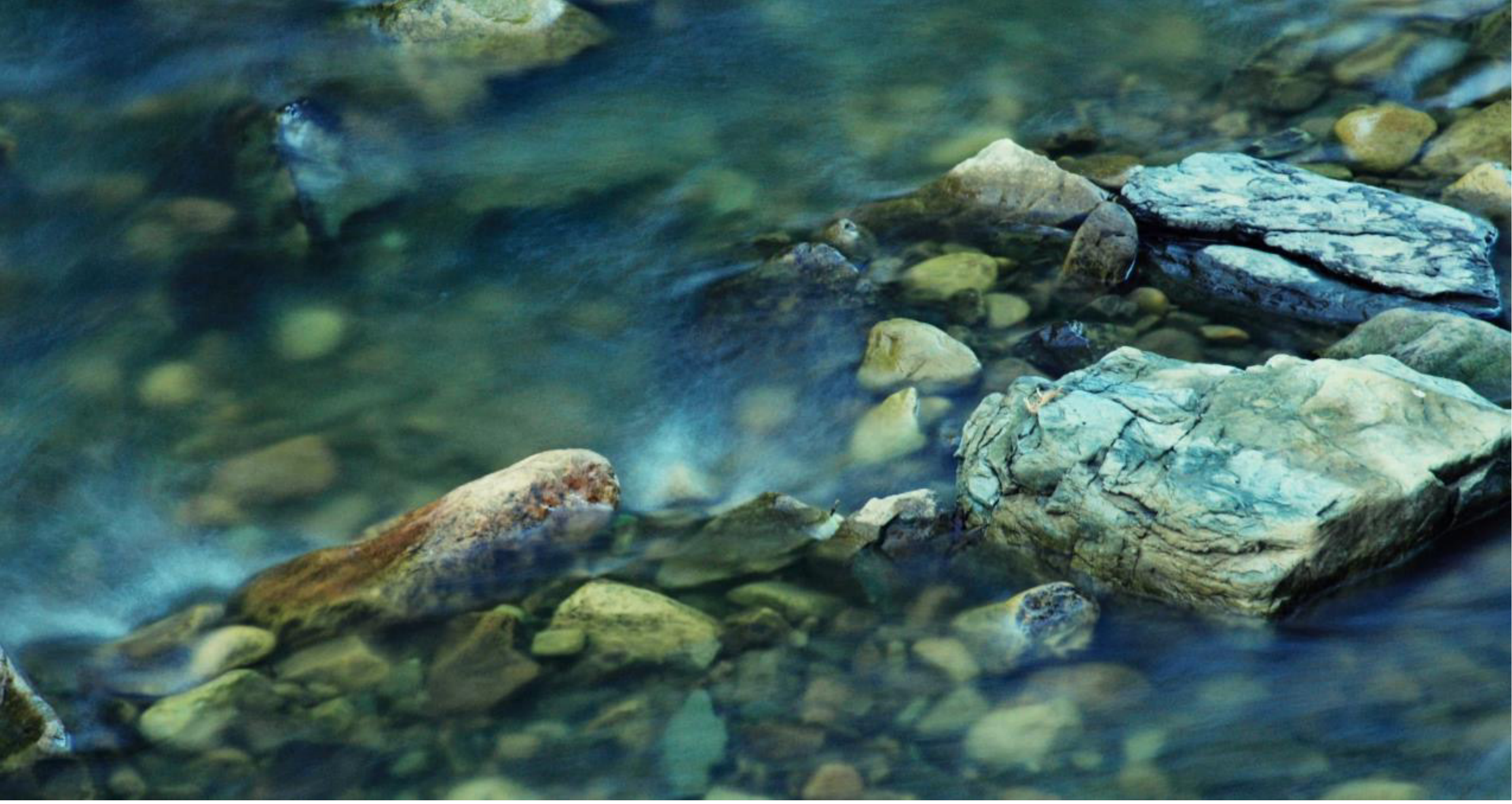
Attachment L

Water Resources Technical Study



July 2023
Port of Grays Harbor Terminal 4 Expansion and Redevelopment Project

Water Resources Technical Study

Prepared for Port of Grays Harbor and Ag Processing, Inc.

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Prepared for
Port of Grays Harbor
Ag Processing, Inc.

Prepared by
Anchor QEA, LLC
Moffatt & Nichol

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ABBREVIATIONS

AGP	Ag Processing, Inc.
AGP Project	Ag Processing, Inc., Operations Expansion at Terminal 4
AJD	Approved Jurisdictional Determination
AMC	Aberdeen Municipal Code
APWD	City of Aberdeen Public Works Department
BMP	best management practice
CFR	*Code of Federal Regulations*
CFU	colony forming unit
COC	contaminant of concern
CWA	Clean Water Act
DMMP	Dredged Material Management Program
DO	dissolved oxygen
Ecology	Washington State Department of Ecology
EEM	Estuarine Emergent
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
HMC	Hoquiam Municipal Code
HPA	Hydraulic Project Approval
HPAH	high-molecular-weight polyaromatic hydrocarbon
HTL	high tide line
HUC6	6-digit hydrologic unit code
HUC8	8-digit hydrologic unit code
LiDAR	Light Detection and Ranging
LPAH	low-molecular weight polyaromatic hydrocarbon
MHHT	mean higher high tide
MHHW	mean higher high water
mL	milliliter
MLLW	mean lower low water
MPN	most probable number
NA	not applicable
NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHD	National Hydrography Dataset

NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NTU	nephelometric turbidity unit
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
PAB	Palustrine Aquatic Bed
PAH	polycyclic aromatic hydrocarbon
PEM	Palustrine Emergent
Port	Port of Grays Harbor
Port Project	Rail Upgrades and Site Improvements, Terminal 4A Cargo Yard Relocation and Expansion, and Terminal 4 Dock Fender and Stormwater Upgrades
Proposed Project	Port of Grays Harbor Terminal 4 Expansion and Redevelopment Project
PSAP	Puget Sound and Pacific Railroad
PSD	prevention of significant deterioration
RCW	Revised Code of Washington
RORO	roll-on/roll-off
SEPA	Washington State Environmental Policy Act
SFHA	Special Flood Hazard Area
SMA	Shoreline Management Act
SMP	Shoreline Master Program
SWPPP	stormwater pollution prevention plan
T1	Terminal 1
T2	Terminal 2
T3	Terminal 3
T4	Terminal 4
T4A	Terminal 4A
T4B	Terminal 4B
TESC	temporary erosion and sediment control
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USC	*United States Code*
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

1 Introduction

The Port of Grays Harbor (Port) is proposing the Terminal 4 (T4) Expansion and Redevelopment Project to increase rail and shipping capacity at T4 at the Port located in the cities of Hoquiam and Aberdeen, Washington, to accommodate growth of dry bulk, breakbulk, and roll-on/roll-off (RORO) cargos. This includes the rail upgrades and site improvements, the Terminal 4A (T4A) cargo yard relocation and expansion, and the T4 dock fender and stormwater upgrades. These project elements would be constructed by the Port and are referred to as the Port Project. It also includes a new export terminal by Ag Processing, Inc. (AGP), at T4. This project element is referred to as the AGP Project. Together, the Port Project and AGP Project are referred to as the Proposed Project.

The purpose of this technical study is to describe the affected environment and potential impacts of the Proposed Project and its alternatives on water resources. Water resources include surface waters (including streams, rivers, lakes, and reservoirs), wetlands (areas frequently saturated by surface or groundwater and supporting wetland vegetation and characteristics), and groundwater (water in a saturated zone beneath the ground surface). For the purposes of this technical report, water resources also include floodplains (relatively flat lands adjacent to rivers and streams that receive water from those waterbodies during flooding), water use (usage of water for consumptive and nonconsumptive purposes), and water rights (legal authorizations granted to persons or groups to use waters of the state).

This technical study will be used to support environmental review of the Proposed Project by the state and federal agencies with a funding, jurisdictional, or permitting authority over the Project. This includes compliance with the Washington State Environmental Policy Act (SEPA) and the National Environmental Policy Act (NEPA). This technical study will also be used as supporting documentation for permitting efforts.

1.1 Location and Regional Setting

Figure 1 shows the location and regional setting of the Port. The Port was founded in 1911 and is located on the Pacific coast of Washington state in the cities of Hoquiam and Aberdeen in Grays Harbor County. The Port is located near where the Chehalis River enters Grays Harbor, approximately 15 miles east from the Pacific Ocean. The Port is the westernmost port in Washington. The Pacific Ocean is accessed from the Port via the Grays Harbor deep-draft federal navigation channel within Grays Harbor. The Proposed Project does not include expansion or deepening of the Grays Harbor federal navigation channel. Rennie Island is just south of the Port and is within Grays Harbor. Bowerman Airport is approximately 4 miles west-northwest of the Port.

1.2 Project Area

The Project Area consists of the area where the proposed facilities would be located, called the On-Site Project Area, and the existing off-site transportation corridors, called the Off-Site Project Area. The On-Site Project Area includes the area that will be directly affected by construction and operation of the Proposed Project (Figure 2). The Off-Site Project Area includes Off-Site transportation corridors used for rail and vessel transportation. This includes the Puget Sound and Pacific Railroad (PSAP) line from the Port property to the connection with the BNSF Railway and Union Pacific Railroad mainline in Centralia, Washington, and the Grays Harbor federal navigation channel from the Port property through Grays Harbor to the Pacific Ocean, up to 3 nautical miles offshore from the southern mouth of Grays Harbor. The Proposed Project will likely include rail construction on property owned by others (PSAP or other private owners) along the PSAP rail corridor east of West Heron Street. It has not been established whether that rail will be built and owned by the PSAP to serve the site, built and owned by the Port, or some other combination of ownership and leasing. Specific study areas for the analysis of potential impacts of the Proposed Project are defined in Section 5.1 based on the potential for effects to water resources.

Figure 1
Project Area Location and Regional Setting

Figure 2
Existing Conditions

2 Proposed Project and Alternatives

Two alternatives are evaluated in this report: the Proposed Project and a No Action Alternative. Additional details about these alternatives are documented in the *Project Description Technical Report* (Anchor QEA 2023a). The alternatives include the following:

- **Alternative 1 (Proposed Project).** As noted in Section 1 and as further described in the *Project Description Technical Report*, the Proposed Project consists of the Port Project and the AGP Project. The Port Project includes the following: 1) rail upgrades and site improvements; 2) T4 dock, fender, and stormwater upgrades; and 3) cargo yard relocation and expansion. In addition to these proposed upgrades at T4, AGP, an existing tenant of the Port, intends to upgrade Terminal 4B (T4B) to include improved rail receiving facilities, a new shiploader, and a soybean meal storage structure (referred to as a surge silo). The primary elements of the Proposed Project are shown in Figure 3 and could be constructed in phases.
- **No Action Alternative.** The No Action Alternative represents the conditions anticipated without construction and operation of the Proposed Project over the course of the construction analysis period of 2024 to 2025 and the operations analysis period from 2025 to 2045. Although the Port would not complete the proposed infrastructure enhancements or redevelop the T4 cargo yard under the No Action Alternative, it is anticipated that the Port would pursue growth opportunities within the existing Port footprint. It is also assumed that AGP would not complete the proposed infrastructure enhancements at T4B, but AGP would maximize its operations at the existing Terminal 2 facility. However, under the No Action Alternative, the Port would continue to operate and maintain T4 as it exists under existing conditions and would continue to seek out new business. Because activity under the No Action Alternative would be limited to current port infrastructure and terminal capacity limits, the No Action alternative is anticipated to result in operations similar to existing conditions.

Figure 3
Project Elements

3 Regulatory Context

3.1 Regulations

Table 1 presents the regulations, statutes, and guidelines that apply to water resources within the On- and Off-Site Project Areas.

Table 1
Federal, State, and Local Regulations, Statues, and Guidelines Applicable to Water Resources

Laws and Regulations	Description
Federal	
Rivers and Harbors Act of 1899 (33 USC 403)	Authorizes USACE to protect commerce in navigable rivers and waterways of the United States by regulating various activities in such waters. Section 10 of the Act specifically regulates construction, excavation, or deposition of materials into, over, or under navigable waters, or any work that would affect the course, location, conditions, or capacity of those waters.
Clean Water Act (33 USC 1251 et seq.)	The CWA establishes the basic structure for EPA to regulate discharges of pollutants into the waters of the United States and regulates water quality standards for surface waters. Section 401 requires Water Quality Certification from the state for activities requiring a federal permit or license to discharge pollutants into a water of the United States. Certification attests the state has reasonable assurance the proposed activity will meet state water quality standards. Section 402 establishes the NPDES program, under which certain discharges of pollutants into waters of the United States are regulated. Section 404 regulates the discharge of dredged or fill material into waters of the United States, including jurisdictional wetlands.
National Flood Insurance Act of 1968	Established the NFIP, a federal floodplain management program designed to reduce future flood losses nationwide through the implementation of community-enforced building and zoning ordinances in return for the provision of affordable, federally backed flood insurance to property owners. The NFIP is a program in which counties and cities can voluntarily participate. FEMA is the agency responsible for enforcing the NFIP. The program is implemented at the city and county level.
Flood Plain Management Criteria for Flood-Prone Areas (44 CFR 60.3[d][3])	FEMA must review any construction within a mapped floodway to ensure that the work will not increase flood levels. Any actions taken within a designated floodway area require a "rise analysis," with review and approval by FEMA.
Executive Order 11988/13690, Floodplain Management	Requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative (42 *Federal Register* 26951). FEMA is the agency responsible for enforcing this Executive Order.

Laws and Regulations	Description
Executive Order 11990, Protection of Wetlands	Requires federal agencies managing federal lands, sponsoring federal projects, or providing federal funds to state or local projects to follow avoidance, mitigation, and preservation procedures and to obtain public input before proposing new construction in wetlands. Consistency with the overall wetlands policy contained in Executive Order 11990 is achieved through CWA Section 404 compliance requirements and USACE's preparation of the 404(b)(1) evaluation.
State	
Washington State Hydraulic Code (RCW 77.55; WAC 220-660)	Regulates projects that use, divert, obstruct, or change the natural flow or bed of any water of the state of Washington. Requires entities who are planning such projects to obtain an HPA from WDFW. As part of the HPA review process, WDFW considers the Project's potential effects on fish passage and riparian and shoreline/bank vegetation in issuance and conditions of the permit, including for the installation of piers, docks, piling, and bank armoring and crossings of streams and rivers (including culverts).
Washington State Flood Control Code (RCW 86)	Covers laws relating to floodplain management, flood control by counties, flood control by state in cooperation with federal agencies, and flood control zone districts.
Washington State Water Pollution Control Act (RCW 90.48)	Grants Ecology the jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland water, saltwaters, water courses, and other surface and groundwater in the state, including those that are not considered to be waters of the United States (i.e., non-jurisdictional) under Section 404 of the CWA.
Water Resources Act of 1971 (RCW 90.54)	Grants Ecology the jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland water, saltwaters, water courses, and other surface and groundwater in the state.
Washington Department of Ecology Code (WAC 173)	Chapter 201A: Establishes water quality standards for surface waters, implementing RCW 90.48, Water Pollution Control Act. Freshwater designated uses and associated criteria are specifically identified in WAC 173-201A-200. Chapter 200: Establishes water quality standards for groundwaters, implementing RCW 90 laws, including RCW 90.48, Water Pollution Control Act, and RCW 90.54, Water Resources Act of 1971. Chapter 204: Establishes sediment management standards to reduce and ultimately eliminate adverse effects on biological resources and significant threats to human health from surface sediment contamination. Chapter 158: Implements RCW 86.16, Floodplain Management, establishing regulations for floodplain management to ensure local government compliance with the NFIP. Chapter 152: Establishes the framework for Ecology's performance of basin assessments and processing of water rights applications, implementing RCW 90 laws, including RCW 90.03, Water Code, and RCW 90.82, Watershed Planning. Chapter 522: Implements RCW 90.54, Water Resources Act of 1971, and establishes regulations for Ecology's water resources program in the Chehalis Basin (WRIAs 22 and 23), including minimum instream flows, allocation and prioritization of surface water for beneficial uses, and streams closed to further consumptive appropriations.
2.6.1.1.1 Administration of Surface and Groundwater Codes (WAC 508-12)	Establishes regulations for Ecology's administration of surface and groundwater codes, including regulation of water right diversions, surface and groundwater appropriation procedures, and reservoir permits.

Laws and Regulations	Description
NPDES Permit Program (WAC 173-220)	Establishes a state permit program applicable to the discharge of pollutants and other wastes and materials to the surface waters of the state.
Water Rights—Oil and Hazardous Substance Spill Prevention and Response (RCW 90.56)	Establishes programs to reduce risks and develop a response to oil and hazardous substance spills, provides a process to calculate damages from an oil spill, and holds responsible parties liable for damages resulting from injuries to public resources.
2.6.1.1.4 Oil Spill Natural Resources Damage Assessment (WAC 173-183)	Establishes procedures for convening a resource damage assessment committee, preassessment screening of damages, and selecting the damage assessment method.
Prohibited Methods of Sewage Disposal (RCW 43.20.050)	Prohibits disposal of sewage and industrial waste in a manner that would negatively affect domestic water supply or endanger the health and well-being of the people of the state.
Washington State Aquatic Lands Code (RCW 79.105)	Articulates the management of state-owned aquatic lands in conformance with constitutional and statutory requirements.
Ballast Water Management (RCW 77.120)	Regulates the discharge of ballast water from vessels operating in waters of the state to reduce the risk of introducing nonindigenous species. Authorizes discharges of ballast water into waters of the state only if there has been an open sea exchange or if the vessel has treated its ballast water to meet standards set by WDFW consistent with applicable state and federal laws.
Local	
Critical Area Protection (HMC 11.06 and AMC 14.100)	Establishes the policies for designating, classifying, and protecting ecologically sensitive and hazardous areas (wetlands, critical aquifer recharge areas, fish and wildlife conservation areas, frequently flooded areas, and geologically hazardous areas) and their functions and values while allowing for the reasonable use of private property as required by the Growth Management Act of 1990.
Shoreline Management (HMC 11.05 and AMC 16.20)	Carries out the responsibilities imposed by the Shoreline Management Act of 1971.
Erosion and Sediment Control (AMC 16.20)	AMC 13.70 establishes minimum requirements and procedures to control the adverse impacts associated with increased storm and surface water runoff.
2.6.1.1.3 Flood Hazard Protection (AMC 15.55)	AMC 13.70 establishes minimum requirements and procedures to control the adverse impacts associated with increased storm and surface water runoff.
Flood Hazard Protection (AMC 15.55)	The floodplain development ordinance has standards and restrictions for construction and development in designated flood hazard areas in the city. Areas affected by the regulations are located within the designated floodplain.
2.6.1.1.4 Water System Regulations (AMC 13.56)	Sets requirements and specifications for use of City of Aberdeen water supply regarding connections and maintenance of pipelines, provisions to avoid insufficient supply for fire flow, permitting, emergency water use restrictions, and fire protection services.

3.2 Required Permits and Approvals

Table 2 presents required permits and approvals that apply to water resources.

Table 2
Required Federal, State, and Local Permits and Approvals Applicable to Water Resources

Permits	Description
Federal	
Clean Water Act, Section 404 Permit (33 USC 1344)	Administered by USACE. Regulates the discharge of dredged or fill material into waters of the United States, including jurisdictional wetlands, to ensure that the chemical, physical, and biological integrity of the nation's waters are protected, restored, and maintained.
Rivers and Harbors Act, Section 10 Permit (33 USC 403)	Administered by USACE. Regulates the construction or modification of any structure in or over any navigable water of the United States to ensure that the navigable capacity of those waters is protected and maintained.
State	
Clean Water Act, Section 401 Water Quality Certification (33 USC 1341; RCW 90.48)	Administered by Ecology. Requires that an applicant for a federal permit obtain a Section 401 Water Quality Certification from the state in which the activity would occur to certify that the action will not violate that state's water quality standards or other protections afforded under the CWA.
Washington State Water Pollution Control Law Administrative Order (RCW 90.48)	Administered by Ecology. Allows regulation of certain activities in wetlands and other waters that USACE has determined are non-jurisdictional under Section 404 of the CWA through the issuance of Administrative Orders.
Hydraulic Project Approval (RCW 77.55)	Administered by WDFW. Required for any project that will use, divert, obstruct, or change the natural flow or bed of any of the salt or freshwater of the state of Washington to ensure that construction is done in a manner that protects fish and aquatic habitats.
Aquatic Use Authorization for State-Owned Aquatic Land (RCW 79.105)	Administered by WDNR. Required for activities that occur on state-owned aquatic lands. Anticipated to require demonstration of consistency with the existing Port Management Agreement. Will likely require coordination with WDNR but will not require an Aquatic Lands Lease.
NPDES Construction Stormwater General Permit (33 USC 1342 et seq.; RCW 90.48)	Administered by Ecology. Required for construction activities that disturb one or more acres of land through clearing, grading, excavating, or stockpiling of fill material where there is a possibility that stormwater runoff from the construction site could enter a surface water of the state.
NPDES Industrial Stormwater General Permit (33 USC 1342; RCW 90.48)	Administered by Ecology. Required for industrial operations that discharge stormwater from their sites to a surface water or storm sewer system that drains to a surface water of the State.

Permits	Description
Local	
City of Hoquiam Shoreline Substantial Development and Shoreline Conditional Use permits (HMC 11.05.700 to 780)	Administered by the City of Hoquiam. Regulates the development within shoreline areas regulated under the City of Hoquiam's Shoreline Master Program. Required for any development project within shoreline jurisdiction whose total cost or fair market value exceeds $6,416 (as adjusted by the State Office of Financial Management). Per the City's SMP, a Shoreline Conditional Use Permit is also required for expansion of Port terminals when such terminals are a primary use.
City of Hoquiam Critical Areas Review (HMC 11.06)	Administered by the City of Hoquiam. Regulates land development in critical areas (wetlands, geologically hazardous areas, fish and wildlife habitat conservation areas, frequently flooded areas, and critical aquifer recharge areas) or their applicable buffers to ensure that such development occurs in a manner that will protect such areas and their associated functions and values. Required prior to issuance of various city permits including shoreline substantial development permit, building permit, and grading and fill permit, among others.
City of Hoquiam Floodplain District Development Permit (HMC 11.16.240)	Administered by the City of Hoquiam. Required for construction work or development activities in the SFHAs identified by FEMA (e.g., Zones A, AE, AH, AO, AR, A99, V, and VE) that occur within the jurisdiction of the City of Hoquiam.
City of Aberdeen Shoreline Substantial Development and Shoreline Conditional Use permits (AMC 14.50.700 to 780)	Administered by the City of Aberdeen. Regulates the development within shoreline areas regulated under the City of Aberdeen's Shoreline Master Program. Required for any development project within shoreline jurisdiction whose total cost or fair market value exceeds $6,416 (as adjusted by the State Office of Financial Management). Per the City's SMP, a Shoreline Conditional Use Permit is also required for expansion of Port terminals when such terminals are a primary use.
City of Aberdeen Critical Areas Review (AMC 14.100)	Administered by the City of Aberdeen. Regulates land development and alteration of critical areas (wetlands, geologically hazardous areas, fish and wildlife habitat conservation areas, frequently flooded areas, and critical aquifer recharge areas) and their applicable buffers to ensure that such development occurs in a manner that will protect such areas and their associated functions and values. Required prior to issuance of various city permits including shoreline substantial development permit, building permit, and grading and fill permit, among others.
City of Aberdeen Floodplain Development Permit (AMC 15.55.100)	Administered by the City of Aberdeen. Required for construction work or development activities in the SFHAs identified by FEMA (e.g., Zones A, AE, AH, AO, AR, A99, V, and VE) that occur within the jurisdiction of the City of Aberdeen.

4 Information Sources

The following information sources were used to describe existing conditions and expected future conditions within the Project Area to support the impact analysis.

4.1 Surface Water Hydrology, Wetlands, and Floodplains

The following sources were used to inform the analysis of surface water hydrology, wetlands, and floodplains (this includes information about precipitation, evaporation, infiltration, surface runoff, streamflow, water levels, and flooding):

- *Chehalis Basin Watershed Management Plan* (CBP 2004) and related assessment reports
- *Quinault Indian Nation State of the Watersheds Report* (Quinault Indian Nation 2016)
- *State of Our Watersheds Report, A Report by The Treaty Tribes in Western Washington* (NWIFC 2020)
- *Chehalis Basin Strategy Final Programmatic Environmental Impact Statement (EIS)* (Ecology 2017)
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), including Map Numbers 53027C0901D (FEMA 2017a), 53027C0903D (FEMA 2017b), and 53027C0904D (FEMA 2017c)
- *Draft Wetland and Stream Delineation Report, Port of Grays Harbor – Terminal 4 Rail Upgrade and Site Improvements* (HDR 2022, Appendix A)
- *Port of Grays Harbor Terminal 4 HTL and OHWM Determination* (Moffatt & Nichol 2022a)
- Approved Jurisdictional Determination for Port of Grays Harbor Casting Basin and Stormwater Ponds (USACE 2023)
- National Wetlands Inventory (NWI) Wetlands Mapper (USFWS 2023)
- National Hydrography Dataset (NHD) (USGS 2023)
- Washington State Department of Ecology (Ecology) *Coastal Atlas: Flood Hazard Maps* (Ecology 2023a)
- Ecology "Water Quality Atlas" (web-based map application; Ecology 2023b)
- Field observations from an October 14, 2022, site visit by Anchor QEA, LLC
- Supplemental flow and connectivity observations from follow-up site visits on March 16 and April 21, 2023, by Moffatt & Nichol and Anchor QEA

4.2 Surface Water and Sediment Quality

The following reports were used to inform the analysis of surface water quality (this includes information about algae, dissolved oxygen [DO], fecal coliform, nutrients, temperature, and turbidity):

- *Revised Upper Chehalis River Basin Dissolved Oxygen Total Maximum Daily Load: Submittal Report* (Ecology 2000)
- *Upper Chehalis River Basin Temperature Total Maximum Daily Load* (Ecology 2001)

- *Grays Harbor/Chehalis Watershed Fecal Coliform Bacteria Total Maximum Daily Load: Submittal Report* (Ecology 2002)
- *Upper Chehalis River Fecal Coliform Total Maximum Daily Load: Submittal Report* (Ecology 2004)
- *Chehalis Basin Strategy Final Programmatic EIS* (Ecology 2017)
- Ecology "Water Quality Atlas" (web-based map application; Ecology 2023b)
- Ecology Water Quality Assessment and 303(d)/305(b) list (Ecology 2023c)
- Ecology Water Quality Monitoring Data (Ecology 2023d)
- *Port of Grays Harbor: Terminals Recency Sediment Characterization and Terminal 2 Advance Maintenance Dredge Area Characterization* (Moffatt & Nichol 2022b)
- *Port of Grays Harbor: Terminal 4 Maintenance Dredging Supplemental Sediment Characterization* (Moffatt & Nichol 2022c)

4.3 Groundwater

The following reports were used to inform analysis of groundwater quantity and quality:

- *Chehalis River Watershed Surficial Aquifer Characterization* (Garrigues et al. 1998)
- *Hydrogeologic Framework and Groundwater/Surface-Water Interactions of the Chehalis River Basin, Southwestern Washington* (Gendaszek 2011)
- *Chehalis Basin Strategy Final Programmatic EIS* (Ecology 2017)
- Ecology "Washington State Well Report Viewer" (Ecology 2023e)
- Ecology Toxics Cleanup Program What's in My Neighborhood online mapping tool (Ecology 2023f)

4.4 Water Use and Water Rights

The following sources were used to inform the analysis of water use and water rights:

- *Chehalis Basin Watershed Management Plan* (CBP 2004) and related assessment reports
- Ecology Water Resources Explorer database (Ecology 2023g)

5 Affected Environment

This section describes water resources with the potential to be affected by the alternatives. Resources include those regulated as critical areas by the Cities of Hoquiam and Aberdeen. This includes marine waters and shorelines, wetlands, and floodplains. Fish and wildlife conservation areas are discussed in greater detail in the *Biological Resources Technical Study* (Anchor QEA 2023b).

5.1 Study Area

The study area for water resources is shown in Figure 4. It consists of the On-Site Project Area plus a 0.5-mile offset to capture potential indirect impacts on adjacent water resources from the Proposed Project. It also includes the rail and vessel transportation corridors of the Off-Site Project Area plus an additional 0.5-mile area on either side of those corridors for the purpose of identifying potential indirect impacts.

5.2 Background

Grays Harbor is an estuarine bay located on the southwest coast of Washington, about 45 miles north of the mouth of the Columbia River and about 110 miles south of the Strait of San Juan de Fuca. Grays Harbor is formed by the Pacific Ocean, the flow from six rivers (Chehalis, Elk, Hoquiam, Humptulips, Johns, and Wishkah), and many smaller creeks and tributaries within the Chehalis River basin (Figure 5). The harbor is approximately 15 miles long and 13 miles wide. The Chehalis River is the largest river flowing into the bay, providing more than 80% of freshwater contributed to the bay. It enters Grays Harbor at its eastern end near the City of Aberdeen, Washington. The Chehalis River basin is rain-dominated and has no glacial source of water. It drains about 2,660 square miles of generally low-lying conifer forests and farmland, including portions of Lewis and Thurston counties; limited areas of Pacific, Cowlitz, Mason, Wahkiakum, and Jefferson counties; and most of Grays Harbor County (Winkowski and Zimmerman 2019).

The Port of Grays Harbor is located near the mouth of the Chehalis River and is approximately 15 miles east from the Pacific Ocean at the mouth of Grays Harbor (Figures 1, 2, 4, and 5). The Pacific Ocean is accessed from the Port via the Grays Harbor deep-draft federal navigation channel within Grays Harbor. Rennie Island is just south of the Port and is within Grays Harbor. Bowerman Airport is approximately 4 miles west-northwest of the Port.

The study area is characterized by a predominantly mild, marine-type climate. Summers are cool and comparatively dry, with average monthly temperatures between 58°F and 62°F and an average monthly rainfall of between 1 and 2 inches (NWS 2022; WRCC 2022). Winters are typically mild, wet, and cloudy, with average monthly temperatures between 42°F and 44°F and an average monthly rainfall between 8 and 14 inches (NWS 2022; WRCC 2022). Average annual low and high temperatures are between 40°F and 58°F, respectively (U.S. Climate Data 2022a, 2022b). Historically, average total annual precipitation has been recorded at 84.47 inches in Aberdeen (U.S. Climate Data 2022a) and 115.62 inches in Hoquiam (U.S. Climate Data 2022b).

