA-listed species and critical habitats that may occur in the vicinity of the Study Area.

ESA-listed species and critical habitats under NMFS and USFWS jurisdiction in Western Washington are referenced on the agencies' websites. NMFS identifies ESA-listed species that occur or may occur within a broad geographic area, such as an evolutionarily significant unit or a distinct population segment, rather than a project-specific location (NMFS 2024). The USFWS identifies ESA-listed species that occur or may occur within a specific location where a project is proposed (USFWS 2024b).

4.4.4.2 Federally Listed Species That May Occur in the Study Area

The May 2024 status of federally listed species and critical habitats protected under the ESA that occur or may occur within the Study Area is presented in Table 2. As shown in Table 2, three ESA-listed bird species occur or may occur within the Study Area. One ESA candidate insect species is identified as potentially occurring within the Study Area. Four ESA-listed fish species are present in the nearby Puyallup River: steelhead trout (*Oncorhynchus mykiss*), Chinook salmon (*O. tshawytscha*), bull trout (*Salvelinus confluentus*), and Dolly Varden (*S. malma*). All four have designated critical habitat in the Puyallup River. However, these species do not occur or are very unlikely to occur in the Study Area based on the species' life history and habitat requirements. Fish species listed in Table 2 are located within the Puyallup River but not in off-site Streams 14 and 15. These species would not be susceptible to impacts related to construction, as no in-water work is proposed, but they are relevant considering the Project is located within the Puyallup River floodplain. No ESA-listed plant or mammal species are identified as potentially occurring within the Study Area.

Table 2
Federally Listed Species That May Occur in Study Area

Species	Status	Agency	Critical Habitat
Birds			
Marbled murrelet (*Brachyramphus marmoratus*)	Threatened	USFWS	Designated (does not include Study Area)
Streaked horned lark (*Eremophila alpestris strigata*)	Threatened	USFWS	Designated (does not include Study Area)
Yellow-billed cuckoo (*Cocczyus americanus*)	Threatened	USFWS	Designated (does not include Study Area)
Insects			
Monarch butterfly (*Danaus plexippus*)	Candidate	USFWS	Not designated
Fish			
Steelhead trout (*Oncorhynchus mykiss*)	Threatened	NMFS	Designated – Puyallup River
Chinook salmon (*Oncorhynchus tshawytscha*)	Threatened	NMFS	Designated – Puyallup River
Bull trout (*Salvelinus malma/S. confluentus*)	Threatened	USFWS	Designated – Puyallup River
Dolly Varden (*S. malma/S. confluentus*)	Threatened	USFWS	Designated – Puyallup River

Marbled murrelets are more commonly associated with marine habitat instead of the freshwater habitat in the Study Area. The urbanized and industrial areas within the Study Area are unfavorable to marbled murrelets, streaked horned larks, and yellow-billed cuckoos.

4.5 Special Flood Hazard Areas

The Puyallup River flows approximately 1,200 feet south of the Main Development Area, south of North Levee Road East. The Study Area is located within the 100-year floodplain of the Puyallup River within Federal Emergency Management Agency (FEMA) Flood Zone AE (FEMA 1999). The base flood elevation (BFE) for the Puyallup River is 33 feet North American Vertical Datum of 1988 (NAVD88); however, the levee along North Levee Road East is not officially certified, meaning the floodplain is mapped as extending onto the Study Area. Per PMC 21.07, the floodplain within the Study Area is a special flood hazard area and a habitat assessment has been prepared by a qualified professional to evaluate the effects and/or indirect effects of the proposed development (during both construction and operation) on floodplain functions. Section 6.3 of this report includes this assessment and documents that the proposed development will not result in impacts to any species listed as threatened or endangered under the ESA.

5 Wetland Delineation

Anchor QEA wetland scientists performed wetland delineation field work on March 11, 2022; May 19, 2023; and May 17, 2024. One wetland was delineated off site: Wetland A, a Category II emergent, scrub-shrub and forested depressional wetland located to the south of 19th Avenue Northwest. One wetland was delineated on site: Wetland B, a Category III emergent depressional wetland located on the eastern portion of parcel 0420174075. Following our review of the Third-Party Review Reporting (Confluence Environmental Group 2022, 2024), we also identified five other off-site wetlands, with four delineated on the WSDOT-owned properties to the north and east and one possible, unstudied wetland located to the west of Freeman Road East on parcel 0420174032. Figure 6 provides a preliminary depiction of the off-site wetlands and how their anticipated buffers may extend onto the Main Development Area portion of the Study Area. The possible wetlands located to the west of Freeman Road East on parcel 0420174032 and on either side of 78th Avenue East are not discussed further because they have not been delineated or categorized, and because any associated buffer is interrupted by the existing Freeman Road East, 48th Avenue East, and 78th Avenue East roadways.

The following sections describe the methodology and results of the wetland delineations. Critical areas figures are attached to this CAR, including wetland delineation results in Figures 6 and 7. Site photos are included in Appendix B, wetland determination data forms and wetland rating forms are provided in Appendix C.

5.1 Methodology

This section describes the methodology used to perform the wetland delineation, including a review of existing information and field investigation procedures. These methods are consistent with current federal and state agency requirements, as well as local jurisdiction requirements, for performing wetland delineations and identifying protective wetland buffer widths.

Field work was conducted according to methods presented in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987); 2010 Regional Supplement (USACE 2010); and *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 8.1, 2017* (USDA and NRCS 2016). Soil colors were classified by their numerical description as identified on a *Munsell Soil Color Chart* (Munsell 2000).

The U.S. Army Corps of Engineers defines wetlands as follows:

> Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. (Environmental Laboratory 1987)

The method for delineating wetlands is based on the presence of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation is "the macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (Environmental Laboratory 1987). Hydric soils are "formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (Environmental Laboratory 1987). Wetland hydrology "encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season" (Ecology 1997). Data collection methods for each of these parameters are described in the following subsections.

A total of 14 DPs were sampled and recorded. Vegetation, soils, and hydrology information were collected at each of the plots and recorded on field data sheets (Appendix C). Wetland boundaries were determined based upon plot data and visual observations of the wetland. The wetland location, wetland boundary, and DP locations were flagged and recorded by Anchor QEA wetland scientists using a Trimble Geo7x GPS unit.

5.1.1 Vegetation

Plant species occurring in each plot were recorded on field data forms, with one data form per plot. Percent cover for each plant species was estimated in the plot, and dominant plant species were identified. At each plot, trees within a 30-foot radius, shrubs and saplings within a 15-foot radius, and herb and forb species within a 5-foot radius from the center of the plot were identified and recorded. Plant indicator status was determined using the National Wetland Plant List: 2016 Wetland Ratings (Lichvar et al. 2016), and a determination was made as to whether the vegetation in the plot was hydrophytic. To meet the hydrophytic parameter, more than 50% of the dominant species, with 20% or greater cover, must have an indicator of obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC). Table 3 shows the definitions for each wetland indicator status category.

Table 3
Wetland Plant Indicator Status Definitions

Indicator Status	Description
Obligate Wetland (OBL)	Plant species occur almost always in wetlands (estimated probability greater than 99%) under natural conditions.
Facultative Wetland (FACW)	Plant species usually occur in wetlands (estimated probability 67% to 99%) but are occasionally found in non-wetlands.
Facultative (FAC)	Plant species are equally likely to occur in wetlands or non-wetlands (estimated probability 34% to 66%).
Facultative Upland (FACU)	Plant species usually occur in non-wetlands (estimated probability 67% to 99%) but are occasionally found in wetlands.

Indicator Status	Description
Obligate Upland (UPL)	Plant species occur almost always in non-wetlands (estimated probability greater than 99%) under natural conditions.

Source: Reed 1988

5.1.2 Soils

Soils were sampled in each plot and evaluated for hydric soil indicators. Soil pits were dug to a depth of 18 inches, unless a restrictive layer was present. Hydric soil indicators include low soil matrix chroma, gleying, and redoximorphic (redox) features. Redox features are spots of contrasting color that occur within the soil matrix (the predominant soil color). Gleyed soils are predominantly bluish, greenish, or grayish in color.

5.1.3 Hydrology

Wetland hydrology was evaluated at each plot to determine whether it "encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season" (Ecology 1997). Field observations of saturation, inundation, and other indicators of wetland hydrology, such as water-stained leaves and drainage patterns in wetlands, were recorded.

5.1.4 Wetland Community Types

Wetland community types are discussed according to the USFWS classification developed by Cowardin et al. (1979) for use in the NWI (Cowardin system). This system, published in 1979 by a team of USFWS scientists led by L.M. Cowardin, bases the classification of wetlands on their physical characteristics, such as the general type of vegetation in the wetland (e.g., trees, shrubs, grass) and how much, and where, water is present in the wetland. The Cowardin system provides a classification for every known wetland type that occurs throughout the United States, and under this system a wetland can be classified as having one or more wetland community types. The community types found during this investigation included the following:

- **Palustrine emergent (PEM):** These wetlands have erect, rooted, herbaceous vegetation present for most of the growing season in most years.
- **Palustrine scrub-shrub (PSS):** These wetlands have 30% cover of woody vegetation that is less than 20 feet high.
- **Palustrine forested (PFO):** These wetlands have at least 30% cover of woody vegetation that is at least 20 feet high.

5.1.5 Wetland Ratings

Wetland ratings were determined using the most current version of the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Washington rating system; Hruby 2014) and according to the City of Puyallup wetland rating criteria, as defined in the PMC. The Washington rating system was updated by Ecology as of January 1, 2015.

The system developed by Ecology is used to differentiate wetlands based on their sensitivity to disturbance, their significance in the watershed, their rarity, our ability to replace them, and the beneficial functions they provide to society. The Washington rating system requires the user to collect specific information about the wetland in a step-by-step process. Three major functions are analyzed: water quality improvement, hydrologic functions, and wildlife habitat. Ratings are based on a point system, where points are given if a wetland meets specific criteria related to the wetland's potential and opportunity to provide certain benefits.

Per the Washington rating system, wetlands are categorized according to the following criteria and associated point system where points are awarded to three functional value categories (water quality improvement, hydrologic functions, and habitat):

- **Category I wetlands** (23 or more points) represent a unique or rare wetland type, are more sensitive to disturbance, or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime.
- **Category II wetlands** (20 to 22 points) are difficult, though not impossible, to replace and provide high levels of some functions.
- **Category III wetlands** (16 to 19 points) have moderate levels of functions. They have been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.
- **Category IV wetlands** (less than 16 points) have the lowest levels of functions and are often heavily disturbed.

PMC classifies wetlands into four categories (categories I, II, III, and IV) based on the Washington rating system.

5.1.6 Wetlands Function Assessment

The functions of wetlands were rated according to the Washington rating system. Using this system, wetlands were rated based on points awarded to three categories of functions: water quality, hydrologic functions, and wildlife habitat. Detailed scoring, based on Washington wetland rating forms, is provided in Appendix C.

5.1.7 State Hydrogeomorphic Classification System

Scientists have come to understand that wetlands can perform functions in different ways. The way a wetland functions depends to a large degree on hydrologic and geomorphic conditions. To recognize these differences among wetlands, a way to group or classify them has been developed. This classification system, called the hydrogeomorphic (HGM) classification, groups wetlands into categories based on the geomorphic and hydrologic characteristics that control many functions.

The Washington rating system incorporates the HGM classification as part of the questionnaire for characterizing a wetland's functions. The Washington rating system uses only the highest grouping in the HGM classification: wetland class. Wetland classes are based on geomorphic settings, such as riverine, slope, lake fringe, or depressional. A classification key is provided within the rating form to help identify which of the following HGM classifications apply to the wetland: riverine, depressional, slope, lake fringe, tidal fringe, or flats.

5.2 Results

Anchor QEA wetland scientists delineated one wetland (Wetland A; off site) and one wetland (Wetland B; on site) within the Study Area (Figure 7). These wetlands are summarized in Tables 4 and 5 and described in more detail in the following subsections. Site photographs showing these features are included in Appendix B. Wetland determination data forms and wetland rating forms are provided in Appendix C.

Table 4
Wetlands Delineated by Anchor QEA Within the Study Area

Wetland	Cowardin Class[1]	HGM Class	Category	Total Wetland Area	
				Square Feet	Acres
A	PEM1C, PSS1C PFO1C	Depressional	II	468,674	10.76
B	PEM1C	Depressional	II	1,218	0.03

Note

1. PEM1C: palustrine, emergent, persistent, seasonally flooded; PSS1: palustrine, scrub-shrub, persistent, seasonally flooded: PFO1C: palustrine, forested, persistent, seasonally flooded

For the Washington rating system, a low, moderate, or high rating is based on three functions: improving water quality, hydrologic, and habitat. Within each of these three functions are three subfunction categories: site potential, landscape potential, and value. Each of these subfunction categories is rated as low, moderate, or high. Wetland functions and scores for Wetland A and Wetland B using the Washington rating system are shown in Table 5. The Washington wetland rating forms are provided in Appendix C.

Table 5
Summary of Scores for Wetland Functions and Values

Wetland and Function	Improving Water Quality	Hydrologic	Habitat	Total Functions Score[1]	Washington State Rating	Puyallup Rating
Off-Site Wetland A						
Site Potential	Moderate	High	Moderate	--	--	--
Landscape Potential	Moderate	High	Low	--	--	--
Value	High	High	High	--	--	--
Score Based on Rating[1]	7	9	6	22	II	II
On-Site Wetland B						
Site Potential	Moderate	Moderate	Low	--	--	--
Landscape Potential	Moderate	Moderate	Low	--	--	--
Value	High	High	High	--	--	--
Score Based on Rating[1]	7	7	5	19	III	III

Notes
Potential total score per function is 9, for a potential total score of 27.

The following sections describe the wetlands identified during our field investigations and wetland delineation. The wetland is classified and rated according to the Cowardin system and the Washington rating system.

5.2.1 Wetland A

Wetland A is 10.76 acres (468,674 square feet) with PEM, PSS, and PFO vegetation classes and has a depressional HGM classification. The approximate wetland position is mapped on Pierce County's PublicGIS wetland inventory (Figure 4; Pierce County 2024). In March 2022, Anchor QEA biologists provided an additional delineation along the northern and eastern boundaries of Wetland A. In May 2023 and May 2024, Anchor QEA biologists provided additional delineations along the western and southern boundaries and the current extent was confirmed (Figure 7).

5.2.1.1 Vegetation

Wetland A is dominated by forest vegetation species such as black cottonwood (*Populus trichocarpa*; FAC), red alder (*Alnus rubra*; FAC), Oregon ash (*Fraxinus latifolia*; FACW), and red osier dogwood (*cornus sericea*; FACW), interspersed with a few patches of Himalayan blackberry (*Rubus armeniacus*; FAC). Other species found along the edge of the wetland include Sitka spruce (*Picea sitchensis*; FAC), osoberry (*Oemleria cerasiformis;* FACU), snowberry (*Symphoricarpos albus*; FACU), red current (*Ribes*

sanguineum; FACU), salmonberry (*Rubus spectabilis*; FAC), and common ivy (*Hedera helix*; FACU). Wetland A Cowardin vegetation classes are presented in Appendix C.

Overall, the vegetation in Wetland A meets the dominance test for hydrophytic vegetation indicator and satisfies the hydrophytic vegetation criteria of the 2010 Regional Supplement (USACE 2010).

5.2.1.2 Soils

Soils in Wetland A are mapped as Pilchuck fine sand, a soil type that is classified as hydric. The soils observed in Wetland A were generally dark at the surface, with a depleted matrix below and redoximorphic features increasing with depth. Upon inspection, the predominant textures were confirmed to be silt loam and sandy loam.

Overall, soil samples met the Depleted Below Dark Surface (A11) hydric soil indicator, satisfying the hydric soil criteria of the 2010 Regional Supplement.

5.2.1.3 Hydrology

Wetland hydrology was confirmed in Wetland A at two data points by surface water (A1), high water table (A2), saturation (A3), inundation visible on aerial imagery (B7), sparsely vegetated concave surface (B8), and water-stained leaves (B9). The primary water regimes of Wetland A were determined to be permanently flooded, seasonally flooded, and saturated.

5.2.1.4 Boundary Determination

The wetland and upland boundaries of Wetland A were determined by an abrupt change in topography and the presence of hydric soils, wetland hydrology, and hydrophytic vegetation. To confirm the current Wetland A extent, Anchor QEA biologists delineated the northern and eastern wetland boundaries in March 2022 and the southern and western boundaries of Wetland A were delineated in May 2023 and May 2024.

5.2.1.5 Wetland Functions Scores and Rating

Wetland A is rated as a Category II wetland, with a score of seven for water quality functions, a score of nine for hydrologic functions, and a score of six for habitat functions. The ratings are discussed in more detail in the following sections, and the wetland rating form for Wetland A is provided in Appendix C.

5.2.1.5.1 Water Quality Functions

Wetland A has moderate function for improving water quality site potential, moderate function for landscape potential components, and high function for the value component based on the Washington rating system. Contributing factors to this functional rating include that the wetland is in a depression with no surface water leaving it (no outlet), persistent ungrazed plants covering more

than 50% of the wetland, the absence of septic systems within 250 feet, and the presence of a 303(d)-listed aquatic resource within the subbasin.

5.2.1.5.2 Hydrologic Functions

Wetland A has high hydrologic functions for site potential, landscape potential, and value based on the Washington rating system. Factors that contribute to this functional rating include marks of ponding greater than 3 feet deep, intensive land uses within the subbasin, stormwater discharging directly into the wetland, and surface flooding problems in a subbasin immediately downgradient from the wetland.

5.2.1.5.3 Habitat Functions

Wetland A has moderate, low, and high habitat functions for site potential, landscape potential, and value, respectively, based on the Washington rating system. Factors that contribute to this functional rating include: the presence of three Cowardin plant classes and three hydroperiods; large, downed woody debris; standing snags; stable steep banks of fine material; thin-stemmed persistent plants for amphibian habitat; adjacent high land use intensity; and the lack of nearby undisturbed habitat.

5.2.2 Wetland B

Wetland B is 0.03 acre (1,218 square feet) with PEM vegetation and has a depressional HGM classification (Figure 7). The approximate wetland position is not mapped on Pierce County's PublicGIS wetland inventory (Pierce County 2024) or on the USFWS NWI (Figure 5; USFWS 2024a). In May 2023 Anchor QEA biologists provided an additional delineation and confirmed the current wetland extent.

5.2.2.1 Vegetation

Wetland B is dominated by emergent vegetation species including pasture grasses (*Agrostis and Fescue species*; assumed FAC).

Overall, the vegetation in Wetland A meets the dominance test hydrophytic vegetation indicator and satisfies the hydrophytic vegetation criteria of the 2010 Regional Supplement (USACE 2010).

5.2.2.2 Soils

Soils in Wetland B are mapped as Sultan silt loam, a soil type that is not classified as hydric. The soils observed in Wetland B were found to have a depleted matrix below and redoximorphic features increasing with depth. Upon inspection, the predominant textures were confirmed to be silt loam.

Overall, soil samples met the depleted matrix (F3) hydric soil indicator, satisfying the hydric soil criteria of the 2010 Regional Supplement.

5.2.2.3 Hydrology

Wetland hydrology was confirmed in Wetland B at one data point by surface water (A1), and saturation (A3). The primary water regimes of Wetland B were determined to be seasonally flooded, and saturated. Wetland B shares no permanent or continuous connection to other surface water features.

5.2.2.4 Boundary Determination

The wetland and upland boundaries of Wetland B were determined the presence of hydric soils, wetland hydrology, and hydrophytic vegetation.

5.2.2.5 Wetland Functions Scores and Rating

Wetland B is rated as a Category III wetland, with a score of seven for water quality functions, a score of seven for hydrologic functions, and a score of five for habitat functions. The ratings are discussed in more detail in the following sections, and the wetland rating form for Wetland B is provided in Appendix C.

5.2.2.5.1 Water Quality Functions

Wetland B has moderate, moderate, and high water quality functions based on the Washington rating system for site potential, landscape potential, and value, respectively. Contributing factors to this functional rating the wetland's position within a depression with no surface water leaving it (no outlet), persistent ungrazed plants covering more than 50% of the wetland, the absence of septic systems within 150 feet, and the presence of a 303(d)-listed aquatic resources within the subbasin.

5.2.2.5.2 Hydrologic Functions

Wetland B has moderate, moderate, and high hydrologic functions based on the Washington rating system for site potential, landscape potential, and value, respectively. Factors that contribute to this functional rating include marks of ponding less than 6 inches deep, the relatively small size of the contributing basin, a lack of stormwater discharging directly into the wetland, and surface flooding problems in a subbasin immediately downgradient from the wetland.

5.2.2.5.3 Habitat Functions

Wetland B has low, low, and high habitat functions based on the Washington rating system for site potential, landscape potential, and value, respectively. Factors that contribute to this functional rating include: the presence of a single Cowardin plant classes and two hydroperiods; the absence of downed woody debris, standing snags, stable steep banks of fine material and thin-stemmed persistent plants for amphibian habitat; low richness of plant species and interspersion of habitat, adjacent high land use intensity; and the lack of nearby undisturbed habitat.

5.2.3 WSDOT-Owned Parcel Wetlands

Four wetlands, identified as Wetland 87, Wetland 89, Wetland 93, and Wetland 146/148 (Figure 6), were delineated by WSDOT consultants on the WSDOT-owned parcels (Herrera 2022; WSDOT 2023). Wetland 87 is located southwest of the confluence of Stream 14 and Stream 15 at the northeast portion of parcel 0420201110. WSDOT consultants assigned Wetland 87 a Category III rating with a habitat score of six points. Wetland 89, located directly north of 19th Avenue Northwest, received a Category II rating by WSDOT consultants with a habitat score of five points. Wetland 93 is located north of Stream 14 and east of Stream 15 and covers much of parcel 0420178009. WSDOT consultants assigned Wetland 93 a Category III rating with a habitat score of four points. Wetland 146/148 is located south of Stream 15 at the southern portion of parcels 0420174028 and 0420174054. WSDOT consultants assigned Wetland 146/148 a Category III rating with a habitat score of four points. Table 6 provides a summary of the off-site WSDOT wetland information.

Table 6
Off-Site WSDOT Wetlands

Wetland	Cowardin Class[1]	HGM Class	Category	Total Wetland Area	
				Square Feet	Acres
WL87	PSS, PFO	Depressional	III	2,745	0.63
WL89	PSS	Depressional	II	5,645	0.13
WL93	PEM	Depressional	III	293,494	6.74
WL146/148	PEM, PSS	Depressional	III	22,128	0.53

Note:
1. PEM: palustrine, emergent wetland; PSS: palustrine, scrub-shrub wetland; PFO: palustrine, forested wetland.

For the Washington rating system, a low, moderate, or high rating is based on three functions: improving water quality, hydrologic, and habitat. Within each of these three functions are three subfunction categories: site potential, landscape potential, and value. Each of these subfunction categories is rated as low, moderate, or high. Wetland functions and scores for Wetlands 87, 89, 93, and 146/148 using the Washington rating system are shown in Table 7. The Washington wetland rating forms provided by WSDOT consultants are included in Appendix C.

Table 7
Summary of Scores for WSDOT Wetland Functions and Values

Wetland and Function	Improving Water Quality	Hydrologic	Habitat	Total Functions Score[1]	Washington State Rating	Puyallup Rating
Wetland 87						
Site Potential	Moderate	Moderate	Moderate	--	--	--

Wetland and Function	Improving Water Quality	Hydrologic	Habitat	Total Functions Score[1]	Washington State Rating	Puyallup Rating
Landscape Potential	Moderate	Moderate	Low	--	--	--
Value	High	Moderate	High	--	--	--
Score Based on Rating[1]	7	7	6	19	III	III
Wetland 89						
Site Potential	Moderate	Moderate	Low	--	--	--
Landscape Potential	High	High	Low	--	--	--
Value	High	Moderate	High	--	--	--
Score Based on Rating[1]	8	7	5	20	II	II
Wetland 93						
Site Potential	Low	Moderate	Low			
Landscape Potential	High	High	Low			
Value	High	Moderate	Moderate			
Score Based on Rating[1]	7	7	4	18	III	III
Wetland 146/148						
Site Potential	Moderate	Low	Low			
Landscape Potential	High	High	Low			
Value	High	Moderate	Moderate			
Score Based on Rating[1]	8	6	4	18	III	III

Note:
Potential total score per function is 9, for a potential total score of 27.

5.3 Puyallup Wetland Buffer Guidance

Required wetland buffers have been identified according to the current PMC. PMC 21.06.930 identifies minimum protective buffer widths for wetlands based on the Ecology habitat rating score, per the Washington rating system, level of function for habitat and water quality improvement, and land use intensity.

Per PMC 21.06.930 2 (C), the minimum proposed buffer width for a Category II wetland with a high land use intensity on the upland side of the buffer, low level for habitat function (less than six points) and high level of function for water quality improvement (eight to nine points) is 100 feet, measured

from the wetland boundary as delineated in the field. Therefore, the proposed buffer width for Wetland 89 is 100 feet. The Wetland 89 buffer does not project onto the Main Development Area (Figure 6).

Per PMC 21.06.930 2 (C), the minimum proposed buffer width for a Category II wetland with a moderate habitat score of six to seven points and high land use intensity on the upland side of the buffer is 150 feet. Therefore, the proposed buffer width for Wetland A is 150 feet. However, any Wetland A buffer that may project onto the Main Development Area is interrupted by an existing roadway (19th Avenue Northwest) that lies between Wetland A and the Main Development Area. The Wetland 93 buffer partially projects onto the Main Development Area and is not interrupted by a roadway or other existing development (Figure 6).

Per PMC 21.06.930 2 (D), the minimum proposed buffer width for a Category III wetland with a habitat score of less than six points and high land use intensity on the upland side of the buffer is 80 feet, measured from the wetland boundary as delineated in the field. Therefore, the proposed buffer width for Wetland B, Wetland 93, and Wetland 146/148 is 80 feet.

Per PMC 21.06.930 2 (D), the minimum proposed buffer width for a Category III wetland with a moderate habitat score of six to seven points, and high land use intensity on the upland side of the buffer is 150 feet. Therefore, the proposed buffer width for Wetland 87 is 80 feet. The Wetland 87 buffer partially projects onto the Main Development Area and is not interrupted by a roadway or other existing development (Figure 6).

Table 8 provides a summary of wetland functional ratings and proposed wetland buffer widths.

Table 8
Proposed Wetland Buffer Widths

Wetland	Improving Water Quality	Habitat	Category	Buffer Width (feet)
On-Site Wetlands				
Wetland B	7	5	III	80
Off-Site Wetlands				
Wetland A	6	4	III	80
WL87	7	6	III	150
WL89	8	5	II	100
WL93	7	4	III	80
WL146/148	8	4	III	80

6 Critical Areas Impact Assessment

This section provides a summary of potential impacts to wetlands and to fish and wildlife habitat conservation areas. Mitigation to address the anticipated wetland and buffer impacts will be implemented with a purchase of mitigation credits from the Port of Tacoma Upper Clear Creek Mitigation Bank that would generate higher-value wetlands off site but within the bank's service area. Table 9 provides a summary of wetland and wetland buffer impacts related to the proposed Project. Proposed wetland and wetland buffer impacts are presented in Figure 9.

Table 9
Proposed Freeman Road Logistics Project Wetland Impacts

Wetland	Wetland Category[1]	Wetland Size (acre)	Permanent Direct (acre)	Permanent Indirect (acre)	On-site Buffer (acre)
Wetland A	II	10.76	0	0	0
Wetland B	III	0.03	0.03	0	0
WL87	III	0.63	0	0.01	0.04
WL89	II	0.13	0	0	0
WL93	III	6.74	0	0.10	0.12
WL146/148	III	0.53	0	0.48	1.40
Total	**NA**	**18.80**	**0.03**	**0.59**	**1.56**

Notes:
1. Source: Hruby 2014

Proposed Project construction activities will not occur within streams but will occur in regulated fish and wildlife habitat conservation buffer areas. Approximately 3,447 square feet of the Stream 14 and 15 buffer projects onto the Main Development Area and will be permanently impacted by the Project. Because these stream buffer impacts overlap with proposed wetland buffer impacts, they will not be added to the wetland buffer impact calculations separately, as mitigation will be implemented by Vector Development Company to address combined stream and wetland buffer impacts by purchase of mitigation credits from the Port of Tacoma Upper Clear Creek Mitigation Bank. The overlapping stream buffer and wetland buffer impacts are presented in Figure 9. Section 8 presents more information on the use of the Port of Tacoma Upper Clear Creek Mitigation Bank.

Indirect impacts are adverse effects on wetlands that occur outside the footprint of direct impacts caused by the placement of dredged or fill material (Ecology et al. 2021). The extent of indirect wetland impacts to off-site Wetlands 87, 93, and 146/148 was determined by calculating the areas of the wetlands that are superimposed by the recommended buffers needed to protect those wetland functions, as measured from the outward edge of the development. While the proposed

development proposes no impacts resulting from the actual placement of fill material directly into the off-site wetlands, portions of buffers for Wetland 87, 93, and 146/148 would be developed that would reduce the width of the buffers below local critical area requirements for wetland protection. However, Wetlands 87, 93, and 146/148 will be permanently impacted by construction of the State Route 167 Completion Project, which will be mitigated as part of that project. Therefore, only mitigation for direct on-site buffer impacts caused by the Freeman Road Logistics Project are proposed as part of this Project (Section 6.1.5).

The Project will not have measurable short-term or long-term impacts on wildlife species. Noise associated with construction activities could result in avoidance behavior by some wildlife species if they are present. However, the Main Development Area is an agricultural and residential area that experiences ongoing human disturbance. Noise levels associate d with operation of the Project after construction are expected to be consistent with current ambient noise levels.

6.1 On-Site and Off-Site Wetland Impacts

6.1.1 On-Site Wetland B Impacts

The Project proposes the total fill (1,218 square feet) of on-site Wetland B, which offers poor water quality, hydrologic, and habitat functions. No practicable alternatives exist that could avoid filling the wetland due to the size, shape, location, and extent of the wetland and the required warehouse and parking capacity, building code requirements, zoning, and other factors supporting the Project purpose and need (Section 2). A detailed description of Project screening criteria and avoidance and minimization measures are provided in Section 7. The Project proposes to provide compensatory mitigation for impacts to Wetland B through purchase of wetland mitigation credits from the Port of Tacoma Upper Clear Creek Mitigation Bank, which is in the same subbasin as the Main Development Area and proposed impact, pending Port review.

6.1.2 Off-Site Wetland A

Water, sewer, and natural gas line improvements are proposed to be installed outside of the Wetland A buffer along the existing 19th Avenue Northwest private drive and along the northern and eastern sides of parcel 0420201114. The design has been modified to avoid any temporary or permanent impacts to the Wetland A buffer. The proposed water line includes a 40-foot-wide public easement. The proposed sewer line includes a 20-foot-wide private easement. The proposed Puget Sound Energy gas line will have a public easement that is yet to be determined (approximately 10 feet in width). The easements will overlap such that the total utility corridor will be 40 feet wide. The easement begins near the southwest property corner of parcel 04020204010, north of 19th Avenue Northwest, extending to the east on parcel 04020204010 for about 60 feet, south into the 19th Avenue Northwest roadway, then to the east for approximately 700 feet to the northeast corner

of parcel 0420201114. From this location, the Puget Sound Energy gas line will continue to the east, and the water and sewer line will turn to the south for about 300 feet until they meet the Wetland A buffer. Wetland A buffer impacts will be avoided by directionally boring the remaining utility line at an approximate depth of 4 to 5 feet below ground surface and the Wetland A buffer where it will connect to the existing water and sewer utilities located at the O'Reilly Auto Enterprises-owned parcel 0420212073 (Appendix A and Figure 8). Temporary impacts to forested areas outside of the Wetland A buffer will result from removal of smaller black cottonwood and red alder trees, along with removal of Himalayan blackberry and a few native and red osier dogwood shrubs. Large trees within the 40-foot easement will be avoided, to the extent feasible. The easement area will be restored with a native grass seed mix.

6.1.3 Off-Site Freeman Road East Widening Adjacent to Parcels 0420201104 and 0420201008

Road-widening is expected at the intersection of Freeman Road East and North Levee Road East. The Project proposes to widen Freeman Road west of parcel 0420201008 along parcel 0420201104 from two 11-foot-wide lanes to two 14-foot-wide lanes. The proposed east edge alignment of Freeman Road will match the current location and fall outside of the 150-foot buffer associated with Wetland A. The roadway improvements will not impact Wetland A or Wetland A buffer. Current design plans (Appendix A) depict a centered road crown, which will result in a minor increase in impervious surfaces (3 feet additional width, 2,100 square feet in area) that will generate runoff directed toward parcel 0420201008. However, the proposed increased flow volumes will be below the stormwater treatment and detention thresholds required by the *Stormwater Management Manual for Western Washington* (Ecology 2019) and will primarily drain onto forested pervious areas outside of the Wetland A buffer and is not expected to appreciably alter surface and groundwater hydrology in or around Wetland A (Barghausen 2024a).

During the May 2023 site visit, no other wetlands or wetland buffers were present within the road-widening area on parcel 0420201008. Similarly, no wetlands or wetland buffers were identified on parcel 0420201104 to the west of Freeman Road East. Therefore, no critical area impacts will occur because of road-widening. A portion of the road-widening area is within the shoreline zone of the Puyallup River. During Project permitting, two memoranda will be prepared that describe how the proposed work is consistent with shoreline regulations, one for the City of Puyallup and one for the City of Fife.

6.1.4 Off-Site Road-Widening Adjacent to Parcel 0420174032

Widening and improvement of off-site segments of Freeman Road East are anticipated to be required by the City of Puyallup and City of Fife north of 48th Street East, where road-widening may impact a swale along Tribal trust land at parcel 0420174032. This area was assessed during the

May 2023 and April 2024 field investigations. No OHWM was observed within the ditch, and this swale area is not a regulated stream.

6.1.5 Off-Site Wetland 87, Wetland 93, Wetland 146/148, and Stream 14/15 Buffer Impacts

In total, approximately 67,887 square feet (1.56 acres) of off-site Wetland 87, Wetland 93, Wetland 146/148 and Stream 14/15 buffers extend onto Main Development Area parcels 0420205016 and 0420174075 (Figure 6). The combined area of the buffers has been used to determine the total area of unavoidable on-site buffer impacts that will require compensatory mitigation. Buffer impacts for multiple critical areas within the same location are not double counted (Figure 9).

The consideration of Project impacts to on-site portions of off-site critical area buffers is complicated by the planning for the future use of the WSDOT-owned properties as part of the State Route 167 Completion Project and the mitigation for that project's impacts to wetlands and streams occurring on the WSDOT-owned parcels. Preliminary State Route 167 Completion Project designs indicate that Wetlands 87, 93, and 146/148 and Streams 14 and 15 and all associated buffers will be impacted by State Route 167 construction. The proposed State Route 167 Completion Project mitigation for those unavoidable impacts will be extensive and is planned to include the total regrading of the WSDOT parcels adjoining to the Main Development Area, including Wetlands 87, 93, and 146/148, relocation of Streams 14 and 15, and wetland re-establishment, rehabilitation, and enhancement to compensate for direct and indirect wetland and wetland buffer impacts within the WSDOT-owned parcels (Appendix D).

Because the Freeman Road Logistics Project will occur prior to the State Route 167 Completion Project, buffer impacts within the Main Development Area parcels are proposed to be mitigated by the Freeman Road Logistics Project. However, because the State Route 167 Completion Project will result in significant permanent, direct disturbance and wetland mitigation within Wetlands 87, 93, and 146/148 and within Streams 14 and 15, no mitigation for indirect wetland impacts caused by the Freeman Road Logistics Project is proposed. It is important to note that the future WSDOT mitigation will be provided with buffers that will be fully located within the WSDOT properties and that these buffers will not extend onto the Main Development Area. The proposed credit purchase from the Upper Clear Creek Mitigation Bank will sufficiently compensate for the direct impacts to on-site buffers that will occur in the short-term prior to the direct, permanent critical area impacts proposed to result from the State Route 167 Completion Project.

6.1.6 Off-Site Wetland 89 Impact

No impacts to Wetland 89 or associated wetland buffers are proposed as part of the Freeman Road Logistics Project.

6.1.7 Off-Site Tribal Wetland Mitigation Project Impact

According to the Third-Party Second Report (Confluence Environmental Group 2024), a wetland located on parcel 0420174707 has been identified in association with a Tribal mitigation project. The utility work proposed in this area will be confined to the current existing 78th Avenue East roadway envelope and any wetland buffers occurring within the Tribal mitigation project parcel are interrupted by the existing roadway (Appendix A).

6.1.8 Puyallup River Oxbow Wetland Hydroperiod Analysis from Stormwater Conveyance

Stormwater will be conveyed from the Main Development Area through a stormwater force main to be constructed within the existing 48th Street East and 78th Avenue East roadway prisms. The stormwater line will connect to the existing stormwater system located at parcel 0420173049 in the City of Fife and will ultimately discharge to the Puyallup River Oxbow, located about 1 mile west of the Main Development Area. Barghausen Engineering (Barghausen; 2024b) has provided a Project stormwater management design and analysis report that includes routing, conveyance and detention details and a Western Washington Hydraulic Model (WWHM) to represent pre- and post-development basin conditions and compare resulting runoff volumes and water elevations to the receiving Puyallup River Oxbow. A key component of the proposed stormwater management is the greater detention capacity provided by new facilities that will further reduce peak stormwater flows.

The Puyallup River Oxbow is located between 54th Avenue East and 70th Ave East and north of Levee Road in the City of Fife. The Puyallup River Oxbow contains a Category I wetland, based on special characteristics from the Washington rating system. Barghausen Engineering has estimated that the Puyallup River Oxbow wetland basin surface area ranges between 34 to 60 acres during the wet season depending on variable precipitation and surface water runoff. Single-family residential housing and associated roads make up about 87% of the surrounding property. The remainder of the perimeter located at the southwest corner of the oxbow wetland is undeveloped property owned by the Puyallup Tribe of Indians. The wetland outlet is located at the southwest corner of the wetland and is a channel to the Puyallup River that varies in width between approximately 10 and 25 feet. The channel runs downgradient to the south, away from the oxbow wetland, and then crosses under Levee Road through a culvert that outlets to the Puyallup River. A tide gate is located at the outlet to the river and is designed to prevent backwatering.

On March 23, 2023, and April 12, 2024, Anchor QEA biologists conducted site visits to the off-site Puyallup River Oxbow wetland to assess current conditions including wetland hydrology and hydroperiods, vegetation communities and habitat. Site visit observations were consistent with aerial imagery and other publicly available information such as NRCS soil maps and NWI wetland maps, and with the approximate area and elevation estimates provided in the Barghausen Engineering report. The wetland is a depressional HGM wetland, having palustrine aquatic bed (PAB), PEM, PSS, and PFO Cowardin wetland vegetation community types The interior wetland surface is relatively flat, and is currently vegetated with dominant hydrophytic species such as reed canary grass (FACW), soft rush (*Juncus effusus,* FACW), sedges (*Carex* spp., FAC, FACW, and OBL), broadleaf cattail (*Typha latifolia*, OBL), marshpepper knotweed (*Persicaria hydropiper*, OBL), and aquatic species Eurasian watermilfoil (*Myriophyllum spicatum*, OBL), and great yellow pond lily (*Nuphar polysepala,* OBL). Other species found along the surrounding edges of the wetland include black cottonwood (FAC), Himalayan blackberry (FAC), Pacific willow (FACW), and red alder (FACW). Hydroperiods identified as present within the wetland included permanently inundated, seasonally inundated, occasionally inundated, and saturated only. The low-lying portions of the wetland, including the outlet culvert were inundated with water between 6 and 18 inches in depth, and high water marks (scour, sediment deposition, and staining) were observed as high as 4 feet above persistent vegetation at the tide gate outlet.

The City of Fife requested that the applicant address Project compliance with the *Stormwater Management Manual for Western Washington* (Ecology 2019) Minimum Requirement 8: Wetland Protection. The results of the WWHM indicate that the overall relative change to average monthly water volumes within the Puyallup River Oxbow basin will be an increase of 1.3% that corresponds to 1.87 acre-feet of water. The greatest modeled variances coincide with large storm events that typically occur in the fall and winter months. Table 10 provides modeled pre-development and post-development modeled monthly average water volumes occurring in the Puyallup River Oxbow wetland basin.

Table 10
WWHM Pre-Development and Post-Development Monthly Average Water Volumes

Month	Pre-development Average Water Volume (acre-feet)	Post-development Average Water Volume (acre-feet))	Percent Change (%)
January	262.68	265.36	1.0
February	229.01	230.68	0.7
March	195.03	196.71	0.9
April	121.37	122.58	1.0
May	78.79	79.54	0.9
June	56.04	56.59	1.0

Month	Pre-development Average Water Volume (acre-feet)	Post-development Average Water Volume (acre-feet))	Percent Change (%)
July	37.04	37.08	0.1
August	28.17	28.07	-0.3
September	39.29	40.28	2.5
October	85.24	88.49	3.8
November	190.49	195.76	2.8
December	261.79	266.31	1.7
Annual Average	**132.08**	**133.95**	**1.3**

Barghausen Engineering has also provided an analysis of water elevation stage changes within the Puyallup River Oxbow wetland basin modeled to occur as a result of the proposed Project stormwater discharges. The analysis includes pre-development and post-development tabular daily water level elevations in three example years of the precipitation record corresponding to low precipitation (1905), moderate precipitation (1971), and high precipitation (2018). The modeled change to water elevations to the Puyallup River Oxbow wetland resulting from the proposed Project stormwater discharges generally measure less than 0.01 feet in each of the three precipitation scenarios. The greatest changes are noted to coincide with large storm events that typically occur in the fall and winter months, but peak events are both infrequent and have short durations.

The pre-development water elevation stage model uses the same basin areas as those used to model stormwater volumes. Low-density single-family homes on larger lots are modeled as 15% impervious. High density single-family homes on small lots are modeled as 60% impervious. The pervious areas of the residential developments are modeled as lawn. Industrial and commercial uses are modeled as 100% impervious. The model uses soil type 'C', which is typical of alluvial valley soils native to the basin. The post-development water elevation stage model includes the same assumptions as those described above and includes the changes to water volumes imparted by the proposed development and stormwater system, which provides additional detention capacity to attenuate peak volumes. Table 11 provides a summary of the water elevation stage model results.

Table 11
WWHM Pre-Development and Post-Development Average Water Elevation Stage

Year	Pre-development Average Water Elevation Stage (Feet)	Post-development Average Water Elevation Stage (Feet)	Difference (Feet)
Low Precipitation Example Year (1905)	0.1053	0.1073	0.002
Moderate Precipitation Example Year (1971)	0.2638	0.2639	0.0001
High Precipitation Example Year (2018)	0.7204	0.7199	-0.0005

The water elevation stage model results for pre- and post-development conditions are very similar in each of the precipitation example years, demonstrating that peak floods are attenuated as a result of the size of the Puyallup River Oxbow wetland basin, existing stormwater detention facilities, and detention facilities proposed by the Project. The capacity of the existing culvert at the Puyallup River Oxbow outlet is sufficiently large enough that modeled Project stormwater discharges of 2 to 15 cubic feet per second are well below the expected free flow from a 48-inch pipe during even the most extreme storm events. The culver will not restrict outflows from the Oxbow under post-development conditions.

The post-development models for all example years indicate that changes to Oxbow water elevations imparted by the proposed Project stormwater discharges will be nearly indiscernible from pre-development condition within the Puyallup River Oxbow basin. The greatest difference was modeled to occur during the low precipitation example year and results in change in water elevation stage of less than 0.002 feet (0.05 inches). This difference is minute in comparison to existing variation in water elevation stage within the oxbow, as evidenced by direct field observations of high water marks measuring as much as 4 feet above persistent wetland vegetation. Wetland functions associated with water quality, hydrology, and habitat, specifically associated with each of the wetland hydroperiods present in the Oxbow (permanently inundated, seasonally inundated, occasionally inundated, and saturated), are not expected to change as a result of the small water surface elevation changes resulting from the Project. Because post-development stormwater runoff volumes have been designed to cause little effect on the water elevations within the oxbow, the stormwater generated by the Project will have no significant effects on wetland areas, hydrology, hydroperiods, vegetation communities or wetland habitat functions. Also, because the stormwater design and WWHM satisfy the *Stormwater Management Manual for Western Washington* (Ecology 2019) Minimum Requirement 8: Wetland Protection, no additional mitigation is proposed.