Figure 4
Water Resources Study Area

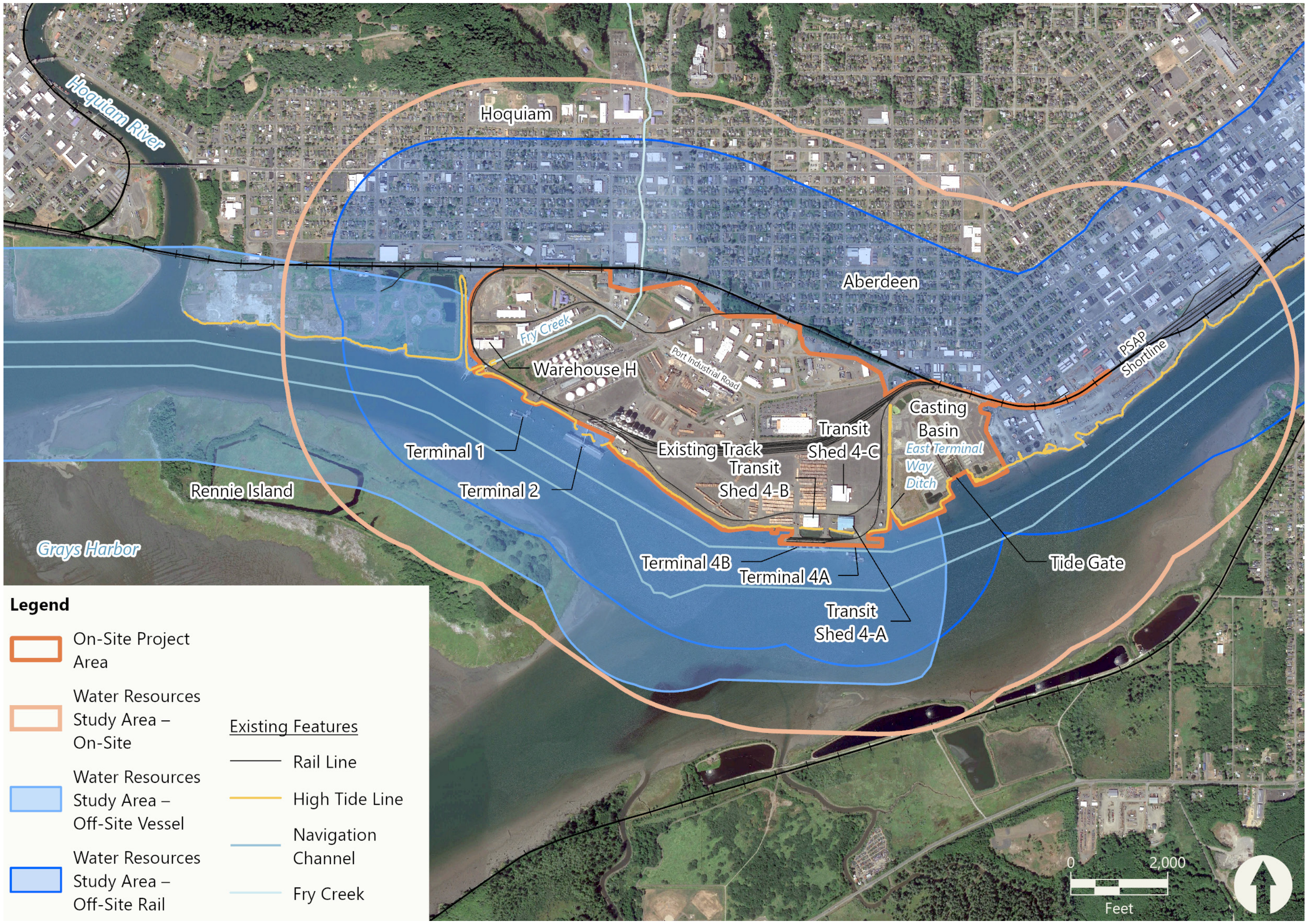
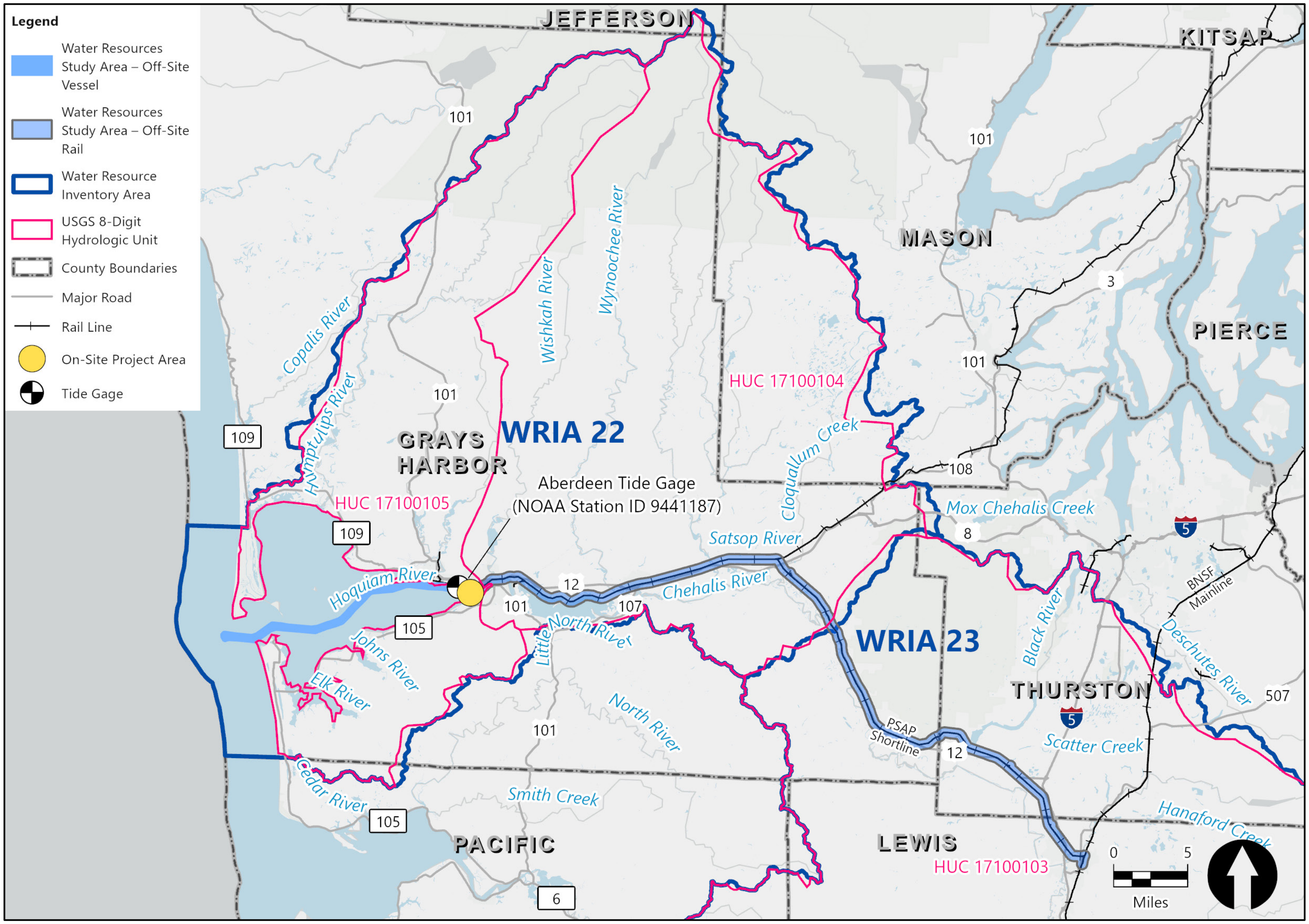


Figure 5
Hydrologic Setting



5.3 Surface Water Resources

As shown in Figure 5, the study area is within the Grays Harbor (8-digit hydrologic unit code [HUC8] 17100105), Lower Chehalis (HUC8 17100104), and Upper Chehalis (HUC8 17100103) subbasins of the Washington Coastal basin (6-digit HUC [HUC6] 17101) (USGS 2023). The On-Site Project Area and the vessel transportation corridor of the Off-Site Project Area both occur within HUC8 17100105; the rail transportation corridor portion of the Off-Site Project Area extends across HUC8 17100105, 17100104, and 17100103. Under Washington's Water Resource Inventory Area (WRIA) system, both the On-Site Project Area and the vessel transportation corridor of the Off-Site Project Area occur in WRIA 22 (Lower Chehalis River Watershed). The rail transportation corridor portion of the Off-Site Project Area extends across both WRIA 22 and WRIA 23 (Upper Chehalis River Watershed). The marine estuary of Grays Harbor is the ultimate receiving waterbody for all surface water discharges in the study area.

To date, only those water resources located within the portions of the On-Site Project Area where Proposed Project activities would occur have been formerly delineated in the field. All other water resource boundaries discussed in this section are approximate.

5.3.1 Chehalis River and Grays Harbor

The Chehalis River and Grays Harbor are the largest surface waters in the water resources study area. They occur adjacent to the On-Site Project Area and within both the Off-Site rail and vessel project areas (Figure 4).

The Chehalis River originates in southwestern Washington and generally flows toward the north/northwest for approximately 125 miles to Grays Harbor and the Pacific Ocean (USGS 2011). The Chehalis River Basin is the second largest river basin in Washington State, draining an area of approximately 2,660 square miles. The river collects freshwater from tributaries from several regions in the southwest portion of the state including the Cascades Foothills, Willapa Hills, Coast Range, and Olympic Mountains. As noted in Section 5.2, the Chehalis River Basin is rain-dominated and has no glacial source of water. The Chehalis River enters Grays Harbor near Aberdeen with River Mile (RM) 0 occurring just upstream of the Chehalis River Bridge (U.S. Highway 101) near the river's confluence with the Wishkah River. The Chehalis River is affected by ocean tides, with salt water extending upstream to as far as Montesano near RM 13. Tidal influence on water levels in the river extends approximately 20 miles upstream to just downstream of the Satsop River confluence (Gendaszek 2011). The Chehalis River is considered a shoreline of statewide significance under Washington's Shoreline Management Act (SMA) and is classified as a Type S water by the City of Aberdeen.

As described in Section 5.2, Grays Harbor is an estuarine bay connected to the Pacific Ocean. It is fed by the Pacific Ocean, the flow from six rivers (Chehalis, Elk, Hoquiam, Humptulips, Johns, and Wishkah), and many smaller creeks and tributaries within the Chehalis River basin (Figure 5).

Grays Harbor is considered a shoreline of statewide significance under the SMA and is classified as a Type S water by the cities of Aberdeen and Hoquiam.

The jurisdictional boundaries of estuarine and marine waters are based on the high tide line (HTL) and/or ordinary high water mark (OHWM) depending on location. Moffatt & Nichol identified the HTL and OHWM for the Chehalis River and Grays Harbor in the *Port of Grays Harbor Terminal 4 HTL and OHWM Determination* memorandum (Moffatt & Nichol 2022a). The following sections describe how those boundaries were established.

5.3.1.1 High Tide Line Determination

Pursuant to 33 CFR Part 328.3, the term "high tide line" means "the line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The HTL may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm."

In 2022, the U.S. Army Corps of Engineers (USACE), Seattle district, provided the following three preferred methods for delineating the HTL (USACE 2022):

1. Identify the 10-year average high tide based on future predicted tide data, and supplement this finding with a field delineation.
2. Average the 10 highest predicted tides for each year over a 10-year period.
3. Use the highest astronomical tide as the HTL.

The HTL for the shoreline between Port of Grays Harbor T2 and T4 was identified using the second method. A total of 10 years of future predicted tide levels from January 2022 through December 2031 were reviewed using data from the National Oceanic and Atmospheric Administration's (NOAA's) Aberdeen Tide Gage (Station ID 9441187), approximately 0.6 mile west of the On-Site Project Area (Figure 5). The annual highest predicted tides are summarized in Table 3. Based on the described method, the 10-year average high tide measured at the Aberdeen Tide Gage and the anticipated HTL for the shoreline between T2 and T4 is 12.22 feet mean lower low water (MLLW).

Table 3
Annual Predicted Highest High Tide

HTL Determination	
Year	**Highest Annual Predicted Highest High Tide (feet MLLW)**
2022	12.278
2023	12.138
2024	12.22
2025	12.39
2026	12.258
2027	12.057
2028	12.099
2029	12.346
2030	12.325
2031	12.029
Average	**12.214**

5.3.1.2 Ordinary High Water Mark Determination

The permitted 2019 BHP Grays Harbor Potash Export Facility project identified an OHWM of 10.11 feet MLLW at Terminal 3 (T3). This OHWM was field delineated in July 2019 and is equivalent to the mean higher high water (MHHW) for NOAA's Aberdeen Tide Gage (WSP 2019).

T3 is approximately 3.5 miles west of the On-Site Project Area. Given the proximity of T3 to T4, the OHWM at T3 is anticipated to be representative of the OHWM at the On-Site Project Area. To confirm the applicability of using the T3 OHWM, tidal datums were obtained for the shoreline at T4 and compared to tidal datums at T3 using VDatum ver. 4.5 (Table 4; NOAA 2022). Tidal datums at the Aberdeen NOAA Tide Gage (Station ID 9441187) are also reported in Table 4. Tidal datums were similar, and it was therefore determined appropriate to use the T3 OHWM for the Project Area shoreline. As such, the OHWM at the On-Site Project Area is anticipated to be 10.11 feet MLLW.

Table 4
Tidal Datums and Water Levels in Feet MLLW

Datum Description	Abbreviation	Terminal 3 Obtained Using VDatum	Terminal 4 Obtained Using VDatum
Mean Higher High Water	MHHW	10.03	10.16
Mean High Water	MHW	9.33	9.47
Mean Tide Level	MTL	5.42	5.46

Datum Description	Abbreviation	Terminal 3 Obtained Using VDatum	Terminal 4 Obtained Using VDatum
Mean Sea Level	MSL	5.54	5.60
Mean Low Water	MLW	1.49	1.46
North American Vertical Datum 1988	NAVD88	1.79	1.87
Mean Lower Low Water	MLLW	0.0	0.0

The Port's T4 is adjacent to the federal navigation deep-draft channel that runs between the City of Aberdeen and the Pacific Ocean. The channel is 350 feet wide and broadens to over 1,000 feet wide over the bar located at the mouth of Grays Harbor. The recent Grays Harbor Navigation Improvement Project deepened about 14.5 miles of the 27.5-mile-long channel from -36 feet MLLW to -38 feet MLLW from the South Reach upstream to Cow Point Reach where T4 is located (USACE 2022). Annual maintenance dredging in the vicinity of Port terminal facilities is permitted between July 16 and February 14 and is authorized to maintain the terminal berth prism to a depth of -43 feet MLLW at T4, which includes 2 feet of overdredge allowance.

5.3.2 Streams and Ditches

Pursuant to Washington Administrative Code (WAC) 220-660-030, in Washington state the term "stream" is defined as any portion of a watercourse channel, bed, or bottom waterward of the ordinary water line of the waters of the state. The term "ditch" is defined as a wholly artificial watercourse, or a natural watercourse (waters of the state) altered by humans.

Streams and ditches within the portions of the On-Site Project Area where Proposed Project activities would occur were initially delineated by HDR, Inc., between June 23, 2022, and August 19, 2022 (Appendix A). That delineation was later refined using information collected by Moffatt & Nichol and Anchor QEA during follow-up site visits on March 16 and April 23, 2023. The purpose of the supplemental site visits was to confirm channel characteristics (e.g., substrate, vegetation, and bed/bank conditions), connectivity to other waterbodies, and the presence or absence of culverts. Based on those studies, streams and ditches identified in the On-Site Project Area include one stream (Fry Creek) and seven ditches (East Terminal Way Ditch, Ditches 1 through 3, and Ditches 5 through 7[1]). The approximate boundaries of those features are shown in Figures 6a through 6e. An additional ditch (Ditch 4) located outside of the delineation area but within the study area was also included in the mapping. That ditch is located directly west of the On-Site Project Area adjacent to the former site of the Grays Harbor Paper water treatment facility (Figure 6b).

[1] Ditches 5 through 7 were originally identified as wetlands in the HDR delineation but were later reclassified as ditches by Moffatt & Nichol and Anchor QEA based on supplemental field data due to their excavated condition, the presence of little to no in-channel vegetation, and the lack of definitive hydric soil indicators.

Figures 6a through 6e also show the approximate boundaries of other streams and ditches located within portions of the study area that were not included in the delineation area. These include other segments of Fry Creek and East Terminal Way Ditch, as well as multiple stormwater ditches and swales. Excavated stormwater and wastewater treatment ponds are also shown. All of those features were identified and mapped by Anchor QEA using the NWI Wetlands Mapper (USFWS 2023), Google Earth aerial photography, and field observations. As such, the locations and boundaries of those features are approximate.

For regulatory purposes under Section 404 of the Clean Water Act (CWA) and the State's SMA, the jurisdictional boundaries of non-tidal waters are typically identified using the OHWM.[2,3] HDR used the OHWM to define the boundaries of the non-tidal ditches within their delineation area (i.e., Ditches 1 through 3 and 5 through 7). For tidally influenced waters, including the downstream end of Fry Creek, much of East Terminal Way Ditch, Ditch 4, and the shoreline of the Chehalis River, the jurisdictional boundaries were identified using the HTL[4] as required by 33 *Code of Federal Regulations* (CFR) 328.3(c)(4). The HTL was identified by Moffatt & Nichol using the 10-year average high tide elevation (Moffatt & Nichol 2022a). A discussion of the methods for determining the HTL is presented in Section 5.5.1. For East Terminal Way Ditch, which includes both non-tidal and tidal sections, HDR used a combined approach to boundary identification. Ecology guidance states that for any area where the OHWM cannot be found, the OHWM adjoining saltwater should be used to represent the line of mean higher high tide (MHHT) and the OHWM adjoining freshwater should be used to represent the line of mean high water (Ecology 2016).

Table 5 presents the locations and geographic extents of the streams and ditches within the study area, as well as their water types and buffer widths according to the stream definitions and typing systems detailed in Aberdeen Municipal Code (AMC) 14.100.500 and Hoquiam Municipal Code (HMC) 11.06.260. Because only USACE can determine the jurisdictional status of these waterways under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act, all of these features are considered to be potentially jurisdictional waters of the United States in this technical study.

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[2] Under the CWA, the OHWM is defined as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 *Code of Federal Regulations* [CFR] 328.3).

[2] Under the SMA, the OHWM is defined as "that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department" (RCW 90.58.030).

[4] The HTL is defined as "the line of intersection of the land with the water's surface at the maximum height reached by a rising tide." In the absence of actual data, the HTL may be determined by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide (33 CFR 328.3(c)(4)).

Figure 6a
Overview of Existing Water Resources

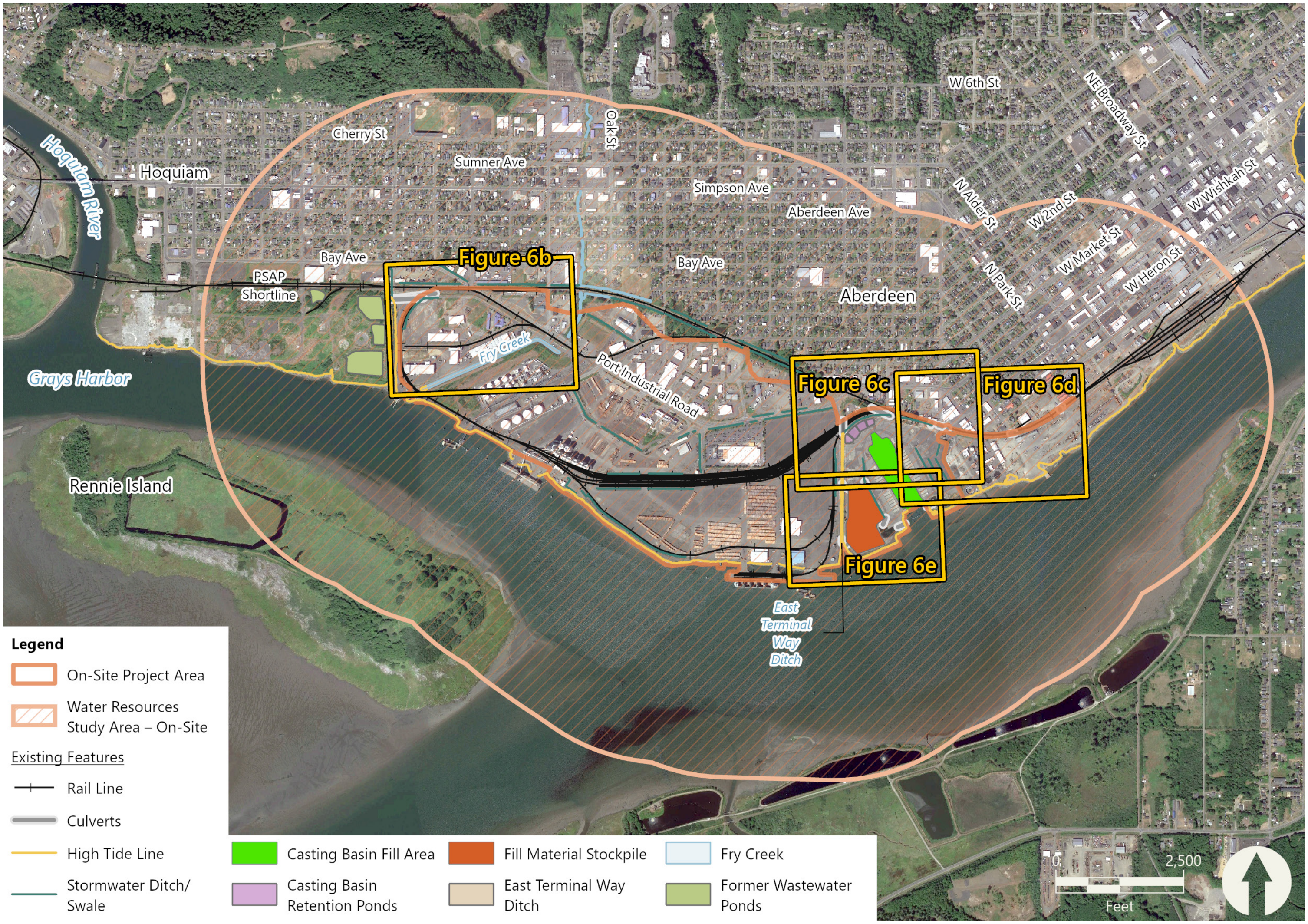


Figure 6b
Existing Surface Water Resources – Northwestern Portion of On-Site Project Area

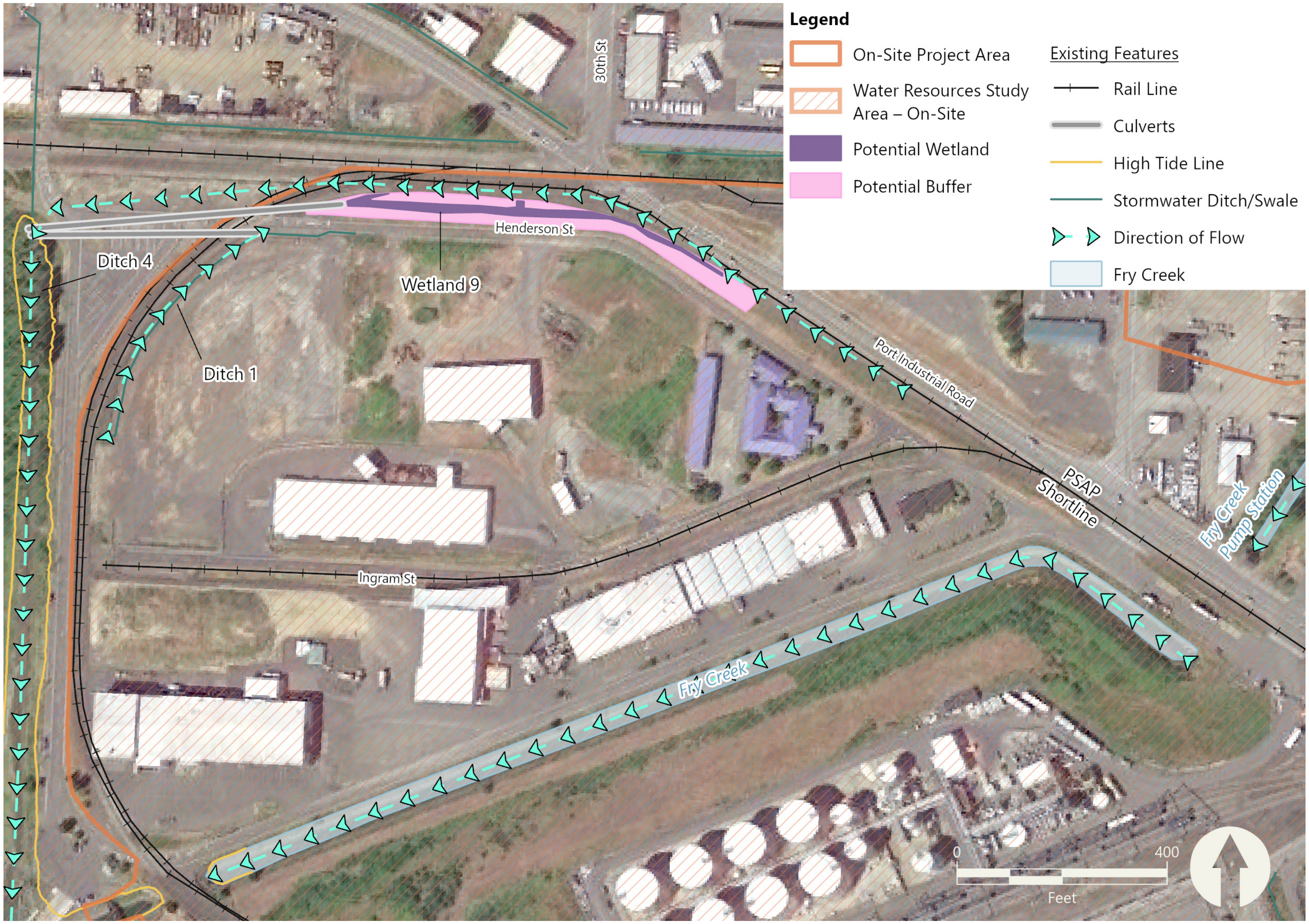


Figure 6c
Existing Surface Water Resources – Northeastern Portion of On-Site Project Area

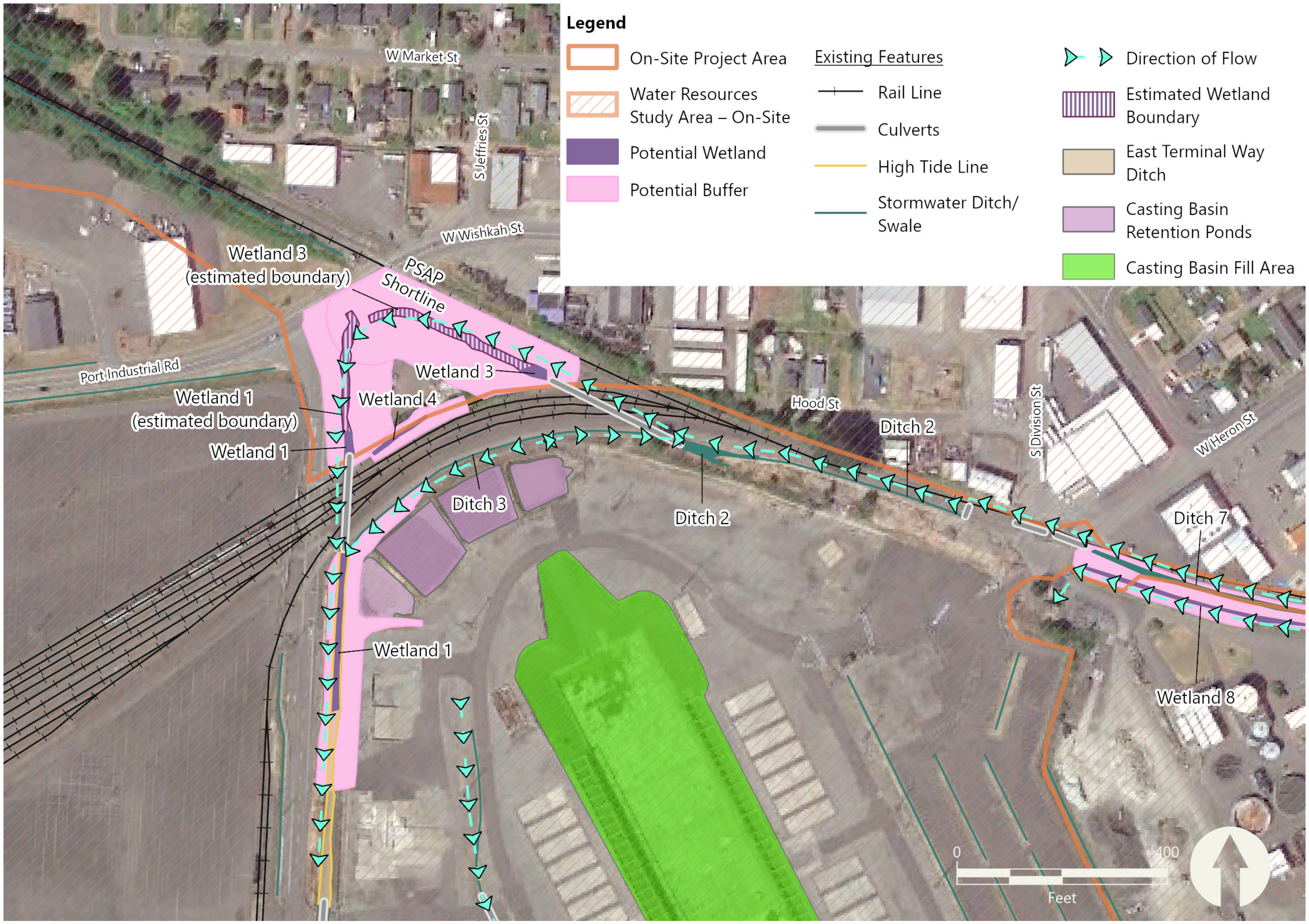


Figure 6d
Existing Surface Water Resources – Eastern Portion of On-Site Project Area

Figure 6e
Existing Surface Water Resources – Southeastern Port of On-Site Project Area

Table 5
Streams and Ditches Delineated Within the Study Area

Stream/Ditch Name	Jurisdiction	Flow Condition	Tributary to	Water Type[1,2]	Buffer Width (Feet)[3,4]	Average Channel Width in Study Area (Feet)	Approximate Length in Study Area (Feet)
Fry Creek	Hoquiam	Perennial, Tidally Influenced	Grays Harbor	S	150	52	100
East Terminal Way Ditch	Aberdeen	Perennial, Tidally Influenced	Grays Harbor	S[2]	150	15	300
Ditch 1	Hoquiam	Intermittent	Ditch 4/ Grays Harbor	NA	NA	4	640
Ditch 2[5]	Aberdeen	Intermittent	Wetland 3/ East Terminal Way Ditch	NA	NA	1.5	400
Ditch 3	Aberdeen	Intermittent	Ditch 2/Wetland 3/ East Terminal Way Ditch	NA	NA	3	700
Ditch 4	Hoquiam	Perennial, Tidally Influenced	Grays Harbor	S	150	25	1,250
Ditch 5[6]	Aberdeen	Intermittent	Ditch 6/Ditch 7/Ditch 2/ East Terminal Way Ditch	NA	NA	6	196
Ditch 6[7]	Aberdeen	Intermittent	Ditch 7/Ditch 2/ East Terminal Way Ditch	NA	NA	6	475
Ditch 7[8]	Aberdeen	Intermittent	Ditch 2/ East Terminal Way Ditch	NA	NA	6	851

Notes:

1. Source: HMC 11.06 Definitions. Type S waters are all waters, within their bankfull width, as inventoried as "shorelines of the state."
2. Source: AMC 14.100.500(B)(6).
3. Source: HMC Table 11.05.330-1: Shoreline Buffers, for industrial and port development, non-water-oriented structures and uses.
4. Source: AMC.50.430.05 Table 4-1, for industrial and port development, non-water-oriented structures and uses.
5. Ditch 2 includes the areas initially mapped as Ditch 2 and Wetland 2 in the preliminary delineation report (HDR 2022).
6. Ditch 5 was previously mapped as Wetland 5 in the preliminary delineation report (HDR 2022).
7. Ditch 6 was previously mapped as Wetland 6 in the preliminary delineation report (HDR 2022).
8. Ditch 7 was previously mapped as Wetland 7 in the preliminary delineation report (HDR 2022).

The following points provide a brief description of the streams and ditches listed in Table 5:

- **Fry Creek** is a tributary to Grays Harbor that flows roughly north to south through the west end of the City of Aberdeen and enters the harbor just east of the Hoquiam River (Figures 2, 4, and 6b). Fry Creek originates in the forested hills north of the city. Within the city limits, it flows through a narrow and heavily developed riparian corridor and passes through a series of culverts under city streets and railroad tracks to a pump station on the north side of Port Industrial Road. During storms, that pump station discharges to the section of Fry Creek located in the study area. That section of the creek extends from the south side of Port Industrial Road to Grays Harbor, passing under a culverted railroad crossing and a pedestrian footbridge at its downstream end. The section of Fry Creek in the study area is channelized and has been heavily altered by surrounding industrial development and the placement of riprap on its bed and banks. In addition to discharge from the pump station, the downstream section of Fry Creek within the study area is also fed by tidal flows from Grays Harbor. The section of Fry Creek within the study area is considered a shoreline of the state (Type S water) and is also likely to be regulated as waters of the United States. The channel is low-gradient, uniform, and the banks are topped with grasses and shrubs, but a functional riparian corridor is lacking. The landward limit of salt-tolerant vegetation, namely the presence of seaside plantain, located along small benches on both banks was used in delineating the HTL in the study area.
- **East Terminal Way Ditch** is a mostly tidal channel that flows south through the study area between Terminal 4 and the former casting basin site to the marine waters of Grays Harbor (Figures 4, 6c, and 6e). It includes the following three culverted crossings: a rail corridor crossing on its northern end, a paved road crossing near its center, and an unpaved road crossing at its southern end. The reach of East Terminal Way Ditch that extends south of the rail crossing to Grays Harbor is tidally influenced. As such, it is considered a shoreline of the state (Type S water), as well as a water of the United States. That section of the ditch is straight and confined in a steep banked excavated channel that is approximately 5 to 6 feet wide in most places. A portion of Wetland 1 occurs in the channel just south of the rail crossing (Figure 6c). The section of East Terminal Way Ditch upstream of the railroad crossing curves toward the east and includes another portion of Wetland 1 and Wetland 3 (Figure 6c). That section of the ditch has very little flow, includes a thick layer of silty substrate, and is partially choked with wetland vegetation. The existing rail culverts are undersized and prevent normal tidal exchange; the upstream portion of East Terminal Way Ditch is not tidally influenced and is unlikely to be regulated as a shoreline of the state, although it would likely be considered a water of the United States. The downstream portion of East Terminal Way Ditch receives surface water discharge from a series of stormwater retention ponds formerly used during casting operations and from a perimeter ditch system located around the material stockpile in the southwest corner of the casting basin site (Figure 6e). The upstream

portion of East Terminal Way Ditch receives runoff from surrounding uplands, including flows from Ditches 2, 3, 5, 6, and 7 and other off-site ditches. East Terminal Way Ditch is identified as an "open channel" segment of the City of Aberdeen's stormwater system (City of Aberdeen 2023).