6.2 On-Site Stream Buffer

Off-site Streams 14 and 15 are regulated as Type III streams and protected by 50-foot buffers, per PMC Chapter 21 (City of Puyallup 2024a), which will partially project onto parcels 0420174075 and 0420205016. A 50-foot buffer projected onto the Main Development Area results in an approximately 3,447-square-foot buffer area, with 2,544 square feet on parcel 0420174075 and 933 square feet on parcel 0420205016. The stream buffers overlap with wetland buffers that extend onto the Main Development Area from Wetland 93 and partially from Wetland 87 and Wetland 146/148. Mitigation for on-site impacts to Streams 14 and 15 buffer impacts will be provided at the Port of Tacoma Upper Clear Creek Mitigation Bank.

6.3 Special Flood Hazard Areas Habitat Assessment

The Main Development Area is located within the 100-year floodplain of the Puyallup River and within a Pierce County designated special flood hazard area. As discussed in Section 3.5, the Puyallup River flows approximately 1,200 feet south of the Main Development Area, south of North Levee Road East. The proposed Project includes construction activities within the 100-year floodplain (Appendix A). The Project will be constructed within the footprint of current low-density residential lots and agricultural fields that experience ongoing human use and disturbance from automobiles, livestock, and agricultural activities.

The BFE varies across the Main Development Area between 32 and 33.7 feet NAVD88, and the two warehouse buildings will be elevated so that the finished floor is elevated approximately 1 foot above the BFE. This will place all electrical and other equipment at least 1 foot above the BFE as well. These design features will avoid or minimize potential impacts to the floodplain, reduce the potential for inundation during flood events, and meet Cities of Puyallup and Fife requirements. The orientation of the proposed warehouses will be situated in line with one another (the northern warehouse will be within the hydraulic shadow of the southern building to align with anticipated flood flows through the property when they occur). This design is intended to minimize potential impacts on floodwater velocity.

To construct the proposed structures, a net cut of material will be achieved within the floodplain through proposed final grades and by the use of compensatory storage west of the northern building (Building A). The proposed grading will result in an increase of local floodwater storage volume. Material removed from the floodplain will be located within the same floodplain cross section and perpendicular to the flow. These mitigation measures are anticipated to result in zero net fill and will not cause any rise to the BFE within the floodplain, consistent with PMC 21.07.

The federal habitat assessment guidelines require an analysis of other potential impacts to the floodplain environment. The following includes an analysis of habitat assessment elements per the minimum habitat assessment standards:

- **Project and action area description, maps, and site plans have been provided.** See Preliminary Plan Set in Appendix A.
- **Methods of work are described.** See Preliminary Plan Set in Appendix A.
- **Projects in the Protected Area are designed to inherently avoid detrimental impacts without mitigation.** The Project is located within the footprint of residential and agricultural fields that experience ongoing human use and disturbance. The Project is designed to avoid or minimize potential detrimental impacts through the orientation of the buildings relative to flood flows, stormwater facilities, and removal of soils from other properties within the floodplain.

- **Direct and indirect impacts.** Direct impacts include minor impacts to the floodplain from construction as described in this CAR. Long-term impacts include the presence of structures within the floodplain in an area previously used for residences and agriculture. The long-term environmental benefits from the Project, including improved water quality from runoff, are anticipated to offset any potential short-term impacts from construction and operation of the facility. Indirect impacts from the Project may include improved downstream water quality in the Puyallup River and reductions in nutrient loads to the Puyallup River from runoff and during flood events.
- **Interrelated and interdependent activities.** All development impacts associated with this Project are described in this CAR. No other projects are known that would result in interrelated and interdependent activities.
- **Cumulative impacts.** Cumulative impacts are those that could result in the combination of effects from individual Project actions occurring over time. If left unmitigated, the cumulative or incremental effects of these actions have the potential to result in significant environmental impacts. The Project is located within an area characterized by residences, agricultural fields and associated structures, and industrial buildings, such as warehouses. At the time of publication, there are no nearby projects that are anticipated to contribute to cumulative impacts. However, it is anticipated that future projects in the area would be required to conduct a separate, Project-specific environmental review, as appropriate. It is anticipated that mitigation measures implemented for each project would decrease the potential for cumulative adverse effects on the environment.
- **Other habitat assessment elements include the following:**
  - **Water quantity and quality.** As described previously, the Project is anticipated to result in a net improvement to water quality from runoff and during flood events due to the construction of stormwater facilities. During construction, stormwater control measures will be implemented to avoid or minimize potential short-term construction impacts on water quality to be shown in a Stormwater Pollution Prevention Plan and Temporary Erosion and Soil Control Plan. A Stormwater Site Plan will also be prepared, describing the stormwater control best management practices (BMPs) incorporated into the Project to meet the requirements of the Cities of Puyallup and Fife stormwater regulations. The Project will have no impact on water quantity.
  - **Flood velocities and volumes.** As described previously, the Project has been designed to accommodate flood velocities through orientation of the structures (with the north warehouse designed to be within the hydraulic shadow of south warehouse) and to align them with floodwaters. The Project will not create any rapid water runoff conditions and therefore will not impact flood flows downstream. The Project will have a negligible impact on flood volumes.

  - **Flood storage capacity.** Earthwork cuts and fills will be balanced at the site to the extent possible. The construction of improvements at the proposed stormwater facilities will provide no net loss to flood storage capacity.
  - **Riparian vegetation.** The Project is located over 1,200 feet from the Puyallup River and associated riparian buffers. No riparian vegetation will be impacted by the Project.
  - **Measures to preserve habitat forming processes.** No in-water work is proposed, and no impacts to habitat forming processes will occur from the Project; therefore, no measures to preserve habitat forming processes are proposed.
  - **Refuge from higher velocity floodwaters is provided.** The presence of the structures within the floodplain may provide limited refuge from higher velocity floodwaters. No additional measures are proposed.
  - **Spawning substrate is provided or protected.** No in-water work or work in the vicinity of salmonid spawning habitat is proposed, and no impacts to spawning substrate will occur from the Project; therefore, no spawning substrate needs to be provided by the Project.
- **No adverse effects from habitat isolation, bank armoring, channel straightening, construction effects (transport of sediment from the work area, noise, etc.), or direct effects.** No habitat isolation, bank armoring, or channel straightening is proposed as part of the Project. To avoid or minimize potential construction effects from the Project, stormwater control measures will be implemented to avoid or minimize potential construction impacts on water quality and will be shown in the Stormwater Pollution Prevention Plan and Temporary Erosion and Soil Control Plan. As described above, a Stormwater Site Plan will also be prepared describing the stormwater control BMPs incorporated into the Project to meet the requirements of the Cites of Puyallup and Fife stormwater regulations. Overall, the long-term environmental benefits from the Project, including improved water quality from runoff, are anticipated to offset any potential short-term impacts from construction and operation of the facility.

For the reasons stated above, the proposed Project may affect, but is not likely to adversely affect, listed fish NMFS species, as evaluated per the NMFS Biological Opinion for the National Flood Insurance Program (NMFS 2008), or listed USFWS species.

7 Site Selection Screening and Alternatives Analysis

7.1 Site Selection Screening Criteria

To meet the Project purpose and need described in Section 2), site selection criteria were developed to evaluate potential alternatives. The primary criterion is a site large enough to accommodate the stated purpose and need for development of a 505,000-square-foot commercial warehouse with employee parking, truck loading bays, truck parking and area for truck maneuvering within proximity to the Port and transportation infrastructure linkages. This area was selected in accordance with market demand for this product (i.e., very large commercial warehouse vacancy is low) and Pierce County's Comprehensive Plan.

In order to accommodate such a development, the property must be between 20 and 30 acres to accommodate the 505,000-square-foot warehouse building capacity and car and trailer parking to meet local codes for setbacks, off-street parking, landscaping and screening, truck movements, fire access, and trailer parking, and it must be zoned LM/W. Other site requirements include the presence of well-developed infrastructure (e.g., road network, utility systems) and a highly qualified regional labor pool to support the land use. The site must also be within 5 miles of the Port and I-5 to support efficient movement of goods with easy access via State Route 167 Completion Project or the Canyon Road Regional Connection Project. This parameter is important due to the nature of the Project. Logistics centers are intended to efficiently receive and distribute goods, and the Project location will support the applicant's intention to minimize or avoid issues with traffic concurrency and impacts to local road conditions from the added truck traffic. In addition, the site should make efficient use of lands designated for LM/W development within the City of Puyallup Freeman Road Comprehensive Plan Map Amendment and FRO, maximize the use of existing infrastructure, and provide jobs in the growing Cities of Puyallup and Fife and greater Pierce County area.

The Project's need to impact wetlands and critical area buffers is related to the location of wetlands and critical area buffers on the Main Development Area, as well as requirements for warehouse capacity, existing roads, access roads, and other infrastructure improvements required to support the proposed Project. Placement of material into wetlands and critical area buffers is unavoidable to facilitate the expansion and improvement of existing roadways and sidewalks; installation of stormwater, sewer and water utilities; and construction of the warehouses and associated parking and vehicle movement areas, including emergency vehicle ingress and egress.

Three sets of screening criteria were selected to evaluate potential alternatives to the proposed Project:

1. Whether or not the alternative would meet the stated Project purpose and need
2. The extent to which the alternative would avoid and minimize impacts to regulated wetlands and other waters

3. The extent to which the alternative is practicable for use for typical warehouse and/or distribution users

Each criterion is further described in the following sections.

7.2 Achievement of Project Purpose and Need

Alternatives were analyzed based on their ability to achieve the stated purpose and need for development of 500,000-square-foot warehouse capacity with employee parking, truck loading bays, and truck parking within 5 miles of the Port and I-5.

In order to achieve this purpose and need, alternative sites must meet the following screening criteria:

- Be zoned for LM/W use, or Employment Center (EC), which is the equivalent zoning designation in use by Pierce County.
- Be within 5 miles of the Port and I-5 with easy access via State Route 167 Completion Project or the Canyon Road Regional Connection Project.
- Be located in an area with a well-developed utility infrastructure, or where necessary improvements could be reasonably afforded.
- Be located in an area that can provide a highly qualified regional labor pool.
- Be able to maximize the use of lands zoned as LM/W of EC.
- Address the regional shortage of 500,000-square-foot warehouse capacity.
- Support traded-sector investments that create high-wage jobs and tax base in the City or another portion of Pierce County.

7.3 Avoidance and Minimization of Impacts

Alternatives were also analyzed based on the capacity for a viable site design to avoid and minimize impacts to any wetlands that specifically provide high ecological and societal functions. Wetlands with any of the following characteristics were considered priorities for avoidance and impact minimization:

- Wetland areas with a “high” potential and associated “high” value scores, as determined from the Washington State Wetlands Rating System – Western Washington: 2014 Update (Hruby 2014)
- Palustrine forested or scrub-shrub wetlands; mitigation for these wetlands entails a higher temporal loss of functions and values than occurs for emergent wetlands
- Riverine or slope wetlands, which are more difficult to replace in-kind than depressional wetlands
- Wetlands connected to streams or other waterways that provide habitat to native fish, ESA-listed fish, or other ESA species

- Wetlands containing special characteristics (Hruby 2014)
- Wetlands characterized by predominately native vegetation species
- Wetlands designated as locally "significant" in Pierce County code or plans
- Wetlands that provide connectivity between, or provide buffer functions to, other valuable upland or wetland habitats, either on or off site
- Any wetlands of high conservation value (WDNR 2024)
- Any designated Priority Habitat Area (WDFW 2024a)

Agriculturally degraded or artificially created wetlands were considered more easily replaced through mitigation with no issues associated with temporal loss. In situations where the quality or origin of a wetland or other water was unknown, avoidance and minimization were kept as the higher priority.

7.4 Practicability

Alternatives were analyzed based on their practicability for use by typical warehouse and logistical users. Factors considered in assessing practicability to the end user included the following general and site-specific criteria.

7.4.1 General Practicability Criteria:

- Short timeline to facility construction, with sites available for construction within 12 months being most practicable
- Readily available for warehouse development (e.g., not earmarked or restricted by designated use/zoning)
- Geometry of building shapes (i.e., rectangular, irregular, square): rectangular building shapes generally preferred for efficient interior layout
- Topography of the site (e.g., flat, rolling, sloped) and presence of natural resource constraints (e.g., wetlands or streams): flat sites without wetlands or stream constraints are generally preferred due to a limited ability to incorporate changes in finished floor elevations in warehouse facilities

7.4.2 Site-Specific Practicability Criteria

- Percent building coverage of site: building coverage of between 30% and 50% is targeted for warehouse/distribution facilities depending on the size of the lot
- Ratio of parking spaces to site size and resultant number of parking spaces: minimum "market" parking requirements of 1.0 employee parking space per 3,000 square feet of building and an equal number of truck parking stalls as truck bays are desired by warehouse/distribution facilities

- Capacity of site to support loading, service, and storage requirements of typical warehouse/distribution facility users: warehouse/distribution typically requires access by large trucks

7.5 Alternatives Analysis

Four potential alternatives were identified for the proposed warehouse and logistics development including a "no action" option. Each of these alternatives is discussed in the following sections.

7.5.1 Alternative 1: No Action

Under this alternative, the proposed Main Development Area would not be developed for warehouse and logistical uses and would continue to exist as vacant and disused grassy lots. The Project purpose and need would not be achieved with this alternative.

7.5.2 Alternative 2: Off-Site Alternatives

Under this alternative, a different site or sites would be used for the proposed Project. Potential alternative sites were evaluated through an informal parcel analysis completed by Vector Development Company using the purpose and need criteria provided in Section 2 of this CAR. Parcels were also reviewed to select potential sites that were not encumbered or characterized by any of the following:

- Ownership by a city or county division unless known to be surplus and for sale
- Ownership by a land trust or private club/organization with a mission to protect or preserve the land as open space or for public or private recreation
- Special tax status granted by enrollment in a state authorized program for open space, agriculture, or timber land

No qualifying parcels that were for sale or may potentially be for sale were identified that met the listed criteria and the purpose and need criteria.

7.5.3 Alternative 3: North-South Building Layout No 1

Alternative 3 is an on-site design that involves developing the proposed Freeman Road Logistics Main Development Area using a north-south building layout. Under this alternative, the build-out design would be adjusted so that the footprint of the northern building and associated paved parking areas would be decreased to avoid all impacts to on-site Wetland B and Wetland B buffers. The footprint would also be reduced to avoid impacts to buffers from off-site Streams 14 and 15 and Wetland 93.

Reducing the footprint to avoid impacts to buffers from off-site Streams 14 and 15 and from off-site Wetlands 87, 93 and 146/148 is feasible. However, total elimination of impacts to Wetland B and its

buffer and the off-site critical area buffers would require reducing the size of the north building footprint by approximately 119,955 square feet in order to retain required Freeman Road East improvements and buffer setbacks under the FRO, achieve necessary truck parking and maneuvering space, and provide required emergency vehicle ingress and egress. Alternative 3 consists of a north building footprint of approximately 119,955 square feet and a south building footprint of approximately 256,102 square feet, resulting in a total Project warehouse capacity of an approximate 376,057-square-foot warehouse capacity, which is well below the minimum 500,000-square-foot warehouse capacity threshold required to meet the applicant's purpose and need.

7.5.4 Alternative 4: North-South Building Layout No 2

Alternative 4 is an on-site design that involves developing the proposed Freeman Road Logistics Main Development Area using a north-south building layout and total fill of Wetland B and fill of the on-site portions of Wetland 87, 93, and 146/148 buffers, as well as the on-site portion of Stream 14 and 15 buffer. Under this alternative, the build-out design of the northern building would use the Main Development Area while retaining required Freeman Road East improvements and buffer setbacks under the FRO, achieving necessary truck parking and maneuvering space, and providing required emergency ingress and egress.

Alternative 4 would involve fill to on-site Wetland B and fill of the on-site portions of Wetland 87, 93, and 146/148 buffers as well as the on-site portion of Stream 14 and 15 buffers due to the construction of the north warehouse and associated paved parking areas. This alternative would consist of a north building footprint of approximately 234,901 square feet and a south building footprint of approximately 256,102 square feet, resulting in a total Project warehouse capacity of 505,436 square feet, which is above the minimum 500,000-square-foot warehouse capacity threshold required to meet the applicant's purpose and need. Additionally, the Alternative 4 layout would meet the Project purpose by making efficient use of lands designated for LM/W uses, maximizing the use of existing infrastructure, providing additional transportation and other infrastructure improvements, and providing high-wage jobs in the growing City of Puyallup and Pierce County areas within 5 miles of the Port and I-5. The north-south building layout is expected to address important market demand for very large commercial warehouses and would provide one parking space for every 3,000 square feet of building, providing the parking space ratio needed for warehouse/distribution facilities of this kind.

Alternative 4 would directly impact 1,218 square feet of Wetland B, a Category III depressional wetland that contains highly degraded PEM habitat. Additionally, Alternative 4 would directly impact a total of 67,887 square feet of combined Wetland 87, 93, and 146/148 buffers, as well as the portion of Streams 14 and 15 buffers occurring on site (Figure 9). This alternative would achieve no net loss of wetland function and would achieve a net benefit in habitat the purchase of wetland mitigation credits from the nearby Port of Tacoma Upper Clear Creek Mitigation Bank. The current condition of

Wetland B and the on-site portions of the stream and wetland buffers is poor, with low native species diversity and low to moderate functions and values. Off-site wetlands and streams will also be relocated as part of the State Route 167 Completion Project occurring on WSDOT-owned parcels. Functions of on-site wetlands and buffers would be offset by purchase of mitigation credits at Port of Tacoma Upper Clear Creek that would generate much higher-value wetlands and buffers off site.

7.6 Site Selection Screening and Alternatives Analysis Conclusions

Based on the alternatives analysis, Alternative 4, the north-south building layout with purchase of off-site compensatory wetland mitigation credits from the Port of Tacoma Upper Clear Creek Mitigation Bank, would best meet the Project purpose and need. It would meet the minimum of 500,000 square feet of warehouse capacity within 5 miles of the Port and I-5 via State Route 167. Alternative 3 would not achieve a minimum 500,0000-square-foot warehouse capacity, would not maximize the appropriately zoned use of the property. Alternative 4 would achieve a net improvement in habitat quality through the purchase of 0.159 wetland credits at the Upper Clear Creek Mitigation Bank Site by generating higher-value wetlands off site but within the bank's service area.

8 Avoidance, Minimization, and Mitigation Measures

The results of the critical area assessment identified on-site Wetland B (Category III), five off-site wetlands (Wetland A [Category II], Wetland 87 [Category III], Wetland 89 [Category II], Wetland 93 [Category III], and Wetland 146/148 [Category III]), and two off-site streams (Streams 14 and 15) within the Study Area. The Project has been designed to avoid and minimize impacts to critical areas and their buffers to the maximum extent possible while also satisfying design criteria for the development and City of Puyallup and City of Fife building and zoning requirements. The Project includes unavoidable fill impacts to on-site Wetland B (1,218 square feet) and to the on-site portions of off-site Wetland 87, 93 146/148 buffers, as well as to the on-site portion of off-site Stream 14 and 15 buffers (67,887 square feet), which provide poor water quality and hydrologic and habitat functions. The Project proposes to offset the wetland and buffer fill by purchasing wetland credits from the nearby Port of Tacoma Upper Clear Creek Mitigation Bank that would generate higher-value wetlands off site but within the bank's service area.

8.1 Mitigation Sequencing

The proposed Project requires the necessary and unavoidable fill of on-site Wetland B, located centrally on parcel 0420174075, and the on-site portions of critical area buffers located on parcels 042174075 and 0420205016. Per PMC 21.06.610, projects should first attempt to avoid impacts all together by not taking certain actions. If actions cannot be eliminated, impacts should be minimized by restraining the magnitude of an action, using different technology, or taking steps to reduce impacts. For impacts that cannot be avoided or minimized, compensation or rectification for the impact should be provided by replacing, enhancing, or providing substitute resources or environments, followed by monitoring and reduction of the impact over time. Mitigation sequencing, outlined under PMC 21.06.210(84), for impacts to critical areas, is as follows:

1. Avoiding an impact altogether by not taking a certain action or parts of actions
2. Minimizing impacts by limiting the degree or magnitude of an action and its implementation
3. Rectifying impacts by repairing, rehabilitating, or restoring the affected environment
4. Reducing or eliminating an impact over time by preservation and maintenance operations during the life of the action
5. Compensating for an impact by replacing or providing substitute resources or environments
6. Monitoring the mitigation and taking remedial action when necessary

As discussed in Section 7, no practicable alternatives could avoid on-site Wetland B and the on-site portions of the off-site critical area buffer impacts and still fulfill the Project purpose and need due to the size, shape, location, and extent of the wetland and the required warehouse and parking capacity, building code requirements, zoning, and other factors. Project avoidance, minimization, and mitigation measures included site selection screening criteria (Section 7.1), alternatives analysis

(Section 7.5), and avoidance and design and construction measures (Sections 8.2 and 8.3, respectively). The Project proposes to provide compensatory mitigation for all impacts to Wetland B and to the on-site potions of off-site critical area buffers by purchase of wetland mitigation credits from the nearby Port of Tacoma Upper Clear Creek Mitigation Bank.

8.2 Avoidance and Minimization Measures

8.2.1 Design Measures

The Project includes unavoidable permanent adverse impacts to all of Wetland B located on parcel 0420174075 and to the on-site portions of off-site Wetlands 87, 93, and 146/148 and Stream 14 and 15 buffers located on parcels 0420174075 and 0420205016 within the Main Development Area. The Project has been designed to first avoid and then minimize and offset impacts to both on-site and off-site critical areas and critical area buffers to the extent practicable while also satisfying the City of Puyallup and City of Fife building and zoning code requirements and fulfilling the criteria of the Project's stated purpose and need. Further discussion of avoidance and minimization is included in Section 7.

8.2.2 Construction Measures and Best Management Practices

Other measures to avoid and minimize impacts include the implementation of the following BMPs during construction:

- All work will be performed according to the requirements and conditions of the Project permits.
- Impacts to off-site wetlands, off-site streams, and on-site stream and wetland buffers will be minimized during construction through the use of temporary erosion and sediment control BMPs. The contractor will prepare and implement a Temporary Erosion and Sediment Control Plan and a Spill Prevention, Control, and Countermeasures Plan.
- All wash water and concrete-laden water associated with construction will be treated to meet State of Washington surface water quality standards (Chapter 173-201A Washington Administrative Code) prior to discharge into surface waterbodies. Concrete-laden water may also be removed from the site.
- All concrete will be poured in dry conditions, or within confined areas not connected to surface waters, and shall be sufficiently cured prior to contact with surface waters.
- Excess or waste materials will not be disposed of or abandoned within the wetland boundary or waterward of the OHWM or allowed to enter waters of the State.
- No petroleum products, chemicals, or other toxic or deleterious materials will be allowed to enter the wetland or surface waters.

- The contractor will be required to properly maintain construction equipment and vehicles to prevent them from leaking fuel or lubricants; if there is evidence of leakage, the further use of such equipment will be suspended until the deficiency has been corrected.
- The Project will be constructed consistent with the stormwater management design criteria outlined in the Ecology *Stormwater Management Manual for Western Washington* (2019) and the Pierce County *Stormwater Management and Site Development Manual* (2021) to reduce and control surface runoff.

8.3 General Goals of Compensatory Mitigation

The general goals of the critical area and critical area buffer compensatory mitigation include the following:

- Ensure no net loss of critical areas and their buffers as a result of the Project.
- Offset direct critical area and critical area buffer impacts through the purchase of mitigation credits.

8.4 Compensatory Mitigation

8.4.1 Wetlands and Critical Area Buffers

Under PMC and state and federal regulations, mitigation is required for unavoidable permanent impacts to 1,218 square feet (0.03 acre) of Category III wetlands and 67,887 square feet (1.56 acres) of total combined permanent impacts to the on-site portion of off-site critical area buffers (Figure 9).

On-site mitigation is not possible because of City of Puyallup and City of Fife design, building, and zoning code requirements and the criteria of the Project's stated purpose and need. Direct wetland impacts and on-site critical area buffer impacts will be offset through the purchase of mitigation credits from a local wetland mitigation bank with a service area that includes the Project location. The mitigation purchase will satisfy the no net loss provision required by federal and state executive orders for the protection of wetlands (Presidential Executive Order 11990 and Washington State Executive Order 90-04) and will also fulfill PMC mitigation requirements.

The Project proposes to purchase mitigation credits from the Port of Tacoma Upper Clear Creek Mitigation Bank, which is a bank in Pierce County approved by the Interagency Review Team to sell credits for wetland and other critical area impacts. The Project site is located within the service area for the Upper Clear Creek Mitigation Bank, approximately 5 miles to the east of the bank. This mitigation bank encompasses approximately 28.64 acres located at 3714 and 4014 Gay Road East, Tacoma, Washington 98443, 36 portions of Pierce County parcels 0320141001 and 0320141086 in Sections 13 and 14 of 37 Township 20 North, Range 3 East, Willamette Meridian. The bank has been constructed and is successfully re-establishing, rehabilitating, and enhancing wetland functions across the site (Port of Tacoma Upper Clear Creek Mitigation Bank 2020).

Guidance from Ecology and the U.S. Army Corps of Engineers (Ecology and USACE 2013) was used to determine the number of bank credits that need to be purchased using the ratios in Table 12.

Table 12
Proposed Mitigation Debit Ratios in Use at Upper Clear Creek Mitigation Bank

Resource Impact	Bank Credits : Impact Acreage
Wetland, Category III	1:1
Critical Area Buffers	0.1:1

Source: Ecology and USACE 2013

Critical area buffer impacts are mitigated on a case-by-case basis per local jurisdictions under the Upper Clear Creek Mitigation Bank Instrument. A ratio of 0.1:1 is proposed because the existing on-site critical area buffer is highly degraded agricultural and residential land and has poor hydrologic, water quality, and habitat functions. Additionally, the buffers that extend on-site are off-site wetlands that will soon be impacted by the State Route 167 Completion Project occurring on WSDOT-owned parcels (Wetlands 87, 93, and 146/148), which will be completely regraded with new protective buffers that will be located entirely within the WSDOT-owned properties and will not extend onto the Main Development Area. Similarly, no mitigation is proposed for indirect impacts to off-site wetlands because of the regrading plan associated with the State Route 167 Completion Project.

The Project proposes purchase of 0.159 credits as detailed in Table 13. Credits will be purchased following approval of the mitigation plan, as presented in this CAR, by the City of Puyallup and Ecology.

Table 13
Critical Area Impacts and Proposed Credit Purchase

Critical Area Impact	Bank Credits : Impact Acreage	Impact Acreage	Proposed Credit Purchase
Weland B, Category III direct impacts	1:1	0.03	0.03 credit
Wetland 87, Category II indirect impacts	1.2:1	0.01	0 credits[1]
Wetland 93, Category III indirect impacts	1:1	0.10	0 credits[1]
Wetland 142/146, Category III indirect impacts	1:1	0.48	0 credits[1]
Critical Area Buffers	0.1:1	1.56	0.156 credits
		Total Credit Purchase	**0.159 credits**

Note:

1. Because future WSDOT mitigation areas resulting from the WSDOT State Route 167 Completion Project will be provided with protective buffers located fully within the WSDOT parcels, the Project does not propose additional mitigation for indirect impacts to Wetlands 87, 93, and 146/148.

Vector will enter into a credit purchase agreement with the Port of Tacoma and provide proof of sale documentation to the City of Puyallup and to Ecology.

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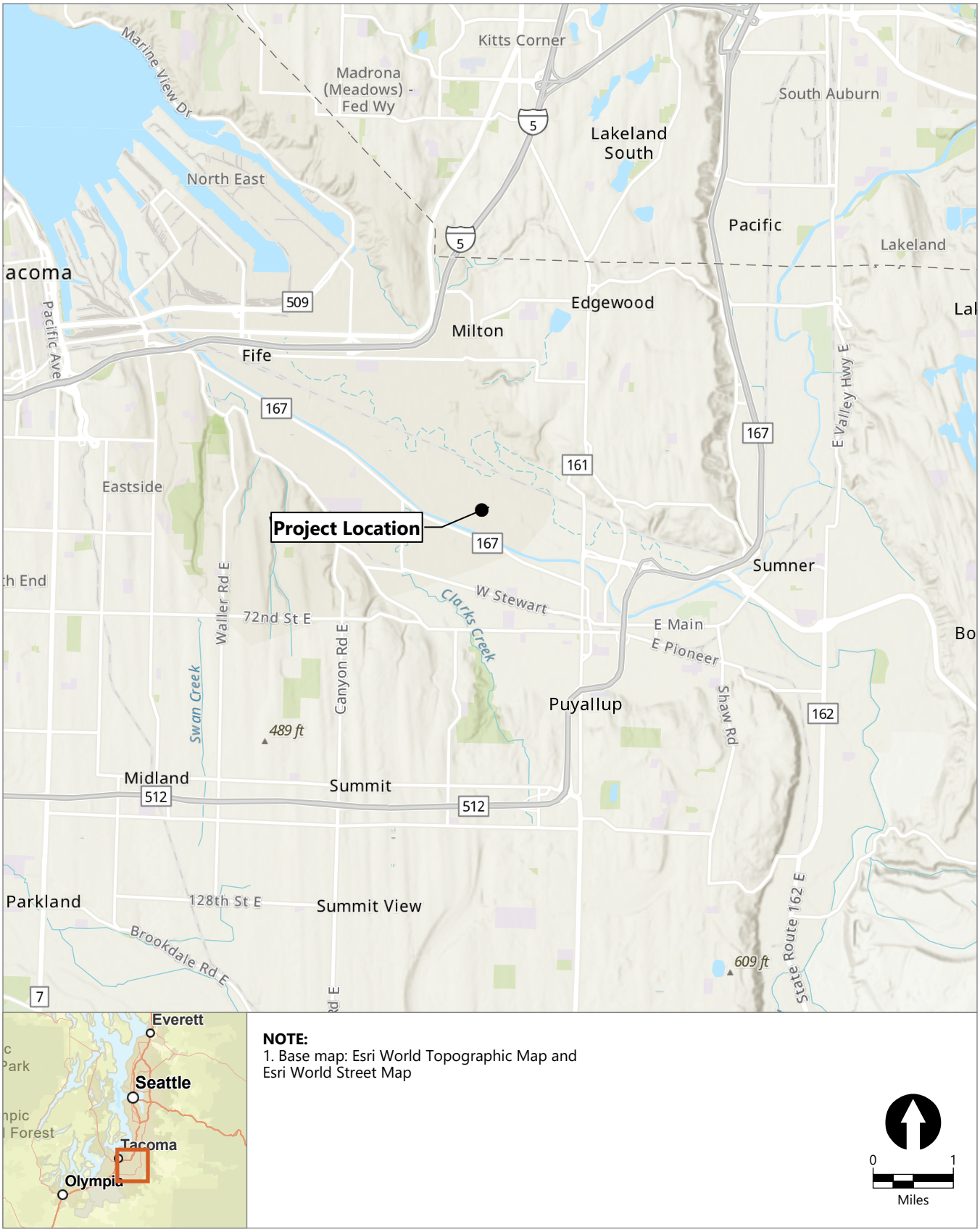

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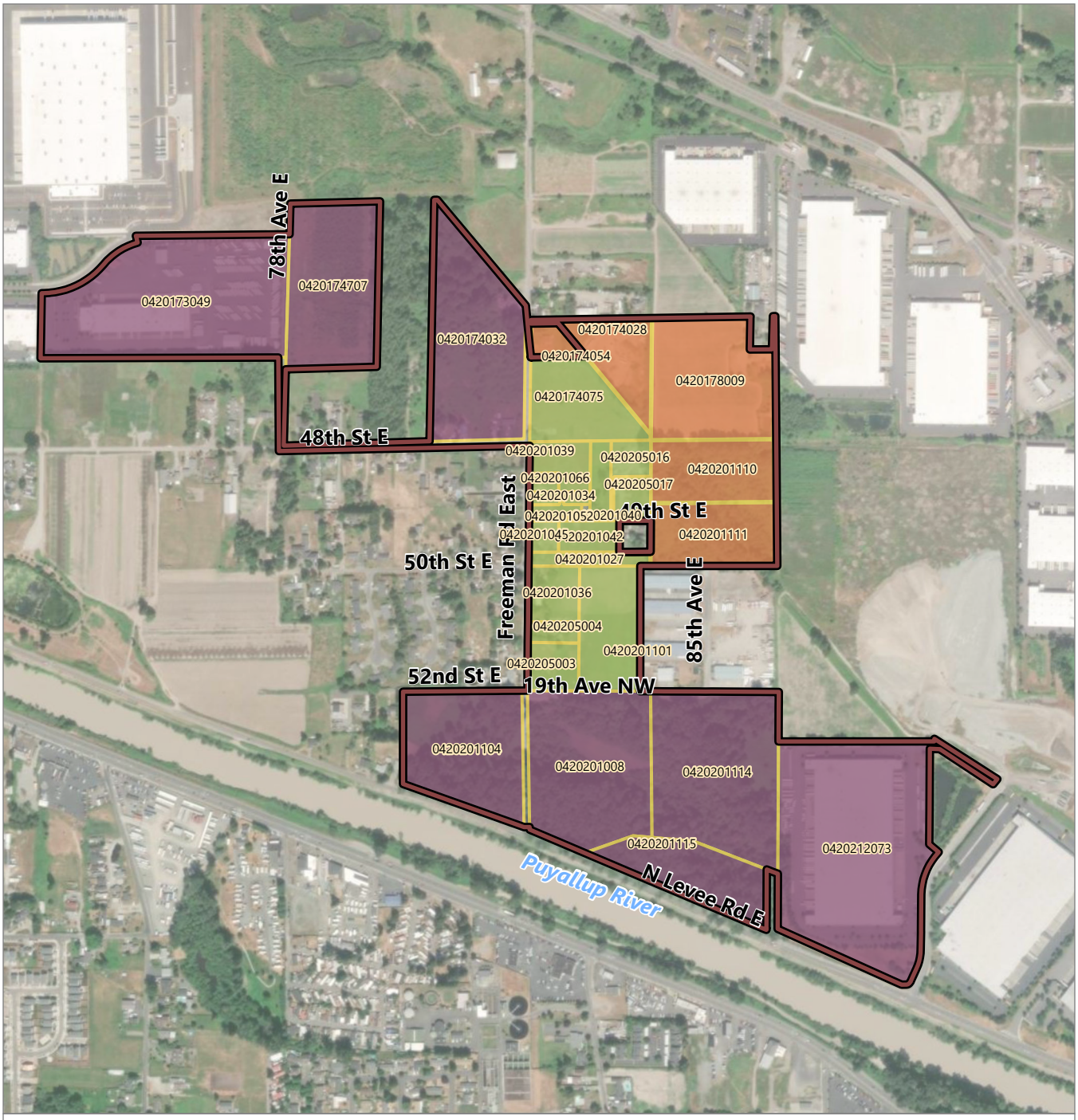
Figure 1
Vicinity Map
Critical Area Report
Freeman Road Logistics



LEGEND:

- Study Area

Tax Parcel Ownership

- Main Development Area
- Other Parcels for Transportation and Utility Improvements
- WSDOT

SOURCES:
1. Aerial imagery: Esri (2022)
2. Parcel: Pierce County (2023)

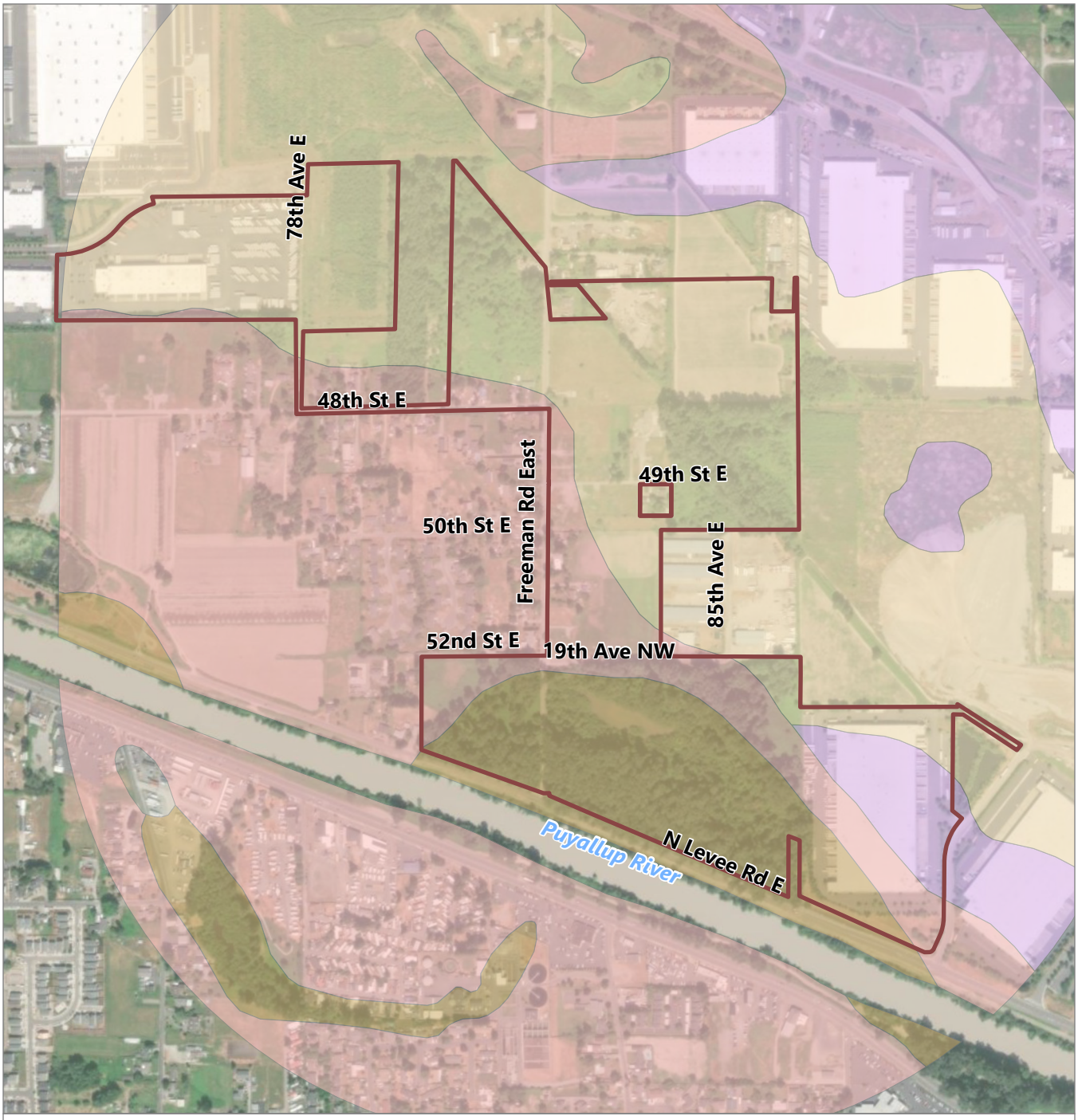
NOTES:
1. USDA: United States Department of Agriculture

0 600
Feet

Publish Date: 2024/06/14, 4:40 PM | User: jquinley
Filepath: \\GSTFILE01\gis\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\CAR\FreemanRoad_CAR.aprx

ANCHOR QEA

Figure 2
Study Area and Existing Conditions
Critical Area Report
Freeman Road Logistics



LEGEND:

- Study Area

NRCS Soils

- Briscot loam
- Pilchuck fine sand
- Puyallup fine sandy loam
- Sultan silt loam

SOURCES:
1. Soil: USDA (2023)
2. Aerial imagery: Esri (2022)

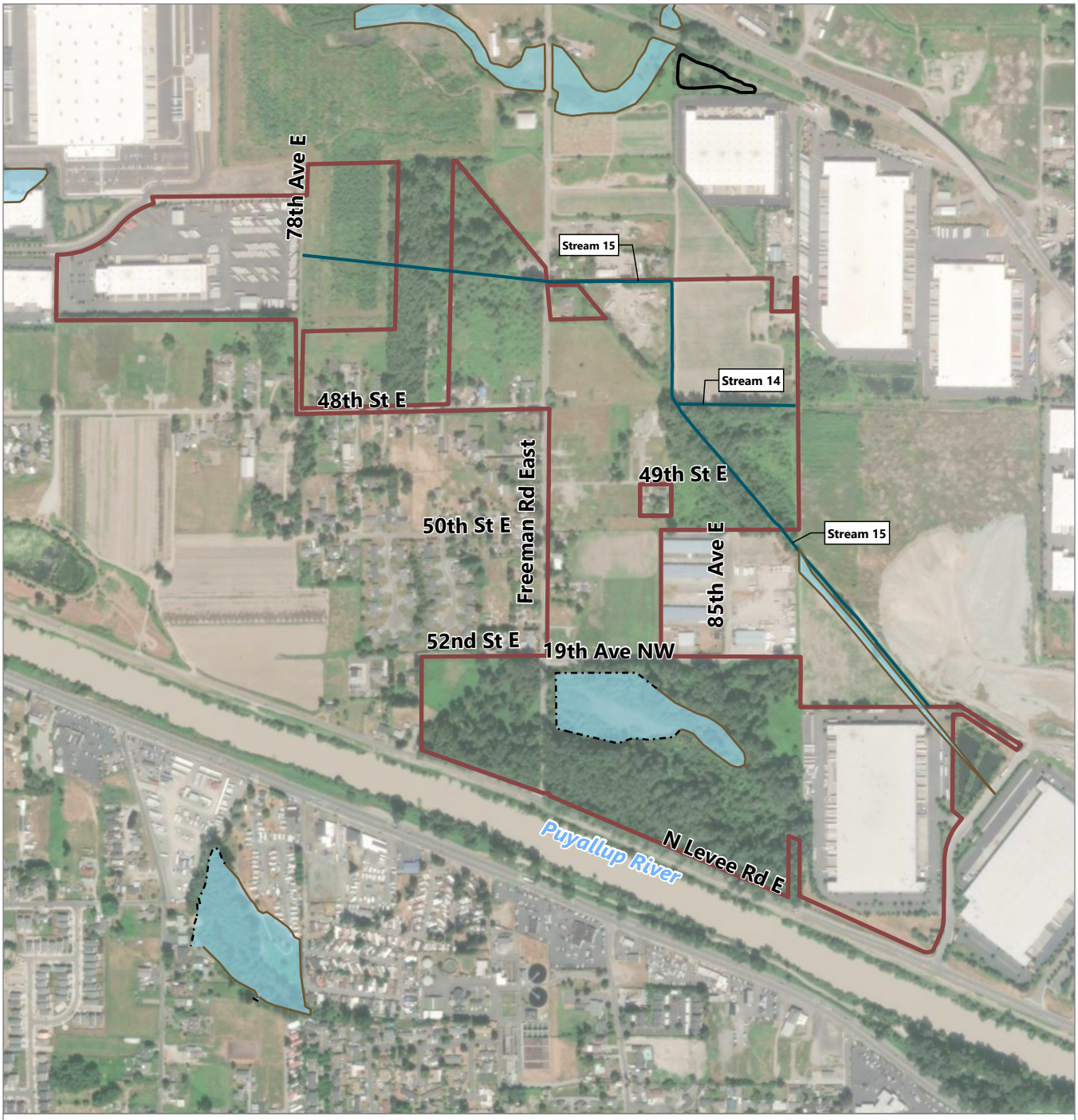
NOTES:
1. NRCS: Natural Resources Conservation Service
2. USDA: United States Department of Agriculture

0 600
Feet

Publish Date: 2024/06/14, 4:00 PM | User: jquinley
Filepath: \\GSTFILE01\gis\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\CAR\FreemanRoad_CAR.aprx

ANCHOR QEA

Figure 3
NRCS Soils Map
Critical Area Report
Freeman Road Logistics



LEGEND:

- Study Area
- Stream

CWI Wetlands

- Unconfirmed
- Delineated
- Verified
- Unverified

SOURCES:
1. CWI: Pierce County (2023)
2. Stream: Pierce County (2023)
3. Aerial imagery: Esri (2022)

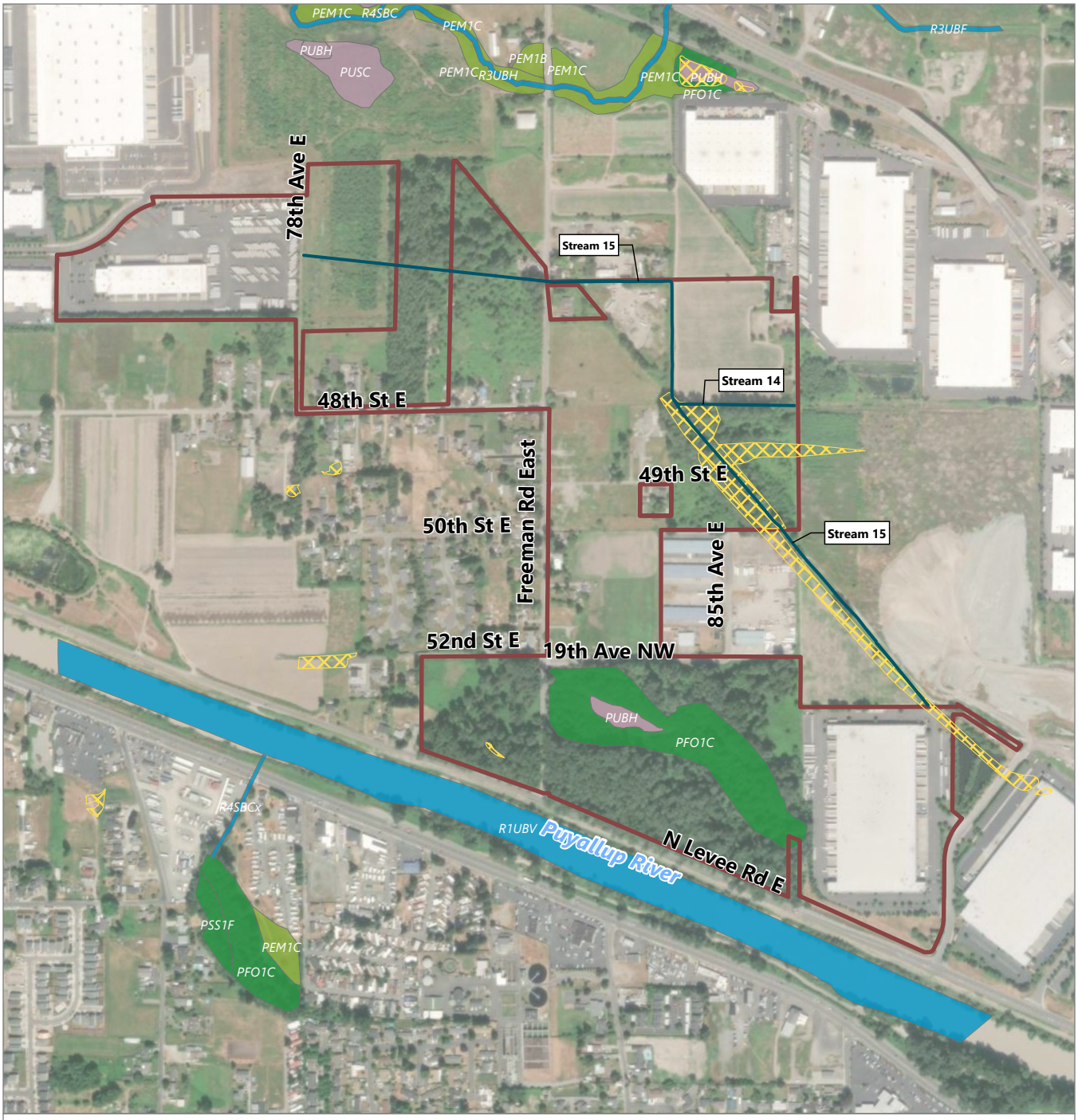
NOTE:
CWI: County Wetland Inventory

0 600
Feet

Publish Date: 2024/06/14, 4:00 PM | User: jquinley
Filepath: \\GSTFILE01\gis\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\CAR\FreemanRoad_CAR.aprx

ANCHOR QEA

Figure 4
Pierce County Wetlands Inventory Map
Critical Area Report
Freeman Road Logistics



LEGEND:

- Study Area

NWI Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine
- City of Puyallup Wetland (Unverified)
- Stream

SOURCES:
1. NWI: USFWS (2023)
2. Stream: Pierce County (2023)
3. Aerial imagery: Esri (2022)

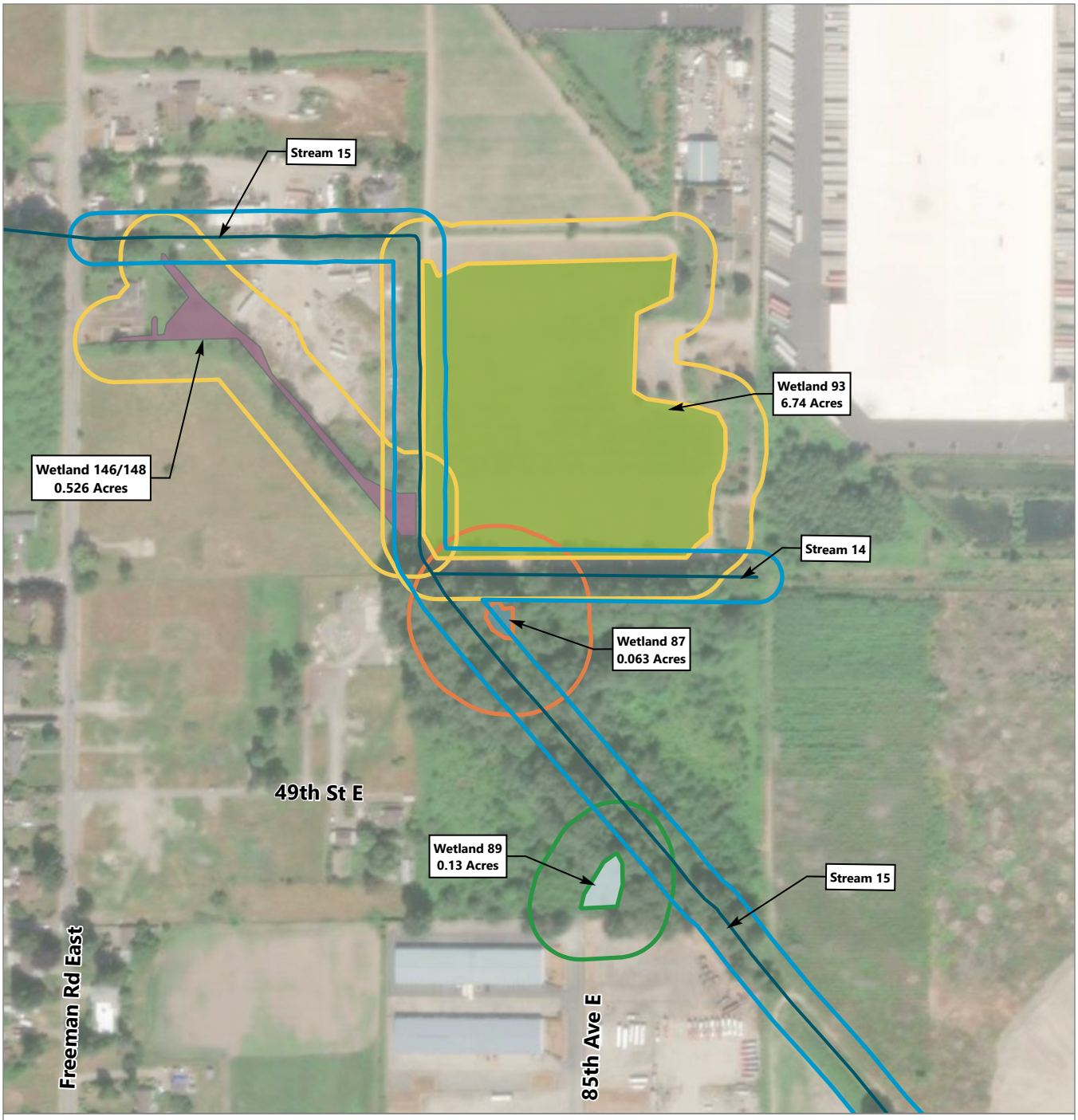
NOTES:
1. NWI: National Wetland Inventory
2. USFWS: United States Fish and Wildlife Service

0 600
Feet

Publish Date: 2024/06/14, 4:01 PM | User: jquinley
Filepath: \\GSTFILE01\gis\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\CAR\FreemanRoad_CAR.aprx

ANCHOR QEA

Figure 5
USFWS National Wetlands Inventory Map
Critical Area Report
Freeman Road Logistics



LEGEND:

- Stream
- Wetland 87, Category 3
- Wetland 89, Cateogory 2
- Wetland 93, Category 3
- Wetland 146/148, Category 3
- Category 2 - 100' Wetland Buffer
- Category 3 - 80' Wetland Buffer
- Category 3 - 150' Wetland Buffer
- Category 3 - 50' Riparian Buffer

SOURCES:
1. Stream: Pierce County (2023)
2. Parcel: Pierce County (2023)
3. Aerial imagery: Esri (2022)

NOTE:
USDA: U.S. Department of Agriculture

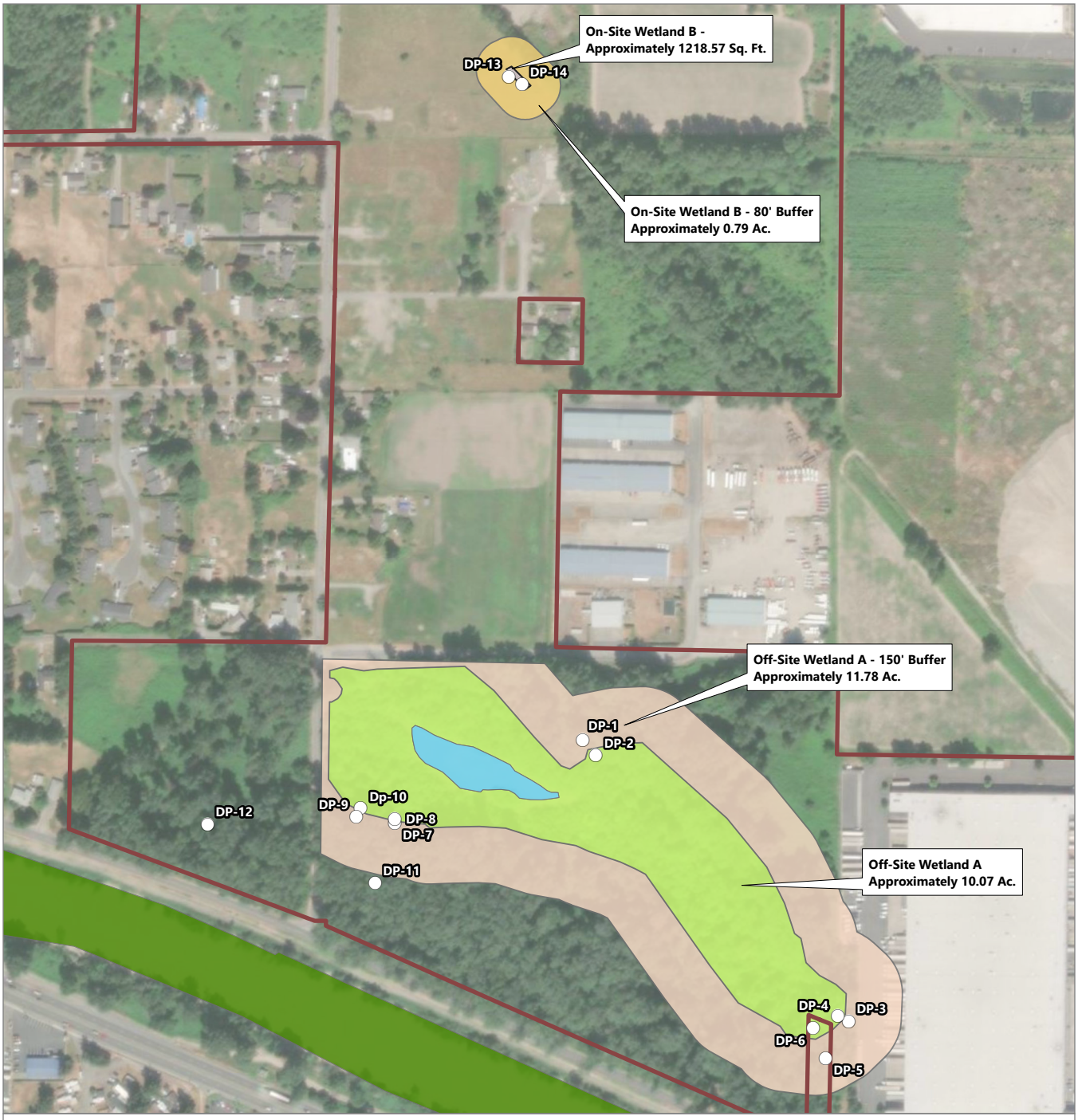
0 300
Feet

Publish Date: 2024/05/23, 1:13 PM | User: tweldy
Filepath: \\GSTFile01\GIS\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\CAR\FreemanRoad_CAR.aprx

ANCHOR QEA

Figure 6
Off-Site WSDOT Parcels Critical Areas and Buffers

Critical Area Report
Freeman Road Logistics



LEGEND:

- Study Area

NWI Wetlands

- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine
- Wetland A - 150' Buffer
- Wetland B - 80' Buffer
- On-Site Wetland B

SOURCES:
1. Aerial imagery: Esri (2022)
2. NWI: USFWS (2023)

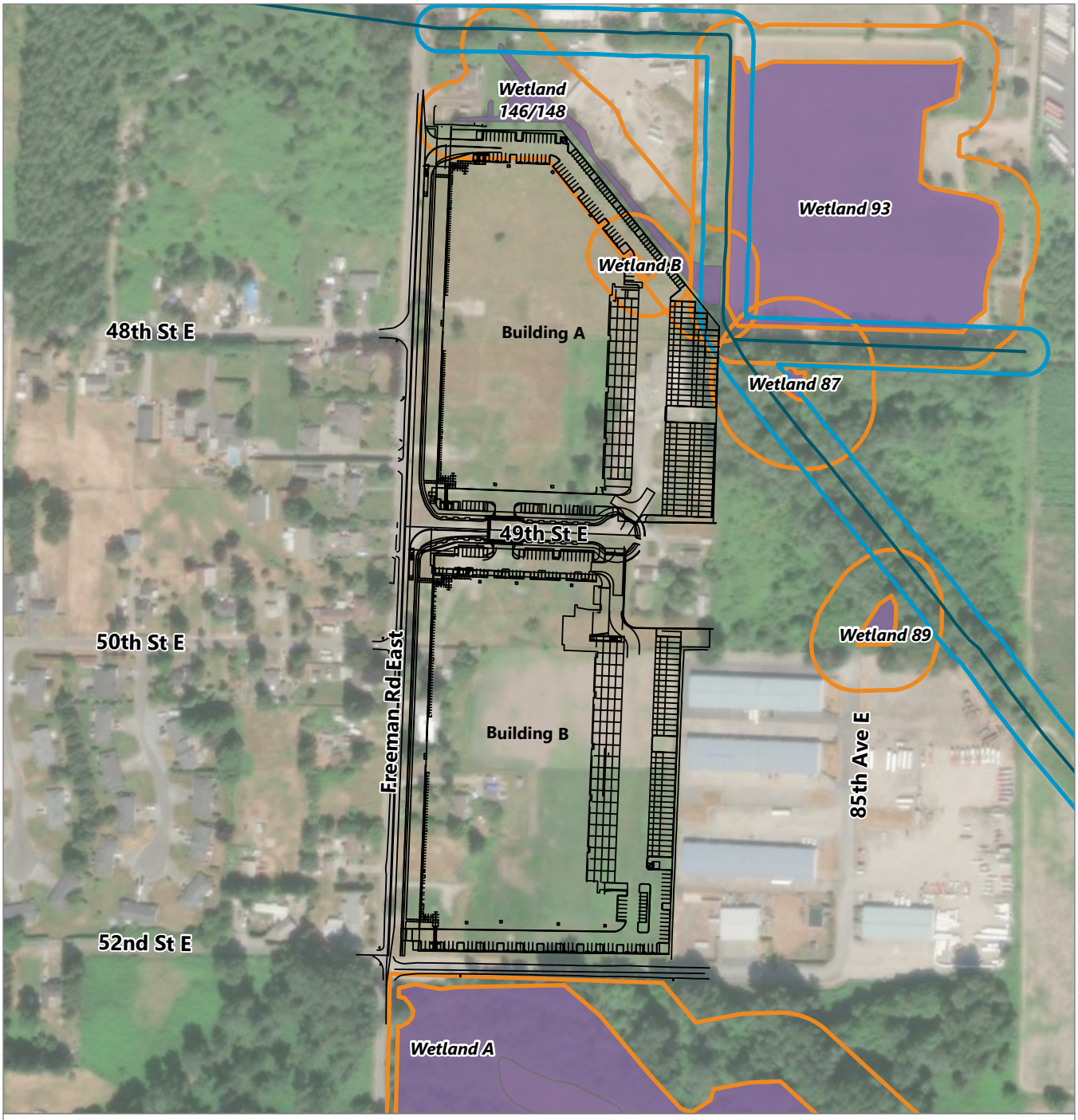
NOTES:
1. NWI: National Wetland Inventory
2. USFWS: United States Fish and Wildlife Service

0 500
Feet

Publish Date: 2024/06/14, 4:01 PM | User: jquinley
Filepath: \\GSTFILE01\gis\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\CAR\FreemanRoad_CAR.aprx

ANCHOR QEA

Figure 7
Wetland Delineation Results
Critical Area Report
Freeman Road Logistics



LEGEND:

- Proposed Development
- Stream
- Stream Buffer
- Wetland
- Wetland Buffer

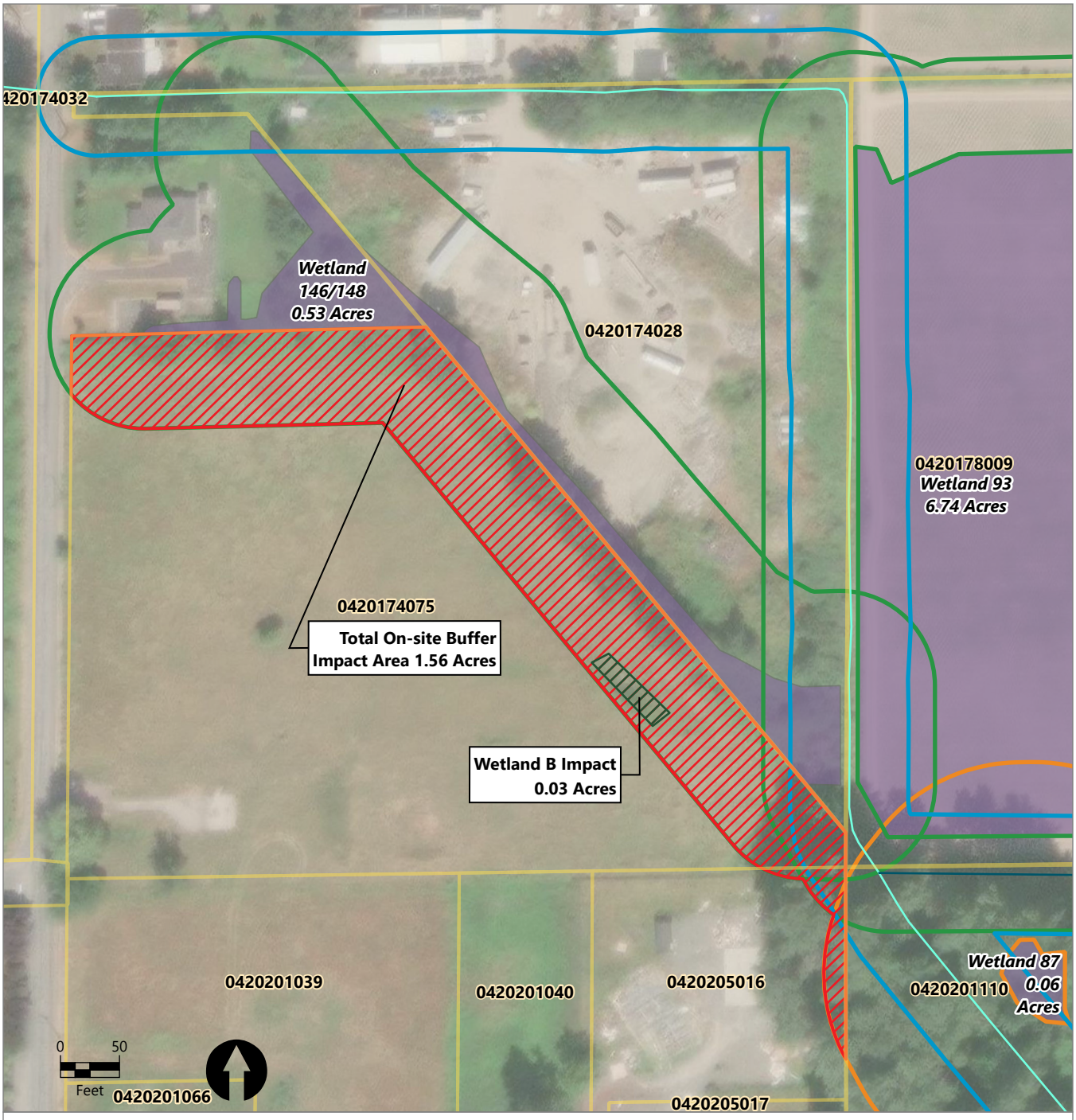
SOURCES:
1. Stream: Pierce County (2023)
2. Aerial imagery: Esri (2022)

0 400
Feet

Publish Date: 2024/06/14, 4:04 PM | User: jquinley
Filepath: \\GSTFILE01\gis\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\CAR\FreemanRoad_CAR.aprx

ANCHOR QEA

Figure 8
Proposed Freeman Road Development and Critical Areas
Critical Area Report
Freeman Road Logistics



LEGEND:

- Stream 14
- Stream 15
- Wetland
- Wetland 93, and 146/148 - 80' Wetland Buffer
- Wetland 87 - 150' Wetland Buffer
- Stream 14 and 15 - 50' Riparian Buffer

On-Site Mitigation Areas

- Total On-site Impacted Critical Area Buffer
- Wetland B Mitigation Area

SOURCES:
1. Stream: Pierce County (2023)
2. Parcel: Pierce County (2023)
3. Aerial imagery: Esri (2022)

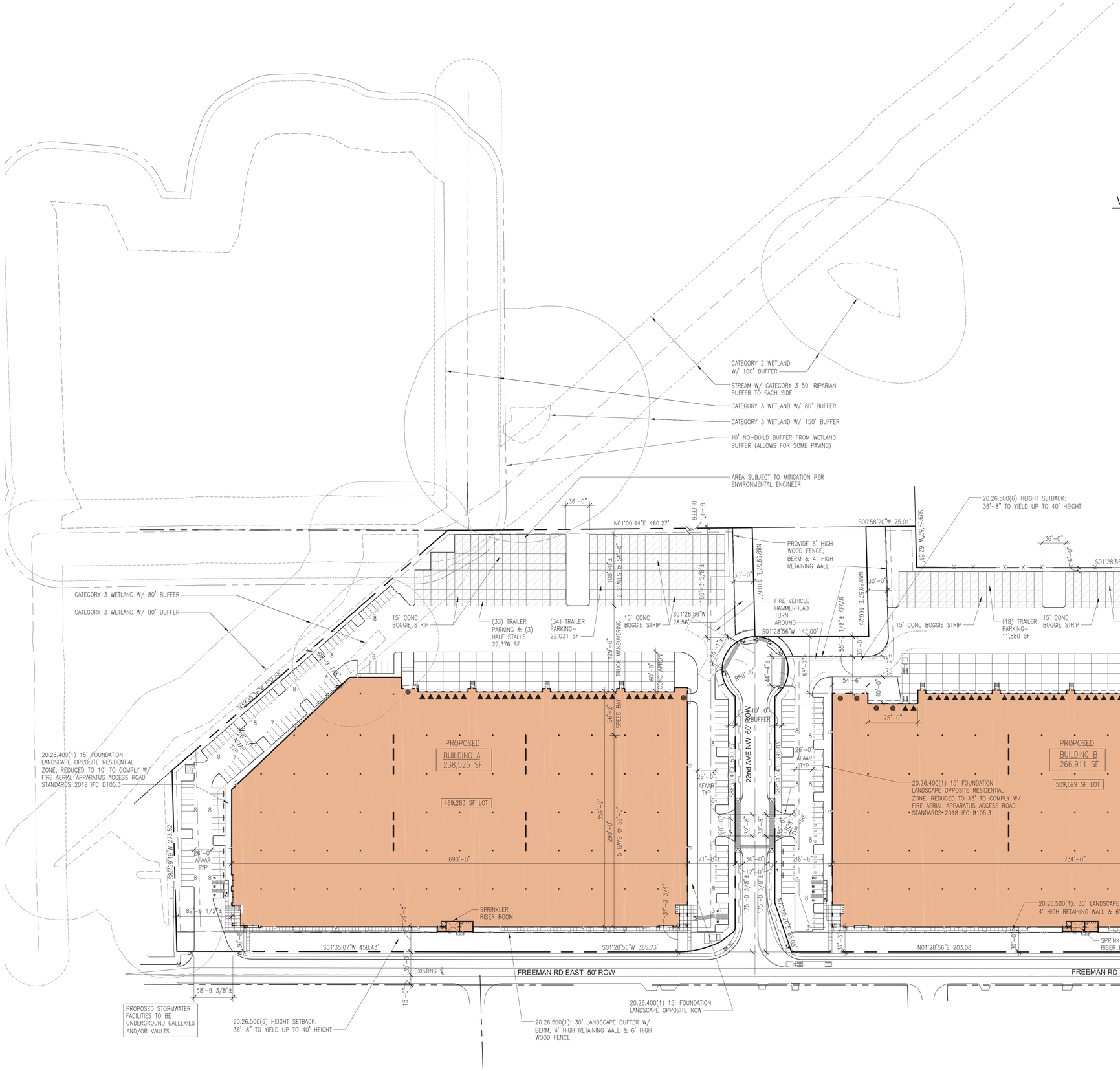
NOTE:
USDA: U.S. Department of Agriculture

Publish Date: 2024/05/30, 12:56 PM | User: tweldy
Filepath: \\GSTFile01\GIS\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\CAR\FreemanRoad_CAR.aprx

ANCHOR QEA

Figure 9
Conceptual Mitigation Plan
Critical Area Report
Freeman Road Logistics

Appendix A
Preliminary Plan Set



VICINITY MAP

NORTH

SITE PLAN

NORTH

SCALE: 1" = 70'-0"

SYNTHESIS PLLC
THE FUSION OF ARCHITECTURE, DESIGN TECHNOLOGY & PEOPLE

12503 Bel-Red Road, Suite 100
Bellevue, WA 98005
p 425 646 1818 f 425 646 4141

VECTOR
Development Company
11411 NE 124th Street
Suite 190
Kirkland, WA 98034

PROJECT DATA

SITE AREA	978,982	SF
BUILDING AREA	505,436	SF
COVERAGE	51.4%	
BUILDING A PARKING REQUIRED	115.5	
12,000 SF OFFICE @ 1:300	40.0	
226,525 SF WHSE @ 1:3000	75.5	
PARKING PROVIDED	123	
BUILDING B PARKING REQUIRED	127.9	
13,000 SF OFFICE @ 1:300	43.3	
253,911 SF WHSE @ 1:3000	84.6	
PARKING PROVIDED	137	
▲ 9'x10' DOCK DOOR	66	
● GRADE ACCESS DOORS (SIZE VARIES)	7	

REVISIONS

ISSUE NO.	DATE	ITEM
3	06 14 24	SEPA RESUBMITTAL
2	11 27 23	SEPA RESUBMITTAL
1	10 14 22	SEPA RESUBMITTAL
D	11 01 21	DESIGN REVIEW APPLICATION
C	09 15 21	PRELIMINARY BID
B	03 19 21	SEPA APPLICATION
A	01 05 21	PRE-APPLICATION

PROFESSIONAL STAMP

7154 REGISTERED ARCHITECT
RANDALL LEE BROWN
STATE OF WASHINGTON

Digitally signed by Randy Brown
Date: 2024.06.14 10:12:01 -07'00'

PROJECT INFORMATION

BUILDING A & B

Freeman Road Logistics
Puyallup, WA

SHEET INFORMATION

RELEASE FOR: PERMIT SUBMITTAL
TITLE: SITE PLAN

DESIGNED BY:
DRAWN BY:
REVIEWED BY:
APPROVED BY:
DATE: 01 05 21
SHEET NO: A1.1
PROJECT NO: 201401.13.031

www.synthesispllc.com

PRELIMINARY DRAINAGE OUTLET PLAN

OF

FREEMAN LOGISTICS

PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

N

0 25' 50' 100'
SCALE: 1"=50'

16.5' ROAD PURPOSES EASEMENT RECORDING NO. 690685

16' PRIVATE ROADWAY EASEMENT RECORDING NO. 1672356

16.5' ROAD PURPOSES EASEMENT RECORDING NO. 201302210656

809 LF SD DISCHARGE LINE

APN 042017-3035
PAPE PROPERTIES INC.

APN 042017-3026
PAPE PROPERTIES INC.

75TH AVE E (PRIVATE)

PRIVATE ROADWAY EASEMENT RECORDING NO. 524104

EX. WATER MAIN (TYP.)

EX. FENCE

EX. OVERHEAD POWER (TYP.)

EX. UNDERGROUND TELEPHONE LINE (TYP.)

APN 042017-8003
TONYA + AARON GOMILLION

APN 042017-4015
STATE OF WASHINGTON

APN 042017-8008
USA IN TRUST

APN 042017-8007
USA IN TRUST

APN 042017-4031
USA IN TRUST FOR

APN 420174032
USA IN TRUST FOR

NOTE: 48TH ST E PAVEMENT SHALL BE RESTORED PER CITY OF FIFE STANDARDS AND PER THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.

1322 LF SD DISCHARGE LINE

48TH ST E (PUBLIC)

12" PUBLIC WATER MAIN EXTENSION

33 LF SD DISCHARGE LINE

PROPOSED BUILDING A
238,525 SF
FF=33.50'

322 LF SD DISCHARGE LINE

APN 042020-5007
DAB69 LLC

APN 042020-2047
DAB69 LLC

APN 042020-5006
MARDENE + HUBERT PATTON

APN 042020-1094
MARJORIE + RAYMOND LEEPER

APN 042020-5020
LEANNA + GREGORY STIDHAM

APN 042020-1023
JULIE + BURGON PETERSON

APN 420205018
RANDALL + CAMMIE REILY

10' STORM EASEMENT

APN 042020-5005
ALEKSANDR DOROSHENKO

APN 042020-1018
LEANNA + GREGORY STIDHAM

APN 042020-5021
LEANNA + GREGORY STIDHAM

APN 420205019
DONALD A + CHARISSE HOBBS

FREEMAN ROAD E (PUBLIC)

STORM DUPLEX LIFT STATION FULLY SUBMERSIBLE PUMPS WITH VARIABLE FREQUENCY DRIVE AND FLOAT SWITCH

PUMP VALVE VAULT

APN 420201019
RAYMOND + MARJORIE LEEPER

35 LF SD DISCHARGE LINE

22ND AVE NW (PUBLIC)

STOP

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS. FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE DEVELOPMENT ENGINEERING MANAGER.

No.	Date	By	Ckd.	Appr.	Revision
3	6/11/23	DTC	JSM	BHE	PROGRESS SET

Title: **PRELIMINARY DRAINAGE OUTLET PLAN**

FOR
FREEMAN LOGISTICS

For: VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale: Horizontal 1"=50' Vertical N/A

Designed JSM Drawn DTC Checked JSM Approved BHE Date 6/12/24

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 **barghausen.com**

Job Number 21585

Sheet C12 of 47

PRELIMINARY DRAINAGE OUTLET PLAN

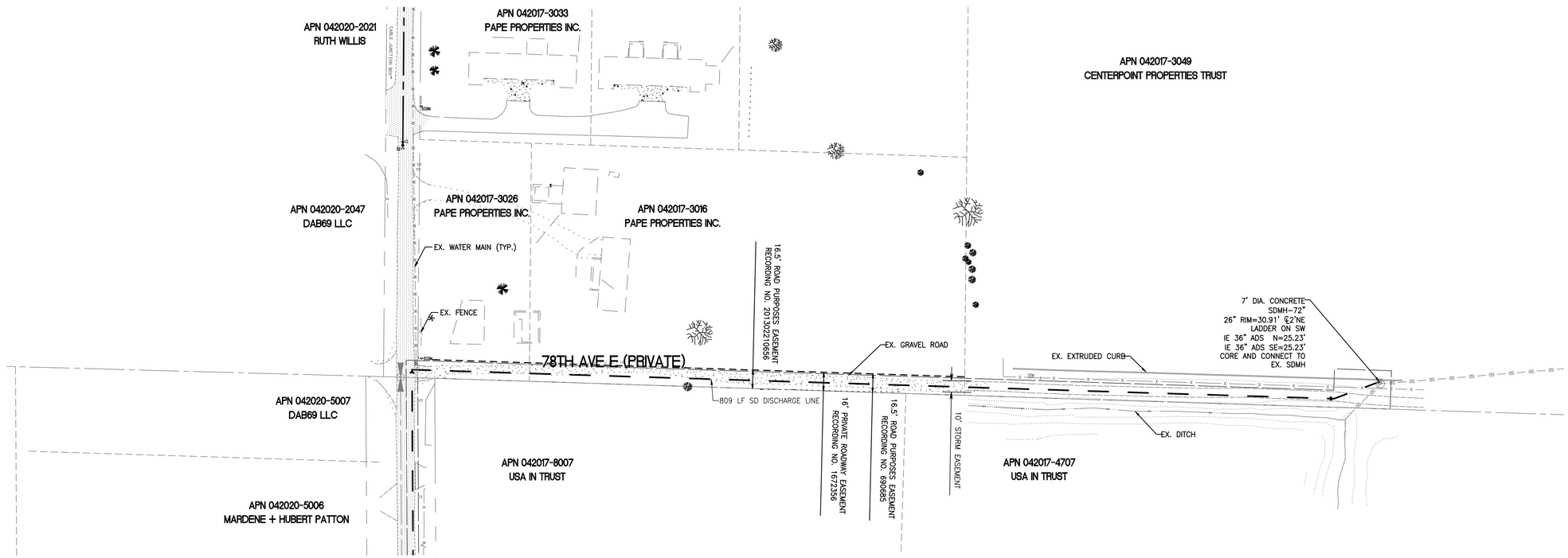
OF

FREEMAN LOGISTICS

PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

0 25' 50' 100'
SCALE: 1"=50'



APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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FOR
FREEMAN LOGISTICS

For: VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale: Horizontal 1"=50' Vertical N/A

Designed JSM Drawn DTC Checked JSM Approved BHE Date 6/12/24

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 **barghausen.com**

Job Number 21585

Sheet C13 of 47

\\Apollo-WA\Projects\21000s\21585\engineering\SEPA SET\21585-GM.dwg 6/12/2024 9:14 AM DCASEY

PRELIMINARY WATER AND SEWER OVERALL PLAN

OF

FREEMAN LOGISTICS

PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

N

0 75' 150' 300'
SCALE 1"=150'

APN 042077-4054
EARL + EVELYN LOGAN

S89°59'19"W 273.52'

APN 042077-4028
DENNIS EUGENE BARRY ET AL

N39°35'36"W 552.86'

150' WETLAND BUFFER

S1°35'07"W 458.43'

APN 420174032
USA IN TRUST FOR

PROPOSED BUILDING A
238,525 SF
FF=33.50'

481ST ST E (PUBLIC)

12" PUBLIC WATER MAIN EXTENSION

APN 420205018
RANDALL + CAMMIE REILY

S1°28'56"W 299.54'

FREEMAN ROAD E (PUBLIC)

APN 420205019
DONALD A + CHARISSE HOBBS

Δ=5°55'30" R=140.50' L=14.53'
Δ=20°36'30" R=140.50' L=50.54'
Δ=10°07'56" R=20.50' L=3.62'
Δ=20°18'52" R=20.50' L=7.27'
Δ=3°32'45" R=6.50' L=0.40'

PRIVATE 6" SIDE SEWER

APN 042020-0110
STATE OF WASHINGTON DOT

N1°00'44"E 460.27'

APN 420201019
RAYMOND + MARJORIE LEEPER

S1°28'56"W 28.56'

APN 042020-0111
STATE OF WASHINGTON DOT

S35°12'28"E 18.21'

S88°30'47"E 495.12'

N1°29'13"W 85.05'

22ND AVE NW (PUBLIC)

N89°59'57"E 110.60'

100' WETLAND BUFFER

APN 420201017
WILLIAM C + BECKY L WHIDBY

S88°31'04"E 396.03'

APN 042020-1032
CHARLES ALMONT JR.

APN 420201057
VLADIMIR + DARYA POPOV

N1°28'56"E 203.08'

S1°28'56"W 142.00'

N89°59'57"E 166.26'

S0°58'20"W 75.01'

50TH ST E

S89°59'57"W 62.51'

APN 420201030
GREGG H + DIANA L JONES

PROPOSED BUILDING B
266,911 SF
FF=34.65'

S1°28'56"W 676.13'

APN 042020-5013
SCHENK BUSINESS PARK LLC

APN 042020-5012
SCHENK BUSINESS PARK LLC

APN 420201084
TERRY + CHARLENE WORSWICK

APN 420201004
MICHAEL C BLODGETT

N1°28'56"E 675.13'

APN 420201035
VIRGILIO S HUESCA SORIANO

APN 042020-5010
SCHENK BUSINESS PARK LLC

APN 042020-5011
SCHENK BUSINESS PARK LLC

PRIVATE 6" SIDE SEWER

APN 420205015
CARRELL VICTORIA SPECIAL NEEDS TRUST

2,855 LF 3" SS FORCE MAIN (PRIVATE)

52ND ST E (PUBLIC)

19TH AVE NW (PRIVATE)

N89°59'31"W 581.19'

PRIVATE SEWER PUMP LIFT STATION

APN 420201104
TERHUNE RAY INVESTMENTS LLC

APN 420201008
PUYALLUP TRIBE OF INDIANS

20' SEWER EASEMENT

12" PUBLIC WATER MAIN EXTENSION

40' WATER EASEMENT

150' WETLAND BUFFER

PROPOSED 8'x20' BORE PIT

APN 042021-2073
O'REILLY AUTO ENTERPRISES LLC

N LEVEE ROAD E (PUBLIC)

APN 042021-2076
AMB INSTITUTIONAL ALLIANCE FUND III LP

PROPOSED 8'x20' BORE PIT

INDUSTRIAL PARKWAY (PUBLIC)

CONNECT TO EXISTING PUBLIC GRAVITY SEWER SYSTEM

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE.
THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS.
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No.	Date	By	Ckd.	Appr.	Revision
3	6/11/23	DTC	JSM	BHE	PROGRESS SET

Title:
PRELIMINARY WATER AND SEWER OVERALL PLAN
FOR
FREEMAN LOGISTICS

For:
VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale: Horizontal 1"=150' Vertical N/A

Designed JSM Drawn DTC Checked JSM Approved BHE Date 6/12/24

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222
barghausen.com

Job Number 21585

Sheet C16 of 47

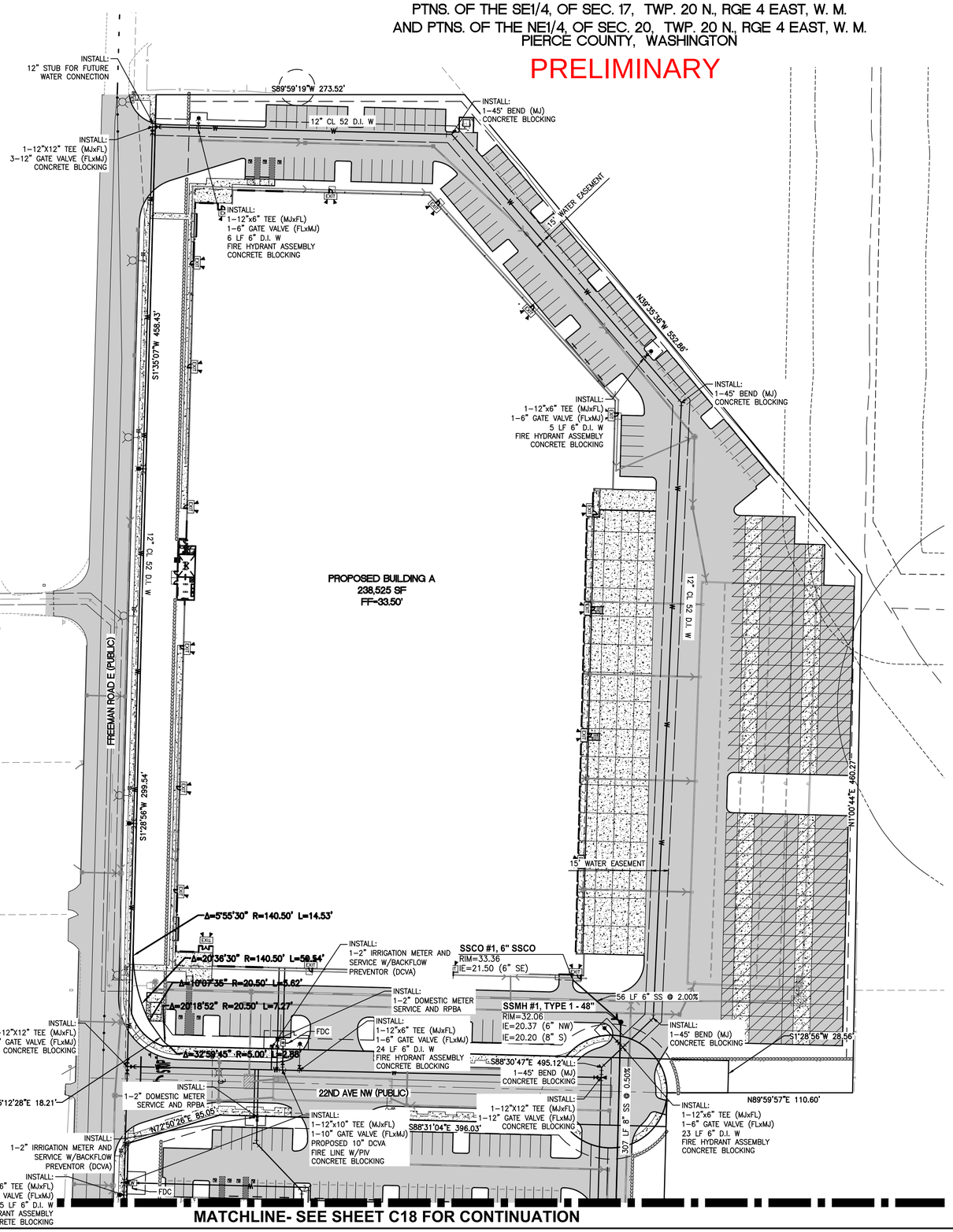
\\Apollo-VM\Projects\21000s\21585\engineering\SEPA SET\21585-WS.dwg 6/12/2024 9:17 AM DCASEY

PRELIMINARY WATER AND SEWER PLAN
OF
FREEMAN LOGISTICS
PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

N

0 25' 50' 100'
SCALE: 1"=50'



MATCHLINE- SEE SHEET C18 FOR CONTINUATION

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS. FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE DEVELOPMENT ENGINEERING MANAGER.