- **Ditch 1** is an isolated short ditch located in the northwest portion of the study area (Figure 6b). It includes two arms: one that extends east to west along the south side of Henderson Street and another that extends from northeast to southwest along an existing rail line. Each arm of the ditch conveys flow toward its center where it is collected by a culvert and conveyed under the rail line and 28th Street to Ditch 4. Ditch 1 is mostly unvegetated with no hydric soil development and appears to have been excavated from uplands.
- **Ditch 2** is an isolated short drainage ditch located to the north of the former casting basin that collects flow from Ditch 3 and several other ditches located to the east along the Port's rail corridor and PSAP's rail line (including Ditches 5, 6, and 7) and conveys it into East Terminal Way Ditch via a culvert under the rail corridor (Figures 6b and 6d). Ditch 2 has no vegetation and no soil development but does show signs of ponding and water flow. The western portion of Ditch 2 was initially called out as a wetland by HDR due to ponding and some sparse vegetation but was later reclassified as a ditch by Moffatt & Nichol and Anchor QEA based on its excavated condition and lack of definitive wetland characteristics. Ditch 2 is identified as an "open channel" segment of the City of Aberdeen's stormwater system (City of Aberdeen 2023).
- **Ditch 3** is a short drainage ditch located between the rail corridor and former casting basin retention ponds (Figure 6c). It conveys flow from the adjacent rail embankment in two directions: into Ditch 2 from the eastern portion of Ditch 3 and into East Terminal Way Ditch and Wetland 1 from the western portion of Ditch 3. The ditch has no vegetation or hydric soil development. It exhibits ponded water and has a substrate consisting of gravel and cobble. Ditch 3 is in close proximity to Wetland 1 but has no fish habitat or surface water connection due to a 5-foot drop where it enters the wetland tidal channel. Ditch 3 is identified as an "open channel" segment of the City of Aberdeen's stormwater system (City of Aberdeen 2023).
- **Ditch 4** is a tidal channel that flows north to south to Grays Harbor along the western boundary of the study area (Figure 6b). Ditch 4 was not identified by HDR but is included here because it is in the vicinity of rail improvement activities proposed in that portion of the study area. Ditch 4 is a ditch with moderately sloped banks that is approximately 25 to 30 feet wide and has no in-channel vegetation but does show signs of ponding and water flow. Ditch 4 was the former outlet channel for the Grays Harbor Paper water treatment facility, which has since been demolished.
- **Ditch 5** is an excavated roadside ditch located adjacent to an existing railroad berm at the eastern end of the study area (Figure 6d). Ditch 5 receives runoff from adjacent uplands and

conveys flow through a culvert under S Washington Street and into Ditch 6 through another culvert under the rail berm. Flow from Ditch 5 is eventually discharged to the upstream end of East Terminal Way Ditch via Ditch 2. Ditch 5 was initially identified as a wetland by HDR but was later reclassified as a ditch by Moffatt & Nichol and Anchor QEA based on its excavated condition and lack of definitive wetland characteristics.

- **Ditch 6** is an excavated roadside ditch located between an existing railroad berm and W River Street at the eastern end of the study area (Figure 6d). Ditch 6 receives runoff from adjacent uplands and conveys flow toward the west into Ditch 7 through a culvert under S Monroe Street. Flow from Ditch 6 is eventually discharged to the upstream end of East Terminal Way Ditch via Ditch 2. Ditch 6 was initially identified as a wetland by HDR but was later reclassified as a ditch by Moffatt & Nichol and Anchor QEA based on its excavated condition and lack of definitive wetland characteristics.
- **Ditch 7** is an excavated roadside ditch located between an existing railroad berm and a gravel access road at the eastern end of the study area (Figure 6d). Ditch 7 receives runoff from adjacent uplands and conveys flow toward the west into Ditch 2 through a culvert under S Monroe Street. Flow from Ditch 7 is eventually discharged to the upstream end of East Terminal Way Ditch via Ditch 2. Ditch 7 is identified as part of the City of Aberdeen's stormwater conveyance infrastructure; it is classified as an "open channel" by the city (City of Aberdeen 2023). Ditch 7 was initially identified as a wetland by HDR but was later reclassified as a ditch by Moffatt & Nichol and Anchor QEA based on its excavated condition and lack of definitive wetland characteristics.

Several other stormwater ditches located outside of the area delineated by HDR were identified in the study area using field observations and Google Earth aerial photography (Figures 6b through 6e). Those ditches are primarily adjacent to roads and rail tracks and consist of shallow, excavated, rock-lined channels designed to collect and convey stormwater runoff away from those transportation features. They also include a perimeter ditch around the material stockpile on the former casting basin site (Figure 6e). These ditches likely only contain water during and for a short time after precipitation events. They either drain into other ditches or streams (e.g., East Terminal Way Ditch, Fry Creek) or stormwater ponds.

Linear waterbodies within the rail transportation corridor portion of the Off-Site Project Area were not delineated in the field but were identified using the NWI Wetlands Mapper and NHD mapping (Figures 7 and 8). The existing PSAP rail line crosses approximately 37 named and unnamed tributaries to the Chehalis River, including the Wishkah River, Elliot Slough, Higgins Slough, Wynoochee River, Sylvia Creek, Camp Creek, Satsop River, Sherwood Creek, Newman Creek, Vance Creek, McDonald Creek, Cloquallum Creek, Mox Chehalis Creek, Porter Creek, Gibson Creek, Cedar Creek, Harris Creek, Roundtree Creek, Black River, Scatter Creek, Prairie Creek, and Skookumchuck River, as well as the Hoquiam River. The rail line runs within 1 mile of but does not cross several other named and unnamed tributaries including Mox Chuck Slough, Gaddis Creek, Davis Creek, Coffee Creek, and China Creek.

No streams are present in the vessel transportation corridor portion of the Off-Site Project Area, but the entire portion of the vessel corridor is within the Grays Harbor estuary.

5.3.3 Wetlands

Wetlands are defined as 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 (CFR 33.328.3[c][4]). Wetlands typically require the presence of three diagnostic characteristics: hydrophytic vegetation, hydric soils, and wetland hydrology.

Wetlands were initially delineated in the portions of the On-Site Project Area where Proposed Project activities would occur by HDR between June 23, 2022, and August 19, 2022 (Appendix A). That delineation identified nine potential wetlands including several that occurred in excavated ditches located adjacent to roads and rail lines. Several of those potential ditch wetlands were revisited by Moffatt & Nichol and Anchor QEA during follow-up site visits on March 16 and April 23, 2023, to confirm the presence of definitive wetland characteristics (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology). Based on that supplemental field work, four areas previously identified as wetlands by HDR were reclassified as ditches due to their excavated condition, presence of little to no in-channel vegetation, and lack of definitive hydric soil indicators. The areas that were reclassified as ditches are channelized features situated between road and rail corridors that provide only stormwater conveyance functions. They lack substantial vegetative diversity or structural complexity and provide little to no hydrologic, habitat, or biogeochemical wetland functions.

Table 6 presents the wetlands identified in the study area and summarizes additional wetland classification and rating information provided by HDR in their *Draft Wetland and Stream Delineation Report* (Appendix A). Supplemental information regarding the nature of these potential wetlands as it relates to their potential jurisdictional status is also included.

Table 6
Wetlands Delineated Within the Study Area

Wetland Name[1]	Jurisdiction	Area (acres)	HGM Class[2]	Cowardin Classification[3]	Ecology and City Wetland Rating[4]	Required Buffer Width[5] (feet)
Wetland 1	Aberdeen	0.13	Depressional	EEM	II	150
Wetland 3	Aberdeen	0.02	Depressional	PEM/PAB	III	80
Wetland 4	Aberdeen	0.02	Depressional	PEM	III	80

Wetland Name[1]	Jurisdiction	Area (acres)	HGM Class[2]	Cowardin Classification[3]	Ecology and City Wetland Rating[4]	Required Buffer Width[5] (feet)
Wetland 8	Aberdeen	0.06	Depressional	PEM	III	80
Wetland 9	Hoquiam	0.20	Depressional	PEM	III	80

Notes:

1. Wetland numbering is nonsequential because some areas identified as wetlands during HDR's delineation were later reclassified as ditches.
2. HGM classification is based on *A Hydrogeomorphic Classification for Wetlands* (Brinson 1993).
3. *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979; FGDC 2013). EEM: Estuarine Emergent. PEM: Palustrine Emergent. PAB: Palustrine Aquatic Bed.
4. Washington State Rating System for Western Washington (Hruby 2014). Estuarine wetlands were rated based on special characteristics.
5. Wetland buffer width applied for high land use impact (AMC 14.50.914 – Appendix 2: Table A2-3; AMC 14.100.250; HMC11.06.140).

The wetlands identified in the Study Area are further described in the following sections:

- **Wetland 1** is an estuarine intertidal emergent wetland, and portions of the wetland are located below the HTL. The wetland is collocated with East Terminal Way Ditch and occurs on both sides of the existing culverted rail crossing (Figure 6c). Wetland 1 is rated Category II based on special characteristics because it is an estuarine wetland not located within a national wildlife reserve, national park, natural estuary reserve, natural area preserves, state park, or other educational environmental or scientific reserve and has been subject to disturbance and lacks features including tidal channels, depressions, and contiguous freshwater wetlands. Wetland 1 is afforded a required 150-foot-wide buffer width by AMC. Only the portions of Wetland 1 to the south of the rail crossing and a short section on the north side of the crossing were delineated in the field. The remainder of that wetland, which extends outside of the proposed disturbance area to the north was approximated using aerial photography and Light Detection and Ranging (LiDAR). Wetland 1 occurs within an area of the City of Aberdeen's stormwater system that is identified as an "open channel" (City of Aberdeen 2023).
- **Wetland 3** is a palustrine emergent and aquatic bed wetland and is located in a narrow swale northwest of an existing railroad track and outside of the study area (Figure 6c). Wetland 3 is rated Category III and is afforded a required 80-foot-wide buffer width by AMC. HDR did not provide an assessment of the wetland water quality, hydrological and habitat functions. Only a small section of Wetland 3 was delineated in the field. The remainder of that wetland, which extends outside of the proposed disturbance area to the northwest was approximated using aerial photography and LiDAR. Wetland 3 occurs within an area of the City of Aberdeen's stormwater system that is identified as an "open channel" (City of Aberdeen 2023).

- **Wetland 4** is a palustrine emergent wetland and is located in a narrow swale between an existing set of railroad tracks and Off-Site development at the east side of the study area (Figure 6c). Wetland 4 is rated Category III with moderate water quality functions, moderate hydrologic functions, and low habitat functions and is afforded a required 80-foot-wide buffer width by AMC. Wetland 4 occurs within an area of the City of Aberdeen's stormwater system that is identified as an "open channel" (City of Aberdeen 2023).
- **Wetland 8** is a palustrine emergent wetland located in a narrow swale between a gravel access road and existing development at the east side of the study area (Figure 6d). It drains to the pumphouse of the City of Aberdeen's wastewater treatment plant. Wetland 8 is rated Category III with moderate water quality functions, moderate hydrologic functions, and low habitat functions, and is afforded a required 80-foot-wide buffer width by AMC. Wetland 8 is identified as part of the City of Aberdeen's stormwater conveyance infrastructure; is classified as an "open channel" by the city (City of Aberdeen 2023).
- **Wetland 9** is a palustrine emergent wetland and is located in a steep-sided ditch adjacent to an existing railroad berm at the west side of the study area (Figure 6b). Wetland 9 is rated Category III with moderate water quality functions, moderate hydrologic functions, and low habitat functions, and is afforded a required 80-foot-wide buffer width by HMC.

Because only indirect effects would occur, wetlands within the Off-Site Project Area were not delineated in the field but were identified using the NWI Wetlands Mapper. That mapping indicates that there are a variety of potential wetland types and other water resources within the rail transportation corridor including several estuarine wetlands; dozens of riverine wetlands; and palustrine freshwater emergent, shrub, and forested wetlands (Figures 7 and 8).

Figure 7
NWI Mapped Wetland and Streams in Off-Site Rail Transportation Corridor Study Area – Northwest Portion

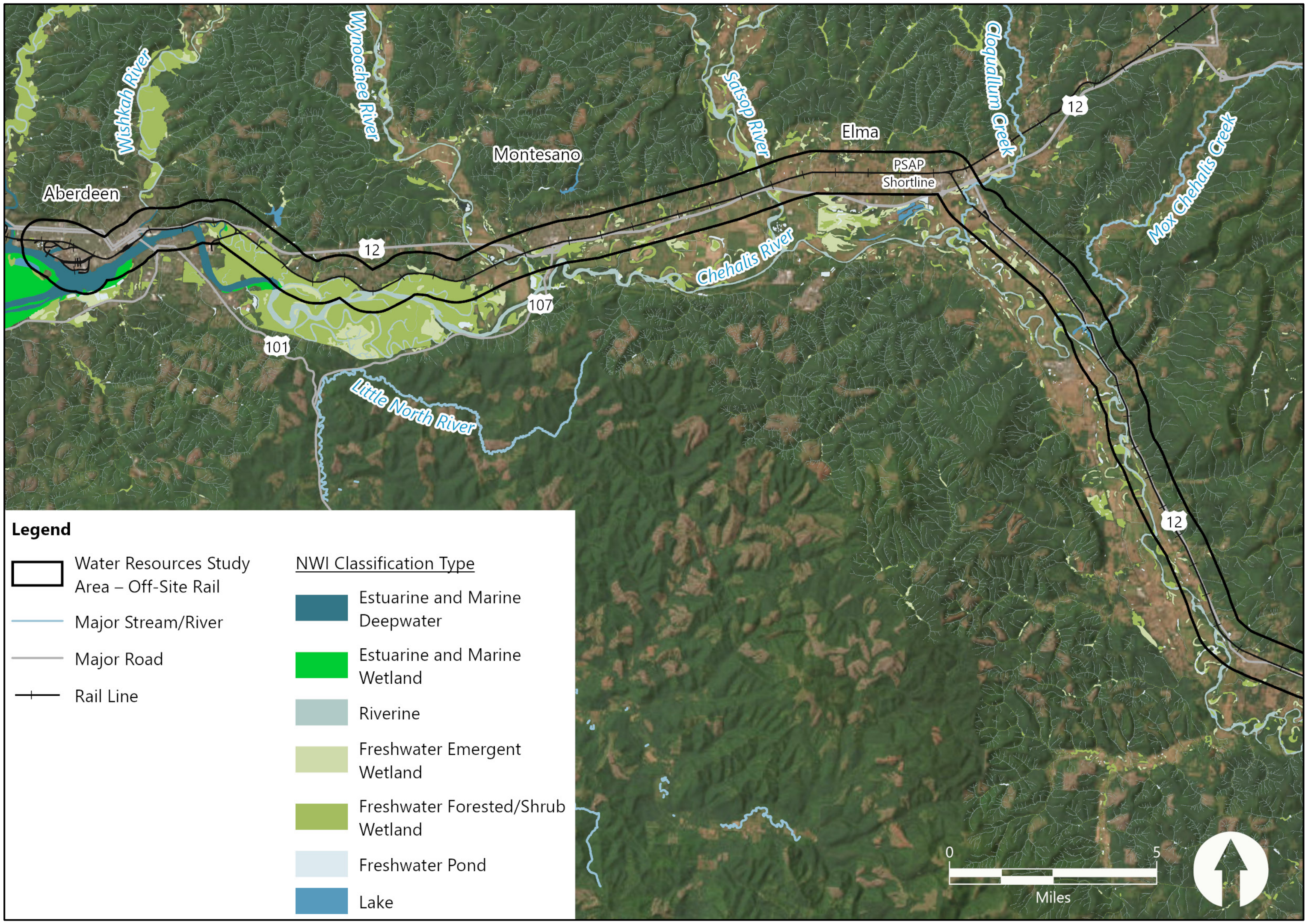
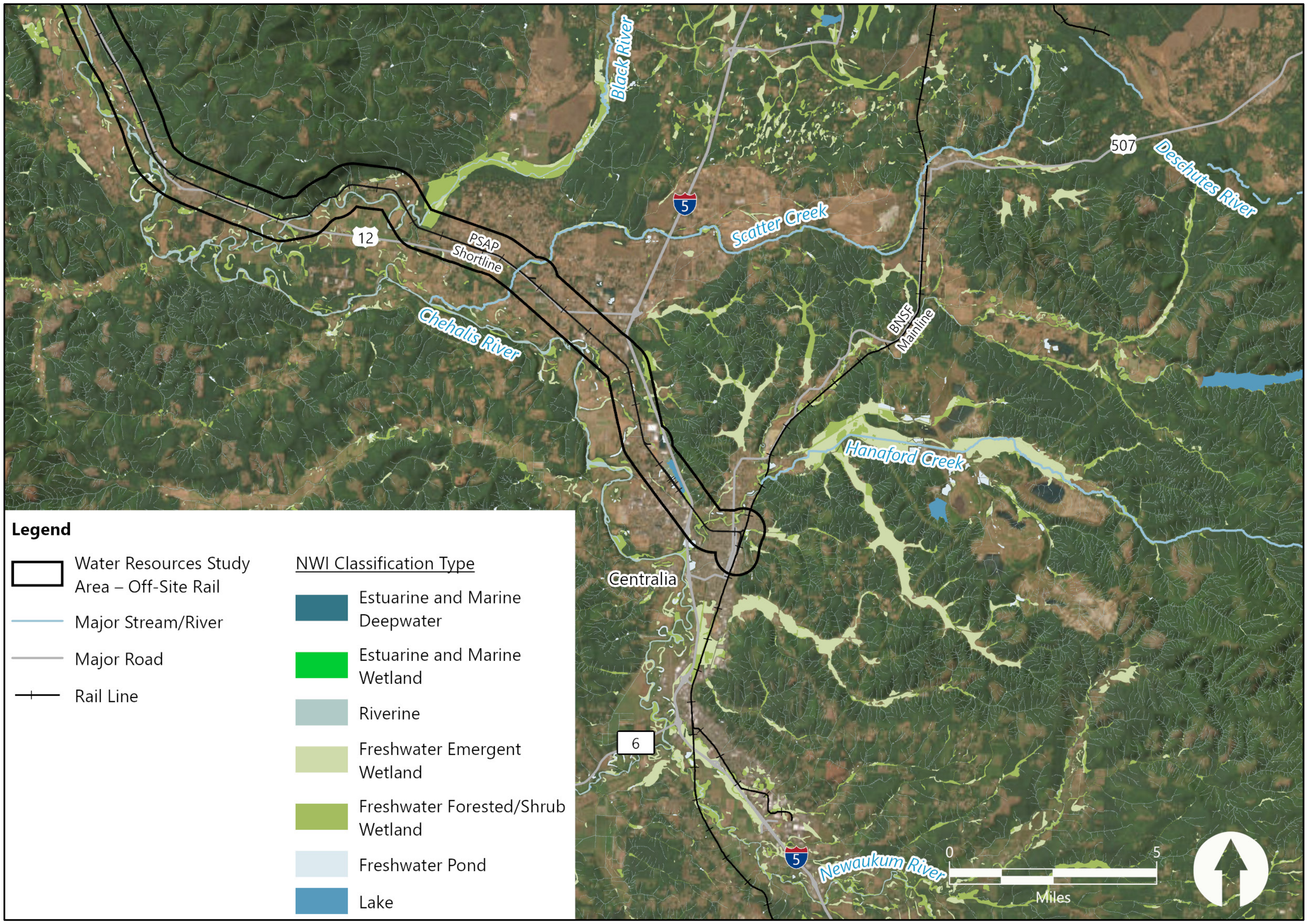


Figure 8
NWI Mapped Wetland in Off-Site Rail Transportation Corridor Study Area – Southeast Portion



5.3.4 Stormwater Features

The entirety of the On-Site study area is currently developed and largely consists of impervious surfaces. Stormwater in the On-Site study area is collected by a system of catch basins, ditches, and other stormwater conveyance features and mainly discharges to Grays Harbor via the Port's multiple outfalls (Appendix B; Figures B-1 and B-2). However, certain areas are captured separately and may also be routed to existing municipal systems. East Terminal Way Ditch, Wetlands 1 through 4, Wetland 8, and Ditches 2 and 7 are all identified as being part of the City of Aberdeen's stormwater infrastructure (City of Aberdeen 2023). Separated catch basins exist at Terminal 1 (T1) and Terminal 2 (T2) related to existing tenant use (Appendix B, Figure B-1). Although the drainage system for T1 would not be affected by the Proposed Project, portions of the drainage system for the new rail lines would connect to the T2 stormwater system.

Within the study area and project footprint at T4, stormwater is separated into two main basins with the T4B area draining to outfalls located to the west of the T4 dock (Appendix B, Figure B-1). Stormwater at the T4A cargo yard is handled through an existing sand and gravel permit, involving detention at the existing ponds prior to discharge via separate outfalls to the east of the T4 dock (Appendix B, Figure B-2). Stormwater at the T4 dock currently drains to Grays Harbor (Appendix B, Figure B-1).

As described in the 2021 site development plan and feasibility analysis (MFA 2021) and shown on Figure B-2 in Appendix B, under existing conditions, stormwater at the casting basin is collected into a sump and then conveyed by pumps to the four northern stormwater ponds (Ponds 1.1, 1.2, 1.3, and 1.4). The water is then treated in the stormwater ponds and discharged to East Terminal Way Ditch via an outfall located to the south of the existing rail crossing of that drainage. Runoff from upland paved and unpaved areas adjacent to the west side of the casting basin is routed to a ditch and biofiltration swale that drains into a stormwater sediment treatment cell (Pond 2) in the southwest corner of the casting basin. From there, stormwater is discharged into Grays Harbor.

As shown on the maps included in Figure B-2 (Appendix B), on the eastern side of the casting basin, there are several biofiltration swales that collect runoff and discharge to the ponds in the southeastern corner of the casting basin (Ponds 3 and 4). To the east and west of the parking area there are conveyance ditches. The ditches on the western side of the parking area convey stormwater to the same pond in the southeastern corner of the casting basin. The ditch on the eastern side of the parking area discharges into Grays Harbor.

Stormwater features are likely to have a varied jurisdictional status under local, state, and federal regulations based on their historical condition, location, and connectivity to other waterbodies. The jurisdictional status of stormwater ditches will primarily depend on the historical condition of their location and the type and duration of any connection they have to waters of the state and/or

United States. Stormwater ditches that were constructed within a former stream channel or wetland or that have a direct and relatively permanently flowing surface connection to Grays Harbor, Fry Creek, East Terminal Way Ditch, or Ditch 4 could be considered jurisdictional waters of the state or United States. Other stormwater ditches that were clearly constructed in uplands and that have no such connections to those waterways are not likely to be regulated as waters of the state or United States. The stormwater ponds within the study area are human-created features that were excavated in uplands for the purpose of providing stormwater retention and treatment as part of a waste treatment system authorized under a state-issued National Pollutant Discharge Elimination System (NPDES) permit. Because of this, they are unlikely to be considered waters of the United States by USACE. This presumption is supported by a February 8, 2023, Approved Jurisdictional Determination (AJD) that was issued by USACE for the former casting basin and the four northern stormwater ponds (Ponds 1.1, 1.2, 1.3, and 1.4) on the casting basin site (USACE 2023). Under that AJD, all of those features were determined to be non-jurisdictional under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act.

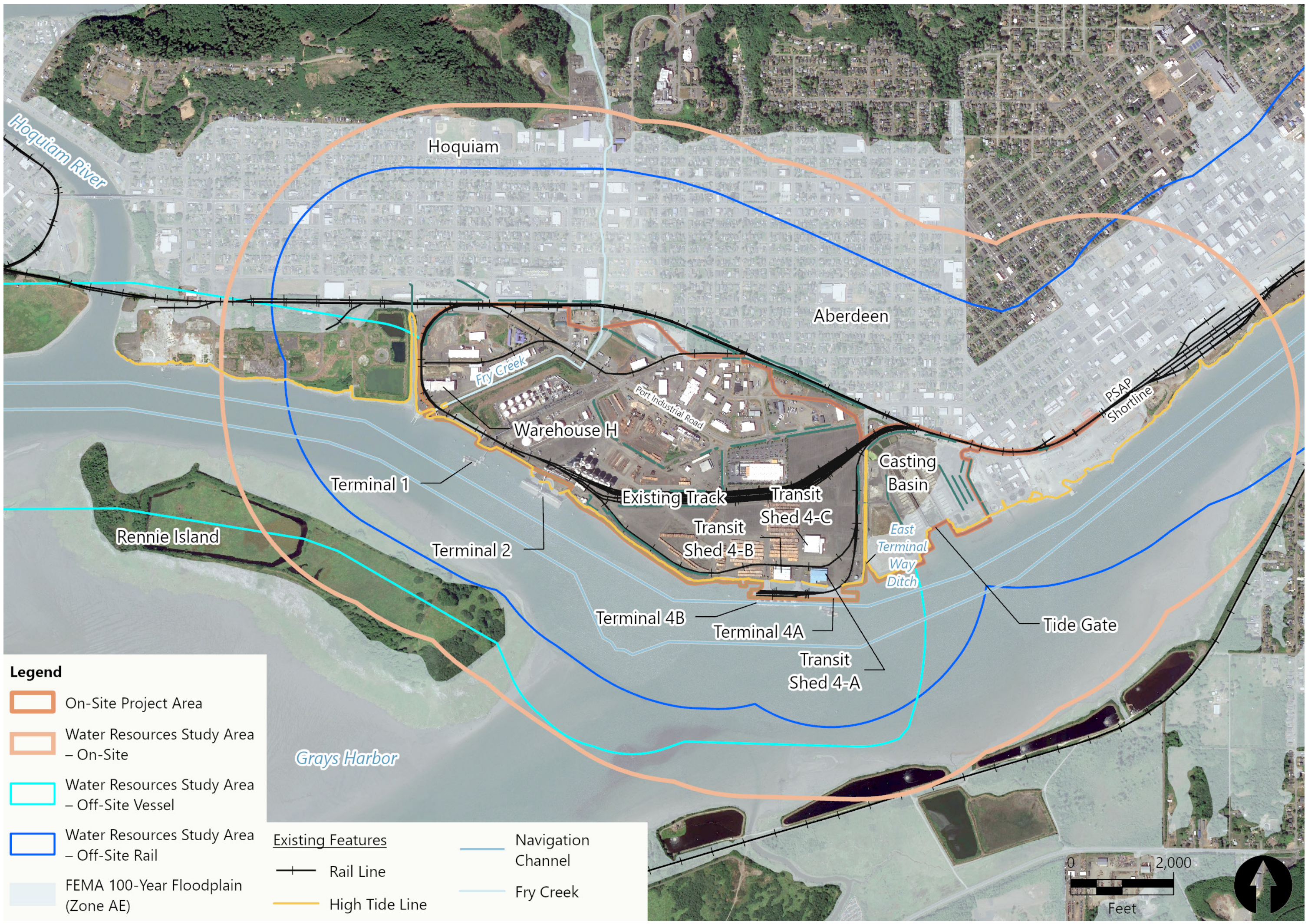
5.4 Floodplains

Portions of the On-Site Project Area are located within Zone AE of the Special Flood Hazard Area (SFHA) defined for Grays Harbor by FEMA under the National Flood Insurance Program (NFIP) (FEMA 2017a, 2017b, 2017c). The SFHA is the land that is subject to inundation by the base flood, which is defined as the flood having a 1% chance of being equaled or exceeded in any given year (i.e., the 100-year flood; FEMA 2023). Management of activities in the SFHA and Zone AE flood zone are administered at the local level by the cities of Hoquiam and Aberdeen with federal oversight from FEMA.

Portions of the On-Site Project Area that occur in Zone AE include the southeastern portion of the casting basin site, Off-Site rail located to the north and east of the Project Area, East Terminal Way Ditch, Ditches 1 through 4, Wetlands 1, 3, and 4, and Wetland 9 (Figure 9). The SFHA in those locations does not have a defined floodway.[5] Per AMC 15.55.190(B)(2)(d)(1), areas within Zone AE that do not have a defined floodway and that are inundated by coastal flooding are exempt from Grays Harbor County's floodplain obstruction rules because it has been determined that filling the floodplain in such locations will not result in an appreciable rise in flood levels. Wetlands/Wet Ditches 5, 6, 7, and 8 are outside the SFHA. The base flood elevation for Grays Harbor is 13 feet North American Vertical Datum of 1988 (NAVD88). The remaining portions of the On-Site Project Area are at higher elevations and outside of Zone AE or other mapped flood hazard areas.

[5] As defined by FEMA, a "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height (FEMA 2023).

Figure 9
100-Year Floodplain as Mapped by the Federal Emergency Management Agency

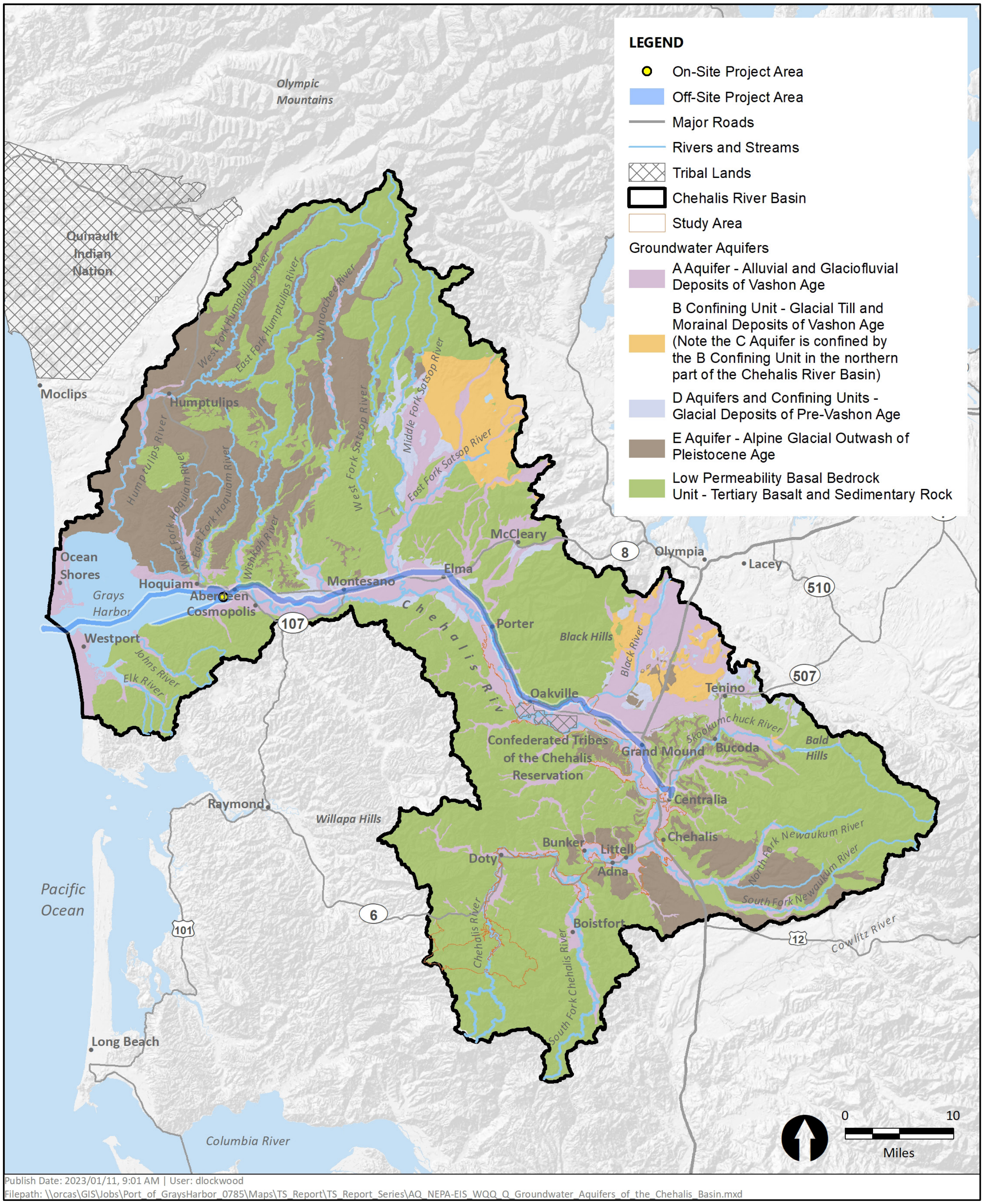


The rail transportation corridor of the Off-Site Project Area crosses several mapped flood hazard areas between its origin in Centralia, Washington, and terminus at the On-Site Project Area. These include the 100-year floodplains (Zone A) of Skookumchuck River, Scatter Creek, Black River, Roundtree Creek, Harris Creek, Cedar Creek, Gibson Creek, Porter Creek, Mox Chehalis Creek, Delezene Creek, Newman Creek, Satsop River, Sylvia Creek, Wynoochee River, Higgins Slough, Elliot Slough, Wishkah River, and Chehalis River (Ecology 2023a). The rail line also crosses the 100- to 500-year floodplains (Zone B) of Dry Bed Creek and Vance Creek.

5.5 Groundwater

A report prepared in cooperation with USACE, Ecology, and the Chehalis Basin Partnership provides the best current understanding of groundwater and hydrogeology within the Chehalis River basin (Gendaszek 2011). Surficial geologic maps and hundreds of lithostratigraphic logs were used to produce basin-wide hydrogeologic maps that include five aquifers within unconsolidated glacial and alluvial sediments separated by discontinuous confining units (Figure 10). These five aquifers are bounded by a low permeability unit comprised of Tertiary bedrock and are composed of Pleistocene glacial outwash and Holocene alluvium deposited along the valleys of the Chehalis River and its major tributaries. In general, groundwater flows follow land surface topography from higher elevation uplands to the lower elevation alluvial valley of the Chehalis River. Groundwater gradients are higher in tributary valleys, relatively flat in the central Chehalis River valley, and tidally influenced near the outlet of the Chehalis River to Grays Harbor.

Figure 10
Chehalis Basin Hydrogeological Map



The A Aquifer was identified as occurring throughout the major river valleys of the Chehalis River and its tributaries, including the Port and both On-Site and Off-Site Project Areas. The A Aquifer is the most extensive surficial aquifer in the Chehalis River basin and interacts readily with surface water. It is recharged by rivers during the wetter winter months when river stages are higher and discharges to rivers and Grays Harbor in the drier summer months when river stages are lower. The A Aquifer is composed of silt, sand, gravel, and coarser alluvial sediments of glacial and non-glacial origin.

A review of well log records available on the Ecology Well Report Viewer (Ecology 2023e) was conducted to locate existing water wells within the Project Area and to determine general groundwater conditions. The well log records indicate several Resource Protection Well Reports and Geotechnical Soil Borings have been performed in the last 20 years at the On-Site portion of the Project Area. Soils encountered were generally listed as fill consisting of brown silts, sands, and coarser materials with groundwater usually encountered between 8 and 12 feet below ground surface. These findings agree with the larger scale hydrogeological mapping efforts summarized in the previous section.