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3	6/11/23	DTC	JSM	BHE	PROGRESS SET

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FOR
FREEMAN LOGISTICS

For: VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 **barghausen.com**

Scale: Horizontal 1"=50' Vertical N/A
Designed _____ JSM
Drawn _____ DTC
Checked _____ JSM
Approved _____ BHE
Date 6/12/24

Job Number 21585
Sheet C17 of 47

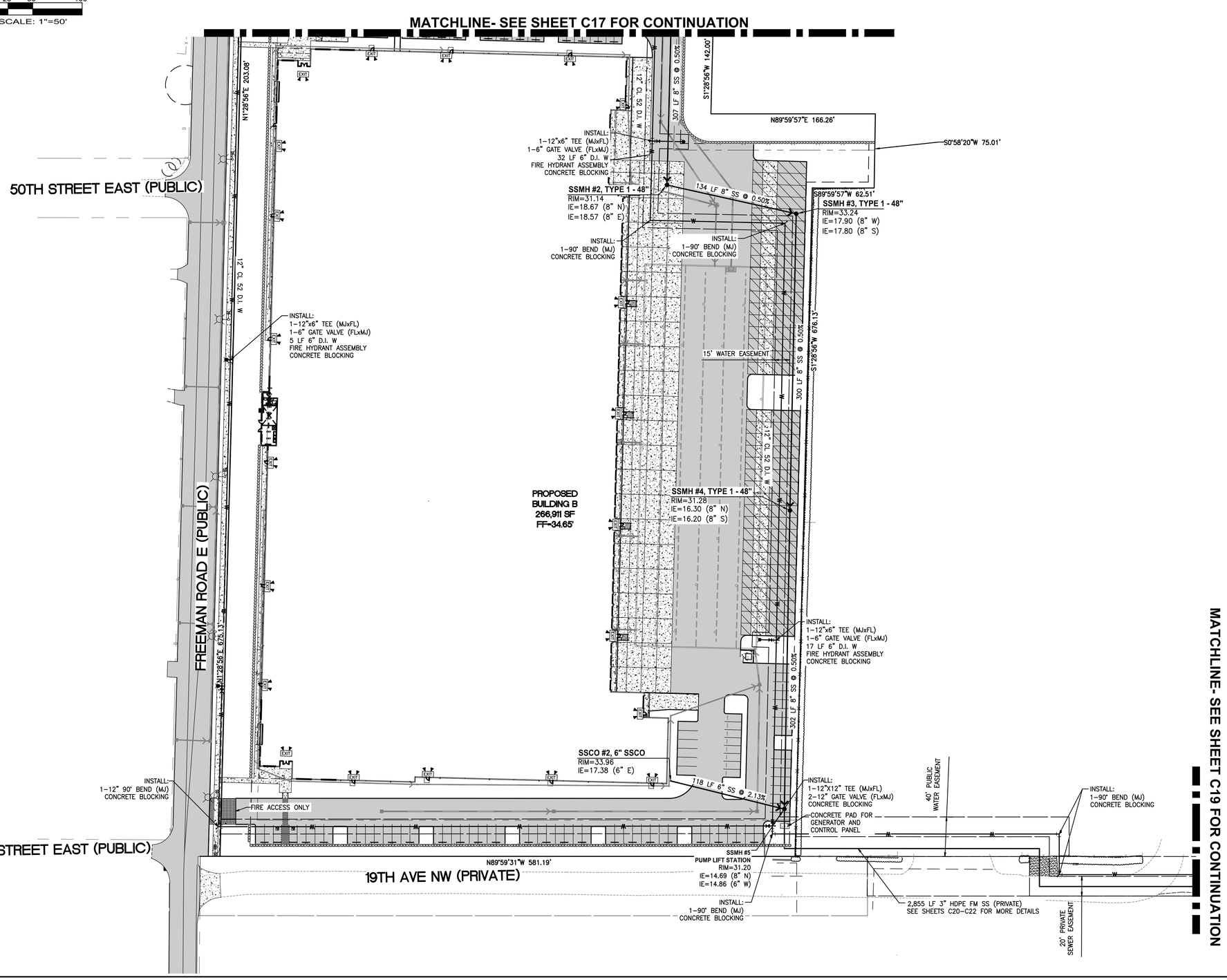
\\Apollo-WA\Projects\21000s\21585\engineering\SEPA SET\c21585-WS.dwg 6/12/2024 9:17 AM DCASEY

PRELIMINARY WATER AND SEWER PLAN
OF
FREEMAN LOGISTICS
PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

N

0 25' 50' 100'
SCALE: 1"=50'



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FOR
FREEMAN LOGISTICS

For: VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 barghausen.com

Scale: Horizontal 1"=50' Vertical N/A

Designed JSM Drawn DTC Checked JSM Approved BHE Date 6/12/24

Job Number 21585

Sheet C18 of 47

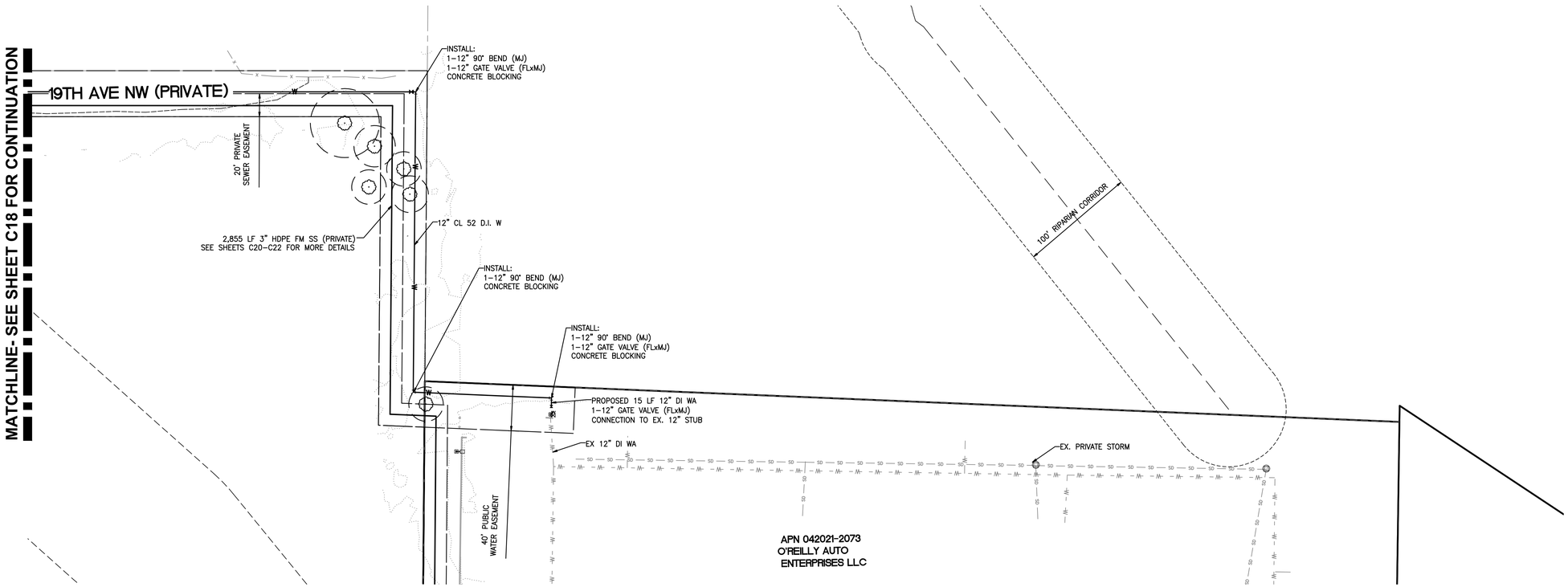
\\Apollo-WA\Projects\21000s\21585\engineering\SEPA SET\21585-WS.dwg 6/12/2024 9:17 AM DCASEY

PRELIMINARY WATER AND SEWER PLAN
OF
FREEMAN LOGISTICS
PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

N

0 25' 50' 100'
SCALE: 1"=50'



APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS. FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE DEVELOPMENT ENGINEERING MANAGER.

No.	Date	By	Ckd.	Appr.	Revision
3	6/11/23	DTC	JSM	BHE	PROGRESS SET

Title: **PRELIMINARY WATER AND SEWER PLAN**

FOR
FREEMAN LOGISTICS

For: VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale:
Horizontal 1"=50'
Vertical N/A

Designed JSM
Drawn DTC
Checked JSM
Approved BHE
Date 6/12/24

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 **barghausen.com**

Job Number 21585

Sheet C19 of 47

PRELIMINARY ROAD IMPROVEMENT FREEMAN AND LEVEE INTERSECTION

OF

FREEMAN LOGISTICS

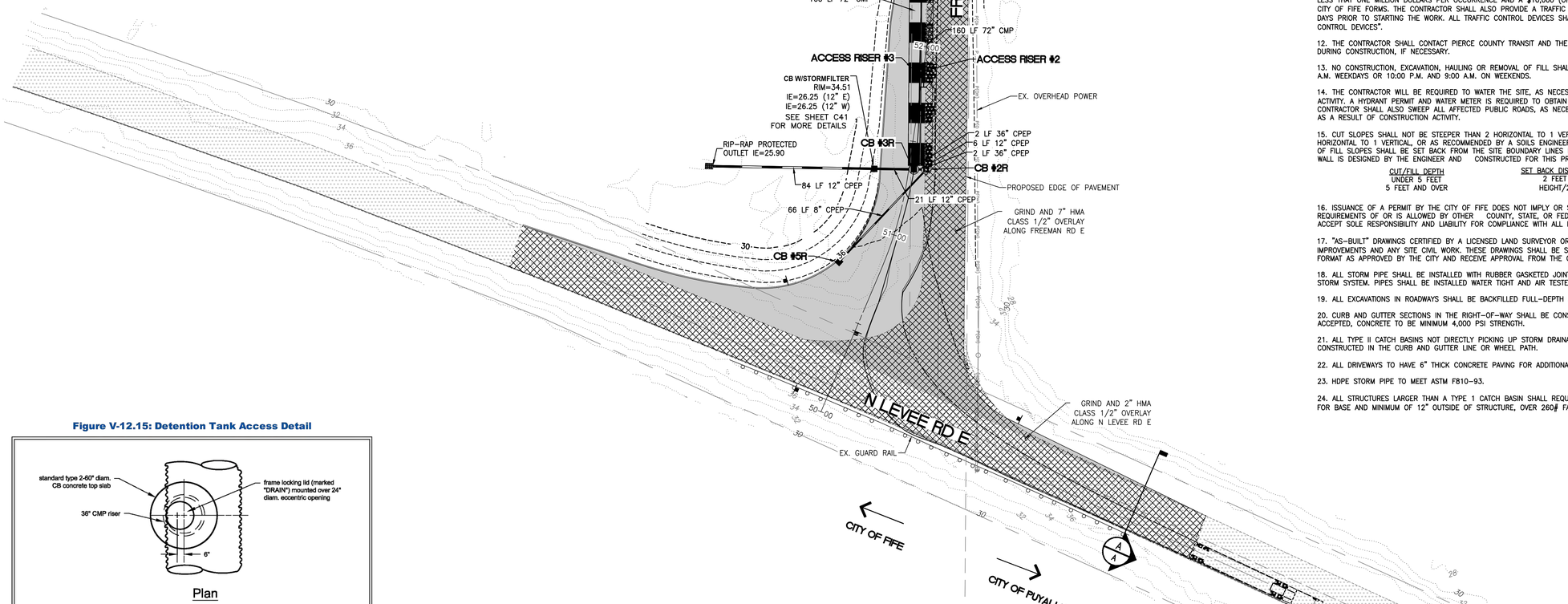
PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

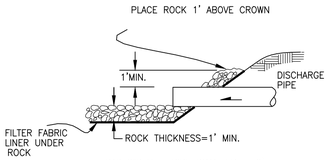
PRELIMINARY

N

0 15' 30' 60'

SCALE: 1"=30'



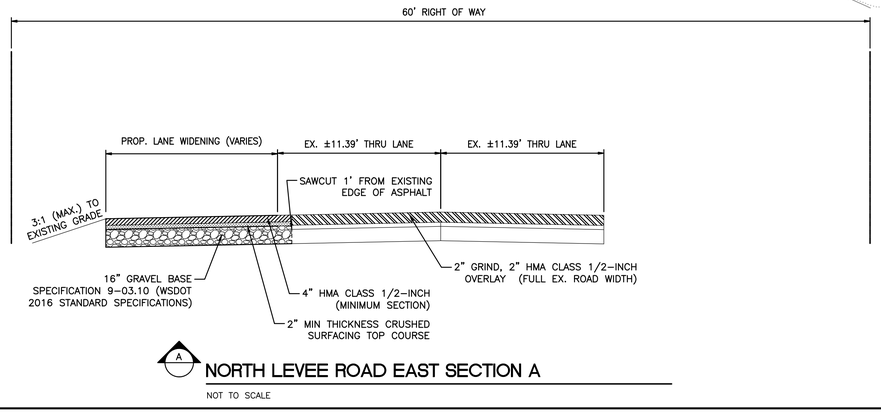


PAD WIDTH = PIPE DIAMETER + 6'
PAD LENGTH = 8' OR 4 x PIPE DIAMETER

RIP RAP SHALL BE QUARRY SPALLS WITH FOLLOWING GRADATION:
PASSING 8" SQUARE SIEVE = 100%
PASSING 3" SQUARE SIEVE = 40%–60% MAX.
PASSING ¾" SQUARE SIEVE = 0%–10% MAX.

RIP RAP PAD DETAIL

NOT TO SCALE



A NORTH LEVEE ROAD EAST SECTION A

NOT TO SCALE

Figure V-12.15: Detention Tank Access Detail

Notes:
1. Use adjusting blocks as required to bring frame to grade.
2. All metal parts corrosion resistant. Steel parts galvanized and asphalt coated (Treatment 1 or better), or aluminized steel (Type II or better).
3. Must be located for access by maintenance vehicles.
4. May substitute WSDOT special Type IV manhole (RCP only)

NOT TO SCALE

DEPARTMENT OF ECOLOGY
State of Washington

Detention Tank Access Detail

Revised May 2019

CITY OF FIFE GENERAL NOTES

1. ALL SPECIFICATIONS, MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CITY OF FIFE MUNICIPAL CODE, THE LATEST EDITION OF THE WSDOT/APWA STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

2. PLANS AND DETAILS SHALL BE IN ACCORDANCE WITH THE CITY OF FIFE MUNICIPAL CODE AND THE LATEST EDITION OF THE WSDOT/APWA STANDARD PLANS.

3. A COPY OF THE APPROVED PLANS SHALL BE ON SITE DURING CONSTRUCTION.

4. CONSTRUCTION OF PROPOSED IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THE APPROVED PLANS. ANY CHANGES FROM THE "APPROVED" PLANS WILL REQUIRE APPROVAL FROM THE DEVELOPER, DEVELOPERS ENGINEER AND THE CITY OF FIFE.

5. A PRE-CONSTRUCTION MEETING AND ANY REQUIRED PERMITS SHALL BE REQUIRED PRIOR TO ANY WORK ACTIVITY. THE PRE-CONSTRUCTION MEETING SHALL BE HELD AT FIFE CITY HALL.

6. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE REQUIRED TO CONTROL ON SITE STORM WATER RUNOFF BY USING APPROVED TEMPORARY OR PERMANENT DRAINAGE EROSION/SILTATION CONTROL PROCEDURES. THE CITY OF FIFE HAS ADOPTED THE STORMWATER MANAGEMENT MANUAL FOR THE PUGET SOUND BASIN (THE TECHNICAL MANUAL) DEVELOPED BY THE DEPARTMENT OF ECOLOGY.

7. PRIOR TO STARTING CONSTRUCTION, THE CONTRACTOR SHALL CALL ONE-CALL (1-800-425-5555) FOR UTILITY LOCATIONS (WATER, SANITARY SEWER, STORM SEWER, GAS, POWER, TELEPHONE AND CABLE TV).

8. LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE TRUE ELEVATIONS AND LOCATIONS OF EXISTING UTILITIES. ANY UTILITY RELOCATIONS SHALL BE AT THE EXPENSE OF THE APPLICANT AND MUST BE IN ACCORDANCE WITH THE CITY OF FIFE'S STANDARDS.

9. NO SAW CUTTING IN THE RIGHT-OF-WAY WILL BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE CITY OF FIFE. ONCE APPROVED, EXISTING PAVEMENT SURFACES SHALL BE SAW CUT FULL DEPTH WITH STRAIGHT, UNIFORM EDGES TWELVE INCHES (12") OUT FROM THE EDGE OF EXCAVATION. IF SLOUGHING OCCURS DURING EXCAVATION, THE EXISTING PAVEMENT SHALL BE SAW CUT TO ACHIEVE THE REQUIRED 12 INCHES (12") FROM THE EDGE OF EXCAVATION.

10. LANE CLOSURES SHALL BE RESTRICTED TO 9:00 A.M. TO 3:00 P.M. MONDAY THROUGH FRIDAY. ONE LANE (MINIMUM) SHALL BE RESERVED FOR TRAFFIC (BOTH DIRECTIONS) AT ALL TIMES. WORK IN THE RIGHT OF WAY REQUIRES A RIGHT-OF-WAY PERMIT. NIGHT, WEEKEND, OR WORK HOURS OTHER THAN HOURS MENTIONED ABOVE WILL REQUIRE THE CITY OF FIFE ENGINEER'S APPROVAL. A THREE DAY ADVANCE NOTICE IS REQUIRED. ACCESS TO EXISTING DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES.

11. IF WORK IS REQUIRED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL PROVIDE PROOF OF LIABILITY INSURANCE IN AN AMOUNT NO LESS THAT ONE MILLION DOLLARS PER OCCURRENCE AND A $10,000 (OR 125% OF CONSTRUCTION COSTS) RESTORATION/DEFECT BOND ON CITY OF FIFE FORMS. THE CONTRACTOR SHALL ALSO PROVIDE A TRAFFIC CONTROL PLAN FOR REVIEW AND APPROVAL A MINIMUM OF FIVE(5) DAYS PRIOR TO STARTING THE WORK. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

12. THE CONTRACTOR SHALL CONTACT PIERCE COUNTY TRANSIT AND THE FIFE SCHOOL DISTRICT FOR COORDINATING BUS STOP OPERATIONS DURING CONSTRUCTION, IF NECESSARY.

13. NO CONSTRUCTION, EXCAVATION, HAULING OR REMOVAL OF FILL SHALL BE PERMITTED BETWEEN THE HOURS OF 10:00 P.M. AND 7:00 A.M. WEEKDAYS OR 10:00 P.M. AND 9:00 A.M. ON WEEKENDS.

14. THE CONTRACTOR WILL BE REQUIRED TO WATER THE SITE, AS NECESSARY, TO REDUCE EMISSIONS AS A RESULT OF CONSTRUCTION ACTIVITY. A HYDRANT PERMIT AND WATER METER IS REQUIRED TO OBTAIN WATER FROM THE CITY OF FIFE'S WATER SYSTEM. THE CONTRACTOR SHALL ALSO SWEEP ALL AFFECTED PUBLIC ROADS, AS NECESSARY, OR AS DIRECTED BY THE CITY, TO REMOVE MUD DEPOSITS AS A RESULT OF CONSTRUCTION ACTIVITY.

15. CUT SLOPES SHALL NOT BE STEEPER THAN 2 HORIZONTAL TO 1 VERTICAL AND FILL SLOPES SHALL NOT BE STEEPER THAN 1-1/2 HORIZONTAL TO 1 VERTICAL, OR AS RECOMMENDED BY A SOILS ENGINEER. THE CATCH POINTS OF THE TOP OF CUT SLOPES AND BOTTOM OF FILL SLOPES SHALL BE SET BACK FROM THE SITE BOUNDARY LINES IN ACCORDANCE WITH THE FOLLOWING TABLE, UNLESS A RETAINING WALL IS DESIGNED BY THE ENGINEER AND CONSTRUCTED FOR THIS PROJECT:

CUT/FILL DEPTH	SET BACK DISTANCE
UNDER 5 FEET	2 FEET
5 FEET AND OVER	HEIGHT/2

16. ISSUANCE OF A PERMIT BY THE CITY OF FIFE DOES NOT IMPLY OR SIGNIFY THAT THE PROPOSED WORK COMPLIES WITH THE REQUIREMENTS OF OR IS ALLOWED BY OTHER COUNTY, STATE, OR FEDERAL LAWS, ORDINANCES, OR REGULATIONS. APPLICANT WILL ACCEPT SOLE RESPONSIBILITY AND LIABILITY FOR COMPLIANCE WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS.

17. "AS-BUILT" DRAWINGS CERTIFIED BY A LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER ARE REQUIRED FOR RIGHT-OF-WAY IMPROVEMENTS AND ANY SITE CIVIL WORK. THESE DRAWINGS SHALL BE SUBMITTED ON 24" X 36" MYLAR, ON CD IN ELECTRONIC PDF FORMAT AS APPROVED BY THE CITY AND RECEIVE APPROVAL FROM THE CITY BEFORE A CERTIFICATE OF OCCUPANCY IS ISSUED.

18. ALL STORM PIPE SHALL BE INSTALLED WITH RUBBER GASKETED JOINTS. PIPES SHALL NOT ALLOW INTRUSION OF GROUNDWATER INTO STORM SYSTEM. PIPES SHALL BE INSTALLED WATER TIGHT AND AIR TESTED.

19. ALL EXCAVATIONS IN ROADWAYS SHALL BE BACKFILLED FULL-DEPTH WITH CRUSHED ROCK BASE COURSE COMPACTED TO 95% MDD.

20. CURB AND GUTTER SECTIONS IN THE RIGHT-OF-WAY SHALL BE CONSTRUCTED USING FORMS. EXTRUDED APPLICATIONS SHALL NOT BE ACCEPTED, CONCRETE TO BE MINIMUM 4,000 PSI STRENGTH.

21. ALL TYPE II CATCH BASINS NOT DIRECTLY PICKING UP STORM DRAINAGE SHALL HAVE ROUND SOLID LOCKING LIDS. LIDS WILL NOT BE CONSTRUCTED IN THE CURB AND GUTTER LINE OR WHEEL PATH.

22. ALL DRIVEWAYS TO HAVE 6" THICK CONCRETE PAVING FOR ADDITIONAL STRENGTH. MIN. 4,000 PSI STRENGTH.

23. HDPE STORM PIPE TO MEET ASTM F810-93.

24. ALL STRUCTURES LARGER THAN A TYPE 1 CATCH BASIN SHALL REQUIRE A MINIMUM OF 12" THICKNESS OF 4" – 8" QUARRY SPALLS FOR BASE AND MINIMUM OF 12" OUTSIDE OF STRUCTURE, OVER 260# FABRIC PER ASTM D-4632

FRONTAGE LEGEND:

(NOTE: NOT ALL SYMBOLS MAY APPEAR ON THE MAP)

- TYPE II CATCH BASIN
- TYPE I CATCH BASIN
- STORM DRAIN FLOW ARROW
- STORM DRAINAGE LINE
- FIRE HYDRANT
- WATER VALVE
- CONCRETE BLOCKING
- 90° BEND
- SPOT ELEVATIONS 300.48
- CONTOURS -150-
- GRIND AND 7" HMA CLASS 1/2" OVERLAY
- PROPOSED ASPHALT PAVEMENT
- EXISTING PAVEMENT

CALL BEFORE YOU DIG:
1-800-424-5555

UTILITY CONFLICT NOTE:

CAUTION:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE @ 1-800-424-5555 AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT BARGHAUSEN CONSULTING ENGINEERS, INC. TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS. FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE DEVELOPMENT ENGINEERING MANAGER.

No.	Date	By	Ckd.	Appr.	Revision
3	6/11/23	DTC	JSM	BHE	PROGRESS SET

Title: PRELIMINARY ROAD IMPROVEMENT FREEMAN AND LEVEE INTERSECTION FOR FREEMAN LOGISTICS

For: VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale: Horizontal 1"=30' Vertical N/A

Designed JSM Drawn DTC Checked JSM Approved BHE Date 6/12/24

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222
barghausen.com

Job Number 21585

Sheet C23 of 47

\\Apollo-VM\Projects\21000s\21585\engineering\SEPA SET\21585-R.dwg 6/11/2024 4:43 PM DCASEY

PRELIMINARY ROAD IMPROVEMENTS STA 50+00 TO 55+00

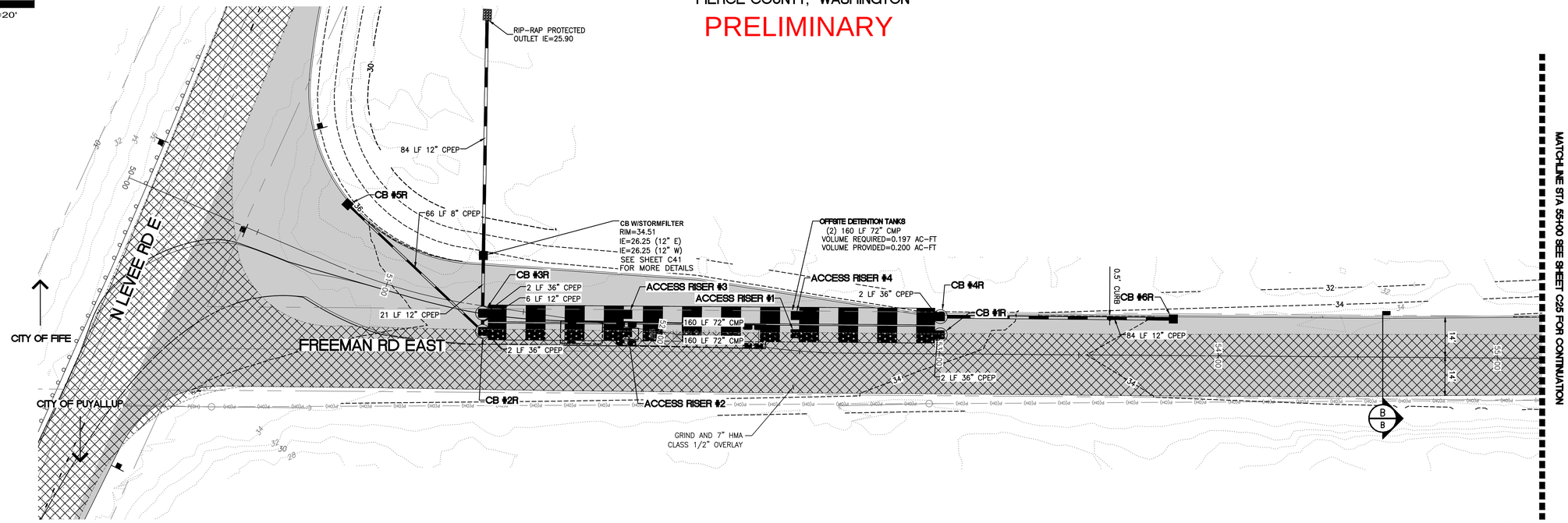
OF

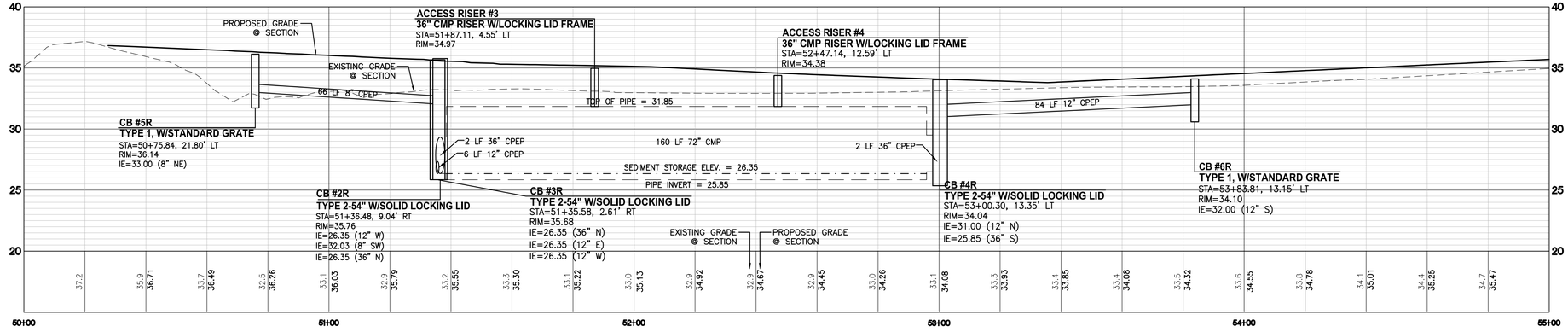
FREEMAN LOGISTICS

PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

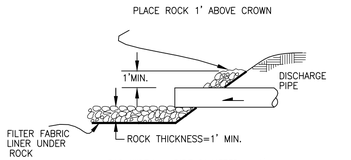
0 10' 20' 40'
SCALE: 1"=20'





FREEMAN ROAD EAST ℄ STA: 50+00 TO 55+00

SCALE: HORIZ. 1"=20' VERT. 1"=5'

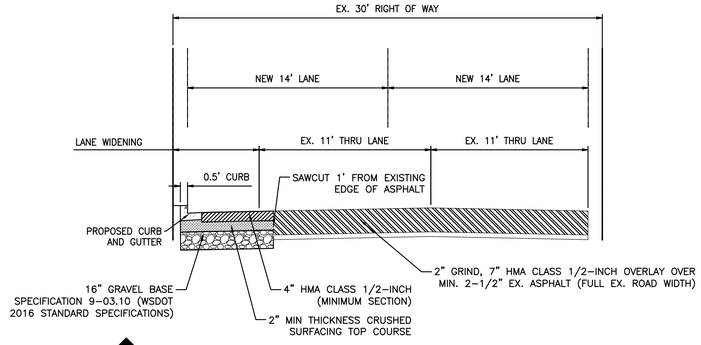


PAD WIDTH = PIPE DIAMETER + 6'
PAD LENGTH = 8' OR 4 x PIPE DIAMETER

RIP RAP SHALL BE QUARRY SPALLS WITH FOLLOWING GRADATION:
PASSING 8" SQUARE SIEVE = 100%
PASSING 3" SQUARE SIEVE = 40%-60% MAX.
PASSING ¾" SQUARE SIEVE = 0%-10% MAX.

RIP RAP PAD DETAIL

NOT TO SCALE



FREEMAN ROAD EAST SECTION B

NOT TO SCALE

FRONTAGE LEGEND:

(NOTE: NOT ALL SYMBOLS MAY APPEAR ON THE MAP)

- TYPE II CATCH BASIN
- TYPE I CATCH BASIN
- STORM DRAIN FLOW ARROW
- STORM DRAINAGE LINE
- FIRE HYDRANT
- WATER VALVE
- CONCRETE BLOCKING
- 90° BEND
- SPOT ELEVATIONS 300.48
- CONTOURS 150
- GRIND AND 7" HMA CLASS 1/2" OVERLAY
- PROPOSED ASPHALT PAVEMENT
- EXISTING PAVEMENT

CALL BEFORE YOU DIG:
1-800-424-5555

UTILITY CONFLICT NOTE:

CAUTION:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE @ 1-800-424-5555 AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT BARGHAUSEN CONSULTING ENGINEERS, INC. TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND OR OMISSIONS ON THESE PLANS.
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No.	Date	By	Ckd.	Appr.	Revision
3	6/11/23	DTC	JSM	BHE	PROGRESS SET

Title: PRELIMINARY ROAD IMPROVEMENTS STA 50+00 TO 55+00 FOR FREEMAN LOGISTICS

For: VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale: Horizontal 1"=20' Vertical 1"=5'
Designed JSM Drawn DTC Checked JSM Approved BHE Date 6/12/24

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 barghausen.com

Job Number 21585
Sheet C24 of 47

\\Apollo-VM\Projects\21000s\21585\engineering\SEPA SET\21585-R.dwg 6/11/2024 4:43 PM DCASEY

PRELIMINARY ROAD IMPROVEMENTS STA 55+00 TO 60+00

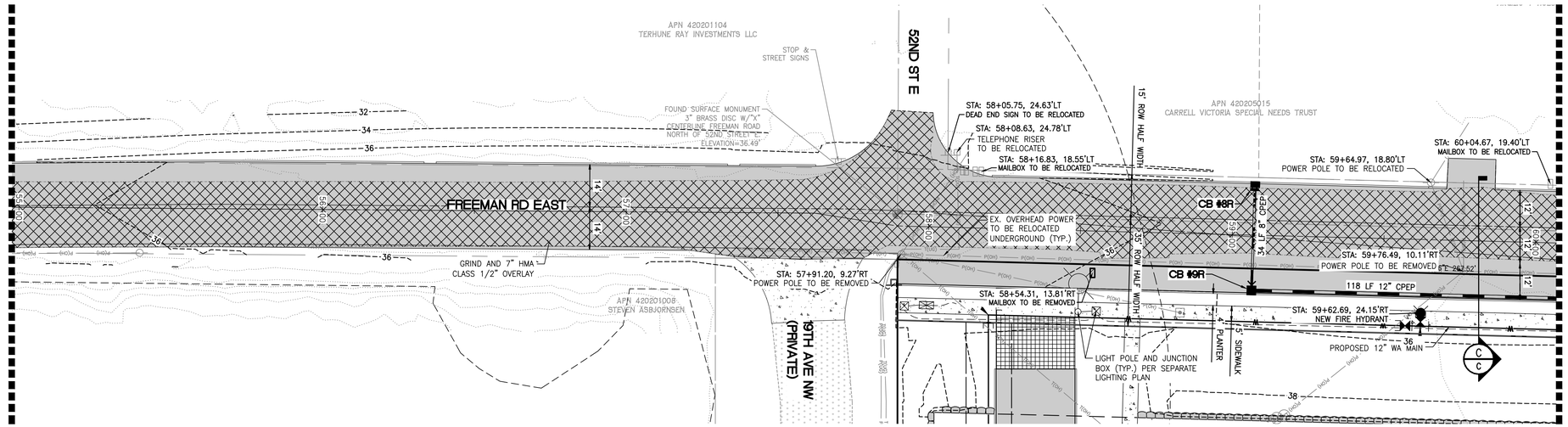
OF

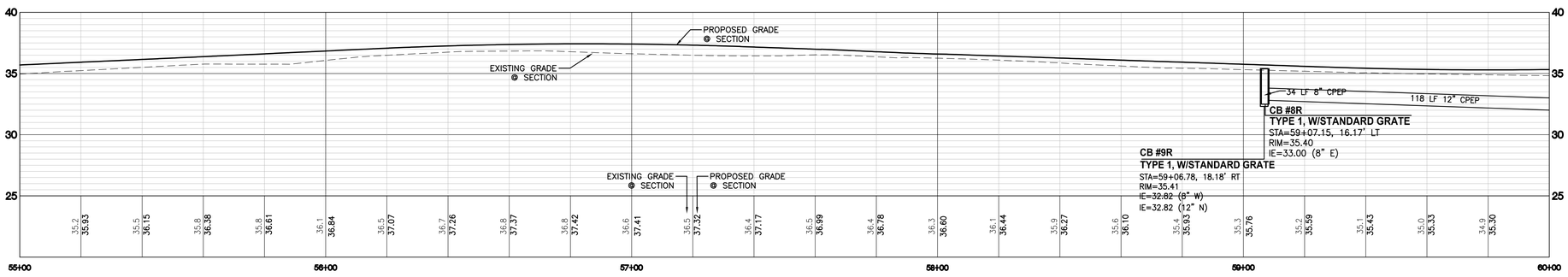
FREEMAN LOGISTICS

PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

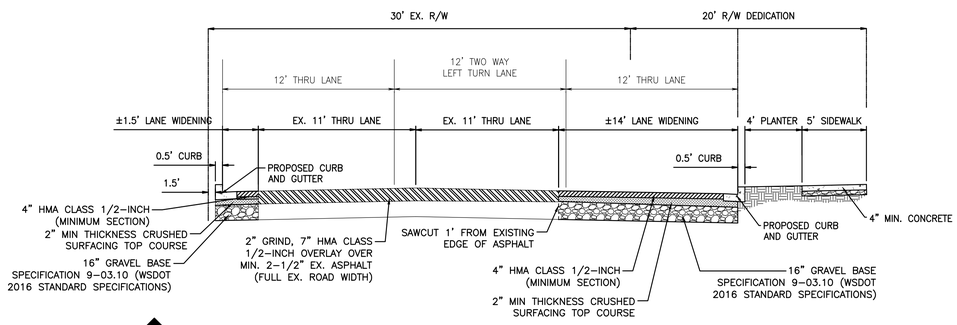
0 10' 20' 40'
SCALE: 1"=20'





FREEMAN ROAD EAST ℄ STA: 55+00 TO 60+00

SCALE: HORIZ. 1"=20' VERT. 1"=5'



C/C FREEMAN ROAD EAST SECTION C

NOT TO SCALE

FRONTAGE LEGEND:

(NOTE: NOT ALL SYMBOLS MAY APPEAR ON THE MAP)

- TYPE II CATCH BASIN
- TYPE I CATCH BASIN
- STORM DRAIN FLOW ARROW
- STORM DRAINAGE LINE
- SANITARY SEWER LINE
- SANITARY SEWER CLEANOUT
- FIRE HYDRANT
- WATER VALVE
- CONCRETE BLOCKING
- 90° BEND
- SPOT ELEVATIONS 300.48
- CONTOURS 150
- GRIND AND 7" HMA CLASS 1/2" OVERLAY
- PROPOSED ASPHALT PAVEMENT
- EXISTING PAVEMENT

CALL BEFORE YOU DIG: 1-800-424-5555

UTILITY CONFLICT NOTE:

CAUTION:
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APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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No.	Date	By	Ckd.	Appr.	Revision
3	6/11/23	DTC	JSM	BHE	PROGRESS SET

Title: PRELIMINARY ROAD IMPROVEMENTS STA 55+00 TO 60+00 FOR FREEMAN LOGISTICS

For: VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale: Horizontal 1"=20' Vertical 1"=5'

Designed JSM Drawn DTC Checked JSM Approved BHE Date 6/12/24

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 barghausen.com

Job Number 21585

Sheet C25 of 47

PRELIMINARY ROAD IMPROVEMENTS STA 60+00 TO 65+00

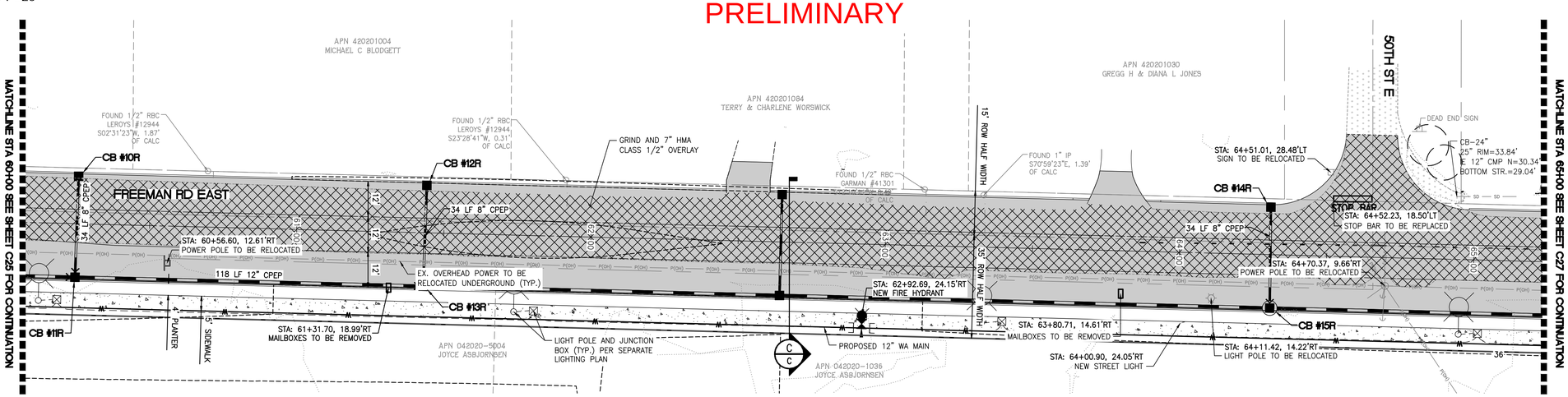
OF

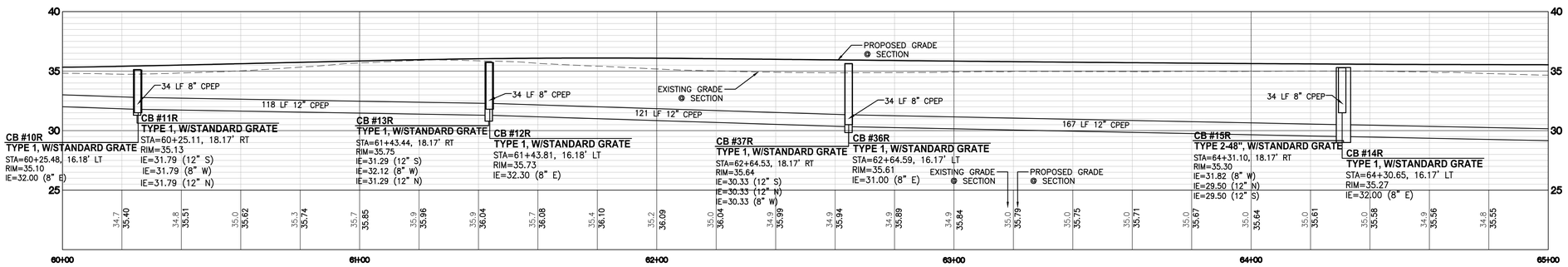
FREEMAN LOGISTICS

PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

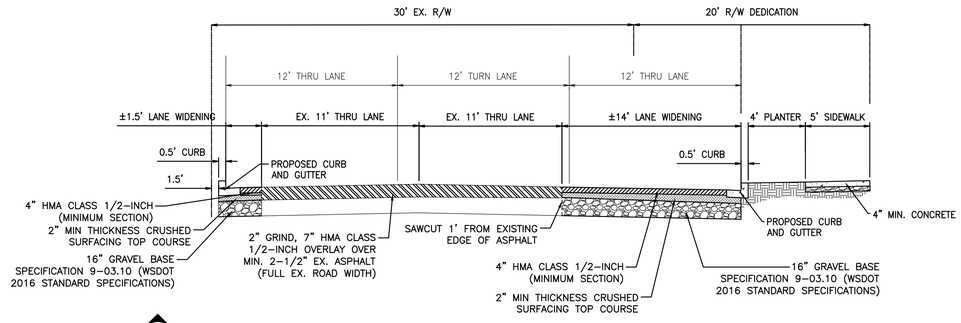
0 10' 20' 40'
SCALE: 1"=20'





FREEMAN ROAD EAST ℄ STA: 60+00 TO 65+00

SCALE: HORIZ. 1"=20' VERT. 1"=5'



C C

FREEMAN ROAD EAST SECTION C

NOT TO SCALE

FRONTAGE LEGEND:

(NOTE: NOT ALL SYMBOLS MAY APPEAR ON THE MAP)

- TYPE II CATCH BASIN
- TYPE I CATCH BASIN
- STORM DRAIN FLOW ARROW
- STORM DRAINAGE LINE
- SANITARY SEWER LINE
- SANITARY SEWER CLEANOUT
- FIRE HYDRANT
- WATER VALVE
- CONCRETE BLOCKING
- 90° BEND
- SPOT ELEVATIONS 300.48
- CONTOURS 150
- GRIND AND 7" HMA CLASS 1/2" OVERLAY
- PROPOSED ASPHALT PAVEMENT
- EXISTING PAVEMENT

CALL BEFORE YOU DIG:
1-800-424-5555

UTILITY CONFLICT NOTE:

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BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE DEVELOPMENT ENGINEERING MANAGER.

No.	Date	By	Ckd.	Appr.	Revision
3	6/11/23	DTC	JSM	BHE	PROGRESS SET

Title:
PRELIMINARY ROAD IMPROVEMENTS
STA 60+00 TO 65+00
FOR
FREEMAN LOGISTICS

For:
VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale:
Horizontal 1"=20'
Vertical 1"=5'

Designed JSM
Drawn DTC
Checked JSM
Approved BHE
Date 6/12/24

Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 barghausen.com

Job Number 21585

Sheet C26 of 47

\\Apollo-WA\Projects\21000s\21585\engineering\SEPA SET\c21585-R.dwg 6/11/2024 4:43 PM DCASEY

PRELIMINARY ROAD IMPROVEMENTS STA 65+00 TO 70+00

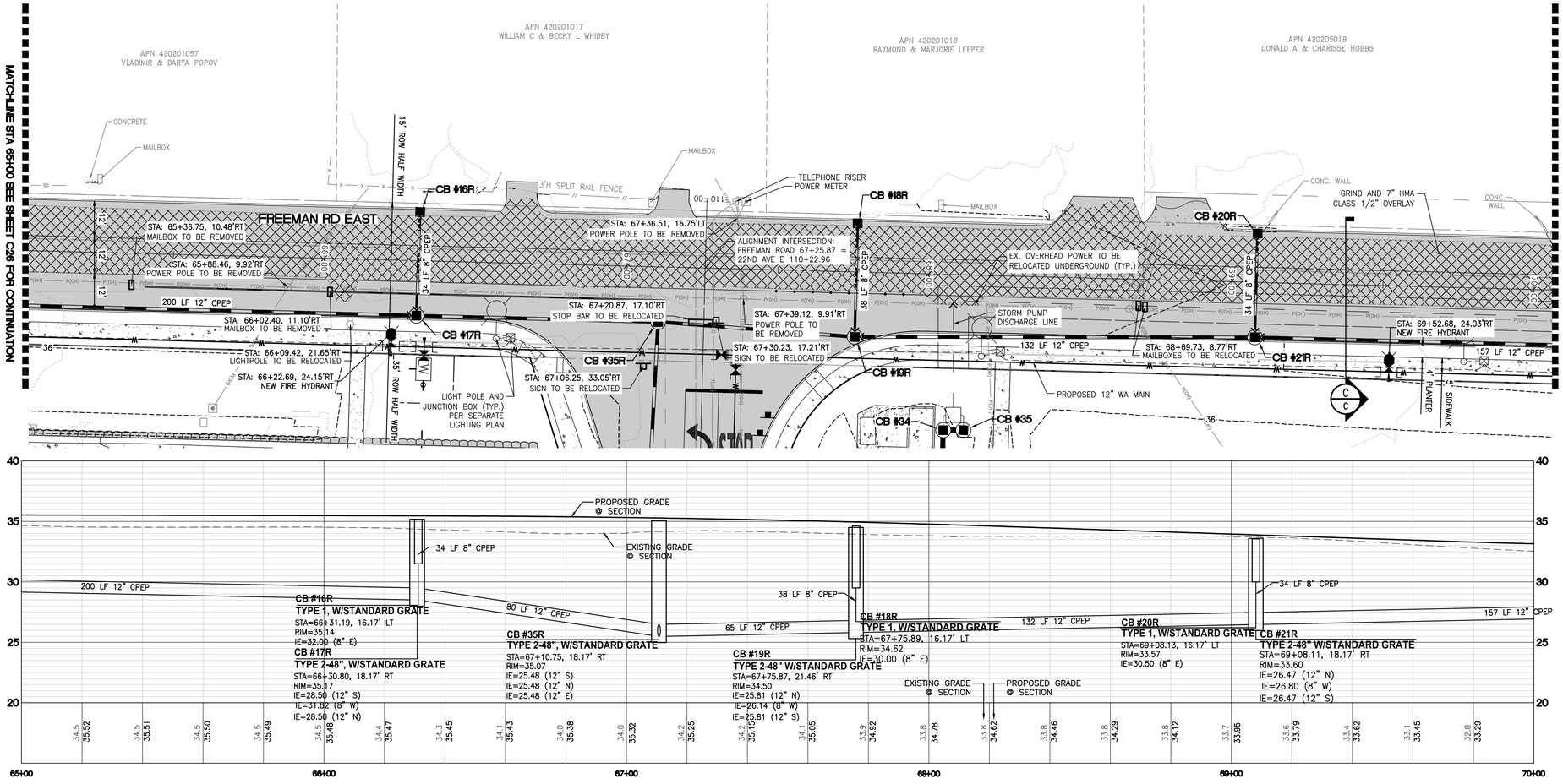
OF

FREEMAN LOGISTICS

PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

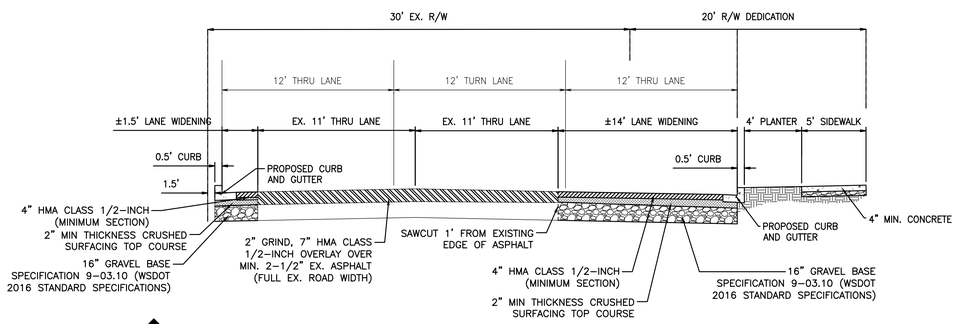
PRELIMINARY

0 10' 20' 40'
SCALE: 1"=20'



FREEMAN ROAD EAST ℄ STA: 65+00 TO 70+00

SCALE: HORIZ. 1"=20' VERT. 1"=5'



C/C FREEMAN ROAD EAST SECTION C

NOT TO SCALE

FRONTAGE LEGEND:

(NOTE: NOT ALL SYMBOLS MAY APPEAR ON THE MAP)

- TYPE II CATCH BASIN
- TYPE I CATCH BASIN
- STORM DRAIN FLOW ARROW
- STORM DRAINAGE LINE
- SANITARY SEWER LINE
- SANITARY SEWER CLEANOUT
- FIRE HYDRANT
- WATER VALVE
- CONCRETE BLOCKING
- 90° BEND
- SPOT ELEVATIONS 300.48
- CONTOURS 150
- GRIND AND 7" HMA CLASS 1/2" OVERLAY
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Title:
PRELIMINARY ROAD IMPROVEMENTS
STA 65+00 TO 70+00
FOR
FREEMAN LOGISTICS

For: VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale: Horizontal 1"=20' Vertical 1"=5'

Designed JSM Drawn DTC Checked JSM Approved BHE Date 6/12/24

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Sheet C27 of 47

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PRELIMINARY ROAD IMPROVEMENTS STA 70+00 TO 75+00

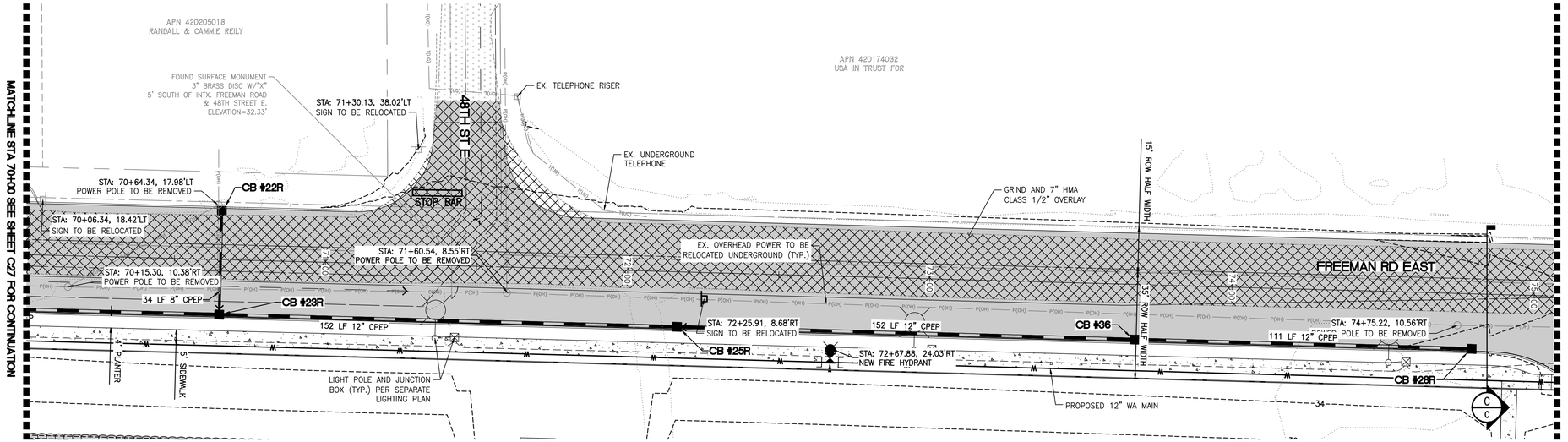
OF

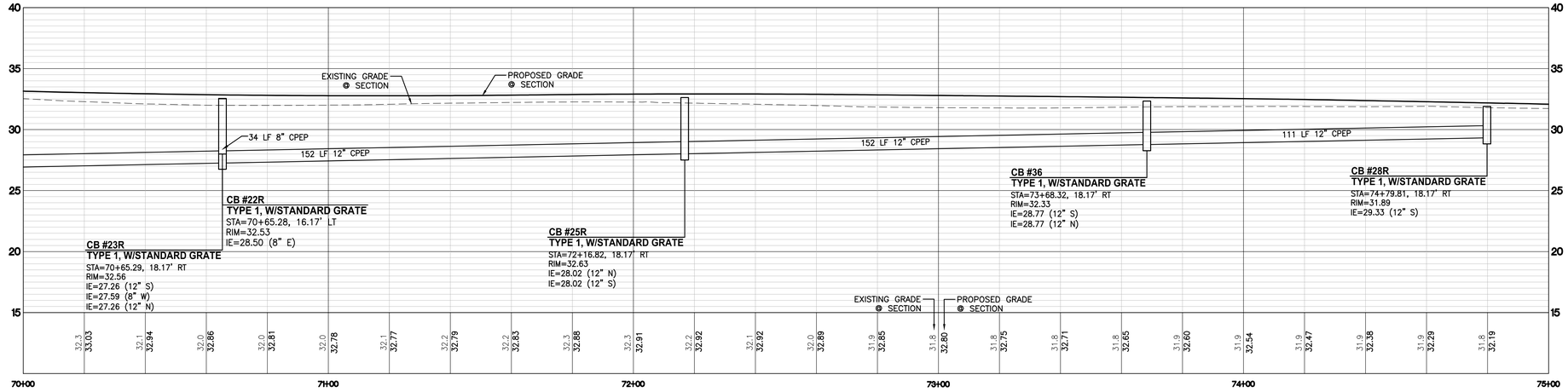
FREEMAN LOGISTICS

PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

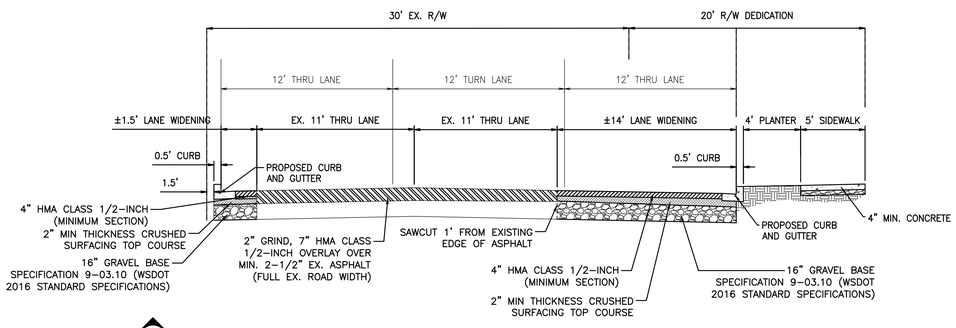
0 10' 20' 40'
SCALE: 1"=20'





FREEMAN ROAD EAST ℄ STA: 70+00 TO 75+00

SCALE: HORIZ. 1"=20' VERT. 1"=5'



C C FREEMAN ROAD EAST SECTION C

NOT TO SCALE

FRONTAGE LEGEND:

(NOTE: NOT ALL SYMBOLS MAY APPEAR ON THE MAP)

- TYPE II CATCH BASIN
- TYPE I CATCH BASIN
- STORM DRAIN FLOW ARROW
- STORM DRAINAGE LINE
- SANITARY SEWER LINE
- SANITARY SEWER CLEANOUT
- FIRE HYDRANT
- WATER VALVE
- CONCRETE BLOCKING
- 90° BEND
- SPOT ELEVATIONS 300.48
- CONTOURS 150
- GRIND AND 7" HMA CLASS 1/2" OVERLAY
- PROPOSED ASPHALT PAVEMENT
- EXISTING PAVEMENT

CALL BEFORE YOU DIG:
1-800-424-5555

UTILITY CONFLICT NOTE:

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No.	Date	By	Ckd.	Appr.	Revision
3	6/11/23	DTC	JSM	BHE	PROGRESS SET

Title: PRELIMINARY ROAD IMPROVEMENTS STA 70+00 TO 75+00 FOR FREEMAN LOGISTICS

For: VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale: Horizontal 1"=20' Vertical 1"=5'

Designed JSM Drawn DTC Checked JSM Approved BHE Date 6/12/24

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Job Number 21585

Sheet C28 of 47

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PRELIMINARY ROAD IMPROVEMENTS STA 75+00 TO 77+20

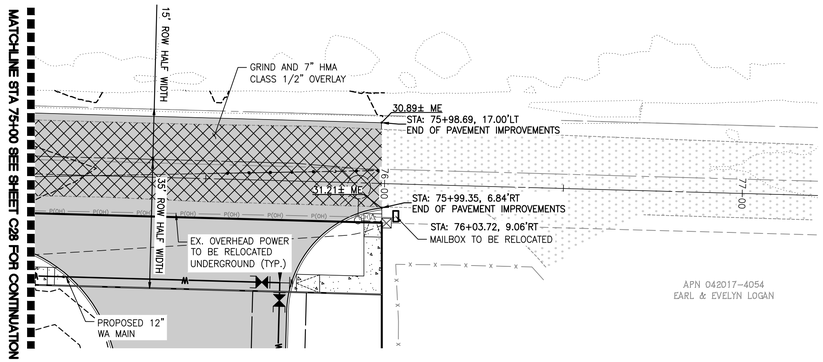
OF

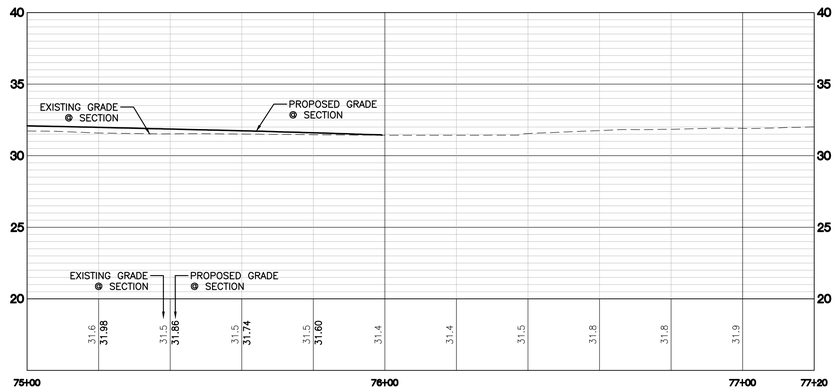
FREEMAN LOGISTICS

PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

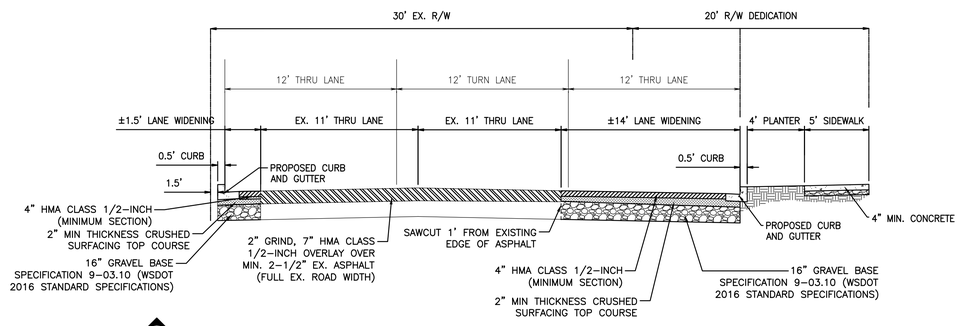
0 10' 20' 40'
SCALE: 1"=20'





FREEMAN ROAD EAST ℄ STA: 75+00 TO 77+20

SCALE: HORIZ. 1"=20' VERT. 1"=5'



C/C FREEMAN ROAD EAST SECTION C

NOT TO SCALE

FRONTAGE LEGEND:

(NOTE: NOT ALL SYMBOLS MAY APPEAR ON THE MAP)

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3	6/11/23	DTC	JSM	BHE	PROGRESS SET

Title:
PRELIMINARY ROAD IMPROVEMENTS
STA 75+00 TO 77+20
FOR
FREEMAN LOGISTICS

For:
VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale:
Horizontal 1"=20'
Vertical 1"=5'

Designed JSM
Drawn DTC
Checked JSM
Approved BHE
Date 6/12/24

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Kent, WA 98032
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Sheet C29 of 47

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PRELIMINARY ROAD IMPROVEMENTS 22ND AVE NW

OF

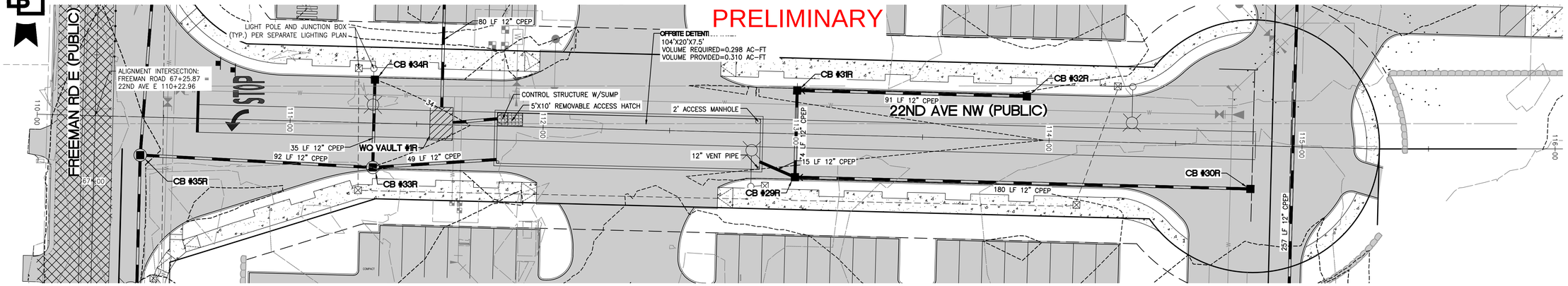
FREEMAN LOGISTICS

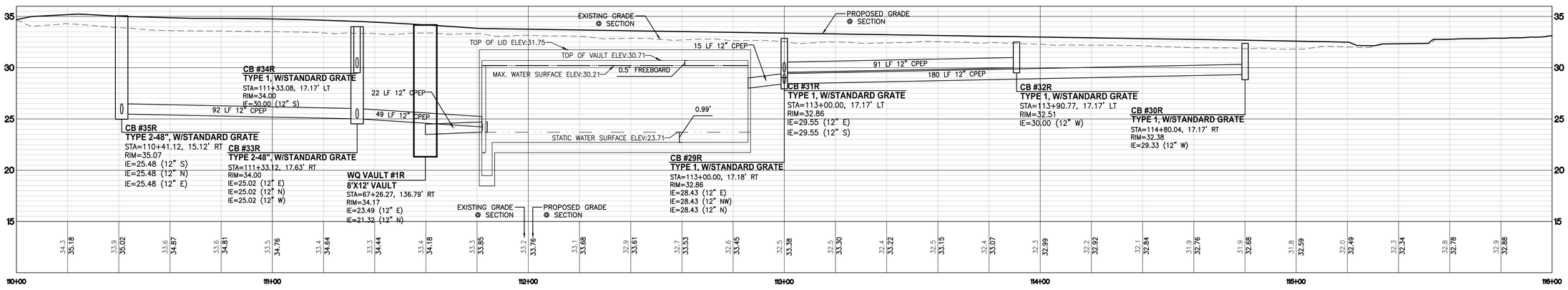
PTNS. OF THE SE1/4, OF SEC. 17, TWP. 20 N., RGE 4 EAST, W. M.
AND PTNS. OF THE NE1/4, OF SEC. 20, TWP. 20 N., RGE 4 EAST, W. M.
PIERCE COUNTY, WASHINGTON

PRELIMINARY

N

0 10' 20' 40'
SCALE: 1"=20'





22ND AVE EAST ℄ STA: 110+00 TO 116+00

SCALE: HORIZ. 1"=20' VERT. 1"=5'

CALL BEFORE YOU DIG:
1-800-424-5555

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No.	Date	By	Ckd.	Appr.	Revision
3	6/11/23	DTC	JSM	BHE	PROGRESS SET

Title:
PRELIMINARY ROAD
IMPROVEMENTS 22ND AVE NW
FOR
FREEMAN LOGISTICS

For:
VECTOR DEVELOPMENT COMPANY
11411 NE 124TH STREET
SUITE 190
KIRKLAND, WA 98034

Scale: Horizontal 1"=20' Vertical 1"=5'

Designed JSM Drawn DTC Checked JSM Approved BHE Date 6/12/24

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Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 barghausen.com

Job Number 21585

Sheet C30 of 47

Appendix B
Study Area Photographs

Appendix B
Study Area Photographs

Photograph 1
Parcels 0420174075 and 0420205016

Photograph 2
Agricultural Ditch

Photograph 3
Agricultural Ditch and Adjacent Agricultural Field

Photograph 4
Adjacent Agricultural Fields

Photograph 5
View of DP1

Photograph 6
Agricultural Ditch South

Photograph 7
East Edge of Parcel 0420205016

Photograph 8
Active Grazing in Parcel 0420174075

Photograph 9
Grazing in Parcel 0420174075

Photograph 10
Ditch

Photograph 11
Field Adjacent to Wetland B

Photograph 12
Landscape View near Wetland B

Photograph 13
View near Wetland B

Photograph 14
Field adjacent to Wetland B

Photograph 15
Area Near Wetland B

Photograph 16
Wetlands Mapped South of 52nd Street East

Photograph 17
Wetlands Mapped South of 52nd Street East

Photograph 18
Vegetation in Wetlands Mapped South of 52nd Street East

Photograph 19
Wetland B on Parcel 0420174075 (March 11, 2022)

Photograph 20
Wetland B on Parcel 0420174075 (March 11, 2022)

Photograph 21
Wetland B on Parcel 0420174075 (March 11, 2022)

Photograph 22
Looking down at Wetland A from the adjacent slope (May 17, 2024)

Photograph 23
Wetland A (May 17, 2024)

Appendix C
Wetland Forms and Figures

Appendix C-1
Data Forms

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

Project/Site: Freeman Road Logistics City/County: Puyallup/Pierce County Sampling Date: 3/11/2022
Applicant/Owner: Vector Development Company State: WA Sampling Point: DP-1
Investigator(s): C. Douglas, M. Curran Section, Township, Range: S17 & 20 R4E T20N
Landform (hillslope, terrace, etc.): Forested Local relief (concave, convex, none): concave Slope: 1-5
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 47.20922528 Long: -122.3177068 Datum: NAD83
Soil Map Unit Name: Pilchuck fine sand NWI Classification: PFO, PSS, POW
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes x No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Delineated northern and eastern boundary of large wetland system to identify potential buffer impacts for utility line construction

VEGETATION

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?
1. *Populus balsamifera ssp. Trichocarpa*	80	Yes	FAC
2. *Picea sitchensis*	10	No	FAC
3.			
4.			
5.			
50%= 45 20%= 18 Total Cover: **90**			
Sapling/Shrub Stratum (Plot size: _____)			
1. *Cornus sericea*	30	No	FACW
2. *Rubus armeniacus*	20	No	FAC
3. *Symphoricarpos albus*	90	Yes	FACU
4. *Ribes sanguineum*	20	No	FACU
5.			
50%= 80 20%= 32 Total Cover: **160**			
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 0 20%= 0 Total Cover: **0**			
Woody Vine Stratum (Plot size: _____)			
1. *Hedera helix*	20		FACU
2.			
Total Cover: **20**			
% Bare Ground in Herb Stratum **100** % Cover of Biotic Crust _____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **1** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **50%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**30**	x2 =	**60**
FAC species	**110**	x3 =	**330**
FACU species	**110**	x4 =	**440**
UPL species	**0**	x5 =	**0**
Column Totals:	**250** (A)		**830** (B)

Prevalence Index = B/A = **3.3**

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes _____ No **X**

Remarks: 50% FAC vegetation

SOIL

Sampling Point: DP-1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					SiL	w/gravel
8-18	10YR 4/2	100					SL	w/gravel

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** **X**

Remarks: 2 chroma with no redox

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- **x** Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ 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 Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes **x** No _____ Depth (inches): 10 inches

Wetland Hydrology Present? **Yes** **X** **No** _____

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

Remarks: Saturation 10 inches deep, no other hydric indicators

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

Project/Site: Freeman Road Logistics City/County: Puyallup/Pierce County Sampling Date: 3/11/2022
Applicant/Owner: Vector Development Company State: WA Sampling Point: DP-2
Investigator(s): C. Douglas, M. Curran Section, Township, Range: S17 & 20 R4E T20N
Landform (hillslope, terrace, etc.): Forested Local relief (concave, convex, none): concave Slope: 1-5
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 47.2091166 Long: -122.3175633 Datum: NAD83
Soil Map Unit Name: Pilchuck fine sand NWI Classification: PFO, PSS, POW
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes x No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Delineated northern and eastern boundary of large wetland system to identify potential buffer impacts for utility line construction

VEGETATION

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?
1. *Populus balsamifera ssp. Trichocarpa*	70	Yes	FAC
2.			
3.			
4.			
5.			
50%= 35 20%= 14 Total Cover: **70**			
Sapling/Shrub Stratum (Plot size: _____)			
1. *Cornus sericea*	85	Yes	FACW
2. *Rubus armeniacus*	20	No	FAC
3. *Symphoricarpos albus*	20	No	FACU
4.			
5.			
50%= 62.5 20%= 25 Total Cover: **125**			
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 0 20%= 0 Total Cover: **0**			
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
Total Cover: **0**			
% Bare Ground in Herb Stratum **100** % Cover of Biotic Crust _____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **2** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**85**	x2 =	**170**
FAC species	**90**	x3 =	**270**
FACU species	**20**	x4 =	**80**
UPL species	**0**	x5 =	**0**
Column Totals:	**195** (A)		**520** (B)

Prevalence Index = B/A = **2.7**

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes X** **No** _____

Remarks: 100% FAC vegetation

SOIL

Sampling Point: DP-2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100					SiL	
4-9	10YR 3/1	90	10YR 5/4	10	D	M	SL	
9-18	10YR 2/1	95	10YR 4/1	5	D	M	LS	w/gravel

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

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

Remarks: 1 chroma with redox

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes x No ___ Depth (inches): 1 inch

Water table Present? Yes x No ___ Depth (inches): at surface

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

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

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

Remarks: Standing water >1 ft deep 10 ft from DP

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

Project/Site: Freeman Road Logistics City/County: Puyallup/Pierce County Sampling Date: 3/11/2022
Applicant/Owner: Vector Development Company State: WA Sampling Point: DP-3
Investigator(s): C. Douglas, M. Curran Section, Township, Range: S17 & 20 R4E T20N
Landform (hillslope, terrace, etc.): Forested Local relief (concave, convex, none): concave Slope: 1-5
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 47.20721312 Long: -122.3147837 Datum: NAD83
Soil Map Unit Name: Pilchuck fine sand NWI Classification: PFO, PSS, POW
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes x No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Delineated northern and eastern boundary of large wetland system to identify potential buffer impacts for utility line construction

VEGETATION

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status?
1. *Alnus rubra*	10	No	FAC
2. *Populus balsamifera ssp. Trichocarpa*	60	Yes	FAC
3.			
4.			
5.			
50%= 35 20%= 14 Total Cover:	**70**		
Sapling/Shrub Stratum (Plot size:)			
1. *Oemleria cerasiformis*	30	Yes	FACU
2. *Rubus armeniacus*	70	Yes	FAC
3.			
4.			
5.			
50%= 50 20%= 20 Total Cover:	**100**		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 0 20%= 0 Total Cover:	**0**		
Woody Vine Stratum (Plot size:)			
1. *Hedera helix*	30		FACU
2.			
Total Cover:	**30**		
% Bare Ground in Herb Stratum **100** % Cover of Biotic Crust			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **3** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **67%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**0**	x2 =	**0**
FAC species	**140**	x3 =	**420**
FACU species	**30**	x4 =	**120**
UPL species	**0**	x5 =	**0**
Column Totals:	**170** (A)		**540** (B)

Prevalence Index = B/A = **3.2**

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes **X** No

Remarks: 67% FAC vegetation

SOIL

Sampling Point: DP-3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/3	100					SiL	w/gravel

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** X

Remarks: 3 chroma with no redox

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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 Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** X

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

Remarks: No hydric indicators

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

Project/Site: Freeman Road Logistics | City/County: Puyallup/Pierce County | Sampling Date: 3/11/2022
Applicant/Owner: Vector Development Company | State: WA | Sampling Point: DP-4
Investigator(s): C. Douglas, M. Curran | Section, Township, Range: S17 & 20 R4E T20N
Landform (hillslope, terrace, etc.): Forested | Local relief (concave, convex, none): concave | Slope: 1-5
Subregion (LRR): Northwest Forests and Coast (LRR A) | Lat: 47.20725182 | Long: -122.3149014 | Datum: NAD83
Soil Map Unit Name: Pilchuck fine sand | NWI Classification: PFO, PSS, POW
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes x No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Delineated northern and eastern boundary of large wetland system to identify potential buffer impacts for utility line construction

VEGETATION

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status?
1. *Populus balsamifera ssp. Trichocarpa*	60	Yes	FAC
2.			
3.			
4.			
5.			
50%= 30 20%= 12 Total Cover:	**60**		
Sapling/Shrub Stratum (Plot size:)			
1. *Cornus sericea*	80	Yes	FACW
2. *Rubus armeniacus*	20	No	FAC
3. *Rubus spectabilis*	30	Yes	FAC
4.			
5.			
50%= 65 20%= 26 Total Cover:	**130**		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 0 20%= 0 Total Cover:	**0**		
Woody Vine Stratum (Plot size:)			
1.			
2.			
Total Cover:	**0**		
% Bare Ground in Herb Stratum **100** % Cover of Biotic Crust			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **3** (A)

Total Number of Dominant Species Across All Strata: **3** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**80**	x2 =	**160**
FAC species	**110**	x3 =	**330**
FACU species	**0**	x4 =	**0**
UPL species	**0**	x5 =	**0**
Column Totals:	**190** (A)		**490** (B)

Prevalence Index = B/A = **2.6**

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes X** **No** _____

Remarks: 100% FAC vegetation

SOIL

Sampling Point: DP-4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	100					SiL	
5-18	10YR 4/1	85	10YR 5/4	15	D	M	SiL	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks: 1 chroma with redox

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water table Present? Yes x No _____ Depth (inches): at surface

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

Wetland Hydrology Present? **Yes** X **No** _____

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

Remarks: Standing water >1 ft deep 3 ft from DP

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

Project/Site: Freeman Road Logistics City/County: Puyallup/Pierce County Sampling Date: 3/11/2022
Applicant/Owner: Vector Development Company State: WA Sampling Point: DP-5
Investigator(s): C. Douglas, M. Curran Section, Township, Range: S17 & 20 R4E T20N
Landform (hillslope, terrace, etc.): Forested Local relief (concave, convex, none): concave Slope: 1-5
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 47.20693991 Long: -122.3150232 Datum: NAD83
Soil Map Unit Name: Pilchuck fine sand NWI Classification: PFO, PSS, POW
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes x No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes	No	**X**
Hydric Soil Present?	Yes	No	**X**
Wetland Hydrology Present?	Yes	No	**X**

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

Remarks: Delineated northern and eastern boundary of large wetland system to identify potential buffer impacts for utility line construction

VEGETATION

	Absolute % Cover	Dominant Species?	Indicator Status?
Tree Stratum (Plot size:)			
1. *Alnus rubra*	60	Yes	FAC
2. *Populus balsamifera ssp. Trichocarpa*	80	Yes	FAC
3.			
4.			
5.			
50%= 70 20%= 28 Total Cover: **140**			
Sapling/Shrub Stratum (Plot size:)			
1. *Oemleria cerasiformis*	50	Yes	FACU
2. *Rubus armeniacus*	10	No	FAC
3. *Rubus spectabilis*	20	No	FAC
4. *Symphoricarpos albus*	70	Yes	FACU
5.			
50%= 75 20%= 30 Total Cover: **150**			
Herb Stratum (Plot size:)			
1. *Polystichum munitum*	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 10 20%= 4 Total Cover: **20**			
Woody Vine Stratum (Plot size:)			
1. *Hedera helix*	20		FACU
2.			
Total Cover: **20**			
% Bare Ground in Herb Stratum **80** % Cover of Biotic Crust			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)

Total Number of Dominant Species Across All Strata: **5** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **40%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**0**	x2 =	**0**
FAC species	**170**	x3 =	**510**
FACU species	**140**	x4 =	**560**
UPL species	**0**	x5 =	**0**
Column Totals:	**310** (A)		**1070** (B)

Prevalence Index = B/A = **3.5**

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: 40% FAC vegetation

SOIL

Sampling Point: DP-5

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

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

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** **X**

Remarks: 3 chroma with no redox

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum 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 Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? **Yes** _____ **No** **X**

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

Remarks: No hydric indicators

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

Project/Site: Freeman Road Logistics City/County: Puyallup/Pierce County Sampling Date: 3/11/2022
Applicant/Owner: Vector Development Company State: WA Sampling Point: DP-6
Investigator(s): C. Douglas, M. Curran Section, Township, Range: S17 & 20 R4E T20N
Landform (hillslope, terrace, etc.): Forested Local relief (concave, convex, none): concave Slope: 1-5
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 47.20715552 Long: -122.3151651 Datum: NAD83
Soil Map Unit Name: Pilchuck fine sand NWI Classification: PFO, PSS, POW
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes x No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes **X** No
Hydric Soil Present? Yes **X** No
Wetland Hydrology Present? Yes **X** No

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

Remarks: Delineated northern and eastern boundary of large wetland system to identify potential buffer impacts for utility line construction

VEGETATION

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status?
1. *Alnus rubra*	70	Yes	FAC
2. *Populus balsamifera ssp. Trichocarpa*	20	Yes	FAC
3.			
4.			
5.			
50%= 45 20%= 18 Total Cover:	**90**		
Sapling/Shrub Stratum (Plot size:)			
1. *Cornus sericea*	70	Yes	FACW
2. *Rubus armeniacus*	20	No	FAC
3. *Rubus spectabilis*	20	No	FAC
4. *Ribes sanguineum*	5	No	FACU
5. *Symphoricarpos albus*	5	No	FACU
50%= 60 20%= 24 Total Cover:	**120**		
Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 0 20%= 0 Total Cover:	**0**		
Woody Vine Stratum (Plot size:)			
1.			
2.			
Total Cover:	**0**		
% Bare Ground in Herb Stratum **100** % Cover of Biotic Crust			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **3** (A)

Total Number of Dominant Species Across All Strata: **3** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**70**	x2 =	**140**
FAC species	**130**	x3 =	**390**
FACU species	**10**	x4 =	**40**
UPL species	**0**	x5 =	**0**
Column Totals:	**210** (A)		**570** (B)

Prevalence Index = B/A = **2.7**

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: 100% FAC vegetation

SOIL

Sampling Point: DP-6

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	100					SiL	
4-18	10YR 4/1	80	10YR 5/4	20	D	M	SiL	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks: 1 chroma with redox

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes x No ___ Depth (inches): 1 inch

Water table Present? Yes x No ___ Depth (inches): at surface

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

Wetland Hydrology Present? **Yes** X **No** _____

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

Remarks: Standing water >1 ft deep 2 ft from DP

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Vector Freeman/5203 Freeman Rd E | City/County: Puyallup/Pierce | Sampling Date: 5/17

Applicant/Owner: Vector/Puyallup Tribe | State: WA | Sampling Point: DP-7

Investigator(s): Hannah Fotherby | Section, Township, Range: S20, T20N, R4E

Landform (hillside, terrace, etc.): floodplain/historic river meander | Local relief (concave, convex, none): none | Slope (%): 5

Subregion (LRR): LRR A, MLRA 2 | Lat: 47.20858637 | Long: -122.3197029 | Datum: WGS84

Soil Map Unit Name: Pilchuck fine sand | NWI classification: PFO1C

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

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

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

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

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
Plot located in a flat area below the line of Symphoricarpos albus, where the Populus balsamifera community transitions to a Cornus alba community.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1. *Populus balsamifera*	60	Yes	FAC
2. *Prunus emarginata*	10	No	FACU
3.			
4.			
	70	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Cornus alba*	20	Yes	FACW
2. *Symphoricarpos albus*	15	Yes	FACU
3.			
4.			
5.			
	35	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Urtica dioica*	2	No	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	2	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 98

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	62	x 3 =	186
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	107 (A)		326 (B)

Prevalence Index = B/A = 3.05

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: DP-7

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					Sandy	sandy loam
6-18	10YR 3/1	100					Sandy	loamy sand (mostly sand)

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

No redox or hydrogen sulfide smell observed. Sand composition increases with depth.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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 on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

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

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

Remarks:

Soil plug was moist but not saturated. Geomorphic position is a flat area adjacent to a ponded depression.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Vector Freeman/5203 Freeman Rd E City/County: Puyallup/Pierce Sampling Date: 5/17/24

Applicant/Owner: Vector/Puyallup Tribe State: WA Sampling Point: DP-8

Investigator(s): Hannah Fotherby Section, Township, Range: S20, T20N. R4E

Landform (hillside, terrace, etc.): floodplain/historic river meander Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): LRR A, MLRA 2 Lat: 47.20861737 Long: -122.3197029 Datum: WGS84

Soil Map Unit Name: Pilchuck fine sand NWI classification: PFO1C

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

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

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

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

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:
Plot is approximately 1 foot lower in elevation than DP-7, and approximately 15 feet away.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	30	Yes	FACW
2.			
3.			
4.			
	30	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Cornus alba*	95	Yes	FACW
2.			
3.			
4.			
5.			
	95	=Total Cover	
Herb Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 100

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	125	x 2 =	250
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	125 (A)		250 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: DP-8

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	100					Mucky Sand	contains silt
8-18	10YR 2/1	100					Sandy	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

Sand composition increases with depth. Hydrogen sulfide odor.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ 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)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 4
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

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

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

Remarks:

Surface water was approximately 15 feet away from plot. Geomorphic position is a flat area within a depression.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Vector Freeman/5203 Freeman Rd E | City/County: Puyallup/Pierce | Sampling Date: 5/17/24

Applicant/Owner: Vector/Puyallup Tribe | State: WA | Sampling Point: DP-9

Investigator(s): Hannah Fotherby | Section, Township, Range: S20, T20N, R4E

Landform (hillside, terrace, etc.): floodplain/historic river meander | Local relief (concave, convex, none): convex | Slope (%): 8

Subregion (LRR): LRR A, MLRA 2 | Lat: 47.20862474 | Long: -122.3201188 | Datum: WGS84

Soil Map Unit Name: Pilchuck fine sand | NWI classification: PFO1C

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

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

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

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

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
Plot located on a slope, at the base of a large black cottonwood. Plot is approximately 8 feet higher on the slope than DP-10.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30)			
1. *Populus balsamifera*	75	Yes	FAC
2. *Prunus emarginata*	15	No	FACU
3. *Fraxinus latifolia*	10	No	FACW
4.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Symphoricarpos albus*	70	Yes	FACU
2. *Physocarpus capitatus*	30	Yes	FACW
3.			
4.			
5.			
	100	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Urtica dioica*	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 95

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	80	x 3 =	240
FACU species	85	x 4 =	340
UPL species	0	x 5 =	0
Column Totals:	205 (A)		660 (B)

Prevalence Index = B/A = 3.22

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: DP-9

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

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

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

Sand composition increases with depth. No redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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 on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

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

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

Remarks:

Soil plug was very lightly moist but not saturated.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Vector Freeman/5203 Freeman Rd E | City/County: Puyallup/Pierce | Sampling Date: 5/17/24

Applicant/Owner: Vector/Puyallup Tribe | State: WA | Sampling Point: DP-10

Investigator(s): Hannah Fotherby | Section, Township, Range: S20, T20N, R4E

Landform (hillside, terrace, etc.): floodplain/historic river meander | Local relief (concave, convex, none): concave | Slope (%): 10

Subregion (LRR): LRR A, MLRA 2 | Lat: 47.20869074 | Long: -122.3200738 | Datum: WGS84

Soil Map Unit Name: Pilchuck fine sand | NWI classification: PFO1C

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

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

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

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

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes X No ____

Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:
Plot located at the edge of the ponded area within Wetland A. At the toe of slope and within a depression.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	60	Yes	FAC
2.			
3.			
4.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Cornus sericea*	80	Yes	FACW
2.			
3.			
4.			
5.			
	80	=Total Cover	
Herb Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
		=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 100

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	60	x 3 =	180
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	140 (A)		340 (B)

Prevalence Index = B/A = 2.43

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: DP-10

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Mucky Sand	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- X Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

Could not dig deeper than 5 inches due to roots. Faint hydrogen sulfide odor.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ 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)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 2
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

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

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

Remarks:

Permanent ponding is approximately 5 feet from this plot location. Geomorphic position is at the toe of slope and within a depression.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Vector Freeman/5203 Freeman Rd E | City/County: Puyallup/Pierce | Sampling Date: 5/17/24

Applicant/Owner: Vector/Puyallup Tribe | State: WA | Sampling Point: DP-11

Investigator(s): Hannah Fotherby | Section, Township, Range: S20, T20N, R4E

Landform (hillside, terrace, etc.): historic floodplain | Local relief (concave, convex, none): concave | Slope (%): 10

Subregion (LRR): LRR A, MLRA 2 | Lat: 47.208145 | Long: -122.319899 | Datum: WGS84

Soil Map Unit Name: Pilchuck fine sand | NWI classification: none

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

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

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

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

Hydrophytic Vegetation Present? Yes ____ No X

Hydric Soil Present? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
Plot located in a low area between Wetland A and the intersection of Levee Rd and Freeman Rd E.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	50	Yes	FAC
2. *Acer macrophyllum*	30	Yes	FACU
3. *Prunus emarginata*	10	No	FACU
4.			
	90	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Symphoricarpos albus*	65	Yes	FACU
2. *Oemleria cerasiformis*	30	Yes	FACU
3. *Rubus armeniacus*	2	No	FAC
4.			
5.			
	97	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Urtica dioica*	20	Yes	FAC
2. *Polystichum munitum*	5	No	FACU
3. *Galium aparine*	2	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	27	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 73

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	72	x 3 =	216
FACU species	142	x 4 =	568
UPL species	0	x 5 =	0
Column Totals:	214 (A)		784 (B)
Prevalence Index = B/A =			3.66

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vascular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: DP-11

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	100					Loamy/Clayey	

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ 1 cm Muck (A9) **(LRR D, G)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR A, E)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:
No redox features observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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 on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

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

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

Remarks:
Soil plug was dry.

U.S. Army Corps of Engineers

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

See ERDC/EL TR-10-3; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Freeman Road - Parcel 0420201104 City/County: Fife/Pierce Sampling Date: 5/20/23

Applicant/Owner: Vector Development State: WA Sampling Point: DP-12

Investigator(s): Hannah Fotherby and Jakob Rowny Section, Township, Range: S20, T20N, R04E

Landform (hillside, terrace, etc.): Ditch/trench bottom Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRR A, MLRA 2 Lat: 47.2085448 Long: -122.32171 Datum: WGS84

Soil Map Unit Name: Pilchuck fine sand NWI classification: none

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

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

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

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

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

Remarks:
Data point located in a low area in the northeast portion of the parcel, within a small trench/ditch about 3 feet deep.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	75	Yes	FAC
2. *Acer macrophyllum*	15	No	FACU
3.			
4.			
	90	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. *Symphoricarpos albus*	40	Yes	FACU
2. *Corylus cornuta*	30	Yes	FACU
3. *Fraxinus latifolia*	30	Yes	FACW
4. *Rubus armeniacus*	15	No	FAC
5.			
	115	=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Ranunculus repens*	10	Yes	FAC
2. *Rubus ursinus*	5	Yes	FACU
3. Unknown grass sp.	5	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20	=Total Cover	
Woody Vine Stratum (Plot size: 15)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 80

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57.1% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	105	x 3 =	315
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	225 (A)		735 (B)

Prevalence Index = B/A = 3.27

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: DP-12

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

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

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

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ 1 cm Muck (A9) **(LRR D, G)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) **(LRR A, E)**
___ Iron-Manganese Masses (F12) **(LRR D)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: none
Depth (inches): ___

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

Remarks:
No redoximorphic features present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is 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 on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

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

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

Remarks:
Soil lightly moist at around 10 inches deep but no saturation or other hydrology indicators present.