5.6 Surface Water and Sediment Quality

Water quality standards applicable to the portions of the Chehalis River and Grays Harbor that occur within and adjacent to the study area[6] are contained in WAC 173-201A-210, which specifies designated water uses and criteria for marine waters. Those standards include numeric and narrative criteria for each of the following designated uses identified for those waters per WAC 173-201A-612:

- Aquatic life uses: Good quality; water quality should meet or exceed the requirements for most uses including salmonid migration and rearing; other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning
- Recreational use: Primary contact recreation (e.g., swimming)
- Water supply uses: Domestic, industrial, agricultural, stock
- Miscellaneous uses: Wildlife habitat, harvesting (excluding shellfish), commerce and navigation, boating aesthetics

Specific water quality criteria associated with these assigned uses from WAC 173-201A-210 include the following:

- Temperature: 7-day average of daily maximum temperatures (7-DADMax) of 19°C (66.2°F)
- DO: not to exceed 5.0 milligrams per liter (mg/L)
- pH: within the range of 7.0 to 8.5, with a human-caused variation within the above range of less than 0.5 unit

[6] Grays Harbor east of longitude 123°59'W to longitude 123°45'45"W (Cosmopolis Chehalis River, river mile 3.1).

- Turbidity: 10 nephelometric turbidity units (NTU) over background when the background is 50 NTU or less; or a 20% increase in turbidity when the background turbidity is more than 50 NTU
- Bacteria: Enterococci and fecal coliform organism levels expressed as colony forming units (CFU) or most probable number (MPN)
  - To protect recreational use: Enterococci organism levels must not exceed a geometric mean value of 30 CFU or MPN per 100 milliliters (mL), with not more than 10% of all samples (or any single sample when fewer than ten sample points exist) obtained for calculating the geometric mean value exceeding 110 CFU or MPN per 100 mL
  - To protect shellfish harvesting use: Fecal coliform organism levels must not exceed a geometric mean value of 14 CFU or MPN per 100 mL, with not more than 10% of all samples (or any single sample when fewer than ten sample points exist) obtained for calculating the geometric mean value exceeding 43 CFU or MPN per 100 mL

The waters of Grays Harbor have been affected by decades of land use activities and discharges within the contributing upstream basins and to Grays Harbor itself. Ecology has evaluated and documented sediment quality in Grays Harbor during the previous decades. In May 1988, sediment samples were surveyed and analyzed from 10 sites in the Grays Harbor estuary to assess the occurrence of toxic chemicals in the bottom sediments (Ecology 1989). The results of the 1988 sediment quality study concluded that compared to sediments in Puget Sound and other sites in Washington and Oregon, chemical contamination levels in Grays Harbor sediments are low relative to the threshold that statistically results in a biological effect in receptors (Ecology 1989). Chemicals targeted for analysis included the U.S. Environmental Protection Agency (EPA) priority pollutants and hazardous substances list compounds, which include approximately 140 different metals and organic compounds. Near the Project Area, sediments had detectable concentrations of arsenic, beryllium, chromium, copper, lead, mercury, nickel, selenium, zinc, and silver, as well as the organic priority pollutants/hazardous substances list compounds polycyclic aromatic hydrocarbons (PAHs), 4-methylphenol, retene, dibenzofuran, phthalate acid esters, and polychlorinated dibenzodioxins (Ecology 1989).

Ecology’s Water Quality Atlas web-based map application indicates that sediments at and near the Project Area are within most state sediment quality standards (Ecology 2023b). Ecology also identifies portions of the navigation channel just downstream from the Project Area as having sediments that meet sediment quality standards for such contaminants as arsenic, bis (2-ethylhexyl) phthalate, cadmium, chromium, copper, fluoranthene, lead, mercury, high-molecular-weight PAHs, silver, and zinc (Ecology and City of Hoquiam 2016).

Ecology’s current EPA-approved Water Quality Assessment does not identify any Category 4 and 5 water quality impaired waters in and adjacent to the study areas (Ecology 2023c). Category 4 waters are impaired waters that do not require a water quality improvement project or Total Maximum Daily

Load (TMDL) pollutant reduction/allocation plan either because there is already an EPA-approved TMDL in place (Category 4a), there is an existing pollution control program similar to a TMDL that is expected to solve the pollution problems (Category 4b), or the water quality impairment is caused by a condition that cannot be addressed through a TMDL plan (e.g., low water flow, stream channelization; Category 4c). Category 5 waters, which are also known as 303(d)-listed waters, are polluted waters that require a water quality improvement project.

As shown in Figure 11, Category 4a waters in the vicinity of the study area include upstream areas in the Chehalis River that are listed for fecal coliform bacteria in both water and sediment and an area in Grays Harbor southwest of Rennie Island that is listed for dioxin. Those waters are covered under the following existing TMDLs:

- *Grays Harbor/Chehalis Watershed Fecal Coliform Bacteria TMDL* (Ecology 2002)
- Recommendations for TMDL Approval Grays Harbor (Inner) – Dioxin Memorandum (Ecology 1992)

In addition to these, the following three TMDL water quality improvement projects have been established in the Upper Chehalis River Basin (WRIA 23):

- *Revised Upper Chehalis River Basin Dissolved Oxygen TMDL* (Ecology 2000)
- *Upper Chehalis River Basin Temperature TMDL* (Ecology 2001)
- *Upper Chehalis River Fecal Coliform Bacteria TMDL: Submittal Report* recommendations (Ecology 2004)

Category 4b waters in the vicinity include an upstream area in the Chehalis River that is listed for high-molecular-weight polyaromatic hydrocarbons (HPAHs), low-molecular weight polyaromatic hydrocarbons (LPAHs), mercury, and phenol (Figure 11). Those areas are covered by a legally enforceable cleanup plan.

Category 4c waters in the vicinity of the study area include areas of the Chehalis River and Grays Harbor near the Port's T3 and the Bowerman Airport that are impaired by non-native fish, shellfish, and/or zooplankton (Figure 11).

Category 5 waters in the vicinity of the Study area include areas in the upstream Chehalis River that are impaired by pH in water; a section of the downstream Wishkah River that is impaired by fecal coliform bacteria in water; an area of the downstream Chehalis River and an area on Rennie Island that are impaired by mercury in sediment; a section of the lower Hoquiam River that is impaired by fecal coliform bacteria in water; and a section of the Hoquiam River farther upstream that is impaired by DO in water (Figures 12 and 13).

Figure 11
Clean Water Action Section 305b Category 4a, 4b, and 4c Listed Waters in the Project Area Vicinity

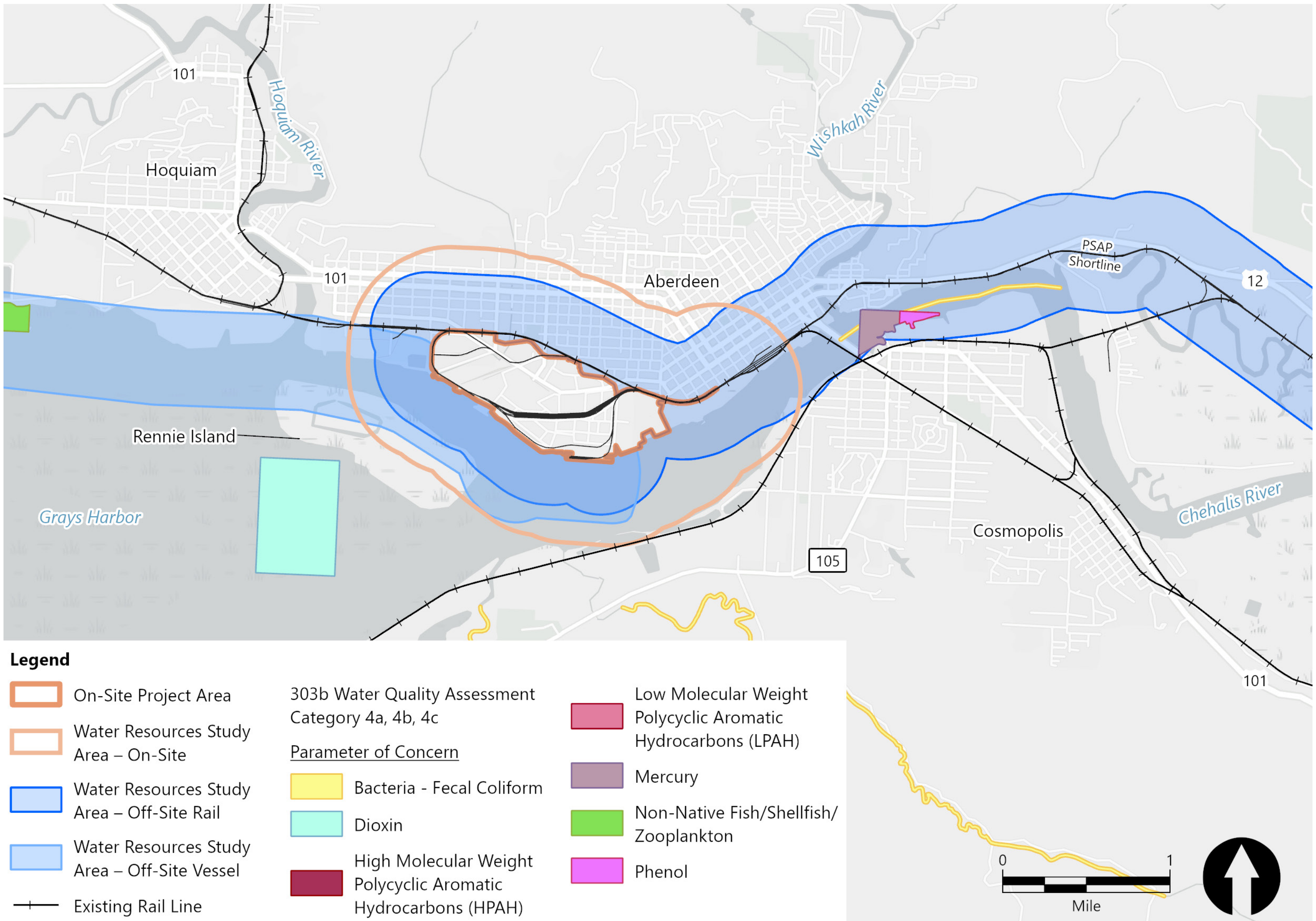


Figure 12
Clean Water Act Section 305b Category 5 Listed Waters (Section 303(d) Waters) in the Project Area Vicinity – Map 1

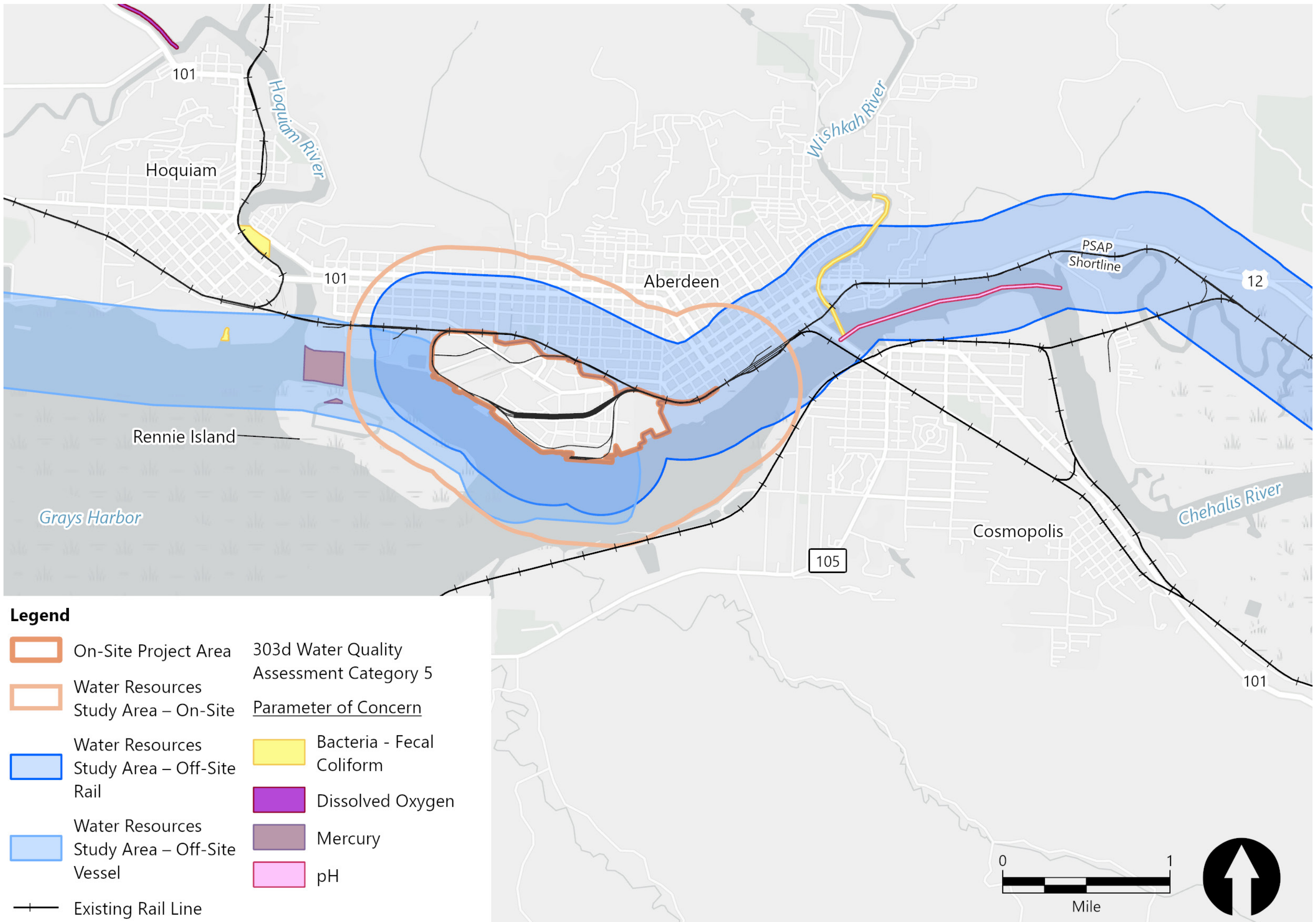
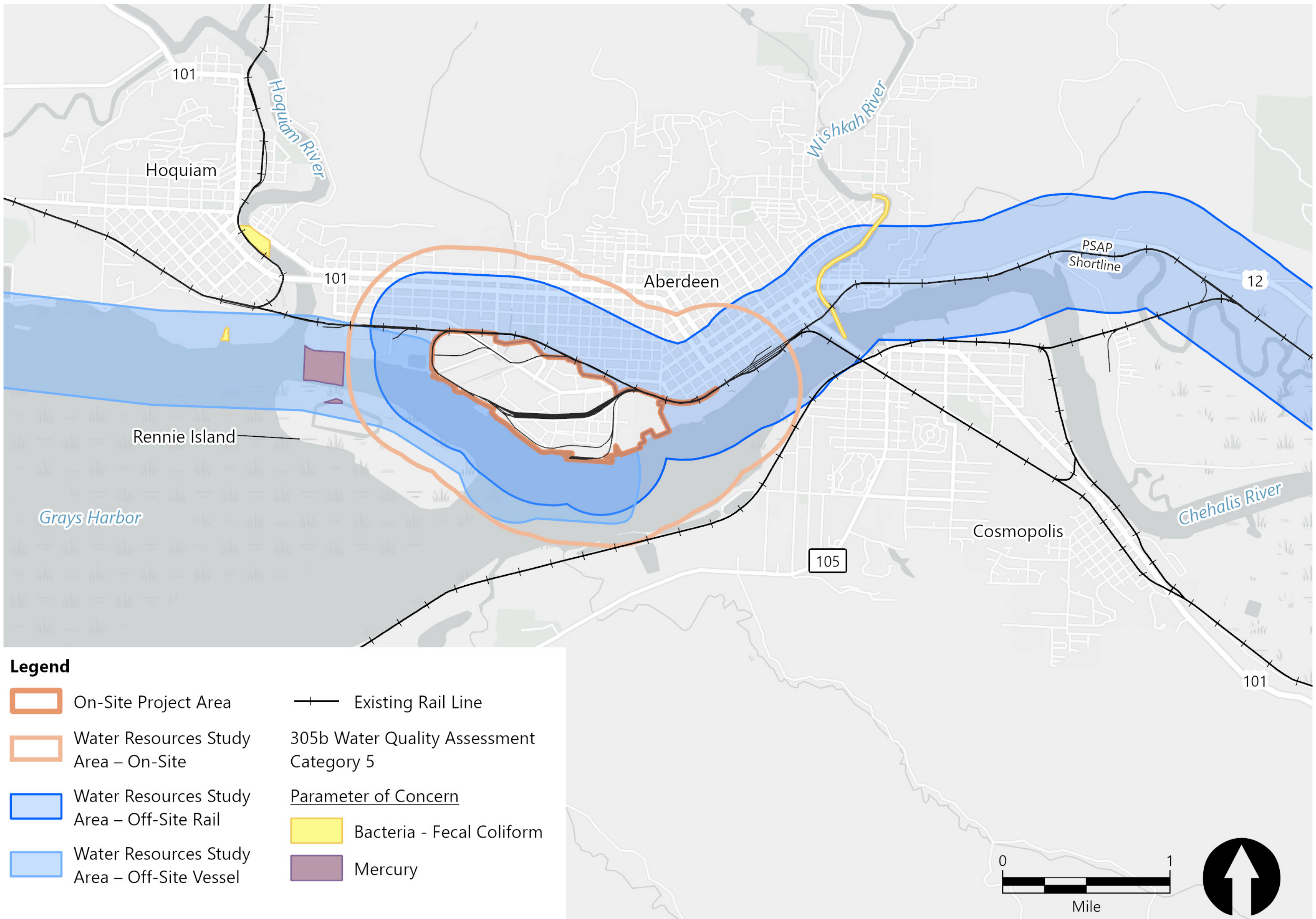


Figure 13
Clean Water Act Section 305b Category 5 Listed Waters (Section 303(d) Waters) in the Project Area Vicinity – Map 2



Sediment sampling was most recently completed for T1, T2, T3, and T4 by the Port in 2021 (Moffatt & Nichol 2022b, 2022c). The purpose of that sampling was to characterize potential dredged material for the Port's recency renewal application for maintenance dredging activities at those terminals and for a suitability determination of dredged material in a proposed advance maintenance dredging area adjacent to T2. Sampling included multiple grab samples at T1 through T4 and four vibracore samples within the advance maintenance dredging area at T2. Samples were collected between October 18 and 21, 2021, and submitted to an analytical laboratory for physical and chemical analysis. Physical analysis included grain size analysis. Chemical analyses included the following:

- Conventional analyses (total organic carbon, total solids, ammonia, sulfides, and grain size) using appropriate EPA and PSEP methods
- Total metals and mercury using EPA methods 6020B/7440/1631E
- Semi-volatile organic compounds using EPA Method 8270E
- Dioxins and furans by EPA Method 1613
- Pesticides using EPA Method 8081B and EPA Method 8270E
- Polychlorinated biphenyls (PCBs) using EPA Method 8082A

Using those methods, samples were analyzed for some 85 contaminants of concern (COCs). All results returned by the laboratory were determined to be acceptable for beneficial use with certain qualifiers applied (Moffatt & Nichol 2022b). Many COCs were not detected above the reporting limits in the samples, including phthalates, chlorinated hydrocarbons, pesticides, and PCBs. Most metals and some phenols, miscellaneous extractables, and PAHs were detected in the samples but at concentrations well below the screening levels specified in the Washington Dredged Material Management Program's (DMMP's) *Dredged Material Evaluation and Disposal Procedures: User Manual* for Washington State (USACE et al. 2021). Some dioxin/furan compounds were detected in dredged material management unit samples; however, calculated toxic equivalency quotients are below DMMP screening levels. Overall, the study concluded that COCs were not detected at concentrations exceeding DMMP guidelines and no subsequent biological testing was required (Moffatt & Nichol 2022b).

A second sediment characterization study was conducted by the Port at T4 on April 13, 2022 (Moffatt & Nichol 2022c). That study was completed to support the Port's amended maintenance dredging permit, which increased the annual maintenance dredging volume at T4 to address increased sedimentation that was occurring in that location. Six grab samples were collected in the berthing areas along the face of the T4 dock. Those samples were analyzed using the same physical and chemical analysis methods used for the 2021 sampling. Results were similar to the previous sampling effort in that many COCs were either not detected above reporting limits in the samples or detected at concentrations well below DMMP screening levels. Some dioxin/furan compounds were detected in one sample; however, the calculated toxic equivalency quotient is below DMMP guidelines. Overall, COCs were not detected at concentrations exceeding DMMP guidelines and no subsequent biological testing was required (Moffatt & Nichol 2022c). All areas were determined to be acceptable for reuse of dredged material with certain qualifiers applied.

5.7 Water Rights and Uses

One active water right (Certificate Number G2-22124 C) is shown as occurring within the On-Site Project Area on Ecology's Water Resources Explorer online mapping tool (Ecology 2023g). That right is held by the Washington Department of Natural Resources (WDNR) and associated with a groundwater well located west of the existing casting basin. It was issued in August 1976 for the purpose of providing cooling water for a blower that feeds aeration and anti-siltation devices (i.e., jet array system) at the T4 dock. The authorized water withdrawal from this well is approximately 25 gallons per minute on a continuous basis for 12 hours per day with an annual maximum withdrawal of approximately 20 acre-feet. That well is no longer used for the jet array system, which was upgraded in 1984 to use water pumped from the Chehalis River. It is not located on any of the project plans for the casting basin site, and no one at the Port is aware of its location. As such, it may no longer be in existence.

The Port does not hold any water rights for surface or groundwater use within the On-Site or nearby Off-Site Project Areas. Water used within those areas is provided by the City of Aberdeen Public Works Department (APWD), which supplies water to structures and for fire suppression at the Port's facilities. Two interties with the City of Hoquiam's water system are available for emergency use. Additional information on APWD's water system and its connection to the On-Site Project Area is provided in the Public Services and Utilities Technical Study.

6 Environmental Consequences

This section describes the environmental consequences of the No Action Alternative and the Proposed Project.

6.1 Assumptions

This analysis is based on the assumptions in the *Project Description Technical Report* (Anchor QEA 2023a); additional analyses relevant to this analysis include the following:

- The rail bridge over Fry Creek and culvert improvements at the East Terminal Way Ditch will be constructed in a manner to span the creek waters in the proposed work areas.
- A silt curtain will be used to isolate the T4 Dock Fender Upgrades in-water work area. A full depth or partial depth curtain may be used by the contractor. If a full curtain is used, efforts will be made to exclude fish from the work area using acoustic fish deterrent methods or similar. If a partial silt curtain is installed, it is assumed that fish would be able to leave the in-water work area when disturbance occurs.
- No water will be withdrawn from the Chehalis River or Grays Harbor. All water used in the production of concrete will be provided from municipal water sources.
- Rail and vessel operations are expected to increase under operations of the Proposed Project as described in the *Project Description Technical Report* (Anchor QEA 2023a). It is assumed that Proposed Project-related rail and vessel operations would adhere to required standards in place to protect water resources. Vessel operators would be required to adhere to the state and federal regulations that control discharge and water quality of ballast water.
- Some construction impacts to streams, floodplains, wetlands, and buffers are likely unavoidable. Compensatory mitigation plans will be implemented to offset these impacts.
- Many of the On-Site streams, wetlands, and protective buffers are currently functionally isolated or otherwise truncated by existing impervious surfaces such as paved roadways, buildings, rail track, and other developments.
- Existing piles to be removed from Grays Harbor at T4A and T4B include creosote-treated timber piles, steel H-piles, and concrete octagonal piles.
- All pile removal will be performed using a vibratory hammer and/or direct pull.
- All in-water and landward installed piles (temporary and permanent) will either be steel pipe piles or steel H piles.
- New piles to be permanently installed in Grays Harbor at T4A and T4B include various diameters of steel pipe pile sand steel H-piles.
- All pile installation will be performed using a vibratory hammer and/or impact hammer.
- The potential for groundwater contamination during construction and operation of the project is considered to be minimal because underlying aquifers are relatively deep and the majority of the project site consists of developed, impervious surfaces that limit infiltration. As

such, this report does not consider groundwater contamination a possible impact of the project.

6.2 Approach

This section describes the approach to the impact analysis, including the types of impacts considered.

6.2.1 Approach to Analysis

This study evaluated the potential direct, indirect, and cumulative impacts of the alternatives that would be different from existing conditions. Existing conditions include those present at the time the analysis was completed in 2023. When informative, the study also includes a comparison of the operational impacts of the Proposed Project to the No Action Alternative. This was done to provide additional information about whether the project impacts may be different later in the analysis period.

Cumulative impacts are caused by the incremental impact of the alternatives when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions, which take place over time (40 CFR 1508.7). The list of cumulative projects is presented in the *Project Description Technical Report* (Anchor QEA 2023a).

The following approach to assessing cumulative impacts was developed based on guidance from the Council on Environmental Quality (CEQ 1997):

- Determine the cumulative impacts study area for each environmental resource. The study area used to evaluate cumulative impacts is the same as described in Section 5.1.
- Assess the existing condition of each resource as it has been affected by past actions. This is based on information provided in Section 5 of this study, which includes the effects of past actions.
- Evaluate the cumulative impacts of all past, present, and reasonably foreseeable future actions on each resource in the study area.
- Assess how Alternative 1 would contribute to cumulative impacts.

6.2.2 Impact Terminology

Direct impacts are those that would occur as the result of and at the same time and place as the activities proposed by the Port and AGP. Direct impacts would only occur in the On-Site Project Area. Indirect impacts would occur later in time or farther in distance from the immediate project location but would be attributable to the Proposed Project. Indirect impacts also include those that would occur as the result of operating the project, such as traffic to and from the Project Area. These impacts could be temporary or permanent.

Project impacts can be characterized by duration. Permanent impacts would affect the resource to such a degree that they would not return to their preconstruction state during the analysis period. Temporary impacts may be short-term or long-term. Short-term impacts were assumed to last for less than 2 years. Long-term temporary impacts would affect functions that will eventually be restored or recover over time, but not within 1 year or more after the impact ceases.

The magnitude of impacts is also described in terms of low, medium, and high impacts. Table 7 provides guidance for how the impact levels were assessed. The level of impacts was assessed assuming that applicable regulations and permits and approvals listed in Section 3 would be adhered to and obtained. If needed, the impact analysis also identifies where mitigation would be required to reduce the impact to acceptable levels. Mitigation is described in Section 7.

Table 7
Impact Thresholds for Water Resources

Impact Indicator	Determining Degree of Impact
Flowing Surface Water Hydrology Alteration	**No/Negligible Impact:** An Alternative would not noticeably affect surface water hydrology. **Low:** An Alternative would alter the course of flowing water, but the changes would be temporary or within the range of natural variation based on available data. **Medium:** An Alternative would result in alterations to the course of flowing water that are minimal or would occur infrequently. **High:** An Alternative would result in alterations to the course of flowing water that are substantial or occur frequently.
Water Quality	**No/Negligible Impact:** An Alternative would not cause any noticeable impacts to water quality. **Low:** An Alternative would result in minimal and temporary changes in water quality parameters compared to existing conditions but would not on its own result in exceedance of state or federal ambient water quality criteria. **Medium:** An Alternative on its own would result in short-term exceedance of state or federal ambient water quality criteria. **High:** An Alternative on its own would result in long-term exceedance of state or federal ambient water quality criteria.

Impact Indicator	Determining Degree of Impact
Wetlands	**No/Negligible Impact:** An Alternative would not cause any noticeable loss of wetland area, functions, or types. **Low:** An Alternative would result in a temporary change in function or type and/or permanent loss of the following: • Less than 0.5 acre of Category II wetlands; and/or • Less than 1 acre of Category III or IV wetlands **Medium:** An Alternative would result in an overall change in function or type and/or permanent loss of the following: • Up to 0.5 acre of Category I wetlands • Between 0.5 to 5 acres of Category II wetlands; and/or • Between 1 to 10 acres of Category III or IV wetlands **High:** An Alternative would result in an overall change in function or type and/or permanent loss of the following: • 0.5 or more acre of Category I wetlands • 5 or more acres of Category II wetlands; and/or • 10 or more acres of Category III or IV wetlands
Floodplains Alteration	**No/Negligible Impact:** An Alternative would not cause noticeable impacts to floodplain areas, capacity, or functions. **Low:** An Alternative would result in minimal and/or temporary alterations to floodplain areas, capacity, or functions affecting a minor proportion of the floodplain. **Medium:** An Alternative would result in moderate and/or long-term alterations to floodplain areas, capacity, or functions affecting a minor proportion of the floodplain. **High:** An Alternative would result in substantial temporary or long-term alterations to floodplain areas, capacity, or functions and/or would affect a substantial proportion of the floodplain.
Groundwater	**No/Negligible Impact:** An Alternative would not cause any noticeable impacts to groundwater. **Low:** An Alternative would result in minimal and short-term impacts on local groundwater resources or disruptions to surface water-groundwater interactions. **Medium:** An Alternative would result in minimal long-term or moderate or substantial short-term impacts on local groundwater resources or disruptions to surface water-groundwater interactions. **High:** An Alternative would result in moderate or substantial long-term impacts on local groundwater resources or disruptions to surface water-groundwater interactions.
Water Use and Water Rights	**No/Negligible Impact:** An Alternative would not cause any noticeable impacts to water use or water rights. **Low:** An Alternative would result in minimal, short-term impacts to downstream water use and/or water rights. **Medium:** An Alternative would result in moderate short-term impacts to downstream water use and/or water rights. **High:** An Alternative would result in substantial or long-term impacts to downstream water use and/or water rights.

6.2.3 Methods

The analysis of potential impacts considered construction- and operation-related effects of the Proposed Project and No Action Alternative on water resources in the study area. The analysis considers the effects of constructing the complete Project; however, the Port and AGP may construct project elements in phases. Any major differences in the Proposed Project would be re-evaluated as appropriate. The analyses were primarily qualitative and based on review of available information including previous regulatory documents for the Proposed Projects near the Project Area, publicly available stream, wetland and floodplain mapping, and resource-specific studies and information. Quantitative analysis was used to determine the amount and type of wetlands and streams that could be affected because of the Proposed Project, including wetland delineations identified within the study area (Appendix A).

6.3 No Action Alternative

The No Action Alternative refers to the continuation of existing conditions without the implementation of the Proposed Project as it is described in Section 5 of the *Project Description Technical Report* (Anchor QEA 2023a). Under the No Action Alternative, the infrastructure proposed by the Port and AGP would not be built and brought online, and potential beneficial or adverse environmental impacts of the Proposed Project would not occur. Additionally, the purpose of the Proposed Project would not be satisfied under the No Action Alternative.

Under the No Action Alternative, it is anticipated that AGP would maximize its operations at the existing T2 facility, although the T2 facility cannot accommodate the increased volume of export cargo intended to flow through T4, if redeveloped. Thus, the No Action Alternative may not have the capacity to meet the purpose and need of the Proposed Project.

The Port would continue to provide economic benefits to the region as a working port; however, economic activity is assumed to be limited to current port infrastructure and terminal capacity limits. Therefore, potential impacts to water resources are expected to remain low, similar to existing conditions. The Port has included several upgrade and maintenance projects in their approved Capital Budget Plan for 2023 to 2028, including the fender system replacement, pile cap repairs, and repairs to the seawall approaches. Under the No Action Alternative, the Port would continue to pursue implementation of their approved Capital Budget Plan; however, these elements are not considered reasonably foreseeable due to lack of funding at this time. The Port would also pursue growth opportunities within the existing terminal footprint, which may include expansion of industrial and commercial activities at existing facilities that are not at capacity and that could have the potential to result in impacts to water resources.

6.4 Proposed Project

This section describes the direct and indirect impacts that would occur as the result of construction and operation of the Proposed Project.

6.4.1 Construction

Construction for the Proposed Project is estimated to last approximately 18 months as described in Section 5 of the *Project Description Technical Report* (Anchor QEA 2023a). Potential construction impacts to surface water hydrology surface water quality, wetlands, floodplains, groundwater, and water uses and rights would be negligible to medium. This is because most of the construction impacts would occur in previously developed areas and would be accompanied by standard construction best management practices (BMPs) to minimize the potential of these impacts.

6.4.1.1 Surface Water Hydrology

Potential construction impacts to surface water hydrology would be negligible to low. This includes hydrology effects to Grays Harbor, Fry Creek, East Terminal Way Ditch, wetlands, and existing stormwater conveyances. The On-Site Project Area is currently developed as impervious surfaces such as paved access roads and parking areas, paved cargo storage areas, ship loading facilities, railyards, and riprap lined stormwater conveyances. The Proposed Project construction would not significantly change surface water hydrology at the site because no alterations to flow would occur for construction purposes.

6.4.1.2 Surface Water and Sediment Quality

Potential construction impacts to surface water and sediment quality would be low to medium. This includes water and sediment quality effects to Grays Harbor, Fry Creek, East Terminal Way Ditch, wetlands, and existing stormwater conveyances. The On-Site Project Area is currently developed as impervious surfaces such as paved access roads and parking areas, paved cargo storage areas, ship loading facilities, railyards, and riprap lined stormwater conveyances that provide little or no treatment of stormwater runoff.

Construction would require in-water work and upland disturbance that could affect water and sediment quality. Elements of the project that could result in reduced water or sediment quality include construction of a new rail bridge at Fry Creek, culvert replacements at East Terminal Way Ditch, construction of a new railcar receiving facility, filling the former casting basin, and upgrading surface treatments to create a new cargo laydown yard, dock upgrades required to support new shiploaders, and construction activities within and over surface waters and at nearby upland areas. Construction of these project elements has the potential to result in accidental discharge of chemical contaminants, construction and demolition debris, and/or sediment loads to surface waters of the study area, including to state priority habitats, critical habitat, and Essential Fish Habitat. Impacts to these special status habitats are further discussed in the *Biological Resources Technical Study* (Anchor QEA 2023b).

Project construction may generate excess turbidity in the in-water portion of the study area during construction of the bridge over Fry Creek, roads and stormwater facilities, culvert extension/replacement, and/or dock demolition/removal and upgrades and installation of the pile-support foundation. Upland improvements that include ground-disturbing activities may also result in erosion of sediment that could potentially be introduced to adjacent waterways increasing turbidity and decreasing surface water quality.

Impacts to surface water quality could also occur if there is an accidental spill of uncured concrete used during construction. The pH of freshwater is normally between 6.5 and 8.5, but accidental concrete spills can cause very alkaline water with a pH of up to 13 (WDFW 2009). Accidentally spilled uncured and new concrete in contact with water could raise the pH up to a pH of 12 or 13, which is highly alkaline (WDFW 2009).

Direct and indirect stormwater impacts during construction will be mitigated through implementation of temporary erosion and sediment control (TESC) BMPs required under the Ecology NPDES construction stormwater permitting process. As such, impacts related to stormwater, erosion, leaks, and spills during construction are expected to be low.

Portions of the existing fender system will be removed along the entire 1,400-foot length of the T4 dock. Vertical elements of the fender system, consisting of treated timber fender piles, steel H-piles, and octagonal concrete piles, will be removed at locations where new fender panels will be installed. Horizontal treated timber elements of the existing fender system (continuous timber walers and chocks between fender piles) and rubber fender elements will be modified and removed in some locations. In addition, treated timber ties that are included in the existing T4 dock surface will be removed.

The removal of existing piles from face of the T4 dock could cause temporary increases in turbidity in Grays Harbor as the sediment those piles are imbedded in is disturbed during the removal process. Although recent sediment sampling completed in the T4 berthing areas in 2021 and 2022 did not find any COCs at concentrations exceeding DMMP guidelines in the upper sediment (Moffatt & Nichol 2022b, 2022c), it is possible that deeper sediments could contain potential contaminants that could be released into the water during the removal process. The Proposed Project includes the removal of creosote-treated wood pilings and other associated timber elements. Creosote is a brownish black/yellowish dark green oily product that is distilled from crude coal tars and consists of hundreds to thousands of chemical compounds (WHO 2004). There is a potential for toxic and carcinogenic compounds to leach from creosote-treated wood into aquatic habitat as some chemical compounds in creosote are highly water soluble (WHO 2004). Impacts from increased turbidity, potentially contaminated sediments, and creosote-treated piles will be reduced through the implementation of BMPs such as those included in WDNR's Derelict Creosote Piling Removal Best Management Practices (2017).

The removal of creosote-treated wood and improvements to stormwater management in the Project Area will reduce the availability of toxic constituents to water quality and result in net beneficial effects to the marine environments within Grays Harbor. However, during removal, the creosote-treated wood piles could be accidentally damaged or otherwise broken, causing small pieces of the material to enter the waters of Grays Harbor. This potential construction impact will be reduced by construction methods and use of construction BMPs such as debris capture, removal, and isolation.

6.4.1.3 Streams, Ditches, and Wetlands

Some unavoidable direct construction impacts to streams, ditches, wetlands, and their associated buffers would occur. Construction of the proposed rail and roadway improvements would result in ground disturbance and fill placement impacts to Ditches 1, 2, 3, 5, 6, and 7 and Wetlands 1, 4, 8, and 9 (Figures 14a through 14d). Those impacts are summarized in Tables 8 and 9.

Table 8
Proposed Project Impacts to Stream and Ditches

Stream/Ditch Name	Jurisdiction	Flow Condition	Tributary To	Water Type[1,2]	Impact Area (acres)
Fry Creek	Hoquiam	Perennial, Tidally Influenced	Grays Harbor	S	0.09
East Terminal Way Ditch	Aberdeen	Perennial, Tidally Influenced	Grays Harbor	S	0.07
Ditch 1	Hoquiam	Intermittent	Ditch 4/ Grays Harbor	NA	0.0
Ditch 2	Aberdeen	Intermittent	Wetland 3/East Terminal Way Ditch	NA	0.04
Ditch 3	Aberdeen	Intermittent	Ditch 2/ Wetland 3/East Terminal Way Ditch	NA	0.0
Ditch 4	Hoquiam	Perennial, Tidally Influenced	Grays Harbor	S	0.0
Ditch 5	Aberdeen	Intermittent	Ditch 6/Ditch 7/ Ditch 2/East Terminal Way Ditch	NA	0.003
Ditch 6	Aberdeen	Intermittent	Ditch 7/Ditch 2/East Terminal Way Ditch	NA	0.06
Ditch 7	Aberdeen	Intermittent	Ditch 2/East Terminal Way Ditch	NA	0.11

Stream/Ditch Name	Jurisdiction	Flow Condition	Tributary To	Water Type[1,2]	Impact Area (acres)
				Total	**0.37**

Notes:

1. Source: HMC 11.06 Definitions. Type S waters are all waters, within their bankfull width, as inventoried as "shorelines of the state."
2. Source: AMC 14.100.500(B)(6).

Table 9
Proposed Project Impacts to Wetlands

Wetland Name[1]	Jurisdiction	Area (acres)	HGM Class[2]	Cowardin Classification[3]	Ecology and City Wetland Rating[4]	Proposed Impact Area (acres)
Wetland 1	Aberdeen	0.13	Depressional	EEM	II	0.13
Wetland 3	Aberdeen	0.02	Depressional	PEM/PAB	III	0.0
Wetland 4	Aberdeen	0.02	Depressional	PEM	III	0.01
Wetland 8	Aberdeen	0.06	Depressional	PEM	III	0.0
Wetland 9	Hoquiam	0.20	Depressional	PEM	III	0.18
					Total	**0.32**

Notes:

1. Wetland numbering is nonsequential because some areas identified as wetlands during HDR's delineation were later reclassified as ditches.
2. HGM classification is based on *A Hydrogeomorphic Classification for Wetlands* (Brinson 1993).
3. *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979; FGDC 2013). EEM: Estuarine Emergent. PEM: Palustrine Emergent. PAB: Palustrine Aquatic Bed.
4. Washington State Rating System for Western Washington (Hruby 2014). Estuarine wetlands were rated based on special characteristics.

For streams and ditches, approximately, 0.16 acre of Type S waters and 0.21 acre of unclassified excavated ditches would be affected (Table 8). Those areas would be filled to construct new road crossings via the installation of new culverts and/or bridged and to create new embankments to support the proposed additional rail lines. Although several of these features would be lost, conveyance of the flow that they contain would be maintained by culverts, piping, and new rail and roadside drainage ditches. As such, impacts on flowing surface water hydrology would be low.

As indicated in Table 9, project construction would require the filling of the southern portion of Wetland 1 (Category II), approximately half of Wetland 4 (Category III), and a portion of Wetland 9 (Category III) to facilitate construction of the new rail lines. Total impacts would include 0.13 acre of Category II wetlands and 0.19 acre of Category III wetlands, for a total of 0.32 acre of wetland impacts. Construction impacts to wetlands would be low because it would result in permanent loss of less than 0.5 acre of Category II wetlands and less than 1 acre of Category III wetlands. Impacts to wetlands and wetland buffers will be mitigated by restoration activities developed as part of a mitigation plan designed to provide adequate compensation.

Figure 14a
Proposed Water Resource Impacts – Northwestern Portion of the On-Site Project

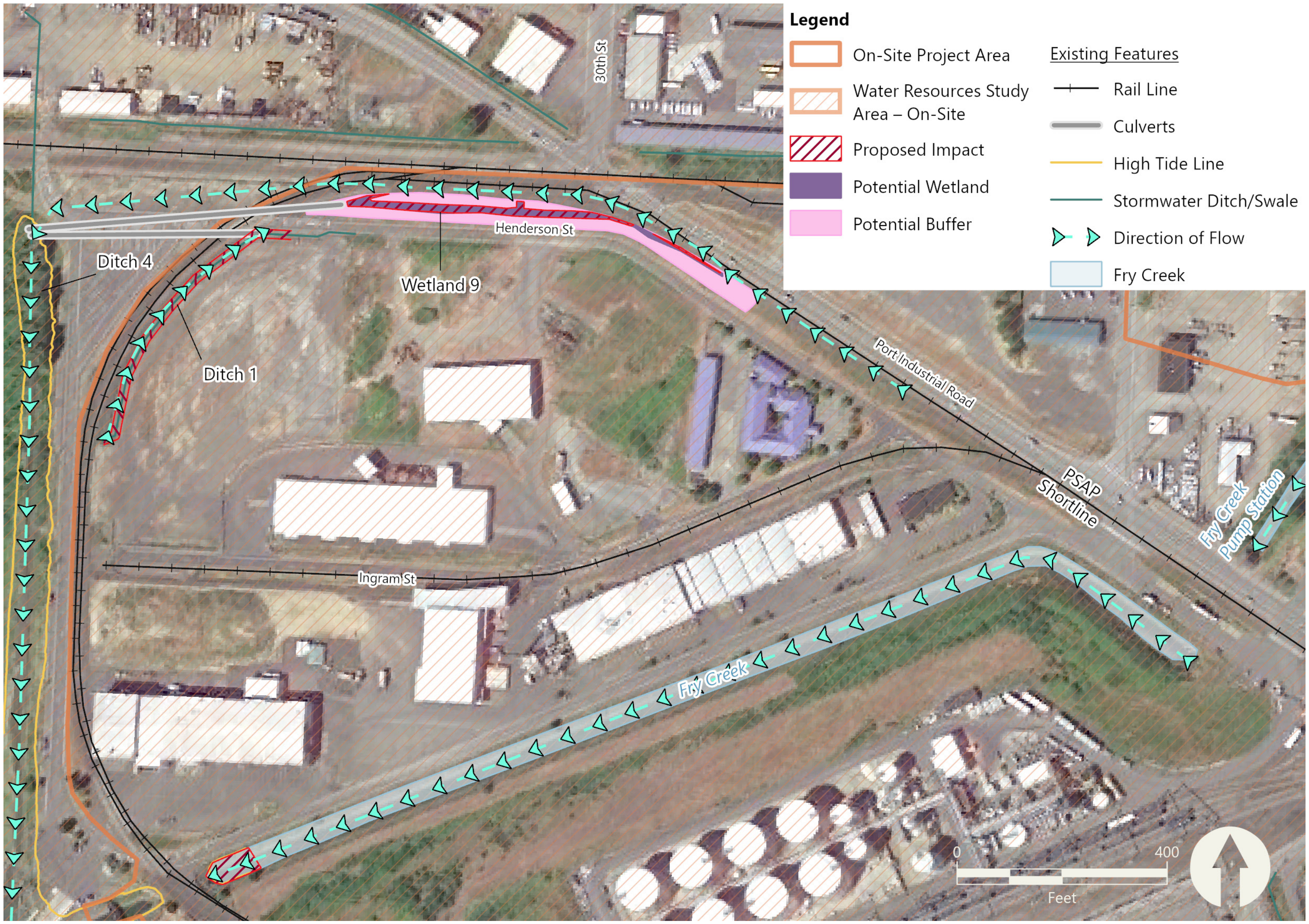


Figure 14b
Proposed Water Resource Impacts – Northeastern Portion of the On-Site Project Area

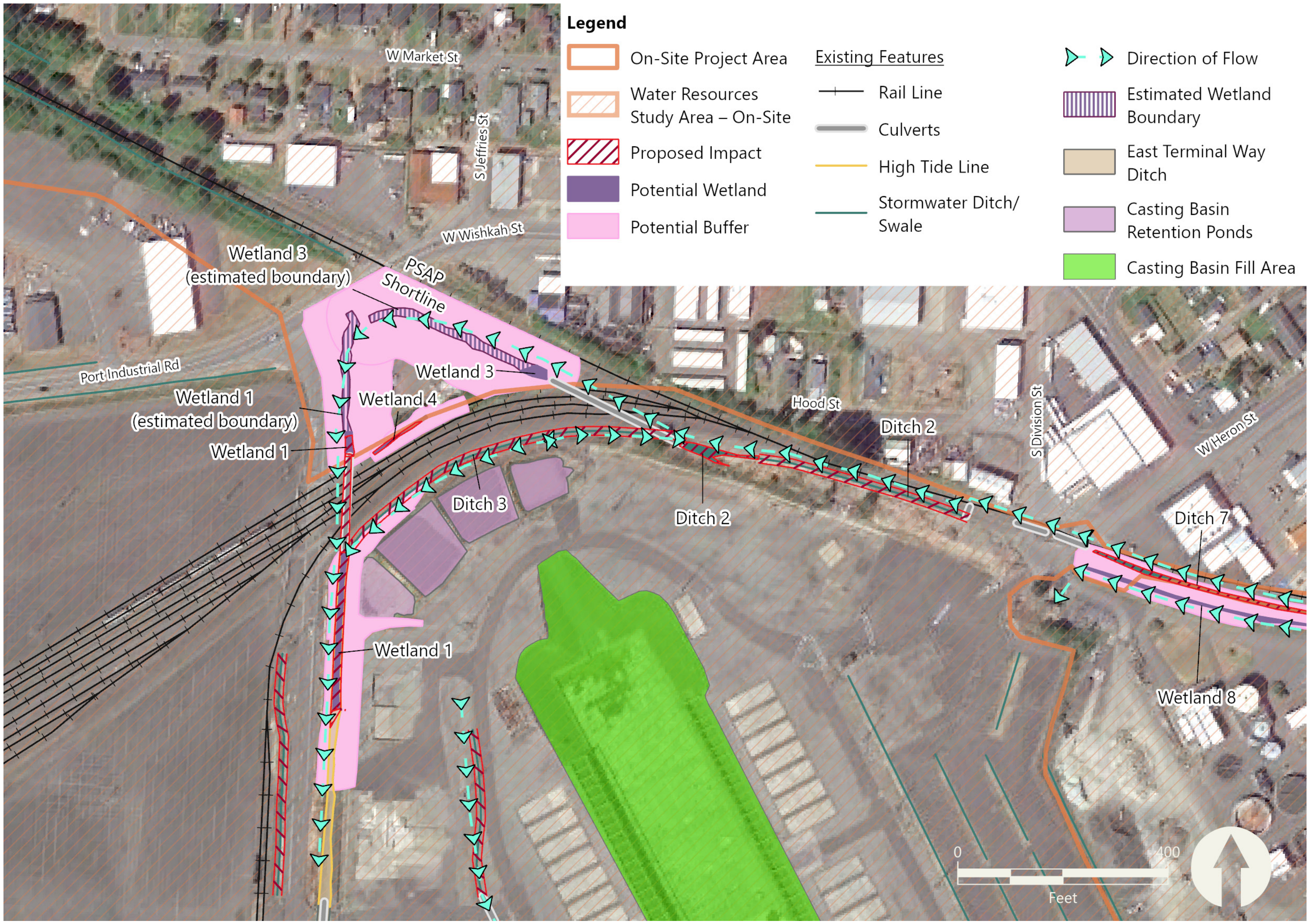


Figure 14c
Proposed Water Resource Impacts – Eastern Portion of the On-Site Project Area

Figure 14d

Proposed Water Resource Impacts – Southeastern Portion of the On-Site Project Area

6.4.1.4 Floodplains

Potential construction impacts to floodplains would be low. The Proposed Project would involve development of rail lines, access roads, intersection improvements, and the filling of the casting basin. Some of these elements have the potential to reduce floodplain capacity in the On-Site Project Area. Outside of the casting basin fill, the remaining project elements would result in approximately 7.6 acres of encroachment into the FEMA-mapped 100-year floodplain. The areas of mapped floodplain on the casting basin site were excluded from this impact estimate because of the significant modifications made to that site during construction of the casting basin in 2011, which occurred after the base map used for FIRM Map Number 53027C0904D had been prepared. That base map was derived from multiple sources between 2004 and 2008 (FEMA 2017c), 3 years prior to casting basin construction. As such, the FIRM map does not accurately portray the elevations or conditions within the casting basin site. For example, based on the FIRM, the southern portion of the material stockpile is shown as being in Zone AE of the SFHA where the uniform base flood elevation is estimated to be 13 feet NAVD88 (FEMA 2017c). However, that stockpile is considerably higher than the surrounding area and would not be inundated by the 100-year flood. Because of this, floodplain encroachment estimates for the casting basin are not provided.

The proposed rail improvements would include substructural support elements, ballast, and rail to be placed within the mapped floodplain. However, the Fry Creek and East Way Terminal Ditch crossings will be constructed in a manner to span the ditch waters in the proposed work areas.

The proposed access roads and intersection improvements would include grading, placement and compaction of subgrade materials, and asphalt surfacing within small portions of the mapped floodplain. The proposed decommissioning of the casting basin to increase needed cargo laydown areas will include filling an area partially within the mapped floodplain. Fill will consist of existing material that is stockpiled at the southwest corner of nearby T4A, which is also partially within the mapped floodplain. Fill of the casting basin will require up to 290,000 cubic yards of material to return the basin to a flat topographic relief. It is anticipated that the existing stockpile material will constitute approximately 200,000 cubic yards of the required fill material specified previously in this section. The remainder of the required fill material will be imported to the site by truck.

Construction of the proposed T4 dock fender and stormwater upgrades would involve removing existing timber, concrete, and steel fender piles and associated components along the entire 1,400-foot face of the T4 dock. Following removal of the existing fender system, a new modern pile-supported panel system would be installed at Berth A using steel pipe piles driven into the riverbed. A modern suspended fender panel system that would not involve the installation of new piles would be installed at Berth B. Between the remaining fender piles at Berth B, additional steel tube piles would be installed in the proposed foundation locations for the three new shiploader towers that are proposed under the AGP Project. Proposed work on the T4 dock would also include the removal of existing steel crane rails, railroad rails, treated railroad ties, and portions of the asphaltic concrete and gravel ballasted paving from the dock surface. Following removal of those materials, the dock surface would be graded and repaved with new asphaltic concrete. Modifications to the existing stormwater collection and conveyance system would also occur.

Portions of the rail improvements, the T4 cargo yard, the T4 dock and fender upgrades, and AGP's Project would occur within portions of SFHA mapped as Zone AE by FEMA and will require authorization under a development permit from the City of Aberdeen under AMC 15.55.100. Because those activities would occur in areas subject to coastal flooding that do not have delineated floodways (FEMA 2017a, 2017b, 2017c), they are exempt from Aberdeen's floodplain obstruction rules. Under AMC 15.55.190(B)(2)(d)(1), such areas do not require certification that the proposed project will not increase the elevation of the base flood more than 1 foot at any point. This is because it has been determined that filling the floodplain in such locations will not result in an appreciable rise in flood levels.

The portions of the project that would occur in mapped SFHA areas in City of Hoquiam include rail improvements, rail crossing modifications, and replacement of the Fry Creek rail crossing. Those activities are subject to Hoquiam's floodplain district regulations in HMC 11.16. Because those activities would require grading and placement of fill material, they are considered to be "development" per HMC 11.16.080 and would require a floodplain development permit per HMC 11.16.240. However, per HMC 11.16.250, because the SFHA areas in the On-Site Project Area are subject to flooding directly from Grays Harbor (i.e., coastal flooding), a certification that the proposed project will not increase the elevation of the base flood more than 1 foot at any point is not required.

Executive Order 11988 requires federal agencies to avoid conducting, allowing, or supporting actions on a floodplain unless no other practicable alternatives are available. The order further directs agencies to design or modify the action to minimize potential harm to or within the floodplain. The Proposed Project cannot effectively meet its purpose and need to improve the Port's economic resiliency and to increase the Port's operational capacity and efficiency to support increased growth, job creation and retention, and economic opportunities related to multimodal Port operations, without development of rail lines, access roads, intersection improvements, and the filling of the casting basin within FEMA mapped floodplains. Alternatives to avoid the floodplain are impracticable because there is no alternative design that could minimize or further avoid the mapped floodplain. This leaves no practicable alternative to the proposed floodplain impacts from rail, roadway, and intersection improvements, or the casting basin fill, which will provide needed cargo laydown areas.

Proposed construction work that would include floodplain modifications would occur in the northwest corner of the On-Site Project Area in connection with the new rail loop route construction, at-grade rail crossing improvements, and gravel access road construction; between Fry Creek and T1 where track work, intersection improvement, and gravel road and fence construction would occur; at the proposed expanded rail crossing over East Terminal Way Ditch; at the eastern end of the Proposed On-Site Project Area where rail improvements would reconnect to the PSAP line; and in T4A where portions of the proposed casting basin fill and stockpile removal would occur.

6.4.1.5 Groundwater

Potential construction impacts to groundwater flow and storage would be negligible to low. The Proposed Project would result in the construction of new aboveground structures such as the T4B ship loader, which would compact soils in the Project Area. Groundwater recharge would not be affected because the ground surfaces are currently developed. There would also be a small increase in the potential for groundwater quality degradation from accidental spills or leaks of fuel or other fluids from construction equipment. The potential for such impacts could be reduced by the implementation of standard construction BMPs.

6.4.1.6 Water Use and Water Rights

No impacts on water use and water rights are expected during construction of the project. Water used as part of construction activities will be sourced from municipal sources within the City of Aberdeen. The largest water consumption will be required for concrete materials provided from Off-Site material suppliers. That water will be provided from Off-Site sources. On Site, water will be used for cleaning concrete trucks prior to leaving the site. That water will be provided from the Port's municipal water supply.

6.4.2 Operation

As described in *Project Description Technical Report* (Anchor QEA 2023a), the project operations in the study area are analyzed for a 20-year period starting in 2025. Over this time period, vessel and rail traffic in the study area are expected to increase as described in Section 6.1.

6.4.2.1 Surface Water Hydrology

Potential operational impacts to surface water hydrology would be negligible to low. This includes hydrology effects to the Chehalis River, Grays Harbor, Fry Creek, East Terminal Way Ditch, On-Site wetlands, existing stormwater conveyances, and in the wetlands, streams, and other surface waters within the Off-Site rail transportation corridor. The On-Site Project Area is currently developed as impervious surfaces such as paved access roads and parking areas, paved cargo storage areas, ship loading facilities, railyards, and riprap lined stormwater conveyances. The Proposed Project would not substantially change surface water hydrology at the site, other than improvements to the existing stormwater system.

6.4.2.2 Surface Water Quality

The project is expected to benefit On-Site surface water quality over the long term. This is because existing infrastructure drains stormwater directly to Grays Harbor and the proposed stormwater improvements will be designed and constructed to updated codes to collect and convey stormwater runoff from the T4 dock to landside treatment facilities. All future stormwater generated by the project will be treated before entering the harbor.

Direct and indirect effects from stormwater runoff would be mitigated through installation of infrastructure to collect and convey stormwater from the dock and upland dry bulk transfer operations to state of the art stormwater treatment facilities incorporating vegetated filtration, which have been proven to limit pollutant discharges to receiving waters.

The types of stormwater treatment systems that will be used for the project have not yet been identified. They will generally fall into two categories: treatment systems required for development per the City of Aberdeen and treatment systems required to comply with industrial stormwater permits. It is likely that the stormwater systems required by the City of Aberdeen through its Phase II Municipal Stormwater Permit will be designed in accordance with the Ecology *Stormwater Management Manual for Western Washington* as adopted by the City of Aberdeen. The industrial stormwater permit areas will be treated by engineered treatment systems to comply with Ecology-specified industrial stormwater pollutant parameters.

Operation of the project could result in low impacts to surface water quality in waters located in the off-site rail and vessel transportation corridors. Such impacts would primarily be related to the increased potential for accidental spills of fuel and various cargoes from project-induced increases in train and vessel traffic in those corridors. The air emissions from increased train and vessel use could also result in indirect impacts on surface water quality if particulates and other air pollutants directly settle on surface waters or surrounding impervious areas where they could be washed into surface waters by stormwater runoff.

6.4.2.3 Wetlands

Operation of the project would not result in any direct impacts to wetlands in either the On-Site or Off-Site Project Area. Potential indirect impacts to wetlands both within the On-Site Project Area and the Off-Site rail transportation corridor could include water quality effects from both runoff and air pollutants that could settle in wetland areas. Impacts from runoff would be minimized through stormwater management. Although air emissions from the Proposed Project are expected to increase, emissions would remain under the prevention of significant deterioration (PSD) thresholds and the mandatory Washington State greenhouse gas reporting threshold during the operational period. Therefore, indirect impacts to wetlands from air emission would be negligible to low. Impacts to air quality are described in more detail in the *Air Quality and Greenhouse Gas Emissions Technical Study* (Anchor QEA 2023c).

6.4.2.4 Floodplains

Potential operational impacts to floodplains and floodplain capacity would be negligible. No Proposed Project operation elements would have an effect on the floodplain or base flood elevations.

6.4.2.5 Groundwater

Potential operational impacts to groundwater would be negligible to low. There would be a low increase in the potential for groundwater quality degradation from accidental operational spills or leaks of fuel or other fluids from operational equipment. The potential for such impacts could be reduced by the proposed improvements to the existing stormwater management system.

6.4.2.6 Water Use and Water Rights

The operation of the project will have negligible effects on water use and no effect on water rights.

6.5 Cumulative Impacts

Cumulative impacts are effects that would result from the incremental addition of the Proposed Project to the impacts from past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor, but collectively significant actions, which take place over time (40 CFR 1508.7) and are evaluated as described in Section 6.2.1. The purpose of the cumulative impacts analysis is to ensure that decision-makers consider the full range of consequences for the Proposed Project under expected future conditions.

Current conditions are a result of past and present actions. The current conditions in the study area that were used as the baseline existing environmental condition are described in Section 5. Therefore, the cumulative effect of past actions were assumed to be captured in the analysis of project impacts and were not separately called out in the analysis of cumulative impacts.

6.5.1 Reasonably Foreseeable Future Actions

Table 10 outlines the projects with the potential to result in cumulative water resources impacts when considered in combination with the Proposed Project. Only the projects that could impact water resources were included in this analysis. The table notes the approximate location and status of these projects.

Table 10
Cumulative Projects and Potential Effects on Water Resources

Type of Project	Project	Potential Cumulative Effects on Water Resources[1]
Rail Maintenance and Improvements	PSAP Railroad Annual Maintenance and Improvements, Grays Harbor County, Washington (PSAP)	Frequency of rail accidents and spills could be increased because of additional rail traffic and could potentially impact surface water, groundwater, and wetlands within the study area. Projects would continue to be regulated to reduce impacts. There are potential direct impacts to surface water or wetlands from excavation and fill placement. Floodplains could also be affected. Such impacts would be limited by compliance with federal, state, and local regulations.
	South Elma Rail Siding Construction, Elma, Washington (PSAP)	
	Blakeslee Junction Tracks #1 and #2 Expansion Project, Lewis County, Washington (PSAP)	
	Blakeslee Junction Track #4 Project, Lewis County, Washington (PSAP)	
	Cedar Creek Siding #2 Project, Lewis County, Washington (PSAP)	
Traffic and Road Improvements	North Aberdeen Bridge Replacement, Aberdeen, Washington (City of Aberdeen)	The U.S. 12 Highway-Rail Separation Project would reduce the potential for train and vehicle accidents and improve safety along a portion of U.S. 12. These improvements would likely reduce the frequency of vehicular traffic accidents and associated spills and their potential effects on surface and groundwater resources in the study area. Similar improvements in safety may also be realized by the bridge improvement and resurfacing projects.
	Aberdeen U.S. 12 Highway-Rail Separation, Aberdeen, Washington (City of Aberdeen)	
	U.S. 12 Heron Street Bridge Rehabilitation, Hoquiam, Washington (WSDOT)	
	Port Industrial Road Resurfacing Project (Port of Grays Harbor)	
Habitat Improvements	Fry Creek Restoration and Pump Station Aberdeen, Washington (City of Aberdeen)	Surface water quality could be improved because of restoration. Restoration elements such as increased floodplain connections could reduce the frequency and duration of flooding.
	U.S. 101 Fry Creek Culvert Replacement Aberdeen, Washington (WSDOT)	
Levee Construction	Aberdeen-Hoquiam Flood Protection Project, Aberdeen, WA and Hoquiam, Washington (City of Hoquiam and City of Aberdeen)	Levees could reduce the frequency and duration of flooding relative to existing condition. There are potential direct impacts to surface water, wetland resources, and floodplains from excavation and fill placement.

Type of Project	Project	Potential Cumulative Effects on Water Resources[1]
Marina Improvement	Westport Marina Modernization, Westport, Washington (City of Westport)	Surface water quality could be impacted from increased spills and leaks from increased number and size of vessels at the marina. Surface water quality could be improved if stormwater management and fuel dock improvements are made. Surface water quality could be improved if creosote-coated wood structures are removed.

Notes:

1. Potential effects on water resources are effects that could occur based on the type of project and do not represent evaluation of project-specific details.

Sources: City of Aberdeen 2021, 2022a, 2022b; City of Hoquiam 2022; Moffatt & Nichol 2022d; Port of Grays Harbor 2022a, 2022b; Sorenson 2022; WSDOT 2021.

6.5.2 Cumulative Water Resource Impacts

Construction of the Proposed Project would have negligible to low potential to affect On-Site surface water hydrology; no Off-Site changes to surface water hydrology are proposed. None of the cumulative projects would interact with the Proposed Project. Therefore, there would be no cumulatively significant impacts to surface water hydrology.

The Proposed Project would have low to medium impacts on water quality during construction and operations, mainly related to the potential for accidental spills and possible increased turbidity. Construction of the cumulative projects would also have the potential to affect water quality of streams, wetlands, and rivers within the study area. Similar to the Proposed Action, these projects would be required to obtain applicable water quality permits and to adhere to the required standards. In addition to resulting in adverse water quality impacts, some of the cumulative projects may improve water quality over the longer-term. These include the planned rail, highway, and other infrastructure improvements, which could also serve to reduce the frequency of rail and vehicular accidents and spills that could affect surface water, groundwater, and wetlands. The habitat restoration projects at Fry Creek and the Aberdeen-Hoquiam Flood Protection Project could improve surface water quality and reduce the frequency and duration of flooding. The Westport Marina Modernization Project is located approximately 12.5 miles to the southwest of the Port. The proposed improvements include reconfigurations to decrease the number of slips, so the proposed improvements are not projected to increase the number of recreational boats or other vessels; therefore, it is not anticipated to reduce water quality within Grays Harbor. Therefore, it is not anticipated that the Proposed Project would result in cumulatively significant impacts to water quality.

Potential cumulative impacts could also include direct impacts from excavation and fill of wetlands or other water resources within the same hydrological unit, which could contribute to loss of wetland functions and values on a watershed scale. However, the Proposed Project and other cumulative projects would be required to ensure no net loss of wetlands or other waters, including no net loss of the functions and values of those features. Therefore, the Proposed Project is not expected to result in cumulatively significant impacts to streams, ditches, or wetlands.

The Proposed Project would result in negligible to low impacts to floodplains, groundwater, and water use and water rights. The cumulative projects would be subject to many of the same regulations that are designed to limit impacts on those resources; therefore, they are likely to have similar impacts. The transportation and levee construction projects described in Table 10 could result in impacts on floodplains but would be required to minimize and/or compensate for such impacts. Both the rail and road transportation projects are likely to result in beneficial impacts to groundwater quality by improving the safety of those transportation corridors and reducing the potential for accidents where spills of fuel and other potentially hazardous substances could occur. Habitat improvement projects are also likely to benefit groundwater quality by improving floodplain conditions and surface water quality. None of the projects listed in Table 10 are likely to involve permanent impacts to water rights or water uses.

7 Mitigation

The Port and AGP propose to implement the following measures, and mitigation actions would be confirmed during project permitting:

- Implementation of a stormwater management plan, a stormwater pollution prevention plan (SWPPP), and a Water Quality Monitoring Program to be approved during the CWA Section 401 certification process
- Compliance with other provisions of a CWA Section 401 Water Quality Certification from Ecology and construction stormwater permits will be procured from Ecology, the City of Hoquiam, and the City of Aberdeen as appropriate for all phases of construction
- Compliance with Ecology's construction NPDES permit including measurement and mitigation measures intended to limit stormwater and in-water turbidity effects
- Mitigation of direct and indirect stormwater impacts during construction through implementation of TESC BMPs and compliance with Ecology NPDES construction permit provisions
- Implementation of a Mitigation Plan to account and compensate for any unavoidable impacts to wetlands, streams, or protective buffers caused by construction or operation of the Proposed Project
- Implementation of BMPs such as those included in WDNR's Derelict Creosote Piling Removal Best Management Practices (2017) to reduce impacts from increased turbidity, potentially contaminated sediments, and creosote treated piles

8 References

Anchor QEA (Anchor QEA, LLC), 2023a. *Project Description Technical Report*. Port of Grays Harbor Terminal 4 Expansion and Redevelopment Project. Prepared for Port of Grays Harbor and Ag Processing, Inc. January 2023.

Anchor QEA, 2023b. *Biological Resources Technical Study*. Port of Grays Harbor Terminal 4 Expansion and Redevelopment Project. Prepared for Port of Grays Harbor and Ag Processing, Inc. January 2023.

Anchor QEA, 2023c. *Air Quality and Greenhouse Gas Emissions Technical Stud*y. Port of Grays Harbor Terminal 4 Expansion and Redevelopment Project. Prepared for Port of Grays Harbor and Ag Processing, Inc. January 2023.