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

Project/Site: Freeman Road Logistics City/County: Puyallup/Pierce County Sampling Date: 3/11/2022
Applicant/Owner: Vector Development Company State: WA Sampling Point: DP-13
Investigator(s): C. Douglas, M. Curran Section, Township, Range: S17 R4E T20N
Landform (hillslope, terrace, etc.): Forested Local relief (concave, convex, none): concave Slope: 1-5
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 47.21406277 Long: -122.318663 Datum: NAD83
Soil Map Unit Name: Pilchuck fine sand NWI Classification: PFO, PSS, POW
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" Present? Yes x No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Depression area within grass pasture, ground is cleared of vegetation, grass vegetation surrounds standing water

VEGETATION

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
5.			
50%= 0 20%= 0 Total Cover: **0**			
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
50%= 0 20%= 0 Total Cover: **0**			
Herb Stratum (Plot size:)			
1. *Agrostis capillaris*	30	Yes	FAC
2. *Festuca rubra*	70	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 50 20%= 20 Total Cover: **100**			
Woody Vine Stratum (Plot size:)			
1.			
2.			
Total Cover: **0**			
% Bare Ground in Herb Stratum **0** % Cover of Biotic Crust			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **2** (A)
Total Number of Dominant Species Across All Strata: **2** (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:
OBL species	**0**	x1 = **0**
FACW species	**0**	x2 = **0**
FAC species	**100**	x3 = **300**
FACU species	**0**	x4 = **0**
UPL species	**0**	x5 = **0**
Column Totals:	**100** (A)	**300** (B)

Prevalence Index = B/A = **3.0**

Hydrophytic Vegetation Indicators:

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

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

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

Remarks: 100% FAC vegetation, mowed grass pasture

SOIL

Sampling Point: DP-13

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/3	99	10YR 5/4	1	D	M	SiL	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

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

Remarks: 3 chroma with redox

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ 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 Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes x No ___ Depth (inches): 14 inches

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

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

Remarks: Saturation at 14 inches

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

Project/Site: Freeman Road Logistics City/County: Puyallup/Pierce County Sampling Date: 3/11/2022
Applicant/Owner: Vector Development Company State: WA Sampling Point: DP-14
Investigator(s): C. Douglas, M. Curran Section, Township, Range: S17 R4E T20N
Landform (hillslope, terrace, etc.): Forested Local relief (concave, convex, none): concave Slope: 1-5
Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: 47.21400951 Long: -122.3185192 Datum: NAD83
Soil Map Unit Name: Pilchuck fine sand NWI Classification: PFO, PSS, POW
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks)
Are Vegetation x , Soil x , or Hydrology _____ significantly disturbed? Are "Normal Circumstances" Present? Yes x No _____
Are Vegetation _____ , Soil _____ , or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: Depression area within grass pasture, ground is cleared of vegetation, grass vegetation surrounds standing water.

VEGETATION

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?
1.			
2.			
3.			
4.			
5.			
50%= 0 20%= 0 Total Cover: **0**			
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
50%= 0 20%= 0 Total Cover: **0**			
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
50%= 0 20%= 0 Total Cover: **0**			
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
Total Cover: **0**			
% Bare Ground in Herb Stratum **100** % Cover of Biotic Crust _____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: **0** (A)

Total Number of Dominant Species Across All Strata: **0** (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	**0**	x1 =	**0**
FACW species	**0**	x2 =	**0**
FAC species	**0**	x3 =	**0**
FACU species	**0**	x4 =	**0**
UPL species	**0**	x5 =	**0**
Column Totals:	**0** (A)		**0** (B)

Prevalence Index = B/A = **0.0**

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes X** **No** _____

Remarks: No vegetation in standing water depression within grass pasture

SOIL

Sampling Point: DP-14

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 5/2	90	10YR 5/4	10	D	M	SiL	
8-18	10YR 5/1	70	7.5YR 4/4	30	D	M	SiL	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

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

Remarks: 1 and 2 chroma with redox

HYDROLOGY

Wetland Hydrology Indicators:

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

- x Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ 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 Plowed Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes x No ___ Depth (inches): 3 inches

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

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

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

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

Remarks: Standing water a few inches deep in depression. No water table, surface water flowed into data plot hole.

Appendix C-2
Wetland A Rating

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Offsite Wetland A Date of site visit: 3/11/22 and 5/30/23

Rated by C. Douglas, H. Fotherby, J. Rowny Trained by Ecology? X Yes ___No Date of training '07, '22, '16

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 ESRI

OVERALL WETLAND CATEGORY II (based on functions X or special characteristics__)

1. Category of wetland based on FUNCTIONS

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

FUNCTION	Improving Water Quality			Hydrologic			Habitat			
	Circle the appropriate ratings									
Site Potential	H	**M**	L	**H**	M	L	H	**M**	L	
Landscape Potential	H	**M**	L	**H**	M	L	H	M	**L**	
Value	**H**	M	L	**H**	M	L	**H**	M	L	**TOTAL**
Score Based on Ratings	7			9			6			22

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number A

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number A

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

   NO – go to 6 **YES** – The wetland class is **Riverine**
   NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

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

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

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

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

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

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

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

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

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	3
D 1.2. The soil 2 in. below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 95% of area points = 5 Wetland has persistent, ungrazed plants > ½ of area points = 3 Wetland has persistent, ungrazed plants ≥ 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	3
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is ≥ ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	2
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	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 — Add the points in the boxes above	2

Rating of Landscape Potential If score is: __**3 or 4 = H** 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	2
Total for D 3 — Add the points in the boxes above	3

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

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

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

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

D 4.1. Characteristics of surface water outflows from the wetland: **4**

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

D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part. **7**

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

D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the area of the wetland unit itself. **5**

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

Total for D 4	Add the points in the boxes above	16

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

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

D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?	Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	Yes = 1 No = 0	1
Total for D 5	Add the points in the boxes above	3

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

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

D 6.1. Is the unit in a landscape that has flooding problems? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met. **2**

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

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

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

Total for D 6	Add the points in the boxes above	4

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

Wetland name or number A

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac if the unit is at least 2.5 ac, or more than 10% of the unit if it is smaller than 2.5 ac. **2**

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

If the unit has a Forested class, check if:

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

H 1.2. Hydroperiods **2**

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

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

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

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

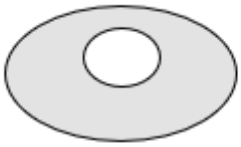
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle**

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

H 1.4. Interspersion of habitats **2**

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

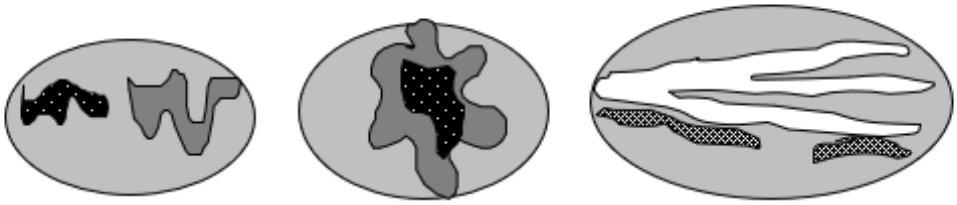
None = 0 points



Low = 1 point

Moderate = 2 points

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



Wetland name or number A

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. The number of checks is the number of points. X Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft long). X Standing snags (dbh > 4 in.) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extend at least 3.3 ft (1 m) over open water or a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) X Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed) X At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 above for the list of strata and H 1.5 in the manual for the list of aggressive plant species)	4
Total for H 1 Add the points in the boxes above	11

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland. *Calculate:* % relatively undisturbed habitat 5 **+** [(% moderate and low intensity land uses)/2] 0 = 5 % Total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Total habitat in 1 km Polygon around the wetland. *Calculate:* % relatively undisturbed habitat 10 **+** [(% moderate and low intensity land uses)/2] 10 = 20 % Total habitat > 50% of Polygon points = 3 Total habitat 10-50% and in 1-3 patches points = 2 Total habitat 10-50% and > 3 patches points = 1 Total habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	-1

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

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

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

Wetland name or number A

WDFW Priority Habitats

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

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

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

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

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.

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

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

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

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

X **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. Do not select if Fresh Deepwater habitat is also present.

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

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

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

Wetland name or number A

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

X **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.

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

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

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

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

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

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

Wetland name or number A

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

Appendix C-3
Wetland A Figures

LEGEND:

NWI Wetland

- Freshwater Forested/ Shrub Wetland
- Freshwater Pond
- Riverine

City of Puyallup Wetlands Inventory

- Unverified

- 150 Foot Buffer of Wetland A
- Pollutant Generating Area
- Wetland Test Plot Location

0 350
Feet

Sources:
1. Aerial imagery: Esri (2022)
2. NWI: USFWS (2023)

Notes:
1. USDA: United States Department of Agriculture
2. NWI: National Wetland Inventory
3. USFWS: United States Fish and Wildlife Service
4. May 2023 field observations indicate upland conditions at DP-13 and unverified wetland area.

Publish Date: 2024/05/23, 2:02 PM | User: tweldy
Filepath: \\GSTFile01\GIS\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\CAR\FreemanRoad_CAR.aprx

ANCHOR QEA

Figure 1
Wetland A - Cowardin Vegetation Classes and 150-foot Wetland Offset
Wetland Rating Form - Wetland A
Freeman Road Logistics

LEGEND:

Hydroperiod

- Permanently Flooded
- Saturated

NOTE:
1. Aerial image provided by Esri Online Services.

0 350
Feet

Publish Date: 2023/07/06, 2:18 PM | User: jlarson
Filepath: \\orcas\GIS\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\CAR\FreemanRoad_CAR.aprx

ANCHOR QEA

Figure 2
Wetland A - Hydroperiods
Wetland Rating Form - Wetland A
Freeman Road Logistics

LEGEND:

- Wetland A
- Contributing Basin

NOTE:
1. Aerial image provided by Esri Online Services.

0 600
Feet

Publish Date: 2023/07/06, 2:27 PM | User: jlarson
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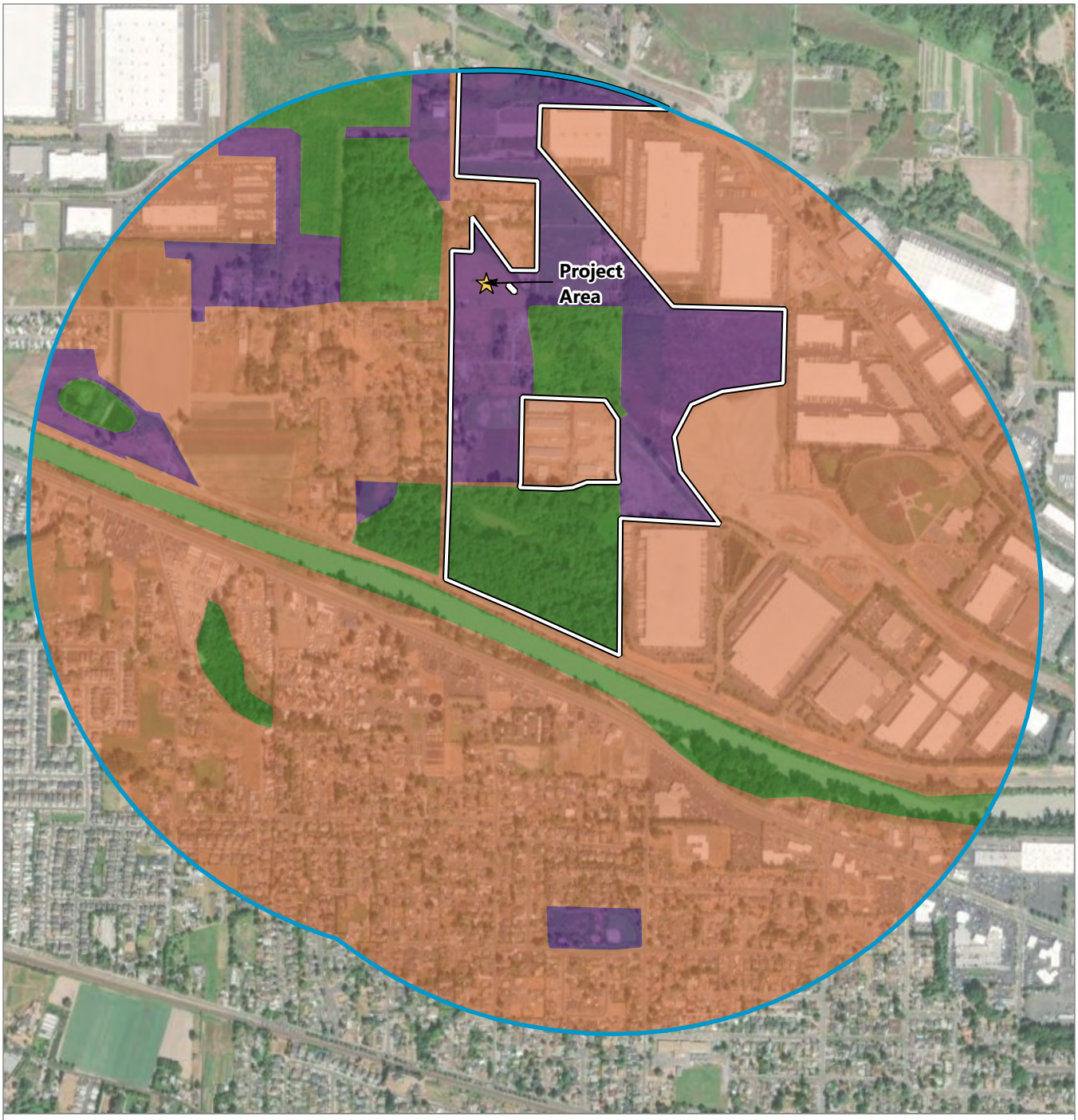
ANCHOR QEA

Figure 3
Wetland A - Map of the Contributing Basin
Wetland Rating Form - Wetland A
Freeman Road Logistics



LEGEND:

- Project Area
- 1-km Radius of Wetland A
- Acessible Habitat

Land Use Type

- High Intensity
- Low/Moderate Intensity
- Relatively Undisturbed

NOTE:
1. Aerial image provided by Esri Online Services.

0 1,200
Feet

Publish Date: 2023/07/06, 4:52 PM | User: jlarson
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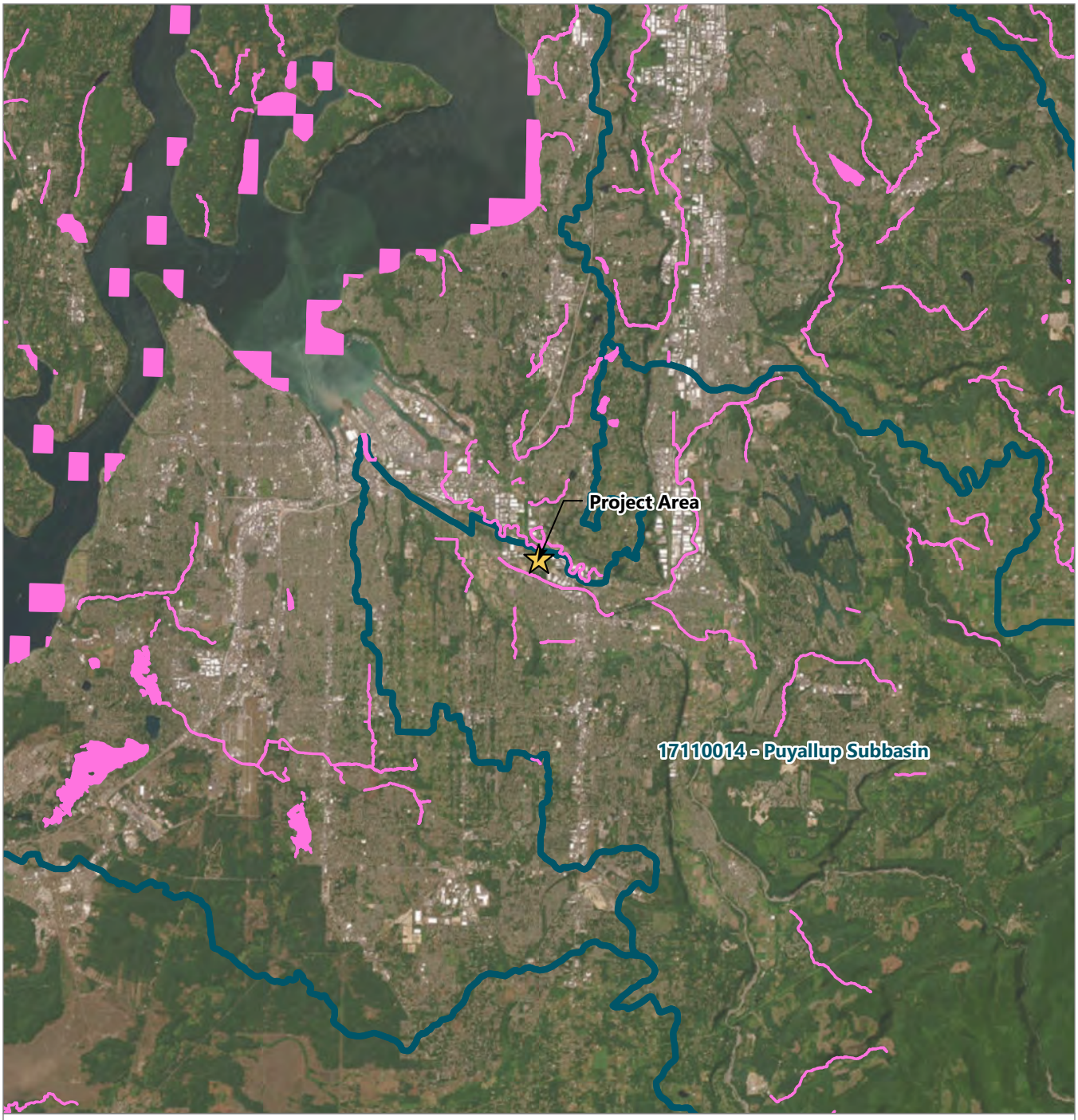
ANCHOR QEA

Figure 4
Land Use Intensity Within 1-km of the Wetland
Wetland Rating Form - Wetland A
Freeman Road Logistics



LEGEND:

- Project Area
- 303(d) Listed Water
- HUC8 Watershed

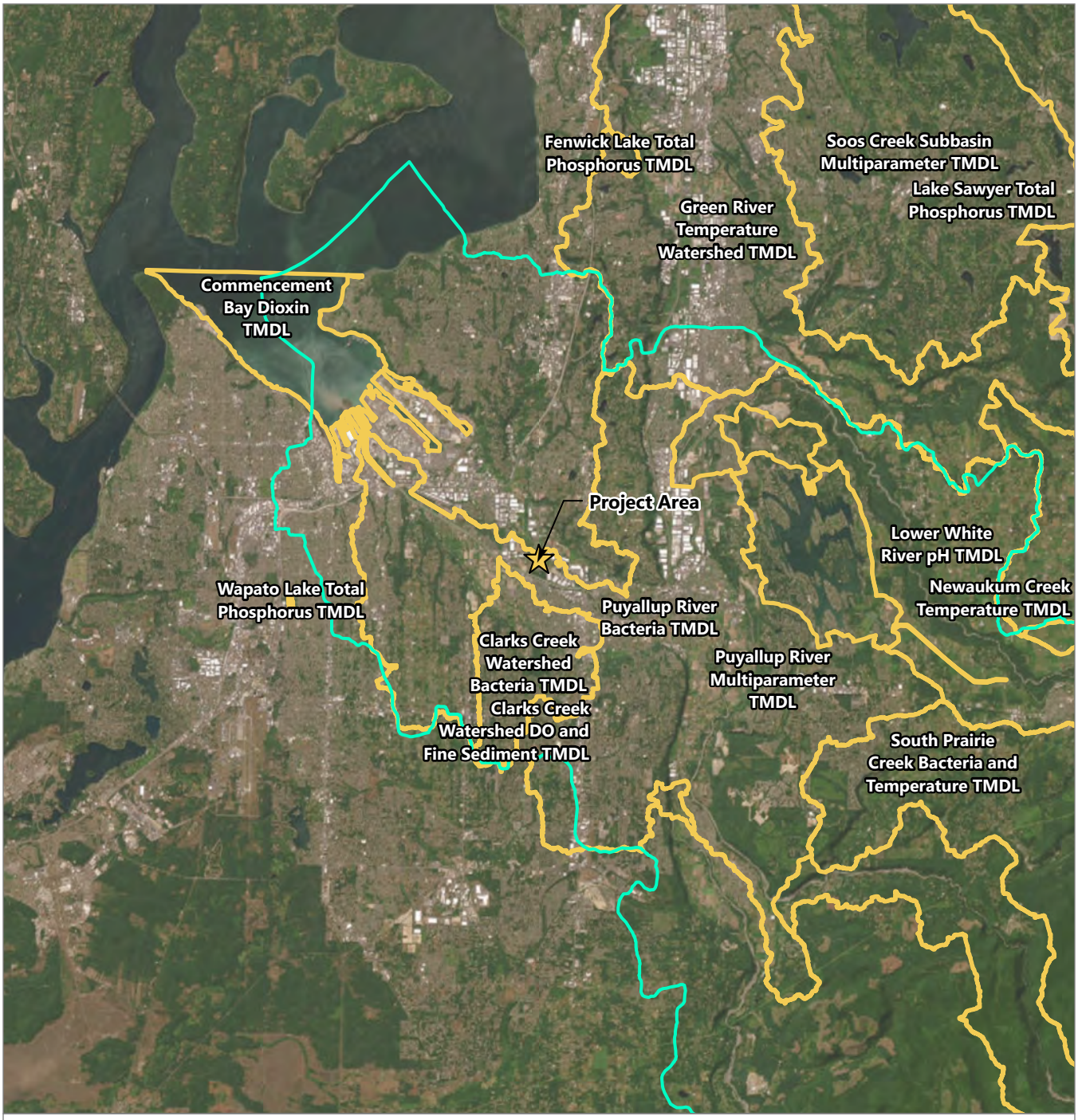
NOTES:
1. Aerial image provided by Esri Online Services.
2. 303(d) lised waters and HUC8 Watershed boundary from Washington State Ecology.

0 4
Miles

Publish Date: 2023/05/25, 10:52 AM | User: alesueur
Filepath: \\orcas\gis\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\Wetlands\Ratings_WetlandB\WetlandB_Ratings.aprx

ANCHOR QEA

Figure 5
303(d) Listed Waters
Wetland Rating Form - Wetland A
Freeman Road Logistics



LEGEND:

- Project Area
- WRIA 10 - Puyallup - White
- TMDL

NOTES:
1. Aerial image provided by Esri Online Services.
2. WRIA 10 and TMDL boundaries are from Washington State Ecology.

0 4
Miles

Publish Date: 2023/05/25, 10:51 AM | User: alesueur
Filepath: \\orcas\gis\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\Wetlands\Ratings_WetlandB\WetlandB_Ratings.aprx

ANCHOR QEA

Figure 6
List of TMDLs for WRIA 10 - Puyallup - White
Wetland Rating Form - Wetland A
Freeman Road Logistics

Appendix C-4
Wetland B Rating

Wetland name or number B

RATING SUMMARY – Western Washington

Name of wetland (or ID #): On-site Wetland B Date of site visit: 5/20/23

Rated by Hannah Fotherby, Jakob Rowny Trained by Ecology? X Yes ___No Date of training 12/8/22

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 ESRI

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	H M (L)	
Landscape Potential	H (M) L	H (M) L	H M (L)	
Value	(H) M L	(H) M L	(H) M L	**TOTAL**
Score Based on Ratings	7	7	5	19

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number B

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	Figure 1
Hydroperiods	D 1.4, H 1.2	Figure 2
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	Figure 2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	Figure 1
Map of the contributing basin	D 4.3, D 5.3	Figure 3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	Figure 4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	Figure 5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	Figure 6

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number B

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

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

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

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

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	3
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	2
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? houses are gone but septic may still be leaching Yes = 1 No = 0	1
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___ **3 or 4 = H** 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 for the basin in which the unit is found*)? Yes = 2 No = 0	2
Total for D 3 Add the points in the boxes above	3

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

Wetland name or number B

DEPRESSIONAL AND FLATS WETLANDS

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

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

D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 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	4
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	0
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	5
Total for D 4 Add the points in the boxes above	9

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

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

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

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

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

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

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

Wetland name or number 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
_X_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
_X_Seasonally flooded or inundated	3 types present: points = 2
____Occasionally flooded or inundated	2 types present: points = 1
_X_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^2.

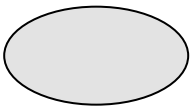
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

If you counted: > 19 species	*Alopecurus pratensis*, *Ranunculus repens*, *Trifolium repens*, *Juncus effusus*	points = 2
5 - 19 species		points = 1
< 5 species		points = 0

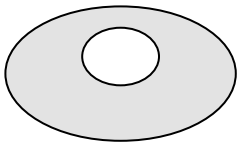
0

H 1.4. Interspersion of habitats

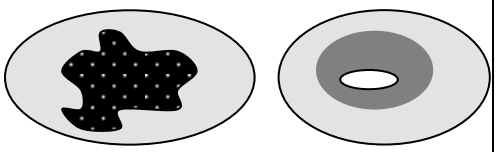
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points

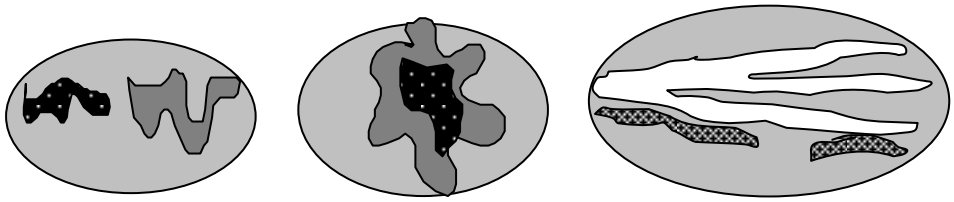


Low = 1 point



Moderate = 2 points

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



0

Wetland name or number B

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

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 6 **+** [(% moderate and low intensity land uses)/2] 6 **=** 12 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 18 **+** [(% moderate and low intensity land uses)/2] 12 **=** 30 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	0

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

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

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

Wetland name or number B

WDFW Priority Habitats

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

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

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

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

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

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

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

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

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

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

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

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

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

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

X — **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

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 2.4** No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No = **Is not a bog**	**Cat. I**

Wetland name or number B

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

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Appendix C-5
Wetland B Figures

LEGEND:

150-foot Buffer of Wetland B

Pollutant Generating Area

Cowardin Class

Palustrine Emergent

NOTES:
1. Aerial image provided by Esri Online Services.

0 100
Feet

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Filepath: \\orcas\gis\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\Wetlands\Ratings_WetlandB\WetlandB_Ratings.aprx

ANCHOR QEA

Figure 1
Cowardin Plant Classes and Area Within 150-feet of the Wetland
Wetland Rating Form - Wetland B
Freeman Road Logistics

LEGEND:

Wetland B

Hydroperiods

Saturated

Seasonally Flooded

NOTES:

1. Aerial image provided by Esri Online Services.

0 40

Feet

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ANCHOR QEA

Figure 2

Hydroperiods

Wetland Rating Form - Wetland B

Freeman Road Logistics

LEGEND:

- Wetland B
- Contributing Basin

NOTES:
1. Aerial image provided by Esri Online Services.
2. Hillshade background from Washington Department of Natural Resources, Pierce County Lidar, 2020.

0 200
Feet

Publish Date: 2023/05/25, 2:23 PM | User: alesueur
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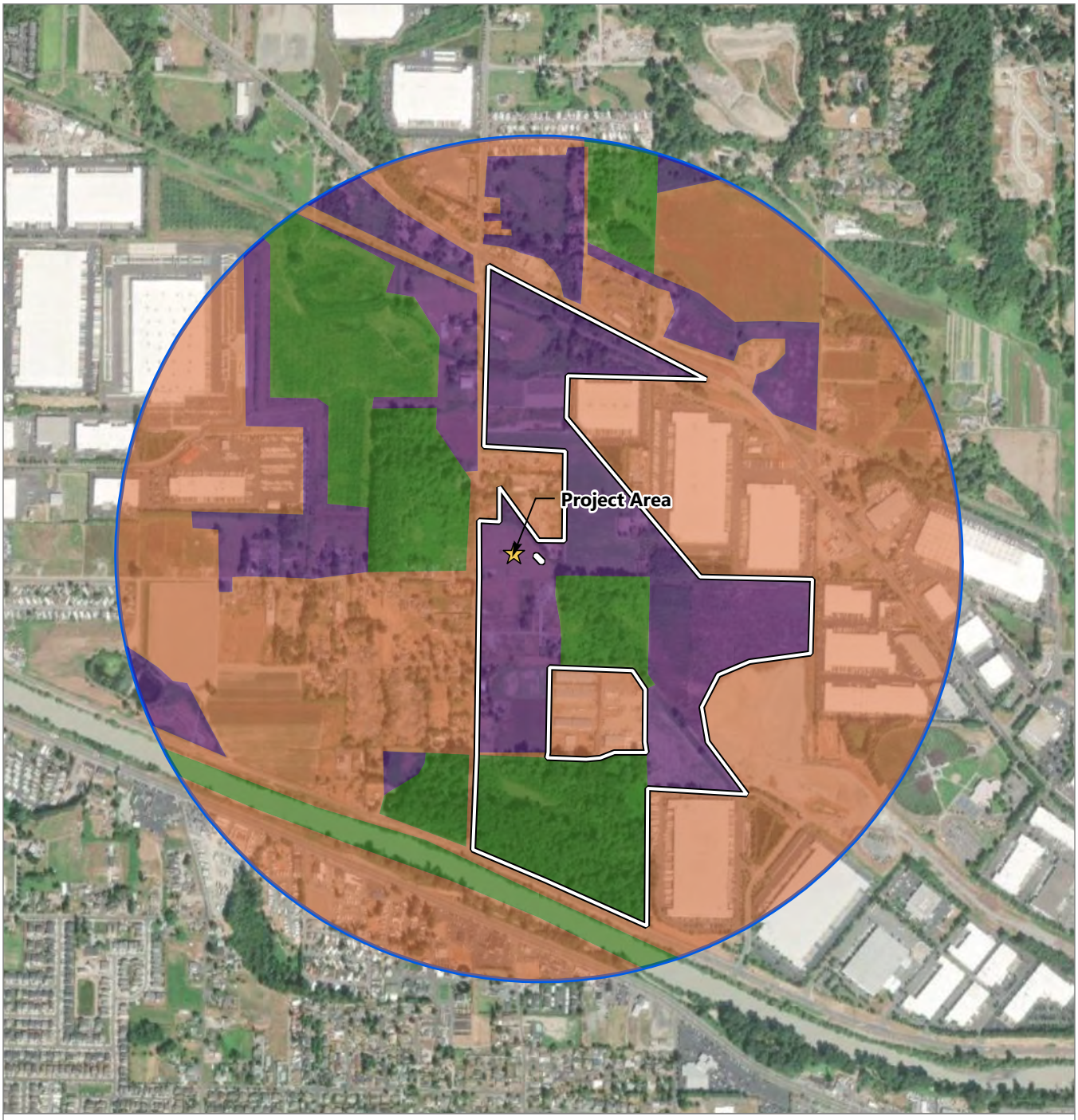
ANCHOR QEA

Figure 3
Contributing Basin
Wetland Rating Form - Wetland B
Freeman Road Logistics



LEGEND:

- Project Area
- 1-km Radius of Wetland B
- Accessible Habitat

Land Use Type

- High Intensity
- Low/Moderate Intensity
- Relatively Undisturbed

NOTES:
1. Aerial image provided by Esri Online Services.

0 1,200
Feet

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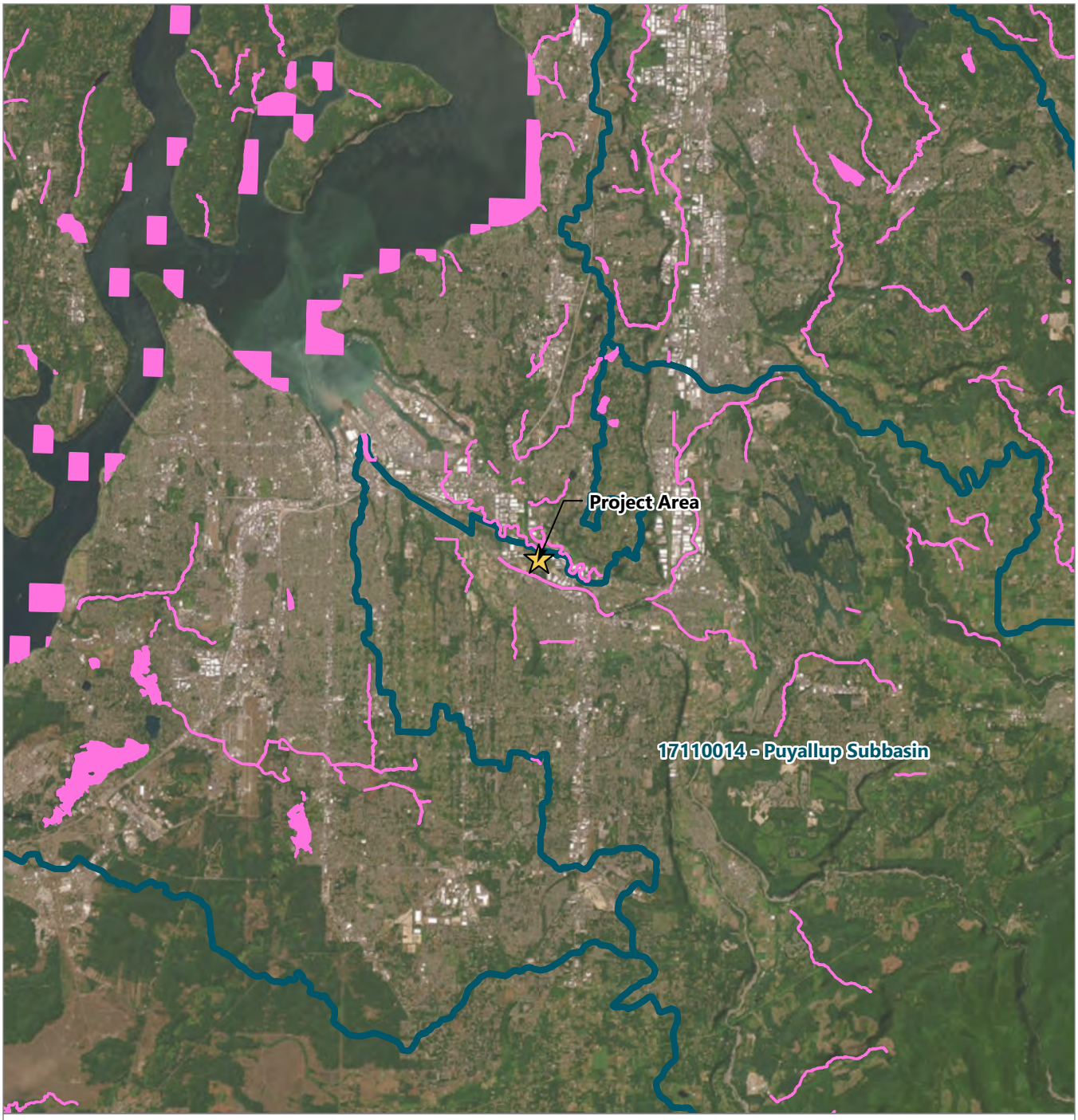
Figure 4
Land Use Intensity within 1-km of the Wetland
Wetland Rating Form - Wetland B
Freeman Road Logistics



LEGEND:

- Project Area
- 303(d) Listed Water
- HUC8 Watershed

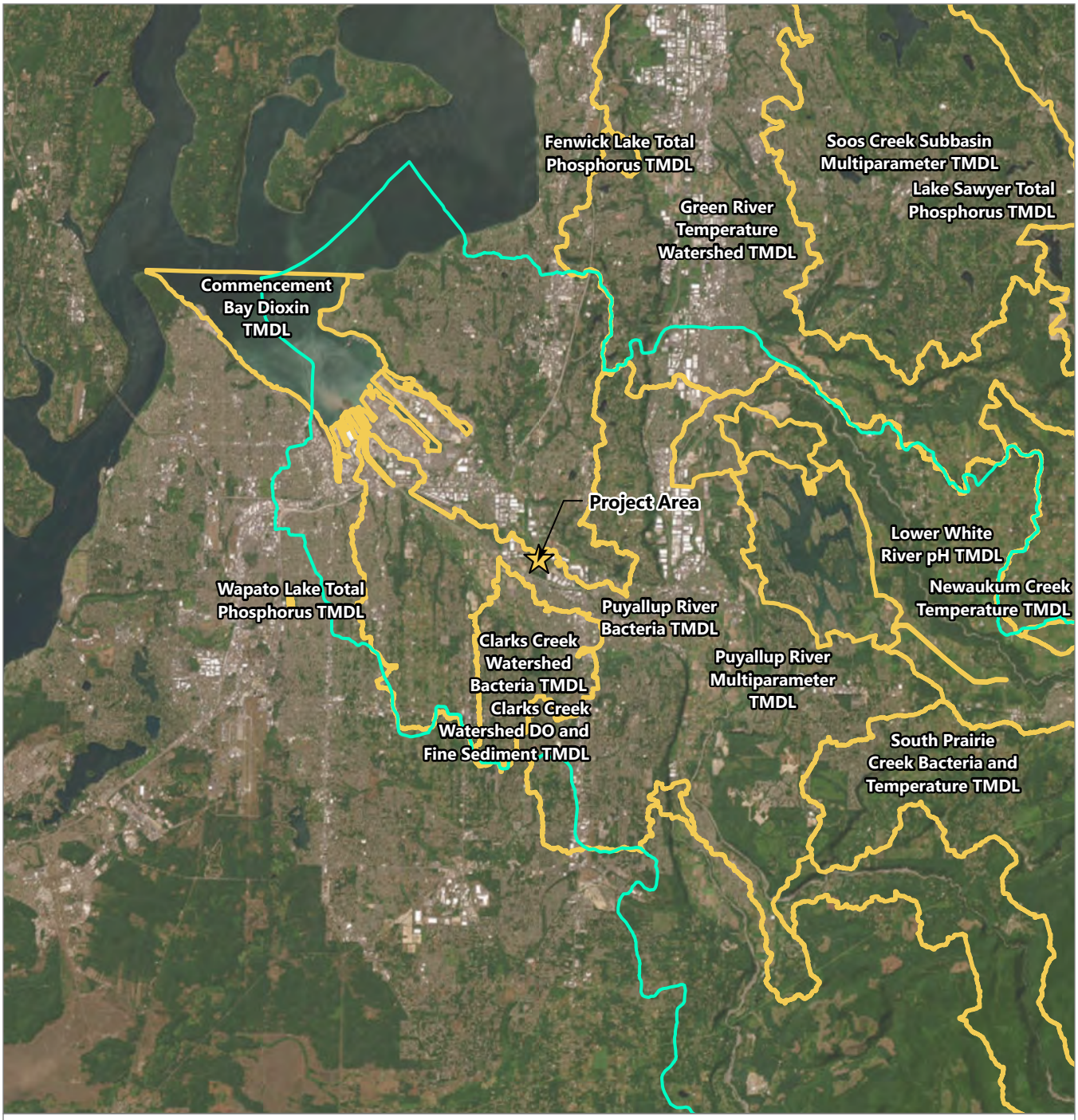
NOTES:
1. Aerial image provided by Esri Online Services.
2. 303(d) lised waters and HUC8 Watershed boundary from Washington State Ecology.

0 4
Miles

Publish Date: 2023/05/25, 10:52 AM | User: alesueur
Filepath: \\orcas\gis\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\Wetlands\Ratings_WetlandB\WetlandB_Ratings.aprx

ANCHOR QEA

Figure 5
303(d) Listed Waters
Wetland Rating Form - Wetland B
Freeman Road Logistics



LEGEND:

- Project Area
- WRIA 10 - Puyallup - White
- TMDL

NOTES:
1. Aerial image provided by Esri Online Services.
2. WRIA 10 and TMDL boundaries are from Washington State Ecology.

0 4
Miles

Publish Date: 2023/05/25, 10:51 AM | User: alesueur
Filepath: \\orcas\gis\Jobs\Vector_Development_Company_2141\Freeman_Road\Maps\Wetlands\Ratings_WetlandB\WetlandB_Ratings.aprx

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Figure 6
List of TMDLs for WRIA 10 - Puyallup - White
Wetland Rating Form - Wetland B
Freeman Road Logistics

Appendix C-6
WSDOT Ratings

Wetland name or number: Wetland 87

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR 167 Completion Project – Wetland 87 Date of site visit: 4/8/2021

Rated by R. Baker Trained by Ecology? ☒ Yes ☐ No Date of Training Sep. 2008

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Yes ☒ No

Additional HGM Classes (*if multiple*): n/a

Source of base aerial photo/map ESRI Aerial, 2020

OVERALL WETLAND CATEGORY III (based on functions ☒ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

Category III – Total score = 16 – 19

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
Enter the appropriate ratings				
Site Potential	M	M	M	
Landscape Potential	M	M	L	
Value	H	M	H	**TOTAL**
Score Based on Ratings	7			

Score for each function based on three ratings
(*order of ratings is not important*)
9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	D-23
Hydroperiods and location of outlets	D 1.4, H 1.2, D 1.1, D 4.1	D-24
Flow directions and associated features	n/a	D-24a
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	D-24
Map of the contributing basin	D 4.3, D 5.3	D-25
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	D-26
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	D-5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	D-6

Wetland name or number: Wetland 87

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet) | points = 3	3
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 95% of area | points = 5	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is < 1/4 total area of wetland | points = 0	0
Total for D 1 Add the points in the boxes above (F9 key)	8

Rating of Site Potential If score is: 6–11 = M *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? 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	1
D 2.3. Are there septic systems within 250 ft of the wetland? 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: Homeless encampment/trash Yes = 1	1
Total for D 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: 1 or 2 = M *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? No = 0	0
D 3.2. Is the wetland in a basin or subbasin where an aquatic resource is on the 303(d) list? Yes = 1	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	2
Total for D 3 Add the points in the boxes above	3

Rating of Value If score is: 2–4 = H *Record the rating on the first page*

COMMENTS: Area to the North of wetland (across Stream 14) is active conventional agriculture. TMDLs in place for the Puyallup.

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

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) | points = 4	4
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding less than 0.5 ft (6 in) | points = 0	0
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is 10 to 100 times the area of the unit | points = 3	3
Total for D 4 Add the points in the boxes above	7

Rating of Site Potential If score is: 6–11 = M *Record the rating on the first page*

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

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

Wetland name or number: Wetland 87

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* 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): Surface flooding problems are in a subbasin farther down-gradient | points = 1 **If not applicable chosen above:** Choose an item. **Explanation for 0 points (if required above):**	1
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? No = 0	0
Total for D 6 Add the points in the boxes above	1
Rating of Value If score is: 1 = M *Record the rating on the first page*	
COMMENTS: Wetland is adjacent to conventional ag fields and streams, but not connected to streams via surface flow.	