Brinson, M.M., 1993. *A Hydrogeomorphic Classification for Wetlands*. Technical Report WRP-DE-4. U.S. Army Corps of Engineers Engineer Waterways Experiment Station, Vicksburg, Mississippi. Accessed March 14, 2023. Available at: https://wetlands.el.erdc.dren.mil/pdfs/wrpde4.pdf.

CBP (Chehalis Basin Partnership), 2004. *Chehalis Basin Watershed Management Plan*. April 2004.

CEQ (Council on Environmental Quality), 1997. *Considering Cumulative Effects Under the National Environmental Policy Act*. January 1997.

City of Aberdeen, 2021. "Aberdeen– Fry Creek Restoration Project." Accessed December 7, 2022. Available at: https://www.ezview.wa.gov/site/alias__1941/overview/36772/overview.aspx/.

City of Aberdeen, 2022a. "Aberdeen Flood Relief Projects." Accessed December 7, 2022. Available at: https://www.ezview.wa.gov/?alias=1825&pageid=35437.

City of Aberdeen, 2022b. "Aberdeen– North Shore Levee Project." Accessed December 7, 2022. Available at: https://www.ezview.wa.gov/?alias=1775&pageid=34768.

City of Aberdeen, 2023. Utilities Map. Accessed March 8, 2023. Available at: https://maps.aberdeenwa.gov/portal/apps/webappviewer/index.html?id=57038a7ebf6b4ef699ccd7c097a24879.

City of Hoquiam, 2022. "Hoquiam – North Shore Levee – West Project." Accessed December 7, 2022. Available at: https://www.ezview.wa.gov/?alias=1997&pageid=37701.

Cowardin, M., W. Carter, F.C. Golet, and E.T. LaRoe, 1979. *Classification of Wetland and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service, Office of Biological Service. Washington, D.C. FWS/OBS-79/31.

Ecology (Washington Department of Ecology), 1989. *Survey of Chemical Contaminants in the Bottom Sediments of Grays Harbor Estuary*. Water Body No. WA-22-4010-; WA-22-0030; WA-22-0020, Segment No. 10-22-03; 10-22-04. December 1989. Available at: https://apps.ecology.wa.gov/publications/documents/89e28.pdf.

Ecology, 1992. Memorandum from U.S. Environmental Protection Agency to Washington Department of Ecology. Regarding: Recommendations for TMDL Approval Grays Harbor (Inner) – Dioxin. Ecology Publication 92-10-202. June 25, 1992. Available at: https://apps.ecology.wa.gov/publications/documents/9210202.pdf.

Ecology, 2000. *Revised Upper Chehalis River Basin Dissolved Oxygen Total Maximum Daily Load: Submittal Report*. Publication No. 00-10-018. March 2000.

Ecology, 2001. *Upper Chehalis River Basin Temperature Total Maximum Daily Load*. Publication No. 99-52. July 2001.

Ecology, 2002. *Grays Harbor/Chehalis Watershed Fecal Coliform Bacteria Total Maximum Daily Load: Submittal Report*. Publication No. 01-10-025 WQ. December 2002.

Ecology, 2004. *Upper Chehalis River Fecal Coliform Bacteria Total Maximum Daily Load: Submittal Report*. Publication No. 04-10-041. May 2004.

Ecology, 2016. *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State*. Publication No. 16-06-029. October 2016.

Ecology, 2017. *Chehalis Basin Strategy Final Programmatic Environmental Impact Statement*. Accessed January 5, 2023. Available at: http://chehalisbasinstrategy.com/programmatic-eis/.

Ecology, 2023a. *Coastal Atlas: Flood Hazard Maps*. Accessed January 5, 2023. Available at: https://fortress.wa.gov/ecy/coastalatlas/tools/Flood.aspx.

Ecology, 2023b. "Water Quality Atlas." Web-based map application. Accessed January 5, 2023. Available at: https://apps.ecology.wa.gov/waterqualityatlas/wqa/map.

Ecology, 2023c. Washington State Water Quality Assessment 303(d)/305(b) List. Accessed January 5, 2023. Available at: https://apps.ecology.wa.gov/ApprovedWQA/ApprovedPages/ApprovedSearch.aspx

Ecology, 2023d. Ecology Water Quality Monitoring Stations in WRIA 23. Accessed January 5, 2023. Available at: https://apps.ecology.wa.gov/eim/search/SMP/RiverStreamSingleStationOverview.aspx?ResultType=RiverStreamOverviewList&StudyMonitoringProgramUserId=RiverStream&StudyMonitoringProgramUserIdSearchType=Equals&LocationUserIds=23A120&LocationUserIdSearchType=Equals.

Ecology, 2023e. "Washington State Well Report Viewer." Web-based map application. Accessed January 5, 2023. Available at: https://appswr.ecology.wa.gov/wellconstruction/map/WCLSWebMap/default.aspx.

Ecology, 2023f. Toxics Cleanup Program What's in My Neighborhood Mapping Tool. Accessed January 5, 2023. Available at: https://apps.ecology.wa.gov/neighborhood/.

Ecology, 2023g. Water Resources Explorer. Accessed January 5, 2023. Available at: https://appswr.ecology.wa.gov/waterrighttrackingsystem/WaterRights/default.aspx.

Ecology and City of Hoquiam, 2016. *Westway Final Environmental Impact Statement*. September 30, 2016. Accessed January 5, 2023. Available at: https://apps.ecology.wa.gov/publications/SummaryPages/1706012.html.

FEMA (Federal Emergency Management Agency), 2017a. FEMA Flood Insurance Rate Map (FIRM). Map Number 53027C0901D. Accessed January 5, 2023. Available at: https://msc.fema.gov/portal.

FEMA, 2017b. FEMA Flood Insurance Rate Map (FIRM). Map Number 53027C0903D. Accessed January 5, 2023. Available at: https://msc.fema.gov/portal.

FEMA, 2017c. FEMA Flood Insurance Rate Map (FIRM). Map Number 53027C0904D. Accessed January 5, 2023. Available at: https://msc.fema.gov/portal.

FEMA, 2023. National Flood Insurance Program Terminology Index. Accessed March 8, 2023. Available at: https://www.fema.gov/flood-insurance/terminology-index.

FGDC (Federal Geographic Data Committee), 2013. *Classification of Wetlands and Deepwater Habitats of the United States*. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.

Garrigues, R.S., K. Sinclair, and J. Tooley, 1998. *Chehalis River Watershed Surficial Aquifer Characterization*. Olympia, Washington: Washington Department of Ecology, Watershed Ecology Section. Ecology Publication No. 98-335. Accessed January 5, 2023. Available at: https://fortress.wa.gov/ecy/publications/documents/98335.pdf.

Gendaszek, A.S., 2011. *Hydrogeologic Framework and Groundwater/Surface-Water Interactions of the Chehalis River Basin, Washington*. U.S. Geological Survey Scientific Investigations Report 2011-5160, 42 p.

HDR (HDR, Inc.), 2022. *Wetland and Stream Delineation Report: Port of Grays Harbor – Terminal 4 Rail Upgrade and Site Improvements.* City of Aberdeen and City of Hoquiam, Washington. Prepared for Port of Grays Harbor. November 21, 2022.

Hruby, T., 2014. *Washington State Wetland Rating System for Western Washington: 2014 Update*. Washington State Department of Ecology. Publication No. 14-06-029. October 2014.

MFA (Maul Foster & Alongi, Inc.), 2021. *East Terminal 4 Cargo Yard Expansion Plan 2021 Feasibility Study Findings*. Prepared for Port of Grays Harbor. July 26, 2021.

Moffatt & Nichol, 2022a. *Port of Grays Harbor Terminal 4 HTL and OHWM Determination*. Job No. 221760. November 3, 2022.

Moffatt & Nichol, 2022b. *Port of Grays Harbor: Terminals Recency Sediment Characterization and Terminal 2 Advance Maintenance Dredge Area Characterization*. Prepared for Port of Grays Harbor. March 2022.

Moffatt & Nichol, 2022c. *Port of Grays Harbor: Terminal 4 Maintenance Dredging Supplemental Sediment Characterization*. Prepared for Port of Grays Harbor. June 2022.

Moffatt & Nichol, 2022d. *Draft Marina Modernization Report*. Prepared for the Port of Grays Harbor. October 4, 2022.

NWIFC (Northwest Indian Fisheries Commission), 2020. *State of Our Watersheds Report, A Report by The Treaty Tribes in Western Washington*. 2020.

NWS (National Weather Service), 2022. Climate. NOWData – NOAA Online Weather Data for Aberdeen STP, WA. Accessed December 19, 2022. Available at: https://www.weather.gov/wrh/Climate?wfo=sew.

NOAA (National Oceanic and Atmospheric Administration), 2022. Vertical Datum Transformation. Available at: https://vdatum.noaa.gov/.

Port of Grays Harbor, 2022a. "PIDP Grant Application FY 2022 Small Port, Large Project – Project Narrative."

Port of Grays Harbor, 2022b. "Westport Marina Modernization Plan Available for Review." Accessed December 7, 2022. Available at: https://www.portofgraysharbor.com/news/marinamodernization.

Quinault Indian Nation, 2016. *Quinault Indian Nation State of the Watersheds Report*. 2016.

Sorenson, L., 2022. Email to: Kris Koski (Port of Grays Harbor). Regarding: Projects and improvements along the PSAP rail line. December 8, 2022.

USACE (U.S. Army Corps of Engineers), 2022. Special Public Notice. Seattle District.

USACE, 2023. Letter to: Randy Lewis, Port of Grays Harbor. Regarding: Approved Jurisdictional Determination for Casting Basin and Stormwater Ponds. Port of Grays Harbor Terminal 4 Rehabilitation (NWS-2022-944). February 8, 2023.

USACE, U.S. Environmental Protection Agency, Region 10, Washington State Department of Natural Resources, and Washington State Department of Energy, 2021. *Dredged Material Evaluation and Disposal Procedures: User Manual*. Dredged Material Management Program. July 2021. Available at: https://www.nws.usace.army.mil/Missions/Civil-Works/Dredging/User-Manual/.

U.S. Climate Data, 2022a. Climate Aberdeen – Washington. Accessed January 17, 2023. Available at: https://www.usclimatedata.com/climate/aberdeen/washington/united-states/uswa0001.

U.S. Climate Data, 2022b. Climate Hoquiam – Washington. Accessed January 17, 2023. Available at: https://www.usclimatedata.com/climate/hoquiam/washington/united-states/uswa0681.

USFWS (U.S. Fish and Wildlife Service), 2023. National Wetlands Inventory Wetlands Mapper. Accessed January 5, 2023. Available at: https://www.fws.gov/wetlands/data/mapper.html.

USGS (U.S. Geological Survey), 2011. Chehalis River Basin. Accessed on: May 8, 2023. Available at: https://www.usgs.gov/centers/washington-water-science-center/science/chehalis-river-basin.

USGS, 2023. The National Hydrography Dataset (NHD). Accessed January 5, 2023. Available at: http://nhd.usgs.gov/data.html.

WDFW, 2009. *Compiled White Papers for Hydraulic Project Approval Habitat Conservation Plan (HCP)*. March 2009. Accessed January 19, 2023. Available at: https://wdfw.wa.gov/publications/00803.

WDNR (Washington Department of Natural Resources), 2017. Derelict Creosote Piling Removal Best Management Practices for Pile Removal and Disposal. Available at: https://www.dnr.wa.gov/publications/aqr_rest_pileremoval_bmp_2017.pdf.

Winkowski, J., and M.S. Zimmerman, 2019. *Chehalis River Smolt Production 2018*. FPA 19-01. Washington Department of Fish and Wildlife, Olympia, Washington.

WHO (World Health Organization), 2004. *Coal Tar Creosote*. Concise International Chemical Assessment Document 62, World Health Organization. Geneva, Switzerland.

WRCC (Western Regional Climate Center), 2022. Climate of Washington. Accessed December 19, 2022. Available at: https://wrcc.dri.edu/Climate/narrative_wa.php.

WSDOT (Washington State Department of Transportation), 2021. *Six Year Transportation Improvement Program From 2022 to 2027*. May 28, 2021. Accessed December 2022. Available at: https://www.aberdeenwa.gov/DocumentCenter/View/1312/2022-2027-TIP.

WSP (Williams Sale Partnership), 2019. *Proposed Grays Harbor Potash Export Facility, Wetland and Waterbody Delineation and Assessment*. July 2019.

Appendix A
Wetland and Stream Delineation Report, Port of Grays Harbor – Terminal 4 Rail Upgrade and Site Improvements

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MEMORANDUM

To:	Reviewer
From:	Allison Kinney, Environmental Scientist, Moffatt & Nichol
Date:	June 16, 2023
Subject:	****Changes to HDR's 21 November 2022 Wetland Delineation Results
M&N Job No.:	221760

This memorandum summarizes changes to HDR's wetland delineation results (see attached report dated 21 November 2022).

Streams and ditches within the portions of the On-Site Project Area where Proposed Project activities would occur were initially delineated by HDR, Inc., between June 23, 2022, and August 19, 2022 (Attached – HDR 2022). That delineation was later refined using information collected by Moffatt & Nichol and Anchor QEA during follow-up site visits on March 16 and April 23, 2023. The purpose of the supplemental site visits was to confirm channel characteristics (e.g., substrate, vegetation, and bed/bank conditions), connectivity to other waterbodies, and the presence or absence of culverts. Based on those studies, streams and ditches identified in the On-Site Project Area include one stream (Fry Creek) and seven ditches (East Terminal Way Ditch, Ditches 1 through 3, and Ditches 5 through 7[1]).

HDR's initial delineation identified nine potential wetlands including several that occurred in excavated ditches located adjacent to roads and rail lines. Several of those areas were revisited by Moffatt & Nichol and Anchor QEA during follow-up site visits on March 16 and April 23, 2023, to confirm the presence of definitive wetland characteristics (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology). Based on that supplemental field work, four areas previously identified as wetlands by HDR were reclassified as ditches due to their excavated condition, presence of little to no in-channel vegetation, and lack of definitive hydric soil indicators. The areas that were reclassified as ditches are channelized features situated between road and rail corridors that provide only stormwater conveyance functions. They lack substantial vegetative diversity or structural complexity and provide little to no hydrologic, habitat, or biogeochemical wetland functions.

Table 1 provides a brief summary of the changes to the wetland determination results. Figures 1 through 10 are representative of the four areas previously identified as wetlands by HDR were reclassified as ditches. Tables 2 and 3 provide additional information about wetlands and ditches identified on the site.

[1] Ditches 5 through 7 were originally identified as wetlands in the HDR delineation but were later reclassified as ditches by Moffatt & Nichol and Anchor QEA based on supplemental field data due to their excavated condition, the presence of little to no in-channel vegetation, and the lack of definitive hydric soil indicators.

Table 1 – Summary of Changes

HDR 2022	Moffatt & Nichol/Anchor QEA 2023	Rationale for Reclassification
Wetland 2/Ditch 2	Ditch 2 (now combined with former Wetland 2)	Excavated in upland fill material, no in-channel vegetation, and lack of definitive hydric soil indicators
Wetland 5	Ditch 5	Excavated in upland fill material between existing upland area and railway prism, presence of little to no in-channel vegetation, and lack of definitive hydric soil indicators
Wetland 6	Ditch 6	Excavated in upland fill material between existing access roadway prism and railway prism, presence of little to no in-channel vegetation, and lack of definitive hydric soil indicators
Wetland 7	Ditch 7	Excavated in upland fill material between existing access roadway prism and railway prism, presence of little to no in-channel vegetation, and lack of definitive hydric soil indicators

Figure 1 – Formerly identified as Wetland 2 reclassified and combined with adjoining portions of Ditch 2. Facing east from northwest end of ditch

Figure 1 – Formerly identified as Wetland 2 reclassified and combined with adjoining portions of Ditch 2. Facing southwest from north of the ditch

Figure 2 – Formerly identified as Wetland 2 reclassified and combined with adjoining portions of Ditch 2. Facing southwest from north of the ditch

Figure 3 – Formerly identified as Wetland 5 reclassified at Ditch 5. Facing east from intersection of S Washington St and W River St.

Figure 4 – Formerly identified at Wetland 5 reclassified at Ditch 5. Facing west toward S Washington St.

Figure 5 – Formerly identified at Wetland 5 reclassified at Ditch 5. Facing west toward S Washington St.

Figure 6 – Formerly identified at Wetland 5 reclassified at Ditch 5. Facing west near intersection of S Washington St and W River St.

Figure 7 – Formerly identified as Wetland 6 reclassified at Ditch 6. Facing east near intersection of S Monroe St. and W River St.

Figure 8 – Formerly identified as Wetland 6 reclassified at Ditch 6. Facing west near intersection of S Washington St. and W River St.

Figure 9 – Formerly identified as Wetland 6 reclassified at Ditch 6. Facing west near intersection of S Washington St. and W River St.

Figure 10 – Formerly identified as Wetland 7 reclassified at Ditch 7. Facing east near southern terminus of West Heron St.

Table 2: Wetlands Delineated Within the Study Area

Wetland Name[1]	Jurisdiction	Area (acres)	HGM Class[2]	Cowardin Classification[3]	Ecology and City Wetland Rating[4]	Required Buffer Width[5] (feet)
Wetland 1	Aberdeen	0.13	Depressional	EEM	II	150
Wetland 3	Aberdeen	0.02	Depressional	PEM/PAB	III	80
Wetland 4	Aberdeen	0.02	Depressional	PEM	III	80
Wetland 8	Aberdeen	0.06	Depressional	PEM	III	80
Wetland 9	Hoquiam	0.20	Depressional	PEM	III	80

Notes:

1. Wetland numbering is nonsequential because some areas identified as wetlands during HDR's delineation were later reclassified as ditches.
2. HGM classification is based on *A Hydrogeomorphic Classification for Wetlands* (Brinson 1993).
1. *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979; FGDC 2013). EEM: Estuarine Emergent. PEM: Palustrine Emergent. PAB: Palustrine Aquatic Bed.
2. Washington State Rating System for Western Washington (Hruby 2014). Estuarine wetlands were rated based on special characteristics.
3. Wetland buffer width applied for high land use impact (AMC 14.50.914 – Appendix 2: Table A2-3; AMC 14.100.250; HMC11.06.140).

Table 3 Streams and Ditches Delineated Within the Study Area

Stream/Ditch Name	Jurisdiction	Flow Condition	Tributary to	Water Type[1,2]	Buffer Width (Feet)[3,4]	Average Channel Width in Study Area (Feet)	Approximate Length in Study Area (Feet)
Fry Creek	Hoquiam	Perennial, Tidally Influenced	Grays Harbor	S	150	52	100
East Terminal Way Ditch	Aberdeen	Perennial, Tidally Influenced	Grays Harbor	S[2]	150	15	300
Ditch 1	Hoquiam	Intermittent	Ditch 4/ Grays Harbor	NA	NA	4	640
Ditch 2[5]	Aberdeen	Intermittent	Wetland 3/ East Terminal Way Ditch	NA	NA	1.5	400
Ditch 3	Aberdeen	Intermittent	Ditch 2/Wetland 3/ East Terminal Way Ditch	NA	NA	3	700
Ditch 4	Hoquiam	Perennial, Tidally Influenced	Grays Harbor	S	150	25	1,250
Ditch 5[6]	Aberdeen	Intermittent	Ditch 6/Ditch 7/Ditch 2/ East Terminal Way Ditch	NA	NA	6	196
Ditch 6[7]	Aberdeen	Intermittent	Ditch 7/Ditch 2/ East Terminal Way Ditch	NA	NA	6	475
Ditch 7[8]	Aberdeen	Intermittent	Ditch 2/ East Terminal Way Ditch	NA	NA	6	851

Notes:

4. Source: HMC 11.06 Definitions. Type S waters are all waters, within their bankfull width, as inventoried as "shorelines of the state."
5. Source: AMC 14.100.500(B)(6).
6. Source: HMC Table 11.05.330-1: Shoreline Buffers, for industrial and port development, non-water-oriented structures and uses.
7. Source: AMC.50.430.05 Table 4-1, for industrial and port development, non-water-oriented structures and uses.
8. Ditch 2 includes the areas initially mapped as Ditch 2 and Wetland 2 in the preliminary delineation report (HDR 2022).
9. Ditch 5 was previously mapped as Wetland 5 in the preliminary delineation report (HDR 2022).
10. Ditch 6 was previously mapped as Wetland 6 in the preliminary delineation report (HDR 2022).
11. Ditch 7 was previously mapped as Wetland 7 in the preliminary delineation report (HDR 2022).

Wetland and Stream Delineation Report

Port of Grays Harbor – Terminal 4 Rail Upgrade and Site Improvements

City of Aberdeen and City of Hoquiam, WA

November 21, 2022

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1 Introduction

This report describes the methods and findings of wetland delineation for the proposed Port of Gray's Harbor Terminal 4 Rail Upgrade and Site Improvements Project (project). The report was prepared by HDR, Inc. (HDR), biologists and is intended to provide documentation for local, state, and federal permitting activities required for the project.

1.1 Project Overview

The Port is proposing the Terminal 4 Expansion and Redevelopment Project (Port project) to expand rail and shipping capacity at Terminal 4 at the Port of Grays Harbor (hereafter Port), Washington, to accommodate growth of dry bulk, breakbulk, and roll-on/roll-off cargoes.

The rail upgrades proposed at Terminal 4 include construction of 50,245 linear feet of new rail at the Port's existing loop track facility. A new rail bridge at Fry Creek that accommodates a third track over the creek will replace an existing culvert, and a rail receiving building will be built along the proposed northernmost track that will lead into Terminal 4. Rail upgrades and other new construction at the Port will be facilitated by construction of new access roads, storm drainage systems, security systems, and other associated improvements.

1.2 Project Location

The proposed project is located along the railroads within the Port property, and Puget Sound and Pacific Railroad right-of-way, the southeastern most extent ending just south of S Alder Street in the city of Aberdeen, and the westernmost extent ending before 28th Street in the city of Hoquiam, Washington, within Township 17 North, Range 9 West Sections 7, 8, 17, and 18 (Figure 1). Parcels within the project area include 317090834001, 029902000101, 029902000103, 317090834004, 317090834003, 029902000102, 029902000200, 056402300000, 052209400001, and 517090732001. The existing uses of the area in the project vicinity are commercial and industrial in nature, including warehouses, a gas station, log storage, and a bulk loading facility at Port of Grays Harbor Terminal 2. Port Industrial Road is located near the north extent of the project area.

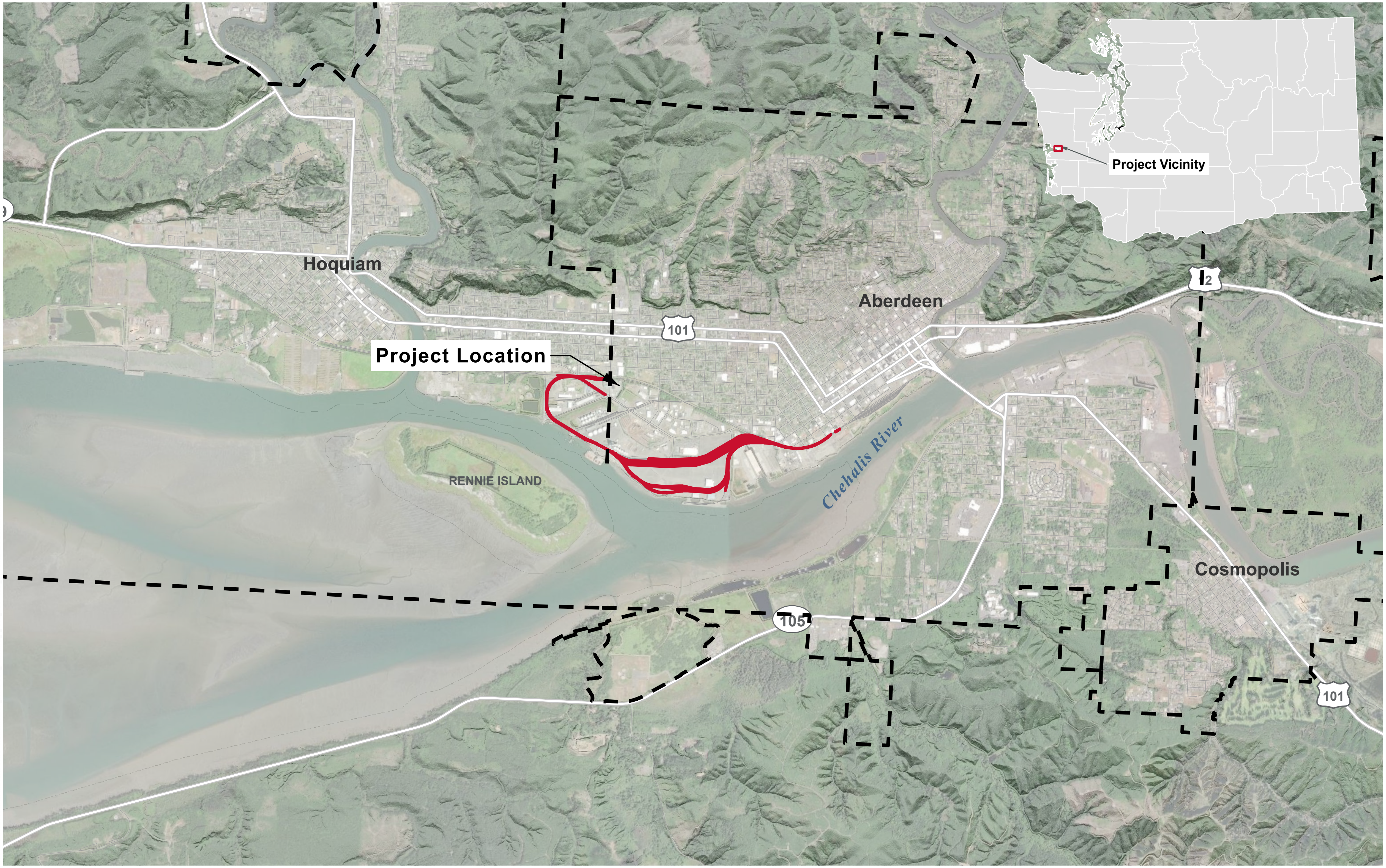

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FIGURE 1: PROJECT VICINITY

PORT OF GRAYS HARBOR - T4 RAIL EXPANSION

DATA SOURCE: Basemap - ESRI; County Boundary, Roads, City - WADNR

2 Study Methods

The study area investigated for the presence and geographic extent of wetlands and streams includes all areas of the Port along the current railway expanse. This area is bounded by Port Industrial Road to the north, S Alder Street to the east, the harbor to the south, and 28th Street to the west (Figure 2).

Wetlands and streams were identified through a two-step process. HDR biologists first reviewed relevant information including online maps and public databases. Following this review, HDR biologists completed a thorough field survey of the study area that included wetland and stream identification, delineation, and classification.

2.1 Review of Relevant Information

Existing documents reviewed for this study include the following:

- United States Geological Survey (USGS) topographic maps
- National Wetlands Inventory (NWI) maps (US Fish and Wildlife Service [USFWS] 2022)
- National Hydrography Dataset maps (USGS 2022)
- USGS soil surveys
- National Resources Conservation Service (NRCS) National Hydric Soils List (NRCS 2020)
- Historical, seasonal, and current aerial photographs to determine probable locations for wetlands and water bodies
- Grays Harbor County geographic information system (GIS) data
- Washington Department of Fish and Wildlife (WDFW) Service Priority Habitat and Species mapper (WDFW 2022a)
- Washington Department of Natural Resources (DNR) Forest Practices Application Mapping Tool (DNR 2022a)
- DNR Washington Natural Heritage Program Wetlands of High Conservation Value Map Viewer (DNR 2022b)
- Washington State Department of Ecology (Ecology) Water Quality Atlas (Ecology 2022)
- Statewide Washington Integrated Fish Distribution (SWIFD) Web Map Viewer (SWIFD 2022)

These documents provide reference information on the soils, hydrology, land use, fish use, documented wetlands, and streams in the study area.

2.2 Field Investigation

Multiple field investigations for the project were conducted by HDR biologists on June 23, July 8, and August 5 and 19, 2022, to identify and delineate wetlands and waterbodies within the study area.

Climate data for the project were determined from the Hoquiam Bowerman Airport station (Station ID 453807), located approximately 4 miles west of the most western portion of the project site. Like the project site, the Bowerman Airport station is located in the West Olympic Coast climate division and is the station closest to the project area with the requisite data history to statistically determine the normality of recent precipitation (NRCS 2022). During the 3 months preceding the June field investigations, a total of 19.02 inches of rain fell at the Bowerman Airport station. Recorded precipitation levels were normal for March, above normal for April, and above normal for May. According to the Direct Antecedent Rainfall Evaluation Method (DAREM) (Sumner et al. 2009), the 3-month antecedent precipitation was higher than normal. During the 2 weeks prior to the start of field work, 2.65 inches of precipitation was observed at the Bowerman Airport station, which is higher than the average of 0.96 inches for the same dates (NRCS 2022).

During the 3 months preceding the July field investigations, NOAA recorded a total of 18.11 inches of rainfall. Recorded precipitation levels were above normal for April, above normal for May, and above normal for June. According to the DAREM, the precipitation for the 3-month period prior to the July site visit is wetter than the normal range. During the 2 weeks prior to field work, 0.34 inches of precipitation was observed at the Bowerman station, which is below the average of 0.57 inches for the same dates. This data indicates that the hydrology indicators should have been generally present in the wetlands in the vicinity of the study area.

During the 3 months preceding the August field investigations, NOAA recorded a total of 11.08 inches of rainfall. Recorded precipitation levels were above normal for May, above normal for June, and below normal for July. According to the DAREM, the precipitation for the 3-month period prior to the August site visits was drier than the normal range. During the 2 weeks prior to field work on August 5th, 0.04 inches of precipitation was observed at the Bowerman station, which is below the average of 0.35 inches for the same dates. During the 2 weeks prior to field work on August 19th, 0.06 inches of precipitation was observed at the Bowerman station, which is below the average of 0.51 inches for the same dates. Due to this site visit occurring during the summer dry season, sample plots were excavated to 24 inches and dry season wetland indicators were utilized where applicable.

2.2.1 Wetlands

HDR biologists delineated wetlands within the study area using the three parameter methods described in the *Corps of Engineers Wetland Delineation Manual* (US Army Corps of Engineers [USACE] 1987) and updated by the Regional Supplement to the *Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region-Version 2.0* (USACE 2010). A detailed description of the field methods used in this study is provided in Appendix A. Formal paired data plots were collected to characterize the wetlands identified within the study area; additional verification plots were collected to characterize conditions in upland areas. Data from all plots are presented in Appendix B.

Delineated wetland boundaries and sample plots were surveyed using a Trimble Global Positioning System (GPS) unit capable of sub-meter accuracy and surveyed by a professional land surveyor. The resulting data from the delineations were then incorporated into project base maps (Figure 2).

As required by the City of Aberdeen and the City of Hoquiam, on-site wetlands were rated using the *Washington State Wetland Rating System for Western Washington: 2014 Update,* Ecology Publication #14-06-029 (Hruby 2014) (Aberdeen Municipal Code [AMC] 14.50.912, 14.100.200(C), Hoquiam Municipal Code [HMC] 11.06.130(2)(b)). Wetlands were rated using the Wetlands Rating Field Data Form provided with the rating system manual (Appendix C). Required buffer widths are based on wetland rating category, intensity of impacts, and wetland functions or special characteristics. Required wetland buffers for the City of Aberdeen are shown in Table 1, and for the City of Hoquiam in Table 2. A detailed analysis of wetland functions is not included in this report; however, a brief description of wetland functions is provided.

Wetland habitats in the study area were also classified according to the system outlined by the USFWS in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979; FGDC 2013). The Cowardin system classifies wetlands based primarily on their dominant vegetation structures and water regimes.

Per AMC 14.50.914(A), AMC 14.100.250(A), and HMC 11.06.140, buffers shall not include areas that are functionally and effectively disconnected from the wetland by a road or other substantially developed surface of sufficient width and with use characteristics such that buffer functions are not provided; therefore, wetland buffers were clipped to edge of pavement or impervious surface, as applicable.

Table 1. Summary of Wetland Buffer Requirements – City of Aberdeen

Wetland Characteristics	Buffer Width[a]
Category IV Wetlands (wetlands scoring less than 16 points for all functions)	
Score for all 3 basic functions is less than 16 points	50 feet
Category III Wetlands (wetlands scoring 16 to 19 points for all functions)	
High level of function for habitat (score for habitat 8 to 9 points)	300 feet
Moderate level of function for habitat (score for habitat 5 to 7 points)	150 feet
Not meeting above characteristics	80 feet
Category II Wetlands (wetlands scoring 20 to 22 points for all functions, or having the "Special Characteristics" identified in the rating system)	
High level of function for habitat (score for habitat 8 to 9 points)	300 feet
Moderate level of function for habitat (score for habitat 5 to 7 points)	150 feet
High level of function for water quality improvement (8 to 9 points) and low for habitat (less than 5 points)	100 feet
Estuarine	150 feet
Not meeting above characteristics	100 feet
Category I Wetlands (wetlands that score 23 points or more for all functions, or having the "Special Characteristics" identified in the rating system)	
Natural Heritage wetlands	250 feet
Bogs	250 feet
Forested	Buffer width based on score for habitat functions or water quality functions
Estuarine	200 feet
High level of function for habitat (score for habitat 8 to 9 points)	300 feet
Moderate level of function for habitat (score for habitat 5 to 7 points)	150 feet
High level of function for water quality improvement (8 to 9 points) and low for habitat (less than 5 points)	100 feet
Not meeting above characteristics	100 feet

Source: AMC 14.50.914; Appendix 2: Table A2-3; AMC 14.100.250. Required buffers for wetlands in shoreline jurisdiction are the same as those outside of shoreline jurisdiction.