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 1/4 ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed ☐ Emergent ☒ Scrub-shrub (areas where shrubs have >30% cover) ☒ Forested (areas where trees have >30% cover) *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	2 structures | points = 1	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 1/4 ac to count (*see text for descriptions of hydroperiods*). ☐ Permanently flooded or inundated ☒ Seasonally flooded or inundated ☐ Occasionally flooded or inundated ☒ Saturated only ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** ☐ **Freshwater tidal wetland**	2 types present | points = 1 **2 points** **2 points**	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle.*** If you counted: 5–19 species | points = 1		1

Wetland name or number: Wetland 87

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.* Choose an item. **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points  All three diagrams in this row are **HIGH** = 3 points 	1
H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points*. ☒ Large, downed, woody debris within the wetland (>4 in diameter and 6 ft long). ☒ Standing snags (dbh >4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30 degree slope) OR signs of recent beaver activity are present (*cut shrubs or trees that have not yet weathered where wood is exposed*) ☐ At least 1/4 ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (*structures for egg-laying by amphibians*) ☒ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	3
Total for H 1 Add the points in the boxes above	7

Rating of Site Potential If score is: 7–14 = M *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate*: % undisturbed habitat 1.3**+** [(% moderate and low intensity land uses)2.7/2] 1.4 **= 2.7**% If total accessible habitat is: <10% of 1 km Polygon | points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate*: % undisturbed habitat 14.1**+** [(% moderate and low intensity land uses)16.5/2] 8.3 **= 22.4**% Undisturbed habitat 10–50% and >3 patches | points = 1	1
H 2.3. Land use intensity in 1 km Polygon: 69.3**%** >50% of 1 km Polygon is high intensity land use | points = (-2)	-2
Total for H 2 Add the points in the boxes above	-1

Rating of Landscape Potential If score is: < 1 = L *Record the rating on the first page*

Wetland name or number: Wetland 87

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* — 2

WDFW Priority Habitats within 100 m:

☐ Aspen Stands	☐ Biodiversity Areas and Corridors	☐ Herbaceous Balds
☐ Old Growth/Mature Forests	☐ Oregon White Oak	☒ Riparian
☐ Westside Prairies	☒ Instream	☐ Nearshore
☐ Caves	☐ Cliffs	☐ Talus
☒ Snags and Logs		

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

Site meets ANY of the following criteria: points = 2

- ☒ It has 3 or more priority habitats within 100 m (checked above)
- ☐ 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 within 100 m (checked above) points = 1

Site does not meet any of the criteria above points = 0

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

Legend

Stream

Delineated wetland boundary

Cowardin class

PFO - Palustrine forested

PSS - Palustrine scrub-shrub

Figure D-23.
Cowardin Classes for Wetland 87.

N

0 25 50 100 Feet

HERRERA

ESRI, Aerial (2020)

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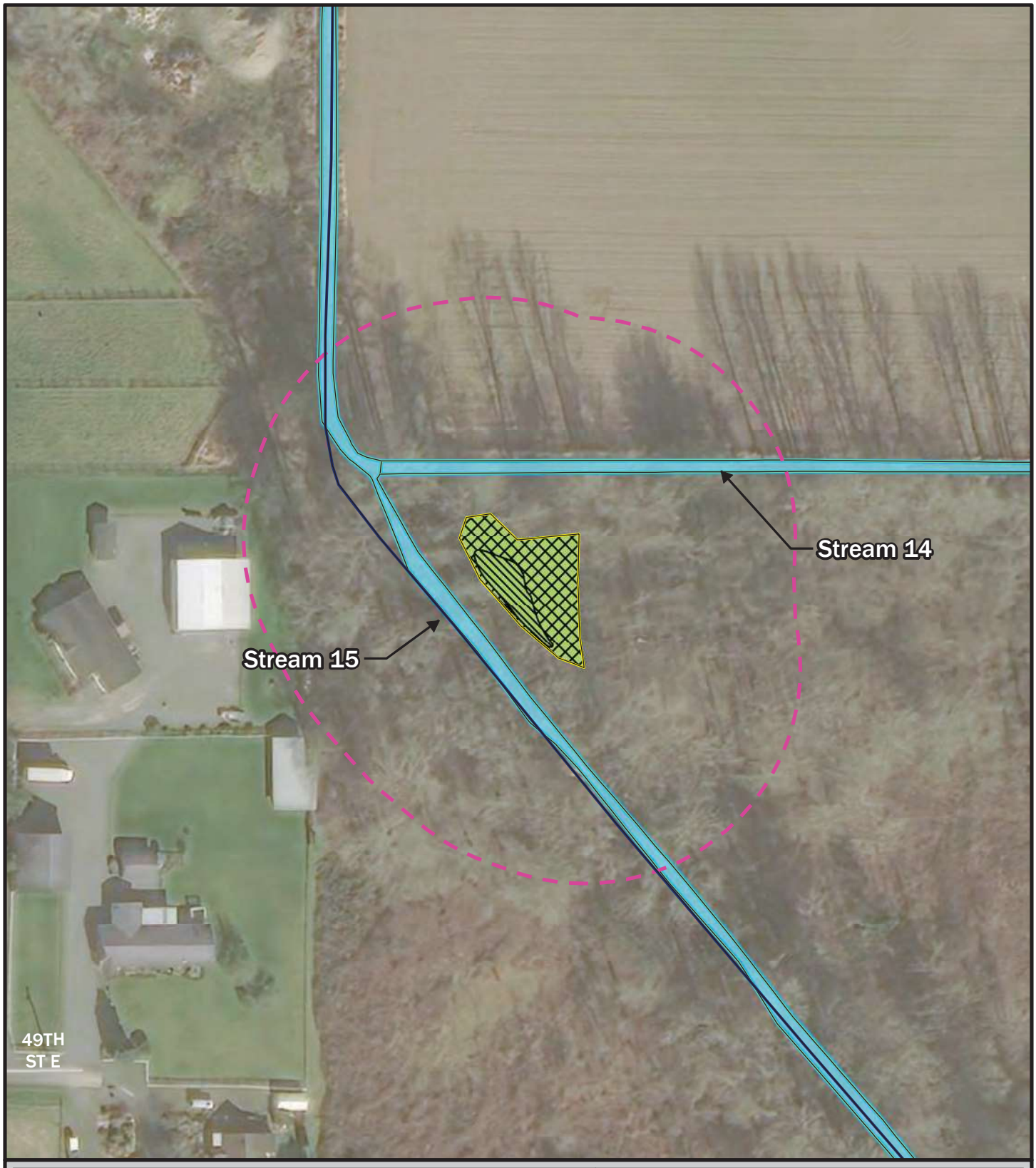

Legend

- Streams (Pierce County 2021)
- Delineated wetland boundary
- Delineated OHWM
- Wetland
- Stream
- 150ft boundary

Hydroperiod

- Saturated only
- Seasonally flooded

Figure D-24.
Hydroperiod, 150-Foot Boundary, and Location of Outlets for Wetland 87.

N

0 45 90 180 Feet

HERRERA

ESRI, Aerial (2021)

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Legend

- Flow Direction
- Streams (Pierce County 2021)
- Wetland
- Stream
- Delineated OHWM

Figure D-24a.
Flow Directions and Features Associated with Wetland 87.

N

0 45 90 180 Feet

HERRERA

ESRI, Aerial (2020)

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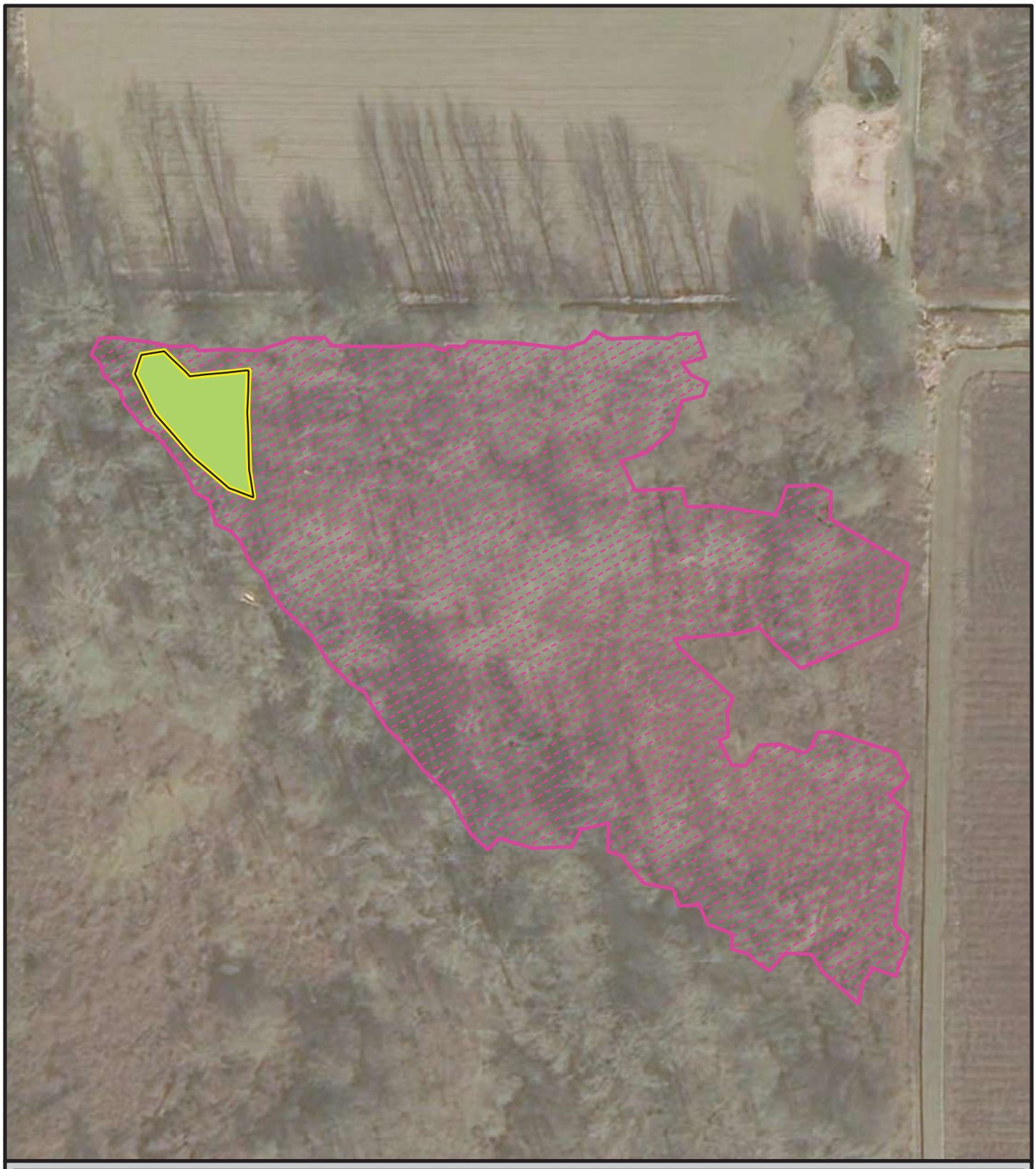

Legend

- Contributing basin
- Wetland
- Delineated wetland boundary

Figure D-25.
Map of Contributing Basin for Wetland 87.

N

0 50 100 200 Feet

HERRERA

Esri, Aerial (2021)

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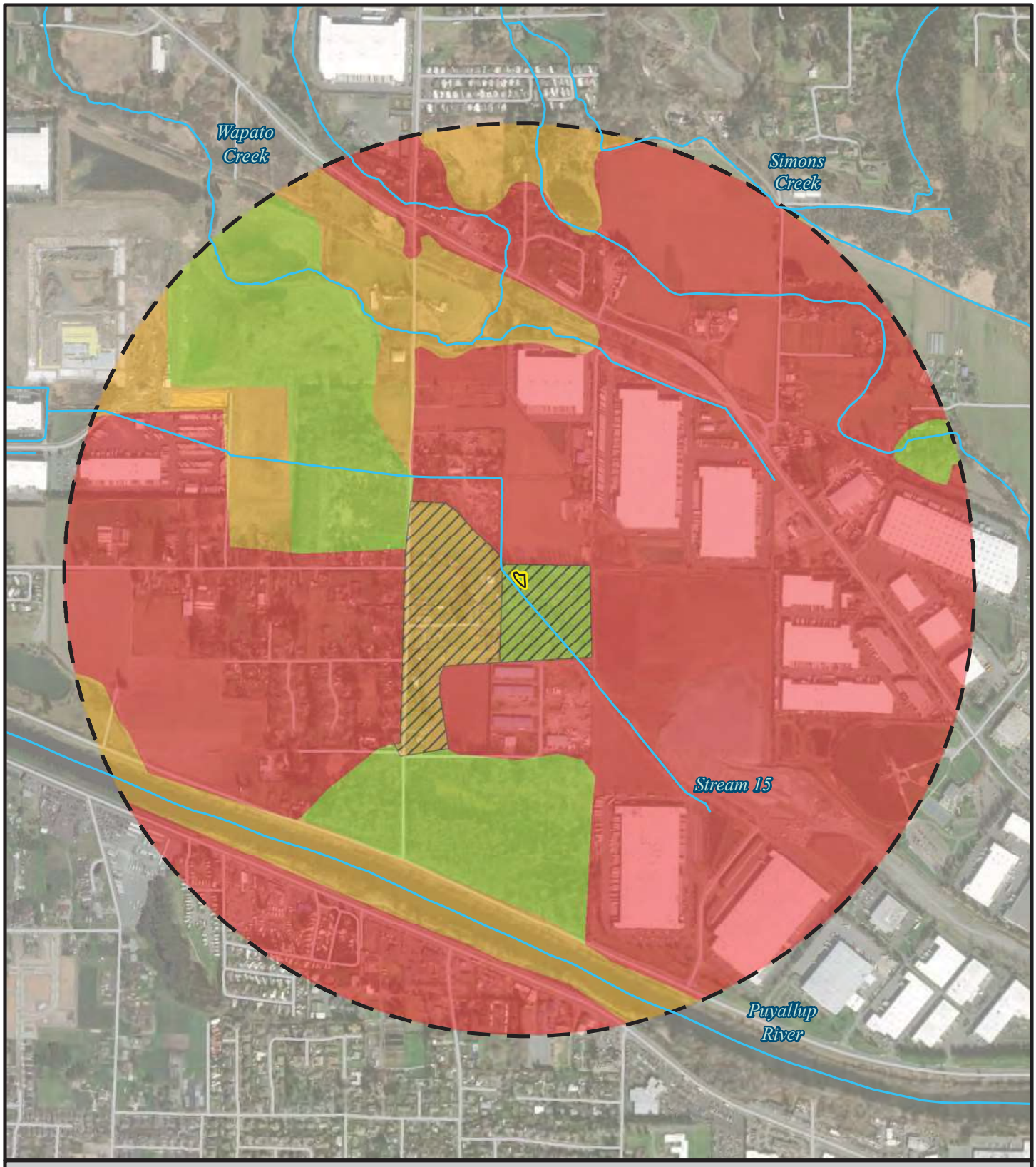

Legend

- Delineated wetland boundary
- 1-km boundary
- Wetland
- Stream (Pierce County)

Habitat type

- High intensity
- Low/Moderate Intensity and accessible
- Low/Moderate Intensity
- Relatively undisturbed
- Relatively undisturbed and accessible

Figure D-26.
Habitat Within a 1-km Boundary of Wetland 87.

N

0 500 1,000 2,000 Feet

HERRERA

Esri, Aerial (2021)

K:\Projects\Y2016\16-06277-000\Project\GISWorking\Wetland_Delineation2021\Ratings_Figures\FigX_Habitat1KM_WLX_letter.mxd

Wetland name or number: Wetland 89

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR 167 Completion Project – Wetland 89 Date of site visit: 4/8/2021

Rated by R. Baker Trained by Ecology? ☒ Yes ☐ No Date of Training Sep. 2008

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Yes ☒ No

Additional HGM Classes (*if multiple*): n/a

Source of base aerial photo/map ESRI Aerial, 2020

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

1. Category of wetland based on FUNCTIONS

Category II – Total score = 20 – 22

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
Enter the appropriate ratings				
Site Potential	M	M	L	
Landscape Potential	H	H	L	
Value	H	M	H	**TOTAL**
Score Based on Ratings	8	7		2

Score for each function based on three ratings

(*order of ratings is not important*)

9 = H,H,H

8 = H,H,M

7 = H,H,L

7 = H,M,M

6 = H,M,L

6 = M,M,M

5 = H,L,L

5 = M,M,L

4 = M,L,L

3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	D-31
Hydroperiods and location of outlets	D 1.4, H 1.2, D 1.1, D 4.1	D-32
Flow directions and associated features	n/a	D-32a
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	D-32
Map of the contributing basin	D 4.3, D 5.3	D-33
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	D-34
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	D-5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	D-6

Wetland name or number: Wetland 89

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet) | points = 3	3
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 1/2 of area | points = 3	3
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is < 1/4 total area of wetland | points = 0	0
Total for D 1 Add the points in the boxes above (F9 key)	6

Rating of Site Potential If score is: 6–11 = M *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	1
D 2.2. Is >10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1	1
D 2.3. Are there septic systems within 250 ft of the wetland? 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: Trash/Homeless encampments Yes = 1	1
Total for D 2 Add the points in the boxes above	3

Rating of Landscape Potential If score is: 3 or 4 = H *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? No = 0	0
D 3.2. Is the wetland in a basin or subbasin where an aquatic resource is on the 303(d) list? Yes = 1	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	2
Total for D 3 Add the points in the boxes above	3

Rating of Value If score is: 2–4 = H *Record the rating on the first page*

COMMENTS: Wetland is upstream of the Puyallup River, which has set TMDLs

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

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) | points = 4	4
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding less than 0.5 ft (6 in) | points = 0	0
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit | points = 5	5
Total for D 4 Add the points in the boxes above	9

Rating of Site Potential If score is: 6–11 = M *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1	1
Total for D 5 Add the points in the boxes above	3

Rating of Landscape Potential If score is: 3 = H *Record the rating on the first page*

Wetland name or number: Wetland 89

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* 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): Surface flooding problems are in a subbasin farther down-gradient | points = 1 **If not applicable chosen above:** Choose an item. **Explanation for 0 points (if required above):**	1
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? No = 0	0
Total for D 6 Add the points in the boxes above	1

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

COMMENTS:

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 1/4 ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed ☐ Emergent ☒ Scrub-shrub (areas where shrubs have >30% cover) ☐ Forested (areas where trees have >30% cover) *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 structure | points = 0	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 1/4 ac to count (*see text for descriptions of hydroperiods*). ☐ Permanently flooded or inundated ☐ Seasonally flooded or inundated ☐ Occasionally flooded or inundated ☒ Saturated only ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** ☐ **Freshwater tidal wetland**	1 type present | points = 0 **2 points** **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^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle.*** If you counted: <5 species | points = 0		0

Wetland name or number: Wetland 89

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 | points = 0 **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points  All three diagrams in this row are **HIGH** = 3 points 	0
H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points*. ☐ Large, downed, woody debris within the wetland (>4 in diameter and 6 ft long). ☐ Standing snags (dbh >4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30 degree slope) OR signs of recent beaver activity are present (*cut shrubs or trees that have not yet weathered where wood is exposed*) ☐ At least 1/4 ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (*structures for egg-laying by amphibians*) ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	0

Rating of Site Potential If score is: 0–6 = L *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate*: % undisturbed habitat 1.3**+** [(% moderate and low intensity land uses)2.7/2] 1.4 **= 2.7**% If total accessible habitat is: <10% of 1 km Polygon | points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate*: % undisturbed habitat 11.9**+** [(% moderate and low intensity land uses)14.1/2] 7.1 **= 19.0**% Undisturbed habitat 10–50% and >3 patches | points = 1	1
H 2.3. Land use intensity in 1 km Polygon: 73.9% >50% of 1 km Polygon is high intensity land use | points = (-2)	-2
Total for H 2 Add the points in the boxes above	-1

Rating of Landscape Potential If score is: < 1 = L *Record the rating on the first page*

Wetland name or number: Wetland 89

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* — 2

WDFW Priority Habitats within 100 m:

☐ Aspen Stands	☐ Biodiversity Areas and Corridors	☐ Herbaceous Balds
☐ Old Growth/Mature Forests	☐ Oregon White Oak	☒ Riparian
☐ Westside Prairies	☒ Instream	☐ Nearshore
☐ Caves	☐ Cliffs	☐ Talus
☒ Snags and Logs		

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

Site meets ANY of the following criteria: points = 2

- ☒ It has 3 or more priority habitats within 100 m (checked above)
- ☐ 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 within 100 m (checked above) points = 1

Site does not meet any of the criteria above points = 0

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

Legend

Stream

Delineated wetland boundary

Cowardin class

PSS - Palustrine scrub-shrub

Figure D-31.
Cowardin Classes for Wetland 89.

N

0 25 50 100 Feet

HERRERA

ESRI, Aerial (2020)

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Legend

- Streams (Pierce County 2021)
- Delineated wetland boundary
- Delineated OHWM
- Wetland
- Stream
- 150ft boundary
- Hydroperiod
- Saturated only

Figure D-32.
Hydroperiod, 150-Foot Boundary, and Location of Outlets for Wetland 89.

N

0 45 90 180 Feet

HERRERA

ESRI, Aerial (2021)

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Legend

- Flow Direction
- Streams (Pierce County 2021)
- Surveyed ditches
- Culverts
- Wetland
- Stream
- Delineated OHWM

Figure D-32a.
Flow Directions and Features Associated with Wetland 89.

N

0 45 90 180 Feet

HERRERA

ESRI, Aerial (2020)

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Legend

- Contributing basin
- Wetland
- Delineated wetland boundary

Figure D-33.
Map of Contributing Basin for Wetland 89.

N

0 50 100 200 Feet

HERRERA

Esri, Aerial (2021)

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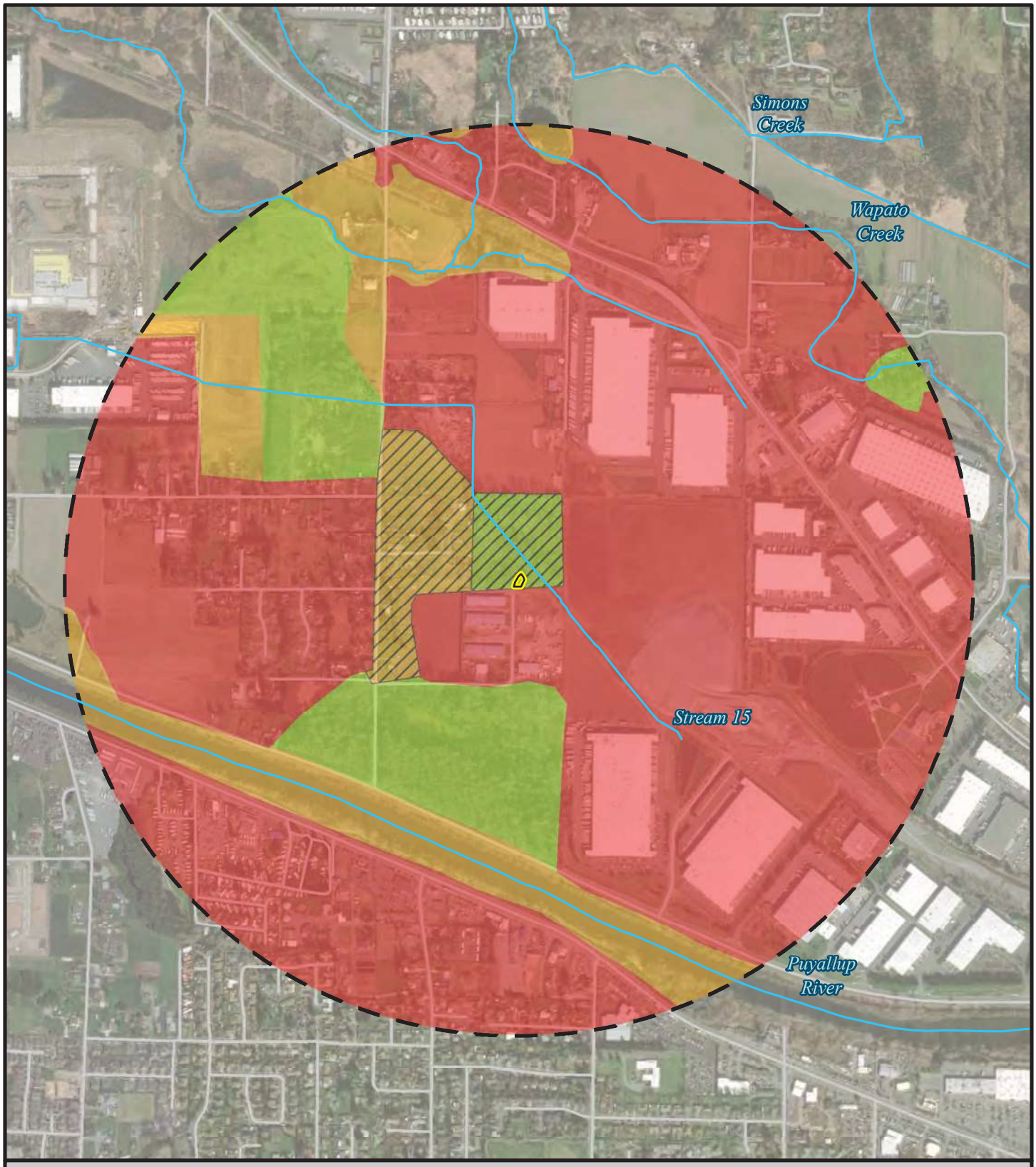

Legend

- Delineated wetland boundary
- 1-km boundary
- Wetland
- Stream (Pierce County)

Habitat type

- High intensity
- Low/Moderate Intensity and accessible
- Low/Moderate Intensity
- Relatively undisturbed
- Relatively undisturbed and accessible

Figure D-34.
Habitat Within a 1-km Boundary of Wetland 89.

N

0 500 1,000 2,000 Feet

HERRERA

Esri, Aerial (2021)

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Wetland name or number: Wetland 93

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR 167 Completion Project – Wetland 93 Date of site visit: 4/20/2021

Rated by R. Baker Trained by Ecology? ☒ Yes ☐ No Date of Training Sep. 2008

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Yes ☒ No

Additional HGM Classes (*if multiple*): n/a

Source of base aerial photo/map ESRI Aerial, 2020

OVERALL WETLAND CATEGORY III (based on functions ☒ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

Category III – Total score = 16 – 19

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
Enter the appropriate ratings				
Site Potential	L	M	L	
Landscape Potential	H	H	L	
Value	H	M	M	**TOTAL**
Score Based on Ratings	7	7		8

Score for each function based on three ratings

(*order of ratings is not important*)

9 = H,H,H

8 = H,H,M

7 = H,H,L

7 = H,M,M

6 = H,M,L

6 = M,M,M

5 = H,L,L

5 = M,M,L

4 = M,L,L

3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	D-39
Hydroperiods and location of outlets	D 1.4, H 1.2, D 1.1, D 4.1	D-40
Flow directions and associated features	n/a	D-40a
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	D-40
Map of the contributing basin	D 4.3, D 5.3	D-41
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	D-42
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	D-5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	D-6

Wetland name or number: Wetland 93

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet) | points = 3	3
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants < 1/10 of area | points = 0	0
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is < 1/4 total area of wetland | points = 0	0
Total for D 1 Add the points in the boxes above (F9 key)	3

Rating of Site Potential If score is: 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	1
D 2.2. Is >10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1	1
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1–D 2.3? Source: waterfowl droppings Yes = 1	1
Total for D 2 Add the points in the boxes above	4

Rating of Landscape Potential If score is: 3 or 4 = H *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? No = 0	0
D 3.2. Is the wetland in a basin or subbasin where an aquatic resource is on the 303(d) list? Yes = 1	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	2
Total for D 3 Add the points in the boxes above	3

Rating of Value If score is: 2–4 = H *Record the rating on the first page*

COMMENTS: Wetland is adjacent to Stream 14, but does not have direct connection. Pierce County indicates homes on septic in area of wetland. Wetland is upstream of Puyallup, which has TMDLs in place.

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

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) | points = 4	4
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding less than 0.5 ft (6 in) | points = 0	0
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit | points = 5	5
Total for D 4 Add the points in the boxes above	9

Rating of Site Potential If score is: 6–11 = M *Record the rating on the first page*

Wetland name or number: Wetland 93

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?		
D 5.1. Does the wetland receive stormwater discharges?	Yes = 1	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?	Yes = 1	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	Yes = 1	1
Total for D 5	Add the points in the boxes above	3

Rating of Landscape Potential If score is: 3 = H *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?		
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* 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): Surface flooding problems are in a subbasin farther down-gradient | points = 1 **If not applicable chosen above:** Choose an item. **Explanation for 0 points (if required above):**		1
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	No = 0	0
Total for D 6	Add the points in the boxes above	1

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

COMMENTS:

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 1/4 ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed ☒ Emergent ☐ Scrub-shrub (areas where shrubs have >30% cover) ☐ Forested (areas where trees have >30% cover) *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 structure | points = 0	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 1/4 ac to count (*see text for descriptions of hydroperiods*). ☐ Permanently flooded or inundated ☒ Seasonally flooded or inundated ☐ Occasionally flooded or inundated ☒ Saturated only ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** ☐ **Freshwater tidal wetland**	2 types present | points = 1 **2 points** **2 points**	1

Wetland name or number: Wetland 93

H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species*. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle.*** If you counted: 5–19 species | points = 1	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 | points = 0 **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points  All three diagrams in this row are **HIGH** = 3 points 	0
H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points*. ☐ Large, downed, woody debris within the wetland (>4 in diameter and 6 ft long). ☐ Standing snags (dbh >4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30 degree slope) OR signs of recent beaver activity are present (*cut shrubs or trees that have not yet weathered where wood is exposed*) ☐ At least 1/4 ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (*structures for egg-laying by amphibians*) ☒ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	3

Rating of Site Potential If score is: 0–6 = L *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate*: % undisturbed habitat 1.1**+** [(% moderate and low intensity land uses)2.3/2] 1.2 **= 2.3**% If total accessible habitat is: <10% of 1 km Polygon | points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate*: % undisturbed habitat 14.4**+** [(% moderate and low intensity land uses)18.1/2] 9.1 **= 23.5**% Undisturbed habitat 10–50% and >3 patches | points = 1	1
H 2.3. Land use intensity in 1 km Polygon: 67.5% >50% of 1 km Polygon is high intensity land use | points = (-2)	-2
Total for H 2 Add the points in the boxes above	-1

Rating of Landscape Potential If score is: < 1 = L *Record the rating on the first page*

Wetland name or number: Wetland 93

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* 1

WDFW Priority Habitats within 100 m:

☐ Aspen Stands	☐ Biodiversity Areas and Corridors	☐ Herbaceous Balds
☐ Old Growth/Mature Forests	☐ Oregon White Oak	☒ Riparian
☐ Westside Prairies	☒ Instream	☐ Nearshore
☐ Caves	☐ Cliffs	☐ Talus
☐ Snags and Logs		

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

Site meets ANY of the following criteria: points = 2

- ☐ It has 3 or more priority habitats within 100 m (checked above)
- ☐ 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 within 100 m (checked above) points = 1

Site does not meet any of the criteria above points = 0

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

Legend

Stream

Delineated wetland boundary

Estimated OHWM

Cowardin class

PEM - Palustrine emergent

Figure D-39.
Cowardin Classes for Wetland 93.

N

0 50 100 200 Feet

HERRERA

ESRI, Aerial (2021)

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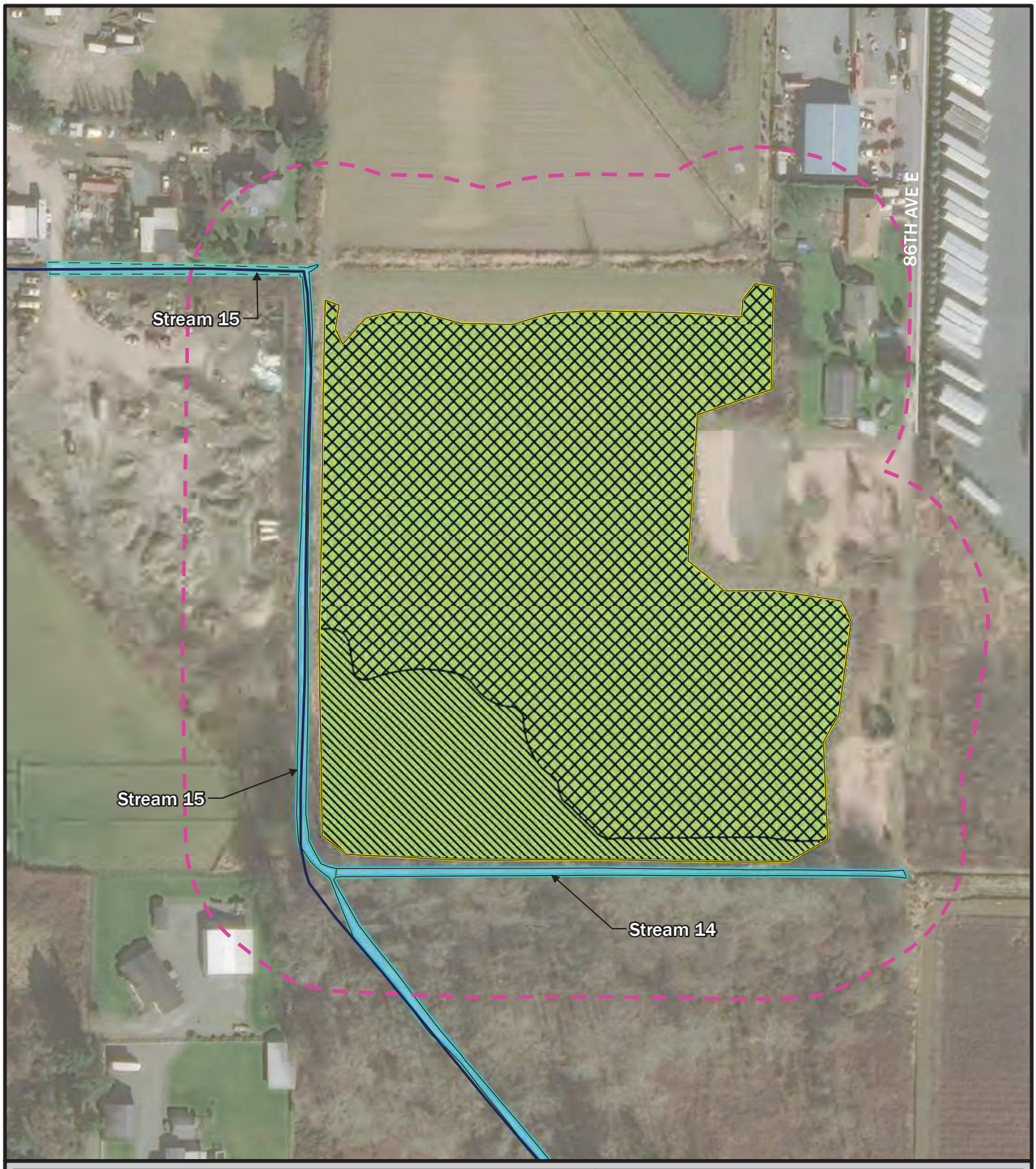

Legend

- Streams (Pierce County 2021)
- Delineated wetland boundary
- Delineated OHWM
- Estimated OHWM
- Wetland
- Stream
- 150ft boundary

Hydroperiod

- Saturated only
- Seasonally flooded

Figure D-40.
Hydroperiod, 150-Foot Boundary, and Location of Outlets for Wetland 93.

N

0 75 150 300 Feet

HERRERA

ESRI, Aerial (2021)

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Legend

- Flow Direction
- Streams (Pierce County 2021)
- Estimated ditch centerline
- Surveyed ditches
- Culverts
- Wetland
- Stream
- Estimated OHWM
- Delineated OHWM

Figure D-40a.
Flow Directions and Features Associated with Wetland 93.

N

0 75 150 300 Feet

HERRERA

ESRI, Aerial (2020)

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Legend

- Contributing basin
- Wetland
- Delineated wetland boundary

Figure D-41.
Map of Contributing Basin for Wetland 93.

N

0 75 150 300 Feet

HERRERA

Esri, Aerial (2021)

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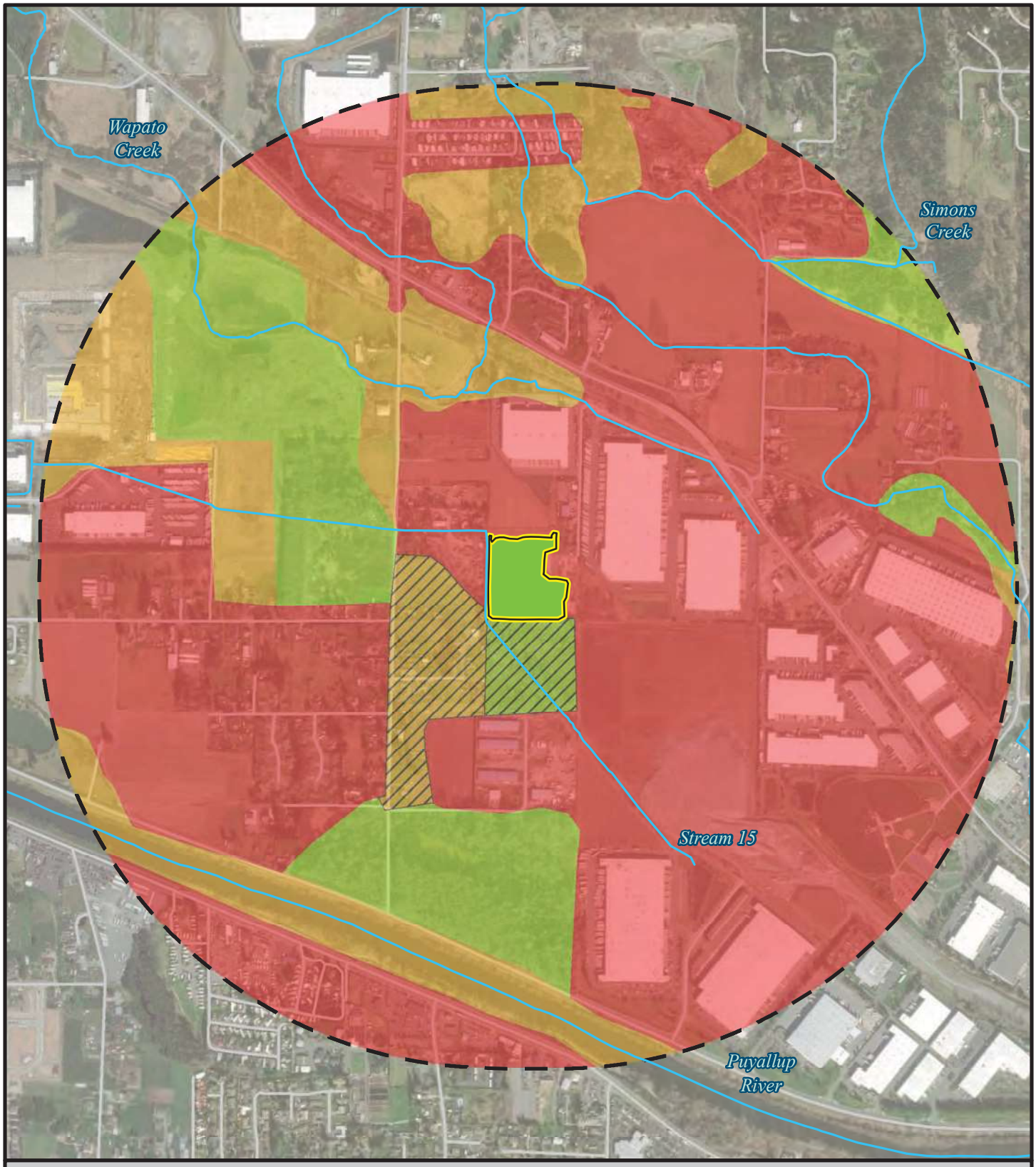

Legend

- Delineated wetland boundary
- 1-km boundary
- Wetland
- Stream (Pierce County)

Habitat type

- High intensity
- Low/Moderate Intensity
- Low/Moderate Intensity and accessible
- Relatively undisturbed
- Relatively undisturbed and accessible

Figure D-42.
Habitat Within a 1-km Boundary of Wetland 93.

N

0 500 1,000 2,000 Feet

HERRERA

Esri, Aerial (2021)

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Wetland name or number: Wetland 146/148

RATING SUMMARY – Western Washington

Name of wetland (or ID #): SR 167 Completion Project – Wetland 146/148 Date of site visit: 11/30/2022

Rated by J. Hearsey Trained by Ecology? ☒ Yes ☐ No Date of Training 2016

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Yes ☒ No

Additional HGM Classes (*if multiple*):

Source of base aerial photo/map ESRI Aerial, 2020

OVERALL WETLAND CATEGORY III (based on functions ☒ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

Category III – Total score = 16 – 19

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
Enter the appropriate ratings				
Site Potential	M	L	L	
Landscape Potential	H	H	L	
Value	H	M	M	**TOTAL**
Score Based on Ratings	8	6	4	18

Score for each function based on three ratings

(*order of ratings is not important*)

9 = H,H,H

8 = H,H,M

7 = H,H,L

7 = H,M,M

6 = H,M,L

6 = M,M,M

5 = H,L,L

5 = M,M,L

4 = M,L,L

3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	B-23
Hydroperiods	D 1.4, H 1.2	B-24
Flow directions and associated features	n/a	B-24a
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	B-24
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	B-24
Map of the contributing basin	D 4.3, D 5.3	B-25
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	B-26
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	B-5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	B-6

Wetland name or number: Wetland 146/148

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland has an intermittently flowing stream or ditch | points = 2	2
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 95% of area | points = 5	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is < 1/4 total area of wetland | points = 0	0
Total for D 1 Add the points in the boxes above (F9 key)	7

Rating of Site Potential If score is: 6–11 = M *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	1
D 2.2. Is >10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1	1
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1–D 2.3? Source: No = 0	0
Total for D 2 Add the points in the boxes above	3

Rating of Landscape Potential If score is: 3 or 4 = H *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? No = 0	0
D 3.2. Is the wetland in a basin or subbasin where an aquatic resource is on the 303(d) list? Yes = 1	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	2
Total for D 3 Add the points in the boxes above	3

Rating of Value If score is: 2–4 = H *Record the rating on the first page*

COMMENTS: D 2.2: The wetland is adjacent to industrial truck yard with road asphalt and concrete disposal, derelict equipment, and demolition material. D 2.3: Pierce County GIS data indicates homes are outside of sewer service areas. D 3.1: The wetland outlets to Stream 15 which flows for approximately 1.5 miles to Oxbow Lake and eventually the Puyallup River downstream of mapped 303(d). D 3.2 and D 3.3. The wetland is in the Puyallup River basin (HUC 12), which contains 303(d) listed waters and has TMDLs in place.

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

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland has an intermittently flowing stream or ditch | points = 2	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding less than 0.5 ft (6 in) | points = 0	0
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is 10 to 100 times the area of the unit | points = 3	3
Total for D 4 Add the points in the boxes above	5

Rating of Site Potential If score is: 0–5 = L *Record the rating on the first page*

Wetland name or number: Wetland 146/148

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?		
D 5.1. Does the wetland receive stormwater discharges?	Yes = 1	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?	Yes = 1	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	Yes = 1	1
Total for D 5	Add the points in the boxes above	3

Rating of Landscape Potential If score is: 3 = H *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* 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): Surface flooding problems are in a subbasin farther down-gradient | points = 1 **If not applicable chosen above:** 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 **Explanation for 0 points (if required above): designed for infiltration with no inlet or outlets**	1
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? No = 0	0
Total for D 6 Add the points in the boxes above	1

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

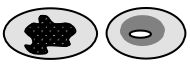
COMMENTS:

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 1/4 ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed ☒ Emergent ☒ Scrub-shrub (areas where shrubs have >30% cover) ☐ Forested (areas where trees have >30% cover) *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	2 structures | points = 1	1

Wetland name or number: Wetland 146/148

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 1/4 ac to count (*see text for descriptions of hydroperiods*). ☐ Permanently flooded or inundated ☐ Seasonally flooded or inundated ☐ Occasionally flooded or inundated ☒ Saturated only ☐ 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** 2 types present | points = 1	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species*. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle.*** If you counted: 5–19 species | points = 1	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.* Low | points = 1 **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points  All three diagrams in this row are **HIGH** = 3 points 	1
H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points*. ☐ Large, downed, woody debris within the wetland (>4 in diameter and 6 ft long). ☐ Standing snags (dbh >4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30 degree slope) OR signs of recent beaver activity are present (*cut shrubs or trees that have not yet weathered where wood is exposed*) ☐ At least 1/4 ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (*structures for egg-laying by amphibians*) ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	4

Rating of Site Potential If score is: 0–6 = L *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate*: % undisturbed habitat 0.0 **+** [(% moderate and low intensity land uses) 0.6/2] **0.3** **=** 0.0% If total accessible habitat is: <10% of 1 km Polygon | points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate*: % undisturbed habitat 13.0 **+** [(% moderate and low intensity land uses)20.0/2] 10.0 **=** **23.0**% Undisturbed habitat 10–50% and >3 patches | points = 1	1
H 2.3. Land use intensity in 1 km Polygon: If >50% of 1 km Polygon is high intensity land use | points = (-2)	-2

Wetland name or number: Wetland 146/148

Total for H 2	Add the points in the boxes above	-1
Rating of Landscape Potential	If score is: < 1 = L	*Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* — 1

WDFW Priority Habitats within 100 m:

☐ Aspen Stands	☐ Biodiversity Areas and Corridors	☐ Herbaceous Balds
☐ Old Growth/Mature Forests	☐ Oregon White Oak	☒ Riparian
☐ Westside Prairies	☒ Instream	☐ Nearshore
☐ Caves	☐ Cliffs	☐ Talus
☐ Snags and Logs		

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

Site meets ANY of the following criteria: points = 2

- ☐ It has 3 or more priority habitats within 100 m (checked above)
- ☐ 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 within 100 m (checked above) points = 1

Site does not meet any of the criteria above points = 0

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

Legend

- Stream
- Delineated wetland boundary
- Estimated wetland boundary

Cowardin class

- PEM - Palustrine emergent
- PSS - Palustrine scrub-shrub

Figure **B-23**.
Cowardin Classes for Wetland 146/148.

N

0 55 110 220 Feet

HERRERA

ESRI, Aerial (2021)

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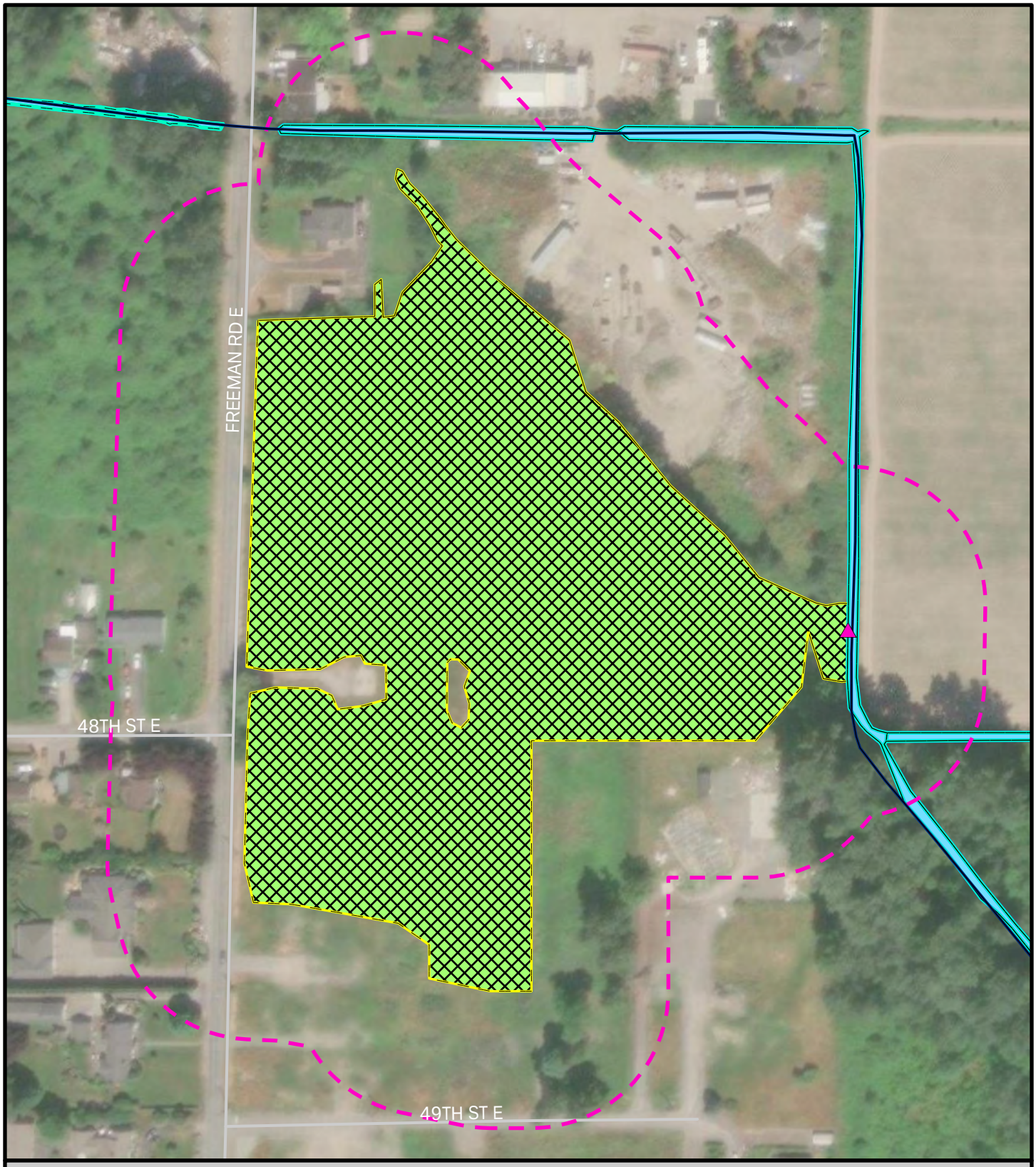

Legend

- Stream (Pierce County 2021)
- Delineated wetland boundary
- Estimated wetland boundary
- Delineated OHWM
- Estimated OHWM
- Wetland
- Stream
- 150ft boundary
- Outlet

Hydroperiod

- Saturated only

Figure **B-24**.
Hydroperiod, 150-Foot Boundary, and Location of Outlets for Wetland 146/148.

N

0 75 150 300 Feet

HERRERA

Esri, Aerial (2021)

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Legend

- Flow Direction
- Streams (Pierce County 2021)
- Estimated ditch centerline
- Culverts
- Wetland
- Stream
- Estimated OHWM
- Delineated OHWM

Figure B-24a.
Flow Directions and Features Associated with Wetland 146/148.

N

0 65 130 260 Feet

HERRERA

Esri, Aerial (2021)

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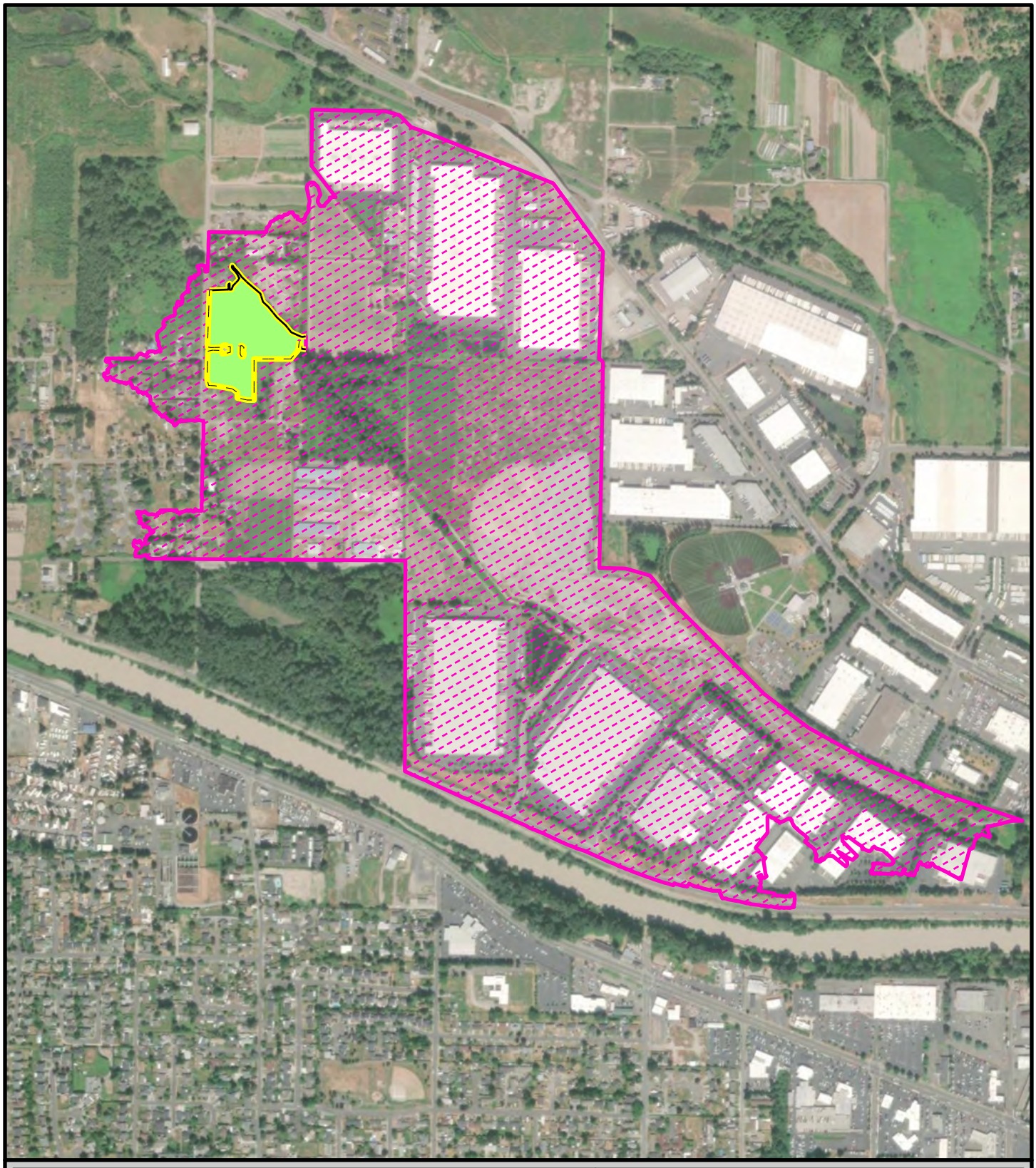

Legend

- Contributing basin
- Wetland
- Delineated wetland boundary
- Estimated wetland boundary

Figure B-25.
Map of Contributing Basin for Wetland 146/148.

N

0 460 920 1,840 Feet

HERRERA

Esri, Aerial (2021)

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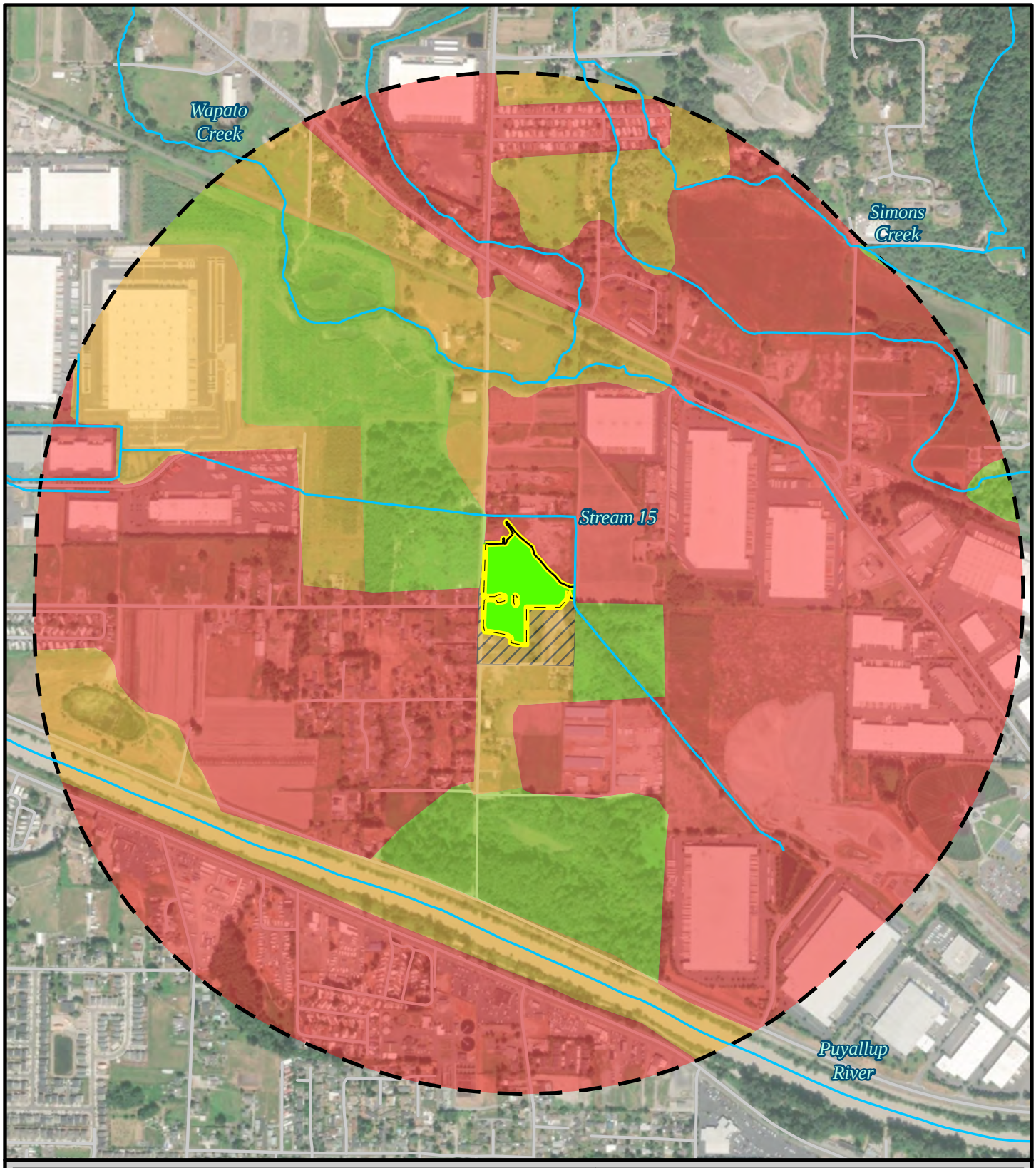

Legend

- Delineated wetland boundary
- Estimated wetland boundary
- 1-km boundary
- Wetland
- Stream (Pierce County)

Habitat type

- High intensity
- Low/Moderate Intensity and accessible
- Low/Moderate Intensity
- Relatively undisturbed

Figure B-26.
Habitat Within a 1-km Boundary of Wetland 146/148.

N

0 500 1,000 2,000 Feet

HERRERA

Esri, Aerial (2021)

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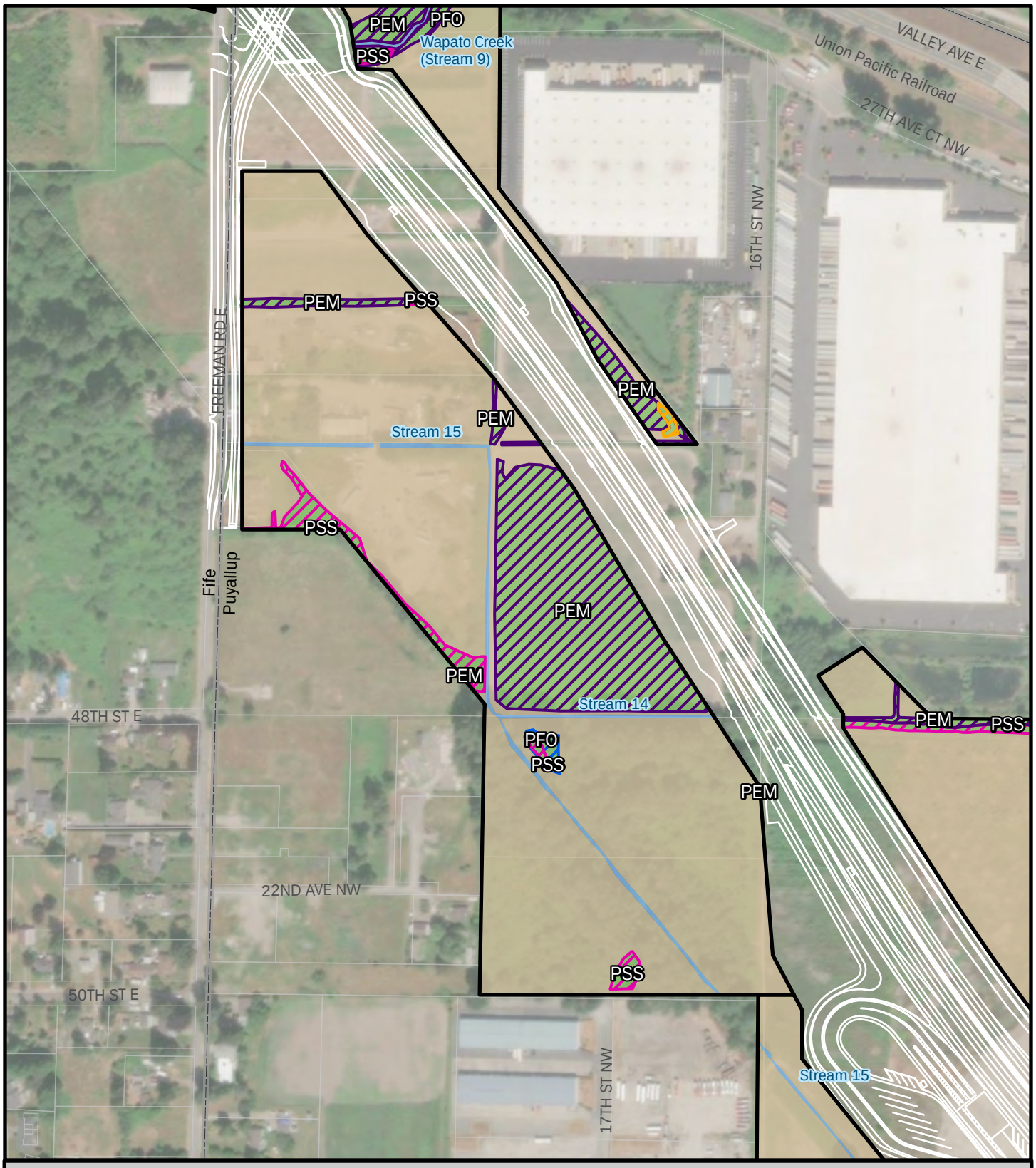
Appendix D
WSDOT State Route 167 Completion Project Mitigation Excerpts



Legend

- Stage 2 RRP Boundary
- Jurisdictional boundary
- Parcel boundaries
- Stage 2 Proposed Road and Shared-Use Path (white line)
- Stream
- Upland
- Wetland
- Bare Ground

CowardinClass

- PEM
- PFO
- PSS

Figure 4-L. Existing Conditions for the SR 167 Completion Project, Stage 2 - Freeman Road Mitigation Site.

0 165 330 660 Feet

HERRERA Science + Planning + Design

Esri Imagery (2023)

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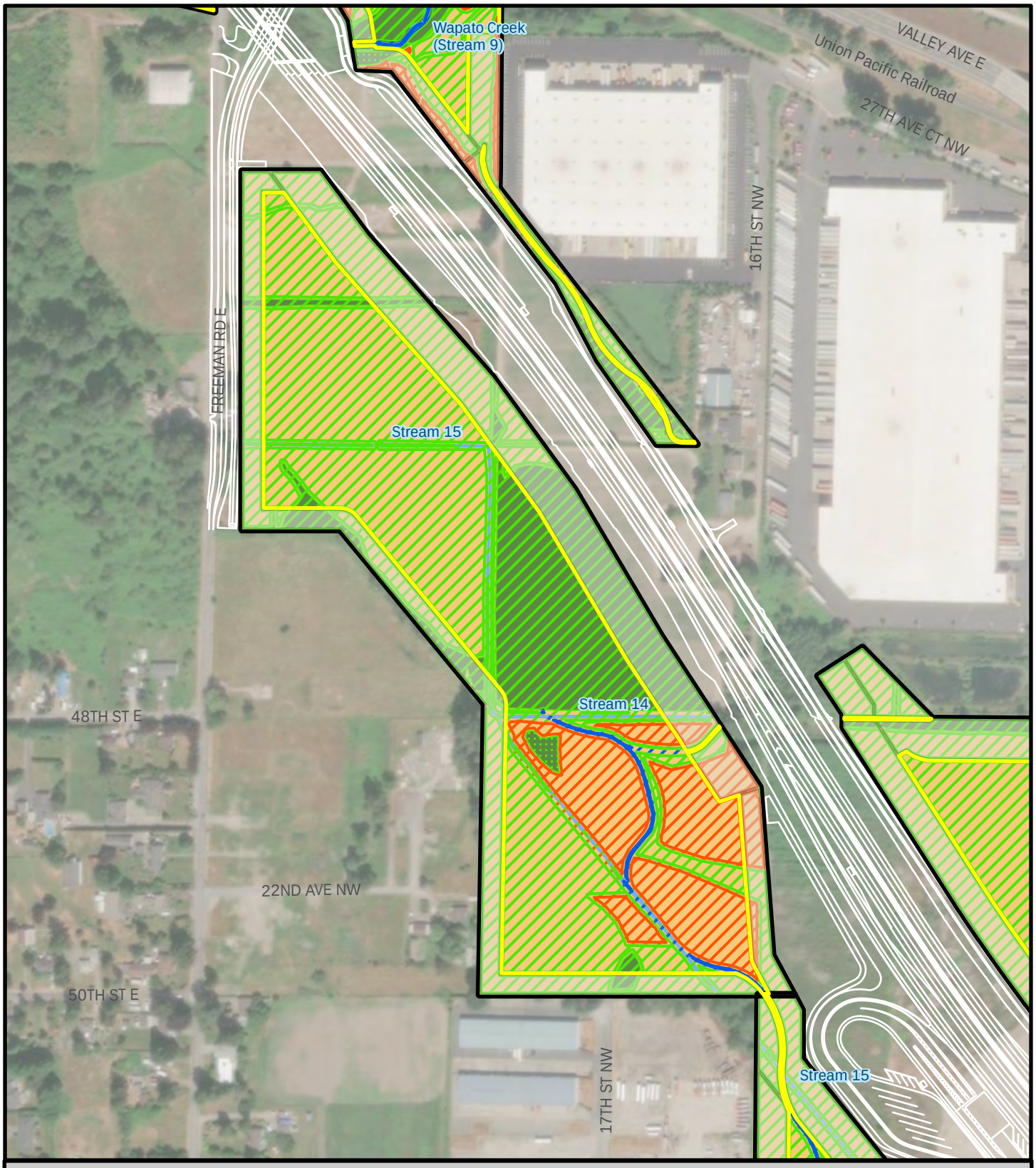

Legend

- Credit-Generating Area
- Mitigation Buffer
- Stage 2 RRP Boundary
- Stage 2 Proposed Road and Shared-Use Path (white line)
- Wetland Reestablishment (Upland to Wetland)
- Stream Creation (Upland to Stream)
- Upland Enhancement (Upland to Upland)
- Stream Enhancement (Stream to Stream)
- Wetland Rehabilitation (Stream to Wetland)
- Stream Creation (Wetland to Stream)
- Wetland Rehabilitation (Wetland to Wetland)
- Wetland Enhancement (Wetland to Wetland)

Figure 5--L. Proposed Conditions for the SR 167 Completion Project, Stage 2 - Freeman Road Mitigation Site.

0 165 330 660 Feet

HERRERA
Science + Planning + Design

Esri Imagery (2023)

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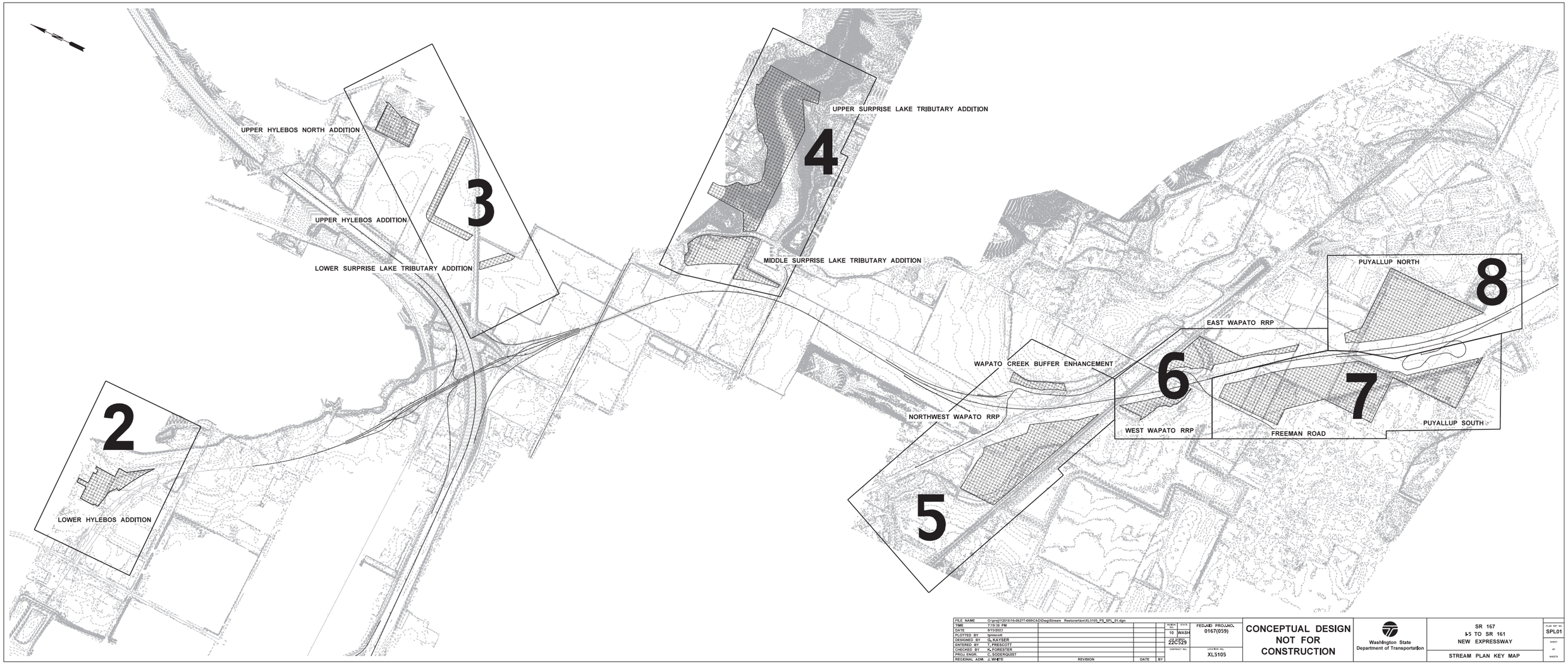

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DATE	8/15/2023				PROJECT NO. 22C529		
PLOTTED BY	bpreuer						
DESIGNED BY	G. KAYSER						
ENTERED BY	T. PRESCOTT						
CHECKED BY	K. FORESTER				CONTRACT NO.		LOCATION NO. XL5105
PROJ. ENGR.	C. SODERQUIST						
REGIONAL ADM.	J. WHITE	REVISION	DATE	BY			

CONCEPTUAL DESIGN NOT FOR CONSTRUCTION

Washington State Department of Transportation

SR 167
I-5 TO SR 161
NEW EXPRESSWAY

STREAM PLAN KEY MAP

PLAN SET NO. SPL01

SHEET OF SHEETS

LEGEND:

EXISTING	PROPOSED	
		RIGHT OF WAY / LIMITED ACCESS
		COUNTY / CITY RIGHT OF WAY
		PROPERTY LINE
		EASEMENT
2190		WETLAND BOUNDARY
	505	ROADWAY ALIGNMENT
	505	CUT / FILL LINE
		STREAM ALIGNMENT
		CONTOURS (1FT)
	+15.0	SPOT ELEVATIONS
		STAGE 1b MITIGATION AREA BOUNDARY
		STAGE 2 MITIGATION AREA BOUNDARY
		NATIVE VEGETATION PROTECTION ZONE

DESIGN INTENT:

1. THE SOUTH PORTION OF THE FREEMAN ROAD SITE IS A CONTINUATION OF THE CHANNEL AND WETLAND CREATION AREA FROM THE PUYALLUP SOUTH RIPARIAN RESTORATION AREA. THE SOUTHEAST QUADRANT CONTAINS LARGE AREAS OF REMNANT WETLAND FOREST THAT ARE TO BE PROTECTED AND ENHANCED. WHERE NEEDED, GRADING WITHIN THE NATIVE VEGETATION PROTECTION ZONE/FOREST ENHANCEMENT AREA IS INTENDED TO ENHANCE WILDLIFE HABITAT. THE NORTHEAST OF THE EXISTING MATURE NATIVE VEGETATION. THE SOUTHWEST PORTION OF THE SITE IS DOMINATED BY INVASIVE VEGETATION AND WILL BE GRADED TO MAXIMIZE WETLAND CREATION. THE EXISTING CHANNEL THAT RUNS DIAGONALLY THROUGH THIS AREA WILL BE REGRADED MIDWAY THROUGH THE FOREST TO JOIN THE STREAM CHANNEL, STREAM 14, ENTERING THE SITE FROM THE EAST. THE GOAL OF PUYALLUP SOUTH IS TO CREATE A MORE SINUOUS AND NATURAL DRAINAGE CHANNEL, STREAM 15, THROUGH THE SITE THAT INCREASES CHANNEL LENGTH AND DISTRIBUTES WATER FLOW THROUGHOUT MORE OF THE WETLAND CREATION AREAS.
2. THE AREAS NORTH OF THE EXISTING FORESTED ZONE CONTAIN EXISTING CHANNELS THAT WILL BE FILLED AND A NEW CHANNEL GRADED THROUGH THE SITE TO CREATE A LONG SINUOUS FLOW PATH THAT ENCOURAGES THE CHANNEL TO INTERACT WITH A RESTORED FLOODPLAIN AND WETLAND CREATION AREAS. AGRICULTURAL AREAS WILL BE GRADED DOWN TO MAXIMIZE WETLAND CREATION, LEAVING VARIED MICROTOPOGRAPHY AND SHALLOW HUMMOCKS TO ENCOURAGE SITE VARIABILITY AND PLANT COMMUNITY DIVERSITY.

NOTES:

1. SEE RRP AND WETLAND MITIGATION PLAN SHEETS FOR NATIVE PROTECTION ZONE BOUNDARY.
2. NO GRADING OR HEAVY MACHINERY WITHIN NATIVE VEGETATION PROTECTION ZONE BOUNDARY.

0 50 100
SCALE IN FEET

MATCHLINE SEE SHEET SPL06

MATCHLINE SEE SHEET SPL08

MATCHLINE SEE SHEET SPL08

GOVT LOT 4
SEC 27

NEW CULVERT UNDER SR 167 EMBANKMENT

WS-1 LINE

WS-2 LINE

END NEW STREAM 14 CHANNEL GRADING FRE_ADJ LINE STA 3+13

NEW STREAM 14 CHANNEL (FRE_ADJ LINE)

FRE_MAIN

START NEW STREAM 14 CHANNEL Y GRADING FRE_ADJ LINE STA 0+00

FILL EXISTING STREAM 15 CHANNEL

FILL EXISTING STREAM 15 CHANNEL

FILL EXISTING STREAM 15 CHANNEL

END NEW STREAM 15 CHANNEL GRADING FRE_MAIN LINE STA 11+61

REMOVE EXISTING BERM

REMOVE EXISTING BERM

REMOVE EXISTING BERM

REMOVE EXISTING FOUNDATION

TURTLE MOUNDS TYP. SEE DETAIL

STAGE 2 MITIGATION AREA BOUNDARY

NO GRADING WITHIN NATIVE VEGETATION PROTECTION ZONE LIMITS, TYP.

STAGE 2 MITIGATION AREA BOUNDARY

FILL EXISTING STREAM 15 CHANNEL

REMOVE EXISTING BERM

END NEW STREAM 15 CHANNEL GRADING FRE_MAIN LINE STA 38+81

GRADE TO CONNECT TO EXISTING STORMWATER POND OUTFALL

NEW STREAM 15 CHANNEL (FRE_MAIN LINE)

NEW FREEMAN ROAD CULVERT

GRADE TO CONNECT TO NEW CONVEYANCE CULVERT

FREEMAN ROAD

PUYALLUP SOUTH

22nd AVE NW

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ENTERED BY	T. PRESCOTT						
CHECKED BY	K. FORESTER						
PROJ. ENGR.	C. SODERQUIST						
REGIONAL ADM.	J. WHITE	REVISION	DATE	BY			

SIGN. NO. 10 | STATE WASH | FED.AID PROJ.NO. 0167(059)

CONTRACT NO. 22C529

LOCATION NO. XL5105

CONCEPTUAL DESIGN NOT FOR CONSTRUCTION

Washington State Department of Transportation

SR 167
I-5 TO SR 161
NEW EXPRESSWAY

STREAM PLAN

PLAN SET NO. SPL07

SHEET OF SHEETS

LEGEND:

EXISTING	PROPOSED	
		RIGHT OF WAY / LIMITED ACCESS
		COUNTY / CITY RIGHT OF WAY
		EASEMENT
		WETLAND BOUNDARY
2190	505	ALIGNMENT
		CUT / FILL LINE
		STREAM THALWEG
		CONTOURS (1FT)
		STAGE 2 MITIGATION AREA BOUNDARY
		NATIVE VEGETATION PROTECTION ZONE
		LARGE WOODY MATERIAL
		BRUSH PILE (HPL13)
		PERCH TREE (HPL10)

NOTES:

1. SEE MITIGATION PLAN DOCUMENT AND TECHNICAL REQUIREMENTS SECTIONS 2.1.5 AND 2.2.0 FOR HABITAT FEATURE REQUIREMENTS.

0 50 100
SCALE IN FEET

MATCHLINE SEE SHEET HPL07

MATCHLINE SEE SHEET HPL09

MATCHLINE SEE SHEET HPL08

WS-1 LINE

WS-2 LINE

TURTLE MOUNDS, TYP SEE HPL12

BEAVER ANALOG DAM TYP SEE HPL11

RRP AREA BOUNDARY

FREEMAN ROAD

PUYALLUP SOUTH

22ND AVE NW

GOVT LOT 4 SEC 21

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SHEET NO.	STATE	FED.AID PROJ. NO.
10	WASH	0167(059)
CONTRACT NO.		LOCATION NO.
22C529		XL5105

CONCEPTUAL DESIGN NOT FOR CONSTRUCTION

Washington State Department of Transportation

SR 167
I-5 TO SR 161
NEW EXPRESSWAY

HABITAT PLAN

PLAN SET NO. HPL07

SHEET OF SHEETS

PLANTING LEGEND:*

- FORESTED WETLAND (PFO) DECIDUOUS DOMINANT
- NATIVE VEGETATION PROTECTION ZONE
- EMERGENT WETLAND (PEM)
- SCRUB SHRUB WETLAND (PSS)
- AQUATIC VEGETATION
- DENSE HEDGEROW (RRP08)
- BEAVER DETERRENT ZONE (PSS)
- TURTLE MOUND

*NOTE: PLAN HATCH ROTATION VARIES PER SHEET DUE TO DIFFERENT ORIENTATIONS OF NORTH ARROW

LEGEND:

PROPOSED

- RIGHT OF WAY / LIMITED ACCESS
- 505 ROADWAY AND STREAM ALIGNMENT
- CUT / FILL LINE
- 11 CONTOURS (1FT)
- +14.0 SPOT ELEVATIONS
- RRP AREAS

NOTES:

1. REFER TO RRP10 FOR PLANT ZONE DESCRIPTIONS.
2. PRESERVE EXISTING NATIVE VEGETATION, NATIVE VEGETATION PROTECTION AREAS SHALL REMOVE INVASIVE AND NON-NATIVE WEEDY VEGETATION WHILE PROTECTING EXISTING NATIVE VEGETATION. BARE AREAS SHALL BE REVEGETATED WITH SPECIES APPROPRIATE FOR EACH AREA.

SCALE IN FEET
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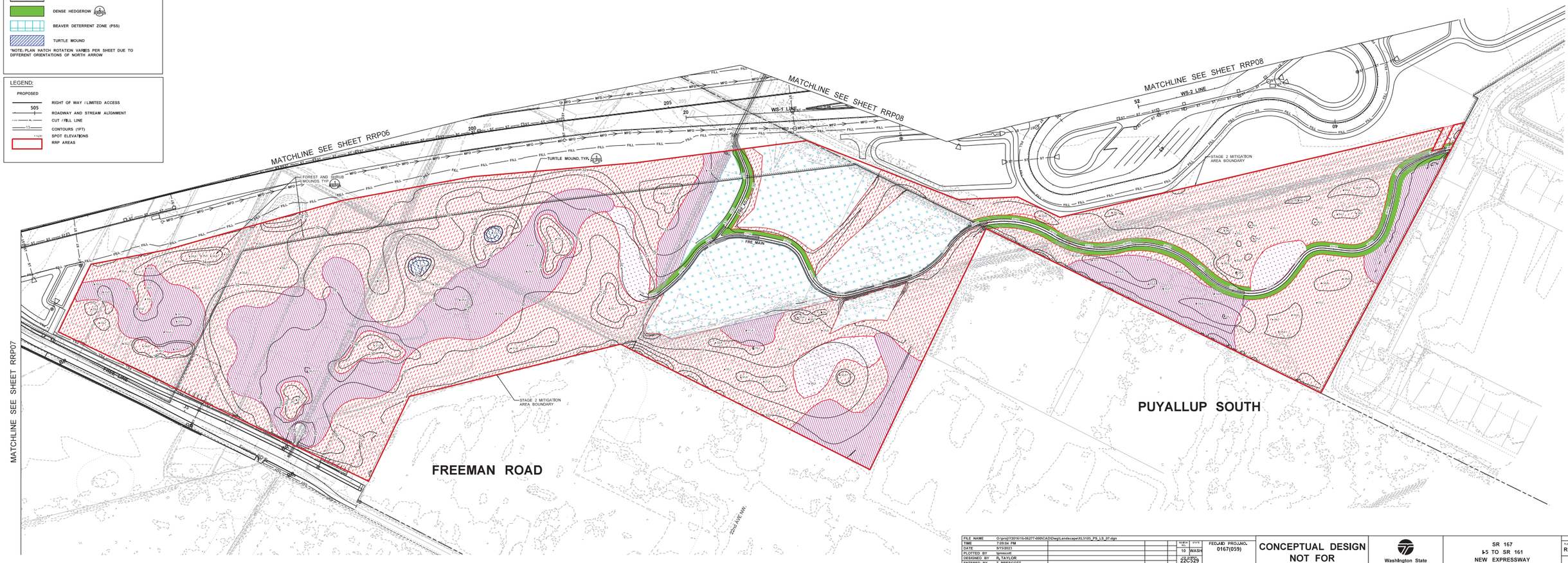

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REGIONAL ADM.	J. WHITE	REVISION	DATE	BY			

REGION NO. 10 | STATE WASH | FED.AID PROJ.NO. 0167(059) | CONTRACT NO. 22CC29 | CONTRACT NO. XL5105

CONCEPTUAL DESIGN NOT FOR CONSTRUCTION

Washington State Department of Transportation

SR 167
I-5 TO SR 161
NEW EXPRESSWAY

MITIGATION PLAN

PLAN SHT NO. RRP07 | SHEET | OF | SHEETS

Table 56g. Objectives and Performance Standards for the SR 167 RRP Wetland and Stream Mitigation – Freeman Road.

Mitigation Site	Goal	Objective	Monitoring Year	Performance Standards
14. Freeman Road	14.1. Restore stream channel	14.1.1 Restore a minimum of 1,292 linear feet of stream channel	Year 10	Combined length of stream channels (as measured in the thalweg) will meet or exceed 1,292 linear feet.
	14.2. Re-establish, rehabilitate, and enhance wetland	14.2.1 Re-establish and rehabilitate a minimum of 15.00 acres of wetland within the CGA • 11.27 acres wetland re-establishment • 3.61 acres wetland rehabilitation • 0.12 acre wetland enhancement	Years 5 and 10	The wetland area at the mitigation site will be delineated using current methods to ensure that the mitigation site contains the anticipated acreage.
		14.2.2 Establish wetland hydrology within re-established wetlands	Years 1, 3, 5, 7, 10	The soils in the wetlands will be saturated to the surface, or standing water will be present within 12 inches of the surface for at least 30 consecutive days during the growing season in years when rainfall meets or exceeds the 30-year average.
	14.3. Improve water quality, hydrologic, and habitat functions in re-established, rehabilitated, and enhanced wetlands	14.3.1 Establish native woody vegetation in wetland	Year 1	Stem density in planted scrub shrub and forested areas will meet or exceed 1,600 stems per acre. Planting density should exceed this metric to account for die-off.
			Year 3	Cover of native saplings, trees, and shrubs in planted forested and scrub-shrub wetland will be at least 20 percent.
			Year 5	Cover of native woody vegetation in planted forested and scrub-shrub wetland will be at least 35 percent.
			Year 7	Cover of native woody vegetation in planted forested and scrub-shrub wetland will be at least 50 percent.
			Year 10	Cover of native woody vegetation in planted forested and scrub-shrub wetland will be at least 75 percent.
			Year 10	A minimum of 10 species of native shrubs and trees will be present in the wetland by the end of the monitoring period.
		14.3.2 Control invasive species	All years	Washington State-listed or county-listed Class A weeds, Japanese knotweed, and purple loosestrife observed in any area of the mitigation site must be eradicated. All occurrences shall be immediately reported to the site manager and an eradication program will be initiated within 30 days of the report.
			Years 1 through 9	Non-designated Class B and Class C noxious weeds including reed canarygrass will not exceed 20 percent cover.
			Year 10	Non-designated Class B and Class C noxious weeds excluding reed canarygrass will not exceed 20 percent cover. Reed canarygrass will only exist as an understory component that does not outcompete native woody vegetation.
		14.3.3 Install fish and wildlife habitat structures	Year 0	Install a minimum of: • 8 perch trees • 10 brush piles • 5 nest boxes • 2 bat boxes on an existing mature tree
	14.4. Improve habitat functions in upland enhancement areas	14.4.1 Control invasive species	All years	Washington State-listed or county-listed Class A weeds, Japanese knotweed, and purple loosestrife observed in any area of the mitigation site must be eradicated. All occurrences shall be immediately reported to the site manager and an eradication program will be initiated within 30 days of the report.
			Years 1 through 9	Non-designated Class B and Class C noxious weeds including reed canarygrass will not exceed 20 percent cover.
			Year 10	Non-designated Class B and Class C noxious weeds excluding reed canarygrass will not exceed 20 percent cover. Reed canarygrass will only exist as an understory component that does not outcompete native woody vegetation.

Table 56g. Objectives and Performance Standards for the SR 167 RRP Wetland and Stream Mitigation – Freeman Road.				
Mitigation Site	**Goal**	**Objective**	**Monitoring Year**	**Performance Standards**
14. Freeman Road	14.4 (continued) Improve habitat functions in upland areas	14.4.2 Enhance native understory vegetation	Year 0	The contractor will provide GPS locations of any underplanted areas.
			Year 1	Planted vegetation will achieve 100 percent survival 1 year after the site is planted. If all dead woody plantings are replaced, the performance measure will be met.
			Years 2 and 3	Planted vegetation will exhibit 80 percent survival within 2 to 3 years after installation.
		14.4.3 Establish native trees and shrubs in upland	Year 1	Stem density in planted scrub shrub and forested areas will meet or exceed 1,600 stems per acre. Planting density should exceed this metric to account for die off.
			Year 3	Cover of native saplings, trees, and shrubs in planted forested and scrub-shrub wetland will be at least 20 percent.
			Year 5	Cover of native woody vegetation in planted forested and scrub-shrub wetland will be at least 35 percent.
			Year 7	Cover of native woody vegetation in planted forested and scrub-shrub wetland will be at least 50 percent.
			Year 10	Cover of native woody vegetation in planted forested and scrub-shrub wetland will be at least 75 percent.
			Year 10	A minimum of 10 species of native shrubs and trees will be present in the wetland by the end of the monitoring period.