[a] Wetland buffer width applied for high land use impact (AMC 14.50.914; Appendix 2: Table A2-2; AMC 14.100.250).

Table 2. Summary of Wetland Buffer Requirements – City of Hoquiam

Wetland Category	Description	Standard Buffer Width Requirements (feet)[a]
Category I Wetland Characteristic (23–27 points for all functions)	Wetlands of High Conservation Value	250
	Bogs	250
	Forested	Buffer to be based on score for habitat functions or water quality functions
	Estuarine	200
	Wetlands in coastal lagoons	200
	High level of function for habitat (habitat score of 8–9 points)	300
	Moderate level of function for habitat (habitat score of 5–7 points)	150
	High level of function for water quality improvement and low for habitat (water quality score of 8–9 points; habitat score of 3–4 points)	100
	Not meeting above characteristics	100
Category II Wetland Characteristic (20–22 points for all functions)	High level of function for habitat (habitat score of 8–9 points)	300
	Moderate level of function for habitat (habitat score of 5–7 points)	150
	High level of function for water quality improvement and low for habitat (water quality score of 8–9 points; habitat score of 3–4 points)	100
	Estuarine	150
	Not meeting above characteristics	100
Category III Wetland Characteristic (16–19 points for all functions)	Moderate level of function for habitat (Habitat score of 5–7 points).[a] If wetland scores 8–9 habitat points, use buffers for Category II	150
	Not meeting above characteristics	80
All Category IV		50

[a] Standard buffers represent high-intensity land use, which includes all uses within overlay districts. Moderate and low-intensity land use wetland buffers and their requirements are defined in HMC 11.06.140.

2.2.2 Streams and Other Waters

HDR biologists identified the high tide line (HTL) of streams and other waters in the study area following USACE guidance. Per 33 Code of Federal Regulations (CFR) 328.3(c)(4), the HTL is defined as “the line of intersection of the land with the water’s surface at the maximum height reached by a rising tide.” In the absence of actual data, the HTL may be determined by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide (33 CFR 328.3(c)(4)).

Prior to fieldwork, HDR biologists reviewed tidal datums for nearby tidal stations maintained by the National Oceanic and Atmospheric Administration (NOAA). Tidal datums for the nearest NOAA station in Aberdeen (Station 9441187) indicate a Highest Astronomical Tide (HAT) of 12.42 feet, North American Vertical Datum of 1988 (NAVD88) of 1.64 feet, mean higher-high water of 10.11 feet, and a mean tidal range of 7.94 feet (NOAA 2022).

During field investigations, HDR biologists looked for physical markings and characteristics including, but not limited to, a natural scour line impressed on the bank, distribution of salt-tolerant and non-salt-tolerant vegetation, sediment deposits, and drift deposits. The HTL for Fry Creek within the study area and along the southern shoreline extent of the study area was surveyed using a Trimble GPS unit and surveyed by a professional surveyor. The resulting data were incorporated into project base maps in combination with previous ground survey conducted for the project and an estimated HTL based on the elevation of the delineated HTL.

Streams identified in the study area were classified according to the stream definitions and typing system detailed in AMC 14.100.500 and HMC 11.06.260. Buffers were applied based on guidance for stream buffers in shoreline jurisdiction detailed in AMC 14.50.918 and requirements for developments along shorelines in HMC 11.06.260. A summary of the typing system and required buffers for the City of Aberdeen are described in Table 3, and for the City of Hoquiam in Table 4. The stream types described in this report are based on the stream reaches within the study area; stream types may be different in upstream or downstream reaches. Fish presence was determined through the review of previous studies, an assessment of the available habitat, and the hydrologic condition of identified surface waters.

Table 3. Summary of Stream Typing System and Required Buffers – City of Aberdeen

Water Type	Description	Buffer Width
Type S	All waters, as inventoried as “shorelines of the state” under Chapter 90.58 Revised Code of Washington, including periodically inundated areas of their associated wetlands.	Regulated in accordance with AMC 14.50.430.02
Type F-A	Segments of natural waters other than Type S waters that are within defined channels greater than 10 feet in width, as defined by the ordinary high water mark (OHWM), and periodically inundated areas of their associated wetlands or within lakes, ponds, or impoundments having a surface area of one-half acre or greater at seasonal low water and which contain fish habitat.	150 feet
Type F-B	Segments of natural waters other than Type S waters that are within defined channels less than 10 feet in width, as defined by the OHWM, or within lakes, ponds, or impoundments having a surface area of less than one-half acre at seasonal low water and which contain fish habitat.	100 feet
Type Np	All segments of natural waters within defined channels that are perennial non-fish-habitat streams. Perennial streams are waters that do not go dry at any time during a year of normal rainfall. However, for the purpose of water typing, Type Np waters include the intermittent dry portions of the perennial channel below the uppermost point of perennial flow.	75 feet
Type Ns	All segments of natural waters within defined channels that are not Type S, F, or Np waters. These are seasonal, non-fish-habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall and are not located downstream from any stream reach that is a Type Np water. Type Ns waters must be physically connected by an above-ground channel system to Type S, F, or Np waters.	50 feet

Source: AMC 14.100.500(B)(6). Buffer widths based on AMC 14.50.918 guidance for streams in shoreline jurisdiction and AMC 14.100.550.

Table 4. Summary of Stream Typing System and required buffers – City of Hoquiam

Water Type	Description	Buffer Width (feet)
Type S	All aquatic areas inventoried as “shorelines of the state,” including segments of streams where the mean annual flow is more than 20 cubic feet per second, marine shorelines, and lakes twenty acres in size or greater.	150
Type F	All segments of natural waters that are not type S waters, which are within the bankfull widths of defined channels and periodically inundated areas of their associated wetlands, and that contain fish or fish habitat.	Streams >10 feet wide: 150 Streams <10 feet wide: 100
Type Np	All segments of natural waters within the bankfull width of defined channels that are perennial nonfish habitat streams.	75
Type Ns	All segments of natural waters within the bankfull width of the defined channels that are not Type S, F, or Np waters. These are seasonal, nonfish habitat streams in which surface flow is not present for at least some portion of a year of normal rainfall, and are not located downstream from any stream reach that is a Type Np water.	50

Source: HMC 11.06 Definitions; HMC 11.06.260(2)(b)

3 Results

3.1 Wetlands

HDR biologists assessed nine wetlands within the study area.

Wetlands were distinguished from adjoining uplands by the presence of indicators for wetland hydrology, hydric soils, and hydrophytic vegetation. Wetland delineation data sheets are provided in Appendix B, wetland rating forms are in Appendix C, and photos of the wetland and surrounding upland areas are in Appendix D. Figure 2 shows the location and geographic extent of the wetlands and the locations of the sample plots that were established in the study area during the survey. Figures 3A through 3C show detailed view of wetlands and associated sample plots. Detailed summaries of the identified wetlands are in Table 5.

Table 5. Summary of Wetlands Delineated in the Study Area

Wetland Name	Jurisdiction	Size (acres)	HGM Classification[a]	Cowardin Classification[b]	Wetland Rating[c]	Required Buffer Width[d] (feet)
Wetland 1	Aberdeen	0.13	Estuarine	EEM	II	150
Wetland 2	Aberdeen	0.04	Depressional	PEM/PAB	III	80
Wetland 3	Aberdeen	0.02	Depressional	PEM/PAB	III[e]	80[e]
Wetland 4	Aberdeen	0.02	Depressional	PEM	III	80
Wetland 5	Aberdeen	0.02	Depressional	PEM	III	80
Wetland 6	Aberdeen	0.05	Depressional	PEM	III	80
Wetland 7	Aberdeen	0.11	Depressional	PEM	III	80
Wetland 8	Aberdeen	0.06	Depressional	PEM	III	80
Wetland 9	Hoquiam	0.20	Depressional	PEM	III	80

[a] HGM classification is based on *A Hydrogeomorphic Classification for Wetlands* (Brinson 1993).

[b] Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979; FGDC 2013). E2EM = Estuarine Intertidal Emergent. PSS = Palustrine Scrub-Shrub.

[c] *Washington State Rating System for Western Washington* (Hruby 2014). Estuarine wetlands were rated based on special characteristics.

[d] Wetland buffer width applied for high land-use impact (AMC 14.50.914: Appendix 2 - Table A2-2; AMC 14.100.250; HMC11.06.140).

[e] Wetland 3 is located outside of the study area. Therefore a formal wetland rating was not completed. The wetland rating and required buffer width are estimated based on similar nearby wetlands.

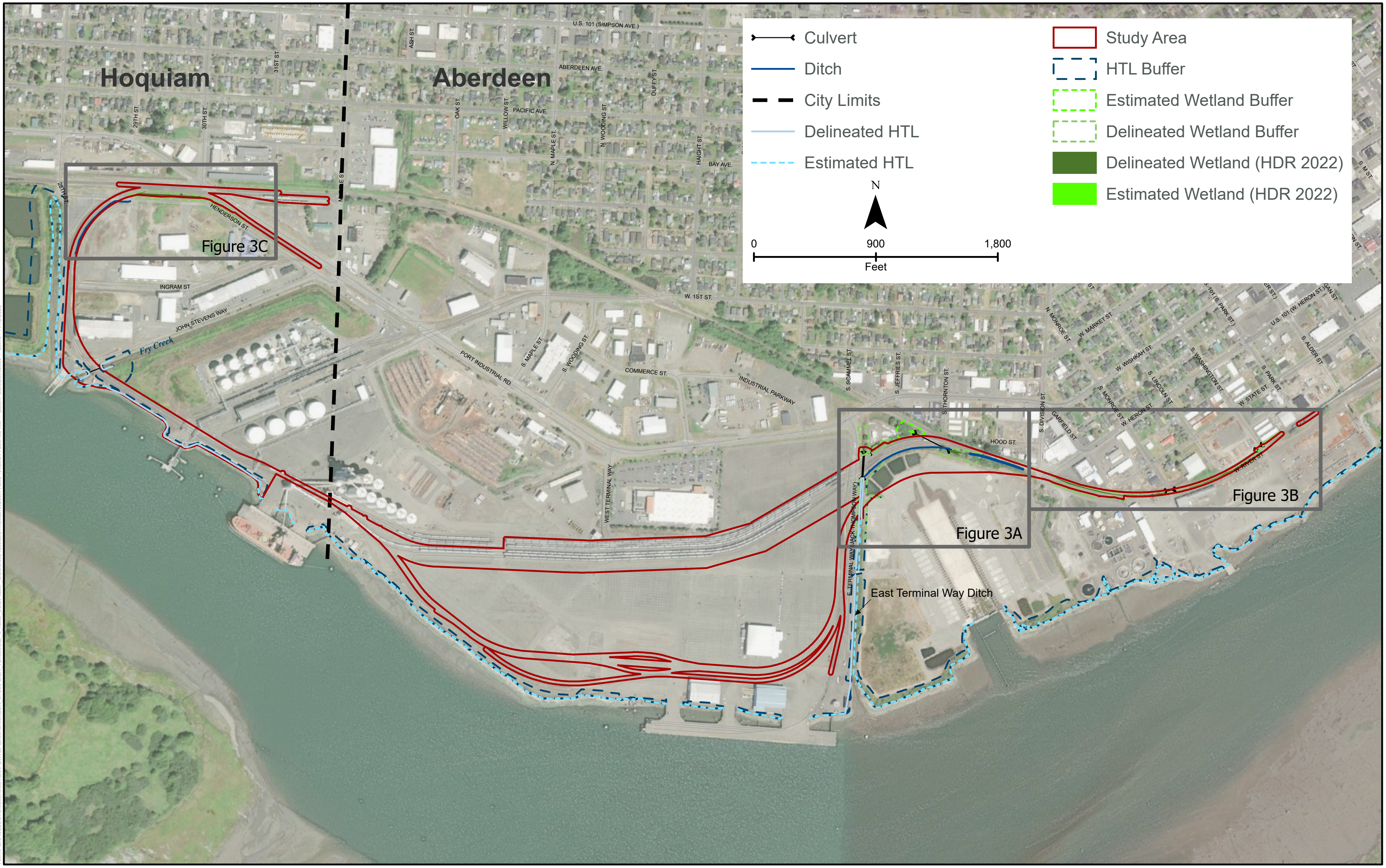

FIGURE 2: EXISTING WETLANDS AND WATERBODIES

PORT OF GRAYS HARBOR – T4 RAIL EXPANSION

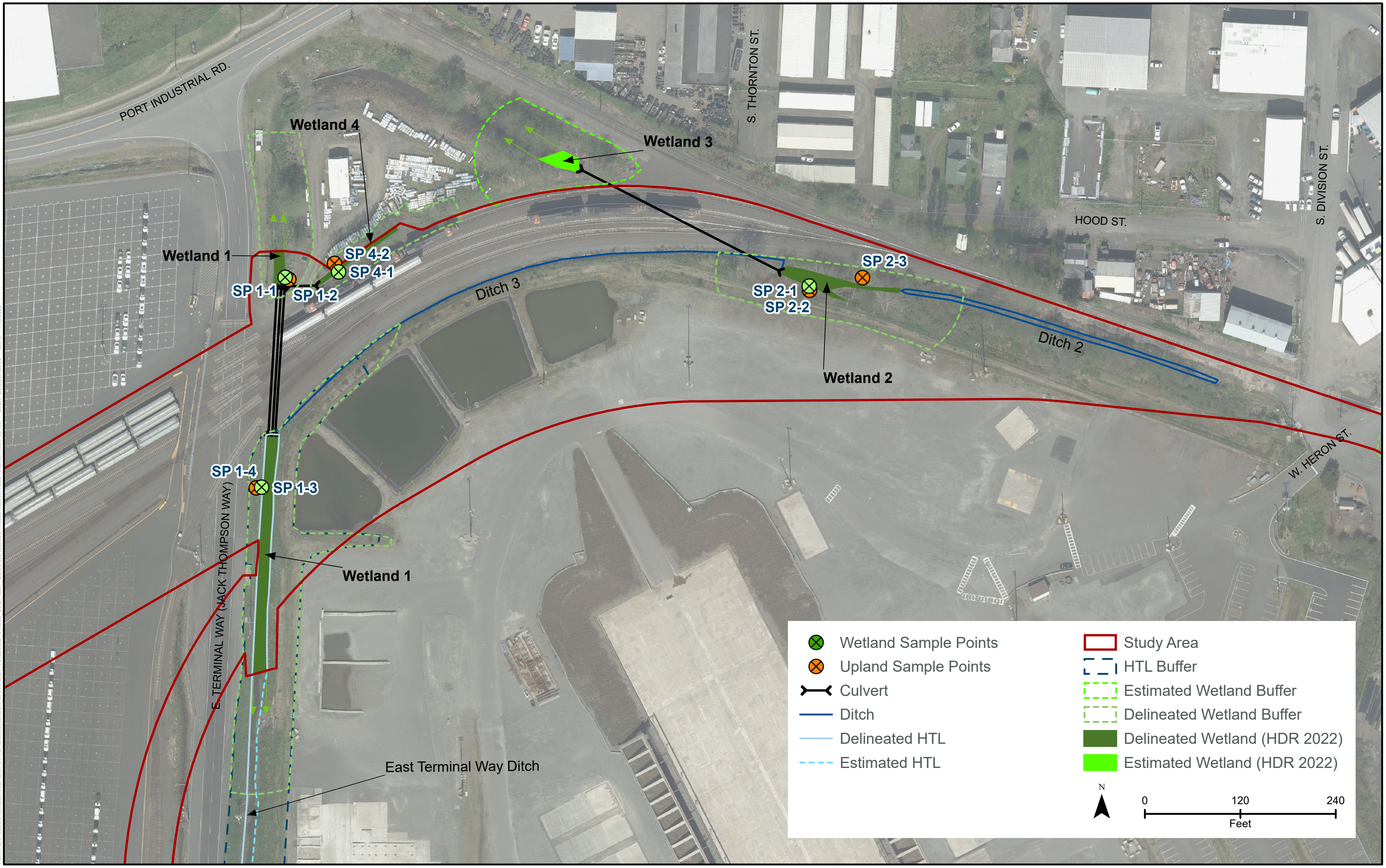

FIGURE 3A: EXISTING WETLAND AND WATERBODIES
PORT OF GRAYS HARBOR – T4 RAIL EXPANSION

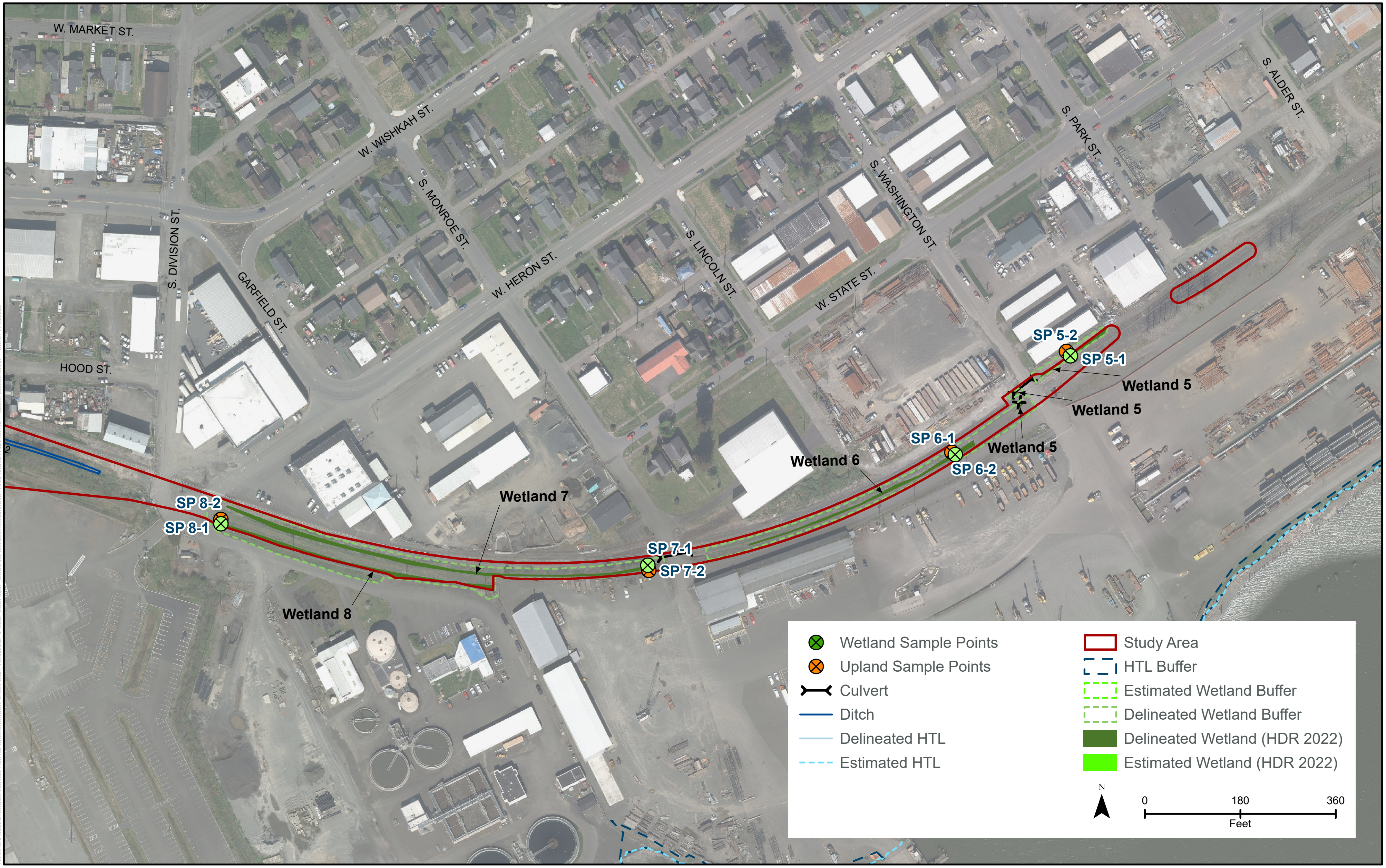

FIGURE 3B: EXISTING WETLANDS AND WATERBODIES

PORT OF GRAYS HARBOR – T4 RAIL EXPANSION

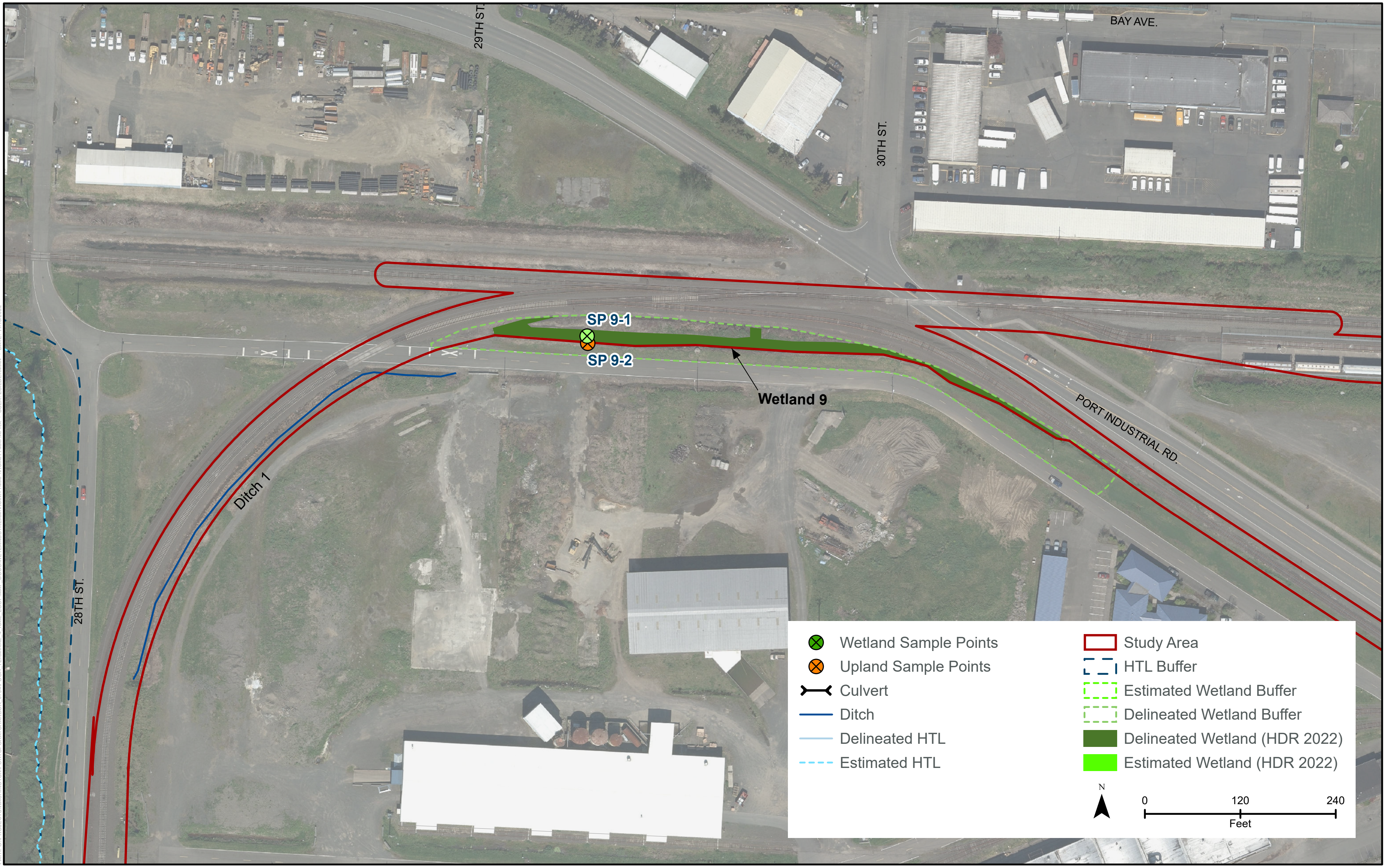

FIGURE 3C: EXISTING WETLANDS AND WATERBODIES
PORT OF GRAYS HARBOR – T4 RAIL EXPANSION

Wetland 1 – INFORMATION SUMMARY (Delineated by HDR)		
Location:	Latitude: 46.966721, Longitude: -123.836388	
	**Local Jurisdiction**	City of Aberdeen
	WRIA	22 - Lower Chehalis
	Ecology Rating (Hruby 2014)	Category II
	Water Quality	N/A
	Hydrologic	N/A
	Habitat	N/A
	Local Buffer Width	110 feet
	Wetland Size (acres)	0.13
	Cowardin Classification	EEM
	HGM Classification	Estuarine
	Wetland Data Sheet(s)	SP 1-1, SP 1-3
	Upland Data Sheet (s)	SP 1-2, SP 1-4
Dominant Vegetation	Wetland 1 is a palustrine emergent wetland. The wetland is dominated by Lyngbye's sedge (*Carex lyngbyei*, OBL), curly/yellow dock (*Rumex crispus*, FAC), and tussock grass (*Deschampsia caespitosa*, FACW). Vegetation observed in this wetland meet the criteria for hydrophytic vegetation.	
Soils	Soils in Wetland 1 are mapped as Udorthents (NRCS 2022). Observed soils in the wetland, north of the culverts, consists of 5 inches of dark brown (7.5YR 3/2) and very dark gray (10YR 3/1) silt loam with redox features, over 2 inches of a mixed matrix dark brown, dark gray and brown (7.5YR 3/3, 10YR 4/1, and 10YR 5/3) silt loam with redox features, over 9 inches of dark gray (2.5Y 4/1) silt loam. Sampled soils meet hydric soil indicators redox dark surface (F6), and red parent material (TF2). Observed soils south of the culverts are substantially similar and meet hydric soil indicators depleted below dark surface (A11), depleted matrix (F3), and redox dark surface (F6).	
Hydrology	Wetland 1 is tidally influenced, and portions of the wetland are located below the HTL. The wetland is collocated with East Terminal Way Ditch. SP 1-1 was saturated at 6 inches, with no water table. Wetland 1, north of the culverts, meets primary hydrology indicators for saturation (A3) and sediment deposits (B2). SP 1-3 was saturated at 13 inches, with a water table at 20 inches. South of the culverts, the wetland meets primary indicators for surface water (A1) and saturation (A3).	
Rationale for Delineation	Wetlands were distinguished from uplands based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology.	
Rationale for Local Rating	Wetland 1 is rated Category II based on special characteristics, as it is an estuarine wetland not located within a national wildlife reserve, national park, natural estuary reserve, natural area preserves, state park, or other educational environmental or scientific reserve, and although larger than 1 acre, has been subject to disturbance and lacks features including tidal channels, depressions, and contiguous freshwater wetlands	
Wetland Functions Summary		
Water Quality	Not applicable for estuarine wetlands.	
Hydrologic	Not applicable for estuarine wetlands.	
Habitat	Not applicable for estuarine wetlands.	

Wetland 2 – INFORMATION SUMMARY (Delineated by HDR)	
Location:	Latitude: 46.966755, Longitude: -123.833694

Local Jurisdiction	City of Aberdeen
WRIA	22 - Lower Chehalis
Ecology Rating (Hruby 2014)	Category III
Water Quality	7
Hydrologic	8
Habitat	3
Local Buffer Width	80
Wetland Size (acres)	0.04 acres
Cowardin Classification	PEM/PAB
HGM Classification	Depressional
Wetland Data Sheet(s)	SP 2-1
Upland Data Sheet (s)	SP 2-2, SP 2-3

Dominant Vegetation	Wetland 2 is a palustrine emergent and palustrine aquatic bed wetland. The emergent stratum is dominated by fringed/American/slender willowherb (*Epilobium ciliatum*, FACW). Vegetation observed in this wetland meet the criteria for hydrophytic vegetation.
Soils	Soils in Wetland 2 are mapped as Udorthents (NRCS 2022). Observed soils consist of 5 inches of very dark gray (10YR 3/1) and very dark grayish brown (10YR 3/2) silt loam with redox features, over 19 inches of gray (10YR 5/1) silty clay loam with redox features. Sampled soils meet hydric soil indicators depleted matrix (F3) and redox dark surface (F6).
Hydrology	Wetland 2 is located in a broad drainage ditch. The wetland receives flow from surrounding uplands, as well as from Ditch 2 and Ditch 3, and outlets through a culvert to an off-site stormwater pond. SP 2-1 shows no saturation or water table but is moist at 20 inches. Wetland 2 meets primary hydrology indicators for algal mat or crust (B4) and surface soil cracks (B6).
Rationale for Delineation	Wetlands were distinguished from uplands based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology.
Rationale for Local Rating	Wetland 7 is rated Category III based on functions, due to moderate water quality (7), high hydrologic (8) and low habitat (3) functions. Wetland 2 scored 18 points using the Ecology Western Washington Wetland Rating System (2014 Update).

Wetland Functions Summary	
Water Quality	The wetland has moderate potential to improve water quality because it is a depressional wetland with an intermittently flowing surface outlet, has persistent, ungrazed plants over 10% of the wetland, and has more than 50% seasonal ponding. The wetland has moderate opportunity to perform the function because more than 10% of the area within 150 feet includes land uses that generate pollutants. Performance of this function is of high value to society because the wetland is located in a basin with a TMDL.
Hydrologic	The wetland has moderate potential to attenuate stormwater flows due to an intermittently flowing outlet, ponding depths of 0.5 to 2 feet, and a contributing basin between 10 and 100 times larger. More than 10% of the area within 150 feet generates excess runoff, and greater than 25% of the contributing basin is characterized by high intensity land use, which contributes to a moderate landscape potential. Grays Harbor frequently experiences flooding immediately down-gradient of the wetland; therefore, the hydrologic function provided by the wetland is high value to society.
Habitat	The wetland has two vegetative structures, two hydroperiods, moderate plant diversity, low interspersion, and two special habitat features, which contributes to a low habitat potential. It is located within a landscape that has a low potential to support the habitat functions due to a lack of connectivity to undisturbed habitat, and a high proportion of high intensity land use within a one-kilometer radius. The wetland has a low performance value as it does not meet any criteria of value to society.

Wetland 3 – INFORMATION SUMMARY (Delineated by HDR)		
Location:	Latitude: 49.967121, Longitude: -123.835060	
	**Local Jurisdiction**	City of Aberdeen
	WRIA	22 - Lower Chehalis
	Ecology Rating (Hruby 2014)	III
	Water Quality	N/A
	Hydrologic	N/A
	Habitat	N/A
	Local Buffer Width	80
	Wetland Size (acres)	0.02
	Cowardin Classification	PEM/PAB
	HGM Classification	Depressional
	Wetland Data Sheet(s)	N/A
	Upland Data Sheet (s)	N/A
Dominant Vegetation	Wetland 3 is a palustrine emergent and aquatic bed wetland. The wetland is dominated by reed canarygrass (*Phalaris arundinacea*, FACW), common/soft rush (*Juncus effusus*,), common cattail (*Typha latifolia*,), Himalayan blackberry (*Rubus armeniacus*,), and lady fern (*Athyrium cyclosorum*,).	
Soils	Soils in Wetland 3 are mapped as Udorthends (NRCS 2022). Soils in Wetland 3 were not sampled because site is outside of study area.	
Hydrology	Seasonally ponded. Water marks were observed throughout the wetland. Wetland 3 drains uplands, and appears to drain offsite toward Wetland 1.	
Rationale for Local Rating	N/A: outside of study area. Based on similar characteristics of this wetland to other nearby wetlands, it is provisionally scored as a Category III wetland.	
Wetland Functions Summary		
Water Quality	N/A: wetland is outside of study area	
Hydrologic	N/A: wetland is outside of study area	
Habitat	N/A: wetland is outside of study area	

Wetland 4 – INFORMATION SUMMARY (Delineated by HDR)		
Location:	Latitude: 46.966736, Longitude: -123.836151	
	**Local Jurisdiction**	City of Aberdeen
	WRIA	22 - Lower Chehalis
	Ecology Rating (Hruby 2014)	Category III
	Water Quality	7
	Hydrologic	7
	Habitat	3
	Local Buffer Width	80 feet
	Wetland Size (acres)	0.02
	Cowardin Classification	PEM
	HGM Classification	Depressional
	Wetland Data Sheet(s)	SP 4-1
	Upland Data Sheet (s)	SP 4-2
Dominant Vegetation	Wetland 4 is a palustrine emergent wetland. The emergent stratum is dominated by reed canarygrass (*Phalaris arundinacea*, FACW). Vegetation observed in this wetland meets the criteria for hydrophytic vegetation.	
Soils	Soils in Wetland 4 are mapped as Udorthents (NRCS 2022). Observed soils consist of 9 inches of black (10YR 2/1) silt loam, over 6 inches of dark gray (2.5Y 4/1) sandy loam with redox features, over 4 inches of gray (10GY 3/1) loamy sand, over 5 inches of gray (10Y 3/1) and bluish black (5B 2.5/1) sandy clay. The sample soils meet hydric soil indicators for depleted below dark surface (A11) and depleted matrix (F3).	
Hydrology	Wetland 4 is located in a narrow swale between an existing set of railroad tracks and off-site development. Wetland 4 drains surrounding uplands, and outlets through a unidirectional culvert to the north side of Wetland 1.Observed hydrology in SP 4-1 includes saturation at 8 inches, with a water table present at 12 inches. Wetland 4 meets primary hydrology indicators for high water table (A2) and saturation (A3).	
Rationale for Delineation	Wetlands were distinguished from uplands based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology.	
Rationale for Local Rating	Wetland 4 is rated Category III based on functions, due to moderate water quality (7), hydrologic (7) and low habitat (3) functions. Wetland 4 scored 17 points using the Ecology Western Washington Wetland Rating System (2014 Update).	
Wetland Functions Summary		
Water Quality	The wetland has moderate potential to improve water quality because it is a depressional wetland with an intermittently flowing surface outlet, and has persistent, ungrazed plants over 95% of the wetland. There is a moderate opportunity to perform the function because more than 10% of the area within 150 feet includes land uses that generate pollutants. Performance of this function is of high value to society because the wetland is located in a basin with a TMDL.	
Hydrologic	The wetland has moderate potential to attenuate stormwater flows due to an intermittently flowing outlet, ponding depths less than 0.5 feet, and a contributing basin between 10 and 100 times larger than the wetland. More than 10% of the area within 150 feet generates excess runoff, and greater than 25% of the contributing basin is characterized by high intensity land use, which contributes to a moderate landscape potential. Grays Harbor frequently experiences flooding immediately down-gradient of the wetland; therefore, the hydrologic function provided by the wetland is high value to society.	
Habitat	The wetland has two vegetative structures, two hydroperiods, moderate plant diversity, low interspersion, and two special habitat features, which contributes to a low habitat potential. It is located within a landscape that has a low potential to support the habitat functions due to a lack of connectivity to undisturbed habitat, and a high proportion of high intensity land use within a one-kilometer radius. The wetland has a low performance value as it does not meet any criteria of value to society.	

Wetland 5 – INFORMATION SUMMARY (Delineated by HDR)	
Location:	Latitude: 46.967319, Longitude: -123.824432
	
Local Jurisdiction	City of Aberdeen
WRIA	22 - Lower Chehalis
Ecology Rating (Hruby 2014)	Category III
Water Quality	6
Hydrologic	7
Habitat	3
Local Buffer Width	80 feet
Wetland Size (acres)	0.02
Cowardin Classification	PEM
HGM Classification	Depressional
Wetland Data Sheet(s)	SP 5-1
Upland Data Sheet (s)	SP 5-2
Dominant Vegetation	Wetland 5 is a palustrine emergent wetland. The emergent stratum is dominated by reed canarygrass (*Phalaris arundinacea*, FACW) and toad rush (*Juncus bufonius*, FACW). Vegetation observed in this wetland meet the criteria for hydrophytic vegetation.
Soils	Soils in Wetland 5 are mapped as Udorthents (NRCS 2022). Observed soils in the wetland consists of 4 inches of gray (5GY 3/1) sandy clay loam with redox features, over 12 inches of very dark gray (5Y 3/1) and gray (5GY 3/1) loamy sand with redox features, over 8 inches of dark greenish gray (10GY 4/1) clay with redox features. Sampled soils meet hydric soil indicators for sandy redox (S5) and redox dark surface (F6).
Hydrology	Wetland 5 is located in a swale located adjacent to an existing railroad berm. Wetland 5 receives flow from adjacent uplands and outlets through an unconfined and unvegetated swale to Wetland 6. Observed hydrology in SP 5-1 includes saturation at 13 inches, with no water table present. Hydrology appears to be perched on a clay layer at 16 inches. Clear water marks were present on soil and rocks, and surface soil cracks were observed. The wetland meets primary hydrology indicators for water marks (B1), surface soil cracks (B6), and sparsely vegetated concave surface (B8).
Rationale for Delineation	Wetlands were distinguished from uplands based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology.
Rationale for Local Rating	Wetland 5 is rated Category III based on functions, due to moderate water quality (6), hydrologic (7) and low habitat (3) functions. Wetland 5 scored 16 points using the Ecology Western Washington Wetland Rating System (2014 Update).
Wetland Functions Summary	
Water Quality	The wetland has moderate potential to improve water quality because it has an unconstricted, or slightly constricted, surface outlet that is permanently flowing and has persistent, ungrazed plants over 10% of the wetland. The wetland has moderate opportunity to perform the function because more than 10% of the area within 150 feet includes land uses that generate pollutants. Performance of this function is of high value to society because the wetland is located in a basin with a TMDL.
Hydrologic	The wetland has low potential to reduce flooding and erosion because it has an unconstricted, or slightly constricted, surface outlet that is permanently flowing, ponding depths less than 0.5 feet, and a contributing basin more than 100 times larger than the wetland. More than 10% of the area within 150 feet generates excess runoff, and greater than 25% of the contributing basin is characterized by high intensity land use, which contributes to a moderate landscape potential. Grays Harbor frequently experiences flooding immediately down-gradient of the wetland; therefore, the hydrologic function provided by the wetland is high value to society.
Habitat	The wetland has one vegetative structure, one hydroperiod, low plant diversity, no interspersion, and no special habitat features, which contributes to a low habitat potential. It is located within a landscape that has a low potential to support the habitat functions due to a lack of connectivity to undisturbed habitat, and a high proportion of high intensity land use within a one-kilometer radius. The wetland has a low performance value as it does not meet any criteria of value to society.

Wetland 6 – INFORMATION SUMMARY (Delineated by HDR)	
Location:	Latitude: 46.966774, Longitude: -123.825203

Local Jurisdiction	City of Aberdeen
WRIA	22 - Lower Chehalis
Ecology Rating (Hruby 2014)	Category III
Water Quality	7
Hydrologic	7
Habitat	3
Local Buffer Width	80 feet
Wetland Size (acres)	0.05
Cowardin Classification	PEM
HGM Classification	Depressional
Wetland Data Sheet(s)	SP6-1
Upland Data Sheet (s)	SP6-2

Dominant Vegetation	Wetland 6 is a palustrine emergent wetland. The wetland is dominated by reed canarygrass (*Phalaris arundinacea*, FACW) and common bent (*Agrostis capillaris*, FAC). Vegetation observed in this wetland meets the criteria for hydrophytic vegetation.
Soils	Soils in Wetland 6 are mapped as Udorthents (NRCS 2022). Observed soils in the wetland consist of 9 inches of very dark gray (10YR 3/1) silty clay loam with redox features, over 15 inches of dark grayish brown (2.5Y 4/2) silty clay with redox features. Sampled soils meet hydric soil indicators for depleted below dark surface (A11), depleted matrix (F3), and redox dark surface (F6).
Hydrology	Wetland 6 is located in a ditch between the existing railroad berm and W River Street. The wetland receives flow from adjacent uplands, Wetland 5, and Wetland 7, and outlets into a culvert, presumably to an outfall to Grays Harbor. Observed hydrology at SP 6-1 includes saturation at 14 inches, with a water table present at 20 inches. The wetland meets primary hydrology indicators for algal mat or crust (B4), surface soil cracks (B6), sparsely vegetated concave surface (B8), and oxidized rhizospheres along living roots (C3). The wetland also meets secondary indicator for dry-season water table (C2).
Rationale for Delineation	Wetlands were distinguished from uplands based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology.
Rationale for Local Rating	Wetland 6 is rated Category III based on functions, due to moderate water quality (7), hydrologic (7) and low habitat (3) functions. Wetland 6 scored 17 points using the Ecology Western Washington Wetland Rating System (2014 Update).
Wetland Functions Summary	
Water Quality	The wetland has moderate potential to improve water quality because it has an unconstricted, or slightly constricted, surface outlet that is permanently flowing and has persistent, ungrazed plants over 50% of the wetland. There's a moderate opportunity to perform the function because more than 10% of the area within 150 feet includes land uses that generate pollutants. Performance of this function is of high value to society because the wetland is located in a basin with a TMDL.
Hydrologic	The wetland has low potential to reduce flooding and erosion because it has an unconstricted, or slightly constricted, surface outlet that is permanently flowing, ponding depths less than 0.5 feet, and a contributing basin more than 100 times larger. More than 10% of the area within 150 feet generates excess runoff, and greater than 25% of the contributing basin is characterized by high intensity land use, which contributes to a moderate landscape potential. Grays Harbor frequently experiences flooding immediately down-gradient of the wetland; therefore, the hydrologic function provided by the wetland is high value to society.
Habitat	The wetland has one vegetative structure, one hydroperiod, moderate plant diversity, no interspersion, and no special habitat features, which contributes to a low habitat potential. It is located within a landscape that has a low potential to support the habitat functions due to a lack of connectivity to undisturbed habitat, and a high proportion of high intensity land use within a one-kilometer radius The wetland has a low performance value as it does not meet any criteria of value to society.

<table>
<tr><th colspan="3">Wetland 7 – INFORMATION SUMMARY (Delineated by HDR)</th></tr>
<tr><td>Location:</td><td colspan="2">Latitude: 46.966171, Longitude: -123.827484</td></tr>
<tr><td rowspan="13" colspan="1"></td><td>Local Jurisdiction</td><td>City of Aberdeen</td></tr>
<tr><td>WRIA</td><td>22 - Lower Chehalis</td></tr>
<tr><td>Ecology Rating (Hruby 2014)</td><td>Category III</td></tr>
<tr><td>Water Quality</td><td>7</td></tr>
<tr><td>Hydrologic</td><td>7</td></tr>
<tr><td>Habitat</td><td>3</td></tr>
<tr><td>Local Buffer Width</td><td>60 feet</td></tr>
<tr><td>Wetland Size (acres)</td><td>0.05</td></tr>
<tr><td>Cowardin Classification</td><td>PEM</td></tr>
<tr><td>HGM Classification</td><td>Depressional</td></tr>
<tr><td>Wetland Data Sheet(s)</td><td>SP7-1</td></tr>
<tr><td>Upland Data Sheet (s)</td><td>SP7-2</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Dominant Vegetation</td><td colspan="2">Wetland 6 is a palustrine emergent wetland. The wetland is dominated by reed canarygrass (Phalaris arundinacea, FACW) and toad rush (Juncus bufonius, FACW). Vegetation observed in this wetland meets the criteria for hydrophytic vegetation.</td></tr>
<tr><td>Soils</td><td colspan="2">Soils in Wetland 7 are mapped as Udorthents (NRCS 2022). Observed soil in the wetland consists of 10 inches of very dark gray (10YR 3/1) and dark grayish brown (2.5Y 4/2) sandy clay loam with redox features, over 7 inches of dark gray (2.5Y 4/1) silty clay loam with redox features, over 7 inches of dark greenish gray (5GY 4/1) silty clay with redox features. Sampled soils meet hydric soil indicators for depleted matrix (F3).</td></tr>
<tr><td>Hydrology</td><td colspan="2">Wetland 7 is located in a narrow ditch between an existing railroad berm and a gravel access road. Wetland 7 receives hydrology from surrounding uplands and drains to Wetland 6 through a unidirectional culvert under S Monroe Street. No direct hydrology indicators were observed at SP 7-1, but soil was moist at 15 inches. The wetland meets primary hydrology indicators for algal mat or crust (B4), surface soil cracks (B6), and oxidized rhizospheres along living roots (C3).</td></tr>
<tr><td>Rationale for Delineation</td><td colspan="2">Wetlands were distinguished from uplands based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology.</td></tr>
<tr><td>Rationale for Local Rating</td><td colspan="2">Wetland 7 is rated Category III based on functions, due to moderate water quality (7), hydrologic (7) and low habitat (3) functions. Wetland 7 scored 17 points using the Ecology Western Washington Wetland Rating System (2014 Update).</td></tr>
<tr><th colspan="3">Wetland Functions Summary</th></tr>
<tr><td>Water Quality</td><td colspan="2">The wetland has moderate potential to improve water quality because it has an unconstricted, or slightly constricted, surface outlet that is permanently flowing and has persistent, ungrazed plants over 50% of the wetland. There's a moderate opportunity to perform the function because more than 10% of the area within 150 feet includes land uses that generate pollutants. Performance of this function is of high value to society because the wetland is located in a basin with a TMDL.</td></tr>
<tr><td>Hydrologic</td><td colspan="2">The wetland has low potential to reduce flooding and erosion because it has an unconstricted, or slightly constricted, surface outlet that is permanently flowing, ponding depths less than 0.5 feet, and a contributing basin between 10 and 100 times larger. More than 10% of the area within 150 feet generates excess runoff, and greater than 25% of the contributing basin is characterized by high intensity land use, which contributes to a moderate landscape potential. Grays Harbor frequently experiences flooding immediately down-gradient of the wetland; therefore, the hydrologic function provided by the wetland is high value to society.</td></tr>
<tr><td>Habitat</td><td colspan="2">The wetland has one vegetative structure, one hydroperiod, moderate plant diversity, no interspersion, and one special habitat feature, which contributes to a low habitat potential. It is located within a landscape that has a low potential to support the habitat functions due to a lack of connectivity to undisturbed habitat, and a high proportion of high intensity land use within a one-kilometer radius The wetland has a low performance value as it does not meet any criteria of value to society.</td></tr>
</table>

<table>
<tr><th colspan="3">Wetland 8 – INFORMATION SUMMARY (Delineated by HDR)</th></tr>
<tr><td>Location:</td><td colspan="2">Latitude: 46.966244, Longitude: -123.830734</td></tr>
<tr><td rowspan="12" colspan="1"></td><td>Local Jurisdiction</td><td>City of Aberdeen</td></tr>
<tr><td>WRIA</td><td>22 - Lower Chehalis</td></tr>
<tr><td>Ecology Rating (Hruby 2014)</td><td>Category III</td></tr>
<tr><td>Water Quality</td><td>6</td></tr>
<tr><td>Hydrologic</td><td>7</td></tr>
<tr><td>Habitat</td><td>3</td></tr>
<tr><td>Local Buffer Width</td><td>80 feet</td></tr>
<tr><td>Wetland Size (acres)</td><td>0.06</td></tr>
<tr><td>Cowardin Classification</td><td>PEM</td></tr>
<tr><td>HGM Classification</td><td>Depressional</td></tr>
<tr><td>Wetland Data Sheet(s)</td><td>W8-1</td></tr>
<tr><td>Upland Data Sheet (s)</td><td>W8-2</td></tr>
<tr><td>Dominant Vegetation</td><td colspan="2">Wetland 8 is a palustrine emergent wetland. The wetland is dominated by reed canarygrass (Phalaris arundinacea, FACW) and bird's foot trefoil (Lotus corniculatus, FAC). Vegetation observed in this wetland meet the criteria for hydrophytic vegetation.</td></tr>
<tr><td>Soils</td><td colspan="2">Soils in Wetland 8 are mapped as Udorthents (NRCS 2022). Observed soil in the wetland consists of 8 inches of very dark gray (10YR 3/1) silt loam with redox features, over 6 inches of dark grayish brown (10YR 4/2) sandy loam with redox features, over 10 inches of dark gray (10YR 4/1) clay loam with redox features. Sampled soils meet hydric soil indicators for depleted below dark surface (A11), depleted matrix (F3), and redox dark surface (F6).</td></tr>
<tr><td>Hydrology</td><td colspan="2">Wetland 8 is located in a narrow swale between a gravel access road and existing development. Wetland 8 receives hydrology from surrounding uplands and drains through a culvert at the west end, presumably to an offsite stormwater facility. No primary hydrology indicators were observed in the wetland - SP 8-1 was dry to 24 inches. The wetland meets secondary hydrology indicators for geomorphic position (D2) and FAC-Neutral Test (D5).</td></tr>
<tr><td>Rationale for Delineation</td><td colspan="2">Wetlands were distinguished from uplands based on the presence of hydrophytic vegetation, hydric soils, and secondary wetland hydrology indicators.</td></tr>
<tr><td>Rationale for Local Rating</td><td colspan="2">Wetland 8 is rated Category III based on functions, due to moderate water quality (6), hydrologic (7) and low habitat (3) functions. Wetland 8 scored 16 points using the Ecology Western Washington Wetland Rating System (2014 Update).</td></tr>
<tr><th colspan="3">Wetland Functions Summary</th></tr>
<tr><td>Water Quality</td><td colspan="2">The wetland has moderate potential to improve water quality because it has an unconstricted, or slightly constricted, surface outlet that is permanently flowing and has persistent, ungrazed plants over 95% of the wetland. There's a moderate opportunity to perform the function because more than 10% of the area within 150 feet includes land uses that generate pollutants. Performance of this function is of high value to society because the wetland is located in a basin with a TMDL.</td></tr>
<tr><td>Hydrologic</td><td colspan="2">The wetland has low potential to reduce flooding and erosion because it has an unconstricted, or slightly constricted, surface outlet that is permanently flowing, ponding depths less than 0.5 feet, and a contributing basin between 10 and 100 times larger. More than 10% of the area within 150 feet generates excess runoff, and greater than 25% of the contributing basin is characterized by high intensity land use, which contributes to a moderate landscape potential. Grays Harbor frequently experiences flooding immediately down-gradient of the wetland; therefore, the hydrologic function provided by the wetland is high value to society.</td></tr>
<tr><td>Habitat</td><td colspan="2">The wetland has one vegetative structure, one hydroperiod, moderate plant diversity, no interspersion, and no special habitat features, which contributes to a low habitat potential. It is located within a landscape that has a low potential to support the habitat functions due to a lack of connectivity to undisturbed habitat, and a high proportion of high intensity land use within a one-kilometer radius The wetland has a low performance value as it does not meet any criteria of value to society.</td></tr>
</table>

<table>
<tr><th colspan="3">Wetland 9 – INFORMATION SUMMARY (Delineated by HDR)</th></tr>
<tr><td>Location:</td><td colspan="2">Latitude: 46.967815, Longitude: -123.859856</td></tr>
<tr><td rowspan="12" colspan="1"></td><td>Local Jurisdiction</td><td>City of Hoquiam</td></tr>
<tr><td>WRIA</td><td>22 - Lower Chehalis</td></tr>
<tr><td>Ecology Rating (Hruby 2014)</td><td>Category III</td></tr>
<tr><td>Water Quality</td><td>8</td></tr>
<tr><td>Hydrologic</td><td>8</td></tr>
<tr><td>Habitat</td><td>3</td></tr>
<tr><td>Local Buffer Width</td><td>80 feet</td></tr>
<tr><td>Wetland Size (acres)</td><td>0.20</td></tr>
<tr><td>Cowardin Classification</td><td>PEM</td></tr>
<tr><td>HGM Classification</td><td>Depressional</td></tr>
<tr><td>Wetland Data Sheet(s)</td><td>SP9-1</td></tr>
<tr><td>Upland Data Sheet (s)</td><td>SP9-2</td></tr>
<tr><td>Dominant Vegetation</td><td colspan="2">Wetland 9 is a palustrine emergent wetland. The wetland is dominated by common bent (Agrostis capillaris, FAC) and common/needle spikerush (Eleocharis acicularis, OBL). Vegetation observed in this wetland meet the criteria for hydrophytic vegetation.</td></tr>
<tr><td>Soils</td><td colspan="2">Soils in Wetland 9 are mapped as Udorthents (NRCS 2022). Observed soils in the wetland consists of 8 inches of very dark grayish brown (10YR 3/2) silt loam with redox features over 10 inches of gray (5GY 3/1) gravelly sandy loam with redox features. Sampled soils meet hydric soil indicators for redox dark surface (F6).</td></tr>
<tr><td>Hydrology</td><td colspan="2">Wetland 9 is located in a steep-sided ditch. Wetland 9 receives hydrology from adjacent uplands and drains through a culvert to Ditch 1 and eventually to an off-site tidal channel of Grays Harbor. SP 9-1 was saturated at 6 inches, with a water table present at 8 inches. The wetland meets primary hydrology indicators for surface water (A1) and saturation (A3).</td></tr>
<tr><td>Rationale for Delineation</td><td colspan="2">Wetlands were distinguished from uplands based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology.</td></tr>
<tr><td>Rationale for Local Rating</td><td colspan="2">Wetland 9 is rated Category III based on functions, due to moderate water quality (8), hydrologic (8) and low habitat (3) functions. Wetland 9 scored 19 points using the Ecology Western Washington Wetland Rating System (2014 Update).</td></tr>
<tr><th colspan="3">Wetland Functions Summary</th></tr>
<tr><td>Water Quality</td><td colspan="2">The wetland has high potential to improve water quality because it has an unconstricted, or slightly constricted, surface outlet that is permanently flowing and has persistent, ungrazed plants over 95% of the wetland. There’s a moderate opportunity to perform the function because more than 10% of the area within 150 feet includes land uses that generate pollutants. Performance of this function is of high value to society because the wetland is located in a basin with a TMDL.</td></tr>
<tr><td>Hydrologic</td><td colspan="2">The wetland has moderate potential to reduce flooding and erosion because it has an unconstricted, or slightly constricted, surface outlet that is permanently flowing, ponding depths 0.5 to 2 feet from surface or bottom of outlet, and a contributing basin between 10 and 100 times larger. More than 10% of the area within 150 feet generates excess runoff, and greater than 25% of the contributing basin is characterized by high intensity land use, which contributes to a high landscape potential. Grays Harbor frequently experiences flooding immediately down-gradient of the wetland; therefore, the hydrologic function provided by the wetland is high value to society.</td></tr>
<tr><td>Habitat</td><td colspan="2">The wetland has one vegetative structure, two hydroperiods, moderate plant diversity, no interspersion, and one special habitat feature, which contributes to a low habitat potential. It is located within a landscape that has a low potential to support the habitat functions due to a lack of connectivity to undisturbed habitat, and a high proportion of high intensity land use within a one-kilometer radius The wetland has a low performance value as it does not meet any criteria of value to society.</td></tr>
</table>

3.2 Streams and other waters

The study area is located in the Lower Chehalis watershed (WRIA 22), Hydrologic Unit Code 17100105. One stream and four ditches were identified within the study area. A summary of the water type and buffer widths based on Aberdeen Municipal Code is provided in Table and detailed descriptions are provided below. Figure 1 shows the locations and geographic extents of the stream and ditches within the study area, and photos are provided in Appendix D.

Table 6. Summary of Streams in the Study Area

Waterbody	Jurisdiction	Tributary to	Water Type	Buffer Width (feet)	Average Channel Width in Study Area (feet)	Approximate Length in Study Area (feet)
Fry Creek	Hoquiam	Grays Harbor	S[a]	150[b]	52	100
East Terminal Way Ditch	Aberdeen	Grays Harbor	S[c]	150[d]	15	300
Ditch 1	Hoquiam	Unnamed ditch/Grays Harbor	N/A	N/A	4	640
Ditch 2	Aberdeen	Wetland 2	N/A	N/A	1.5	400
Ditch 3	Aberdeen	Wetland 1	N/A	N/A	3	700

[a] HMC 11.06 Definitions.
[b] Source: HMC Table 11.05.330-1: Shoreline Buffers, for industrial and port development, non-water-oriented structures and uses
[c] AMC 14.100.500(B)(6).
[d] Source: AMC.50.430.05 Table 4-1, for industrial and port development, non-water-oriented structures and uses

3.2.1 Fry Creek

Fry Creek is a tributary to Grays Harbor and flows roughly north to south through the west end of the city of Aberdeen and enters the harbor just east of the Hoquiam River (Figure 2). Fry Creek originates in the forested hills north of the city; it flows through a narrow and heavily developed riparian corridor and passes through a series of culverts under city streets and railroad tracks. This part of the stream has been heavily altered and channelized due to surrounding industrial development, and hydrologic and habitat functionality has been heavily affected. The reach of Fry Creek within the study area is considered a shoreline of the state (Type S).

The study area reach of Fry Creek is tidally influenced and has been channelized and confined by riprap banks (Appendix D, Photo 18). The channel is low-gradient and uniform and the banks are topped with grasses and shrubs, and a functional riparian corridor is lacking (Appendix D, Photo 19).

The landward limit of salt-tolerant vegetation, namely the presence of seaside plantain, located along small benches on both banks was used in delineating the HTL in the study area.

Online databases from WDFW Priority Habitat and Species data and SalmonScape (WDFW 2022a, 2022b), as well as SWIFD (WDFW 2018), indicate the presence of Coho Salmon (*Oncorhynchus kisutch*) and resident Cutthroat Trout (*O. clarki*) in Fry Creek. No fish were observed in the creek during the June 23, 2022, field visit. The portion of Fry Creek within the study area has a direct surface connection to Grays Harbor and could therefore potentially be used by Chinook Salmon (*Oncorhynchus tshawytscha*), Coho Salmon, Chum Salmon (*Oncorhynchus keta*), and steelhead trout (*Oncorhynchus mykiss*). Use of the channel by these species would be limited to juveniles moving up from Grays Harbor to use it for off-channel rearing.

<table>
<tr><th colspan="4">Fry Creek - INFORMATION SUMMARY</th></tr>
<tr><td colspan="2" rowspan="8"></td><td>Stream Name</td><td>Fry Creek</td></tr>
<tr><td>Long./Lat. ID Number</td><td>0188</td></tr>
<tr><td>WRIA Name/Stream #</td><td>WRIA 22 Lower Chehalis Watershed / Stream # 0188</td></tr>
<tr><td>Local Jurisdiction</td><td>City of Hoquiam</td></tr>
<tr><td>DNR Water Type</td><td>F</td></tr>
<tr><td>Local Stream Rating</td><td>S</td></tr>
<tr><td>Buffer Width[a]</td><td>150 feet</td></tr>
<tr><td>Documented Fish Use[b]</td><td>Coho salmon and resident cutthroat trout</td></tr>
<tr><td>Connectivity</td><td colspan="3">Fry Creek flows north to south through a series of culverts under city streets and railroad tracks and under Port Industrial Way, and then flows into Grays Harbor. Tidal flap gates on the outlets of the culverts under Port Industrial Way restrict fish access between the downstream reach that flows into Grays Harbor and the project reach upstream of the pump station.</td></tr>
<tr><td>Fish Habitat</td><td colspan="3">Documented use by Coho Salmon and resident Cutthroat Trout in the project reach. The substrate is dominated by silt and clay, and the reach is a uniform straight channel that is deeply incised into the banks. Habitat is not suitable for spawning salmonids and has limited function for rearing.</td></tr>
<tr><td>Riparian/Buffer Condition</td><td colspan="3">The riparian corridor is narrow and constrained by surrounding development.</td></tr>
</table>

[a] Source: HMC Table 11.05.330-1: Shoreline Buffers, for industrial and port development, non-water-oriented structures and uses

[b] Documented fish species known to occur in the stream from available data sources (WDFW 2018; WDFW 2022a, 2022b).

3.2.2 East Terminal Way Ditch (Wetland 1)

East Terminal Way Ditch is a tidal channel that flows south to Grays Harbor, and includes Wetland 1 (Figures 2 and 3A). This channel in the study area is confined in a steep banked roadside ditch and is approximately 5-6 feet wide in most places. The channel alignment in the study area is straight and provides little to no habitat complexity. The ditch flows through three existing railroad culverts that are undersized and prevent good tidal exchange. The reach upstream of the railroad has very little flow, a thick layer of silty substrate, and is partially choked with wetland vegetation.

Riparian habitat along East Terminal Way Ditch is poor to non-existent and provides little function. Very little shading provided by the few small alder trees on the left bank, and the right bank is open roadside grass. The low flow and lack of shading provides poor salmonid habitat due to probable high-water temperatures and low oxygen levels despite the downstream connection to Grays Harbor. Algae was present in the ponded water both upstream and downstream of the railroad crossing.

This ditch has a direct surface connection to Grays Harbor and could therefore potentially be used by Chinook Salmon, Coho Salmon, Chum Salmon, and steelhead trout. Use of the channel by these species would be limited to juveniles moving up from Grays Harbor to use it for off-channel rearing. However, under existing conditions, the reach upstream and immediately downstream of the railroad culvert crossings in the study area does not provide suitable tide channel habitat for use by salmonid species. Downstream of the railroad culverts the channel continues southward in a channelized ditch and passes through two more downstream culvert crossings. These culverts allow more tidal exchange and habitat downstream of the study area becomes more functional for salmonids near the confluence with Grays Harbor.

<table>
<tr><th colspan="3">East Terminal Way Ditch (Wetland 1) - INFORMATION SUMMARY</th></tr>
<tr><td rowspan="8"></td><td>Stream Name</td><td>East Terminal Way Ditch</td></tr>
<tr><td>Long./Lat. ID Number</td><td>N/A</td></tr>
<tr><td>WRIA Name/Stream #</td><td>WRIA 22 Lower Chehalis Watershed / N/A</td></tr>
<tr><td>Local Jurisdiction</td><td>City of Aberdeen</td></tr>
<tr><td>DNR Water Type</td><td>Not Mapped</td></tr>
<tr><td>Local Stream Rating</td><td>S</td></tr>
<tr><td>Buffer Width[a]</td><td>150 feet</td></tr>
<tr><td>Documented Fish Use[b]</td><td>Not mapped – direct surface connection to Grays Harbor</td></tr>
<tr><td>Connectivity</td><td colspan="2">East Terminal Way Ditch is a tidal channel that incorporates Wetland 1. The ditch flows south, crossing through the study area in a pair of railroad culverts. The ditch drains uplands and wetlands, and connects directly to Grays Harbor.</td></tr>
<tr><td>Fish Habitat</td><td colspan="2">This wetland channel ditch has a direct surface connection to Grays Harbor and could therefore potentially be used by Chinook Salmon, Coho Salmon, Chum Salmon, and steelhead trout. Use of the channel by these species would be limited to juveniles moving up from Grays Harbor to use it for off-channel rearing. However, under existing conditions, the reach upstream and immediately downstream of the RR railroad culvert crossings in the study area does not provide suitable tide channel habitat for use by salmonid species.</td></tr>
<tr><td>Riparian/Buffer Condition</td><td colspan="2">The riparian corridor is narrow and constrained by surrounding development.</td></tr>
</table>

[a] Source: AMC.50.430.05 Table 4-1, for industrial and port development, non-water-oriented structures and uses

[b] Documented fish species known to occur in the stream from available data sources (WDFW 2018; WDFW 2022a, 2022b).

3.2.3 Ditches

Ditch 1 is a short drainage ditch that does not flow into any wetlands (Figure 3A). The ditch is mostly unvegetated with no soil development and is excavated from uplands.

Ditch 2 is a short drainage ditch that coveys flow from the culvert and railroad berms into Wetland 2 from the east. The ditch has no vegetation, no soil development, but does show signs of ponding and water flow. Ditch 2 has no fish habitat or surface water connection to streams or areas of fish use.

Ditch 3 is a short drainage ditch that coveys flow from the adjacent railroad and Port of Grays Harbor fill pad into Wetland 2 from the west and into Wetland 1 from the east. The ditch has no vegetation or soil development. There is ponding water and has a substrate consisting of gravel and cobble. Ditch 3 is in close proximity to wetland 1 but has no fish habitat or surface water connection due to a 5-foot drop up the bank from the wetland tidal channel.

4 References

Brinson, M.M. 1993. *A Hydrogeomorphic Classification for Wetlands.* Technical Report WRP-DE-4, U.S. Army Corps of Engineers Engineer Waterways Experiment Station, Vicksburg, Mississippi. http://el.erdc.usace.army.mil/wetlands/pdfs/wrpde4.pdf.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. Government Printing Office, Washington, DC.

DNR (Washington Department of Natural Resources). 2022a Forest Practices Application Mapping Tool

DNR (Washington Department of Natural Resources). 2022b. Natural Heritage System. Wetlands of High Conservation Value Map Viewer. https://www.dnr.wa.gov/NHPwetlandviewer.

Ecology (Washington State Department of Ecology). 2022. Water Quality Atlas Map. https://apps.ecology.wa.gov/waterqualityatlas/wqa/map

FGDC (Federal Geographic Data Committee). 2013. *Classification of Wetlands and Deepwater Habitats of the United States*. Adapted from Cowardin, Carter, Golet, and LaRoe (1997). FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC. Accessed October 2022. https://www.fgdc.gov/standards/projects/wetlands/nwcs-2013.

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

NOAA (National Oceanic and Atmospheric Association). 2022. Tidal Datums for Station 9441187, Aberdeen WA. Accessed November 2022. https://tidesandcurrents.noaa.gov/datums.html?datum=NAVD88&units=0&epoch=0&id=9441187&name=Aberdeen&state=WA.

NRCS (Natural Resources Conservation Service). 2020. Web Soil Survey: Grays Harbor County Area, Pacific and Wahkiakum Counties, Washington (Version 19, June 4, 2020). Accessed October, 2022. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

NRCS. 2022. USDA Field Office Climate Data for Hoquiam Bowerman Airport - WETS Table. AgACIS for Grays Harbor County. Accessed October, 2022. http://agacis.rcc-acis.org/.

Sumner, J.P., M.J. Vepraskas, and R.K. Kolka. 2009. Methods to Evaluate Normal Rainfall for Short-Term Wetland Hydrology Assessment. USDA (U.S. Department of Agriculture) Northern Research Station. *Wetlands* Volume 29, No 3 (September 2009), pp. 1049–1062.

SWIFD (Statewide Washington Integrated Fish Distribution) online. 2018. http://geo.wa.gov/datasets/4ed1382bad264555b018cc8c934f1c01_0. Accessed November 2021

USACE (U.S. Army Corps of Engineers). 1987. *Corps of Engineers Wetland Delineation Manual*. Technical Report Y-87-1. Department of the Army, Waterways

Experiment Station. Vicksburg, Mississippi. Prepared by Environmental Laboratory.

USACE. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region*. ERDC/EL TR-10-3. May 2010. https://usace.contentdm.oclc.org/utils/getfile/collection/p266001coll1/id/7646.

USFWS (U.S. Fish and Wildlife Service). 2022. National Wetlands Inventory. Wetlands Online Mapper. https://www.fws.gov/wetlands/data/mapper.html.

USGS (U.S. Geological Survey). 2022. National Hydrologic Dataset. Viewed using National Map. https://apps.nationalmap.gov/viewer/

WDFW (Washington Department of Fish and Wildlife). 2018. Washington Geospatial Open Data Portal: Statewide Washington Integrated Fish Distribution. http://geo.wa.gov/datasets/4ed1382bad264555b018cc8c934f1c01_0. Accessed October 2022.

WDFW. 2022a. Priority Habitats and Species on the Web. Accessed October 2022. https://geodataservices.wdfw.wa.gov/hp/phs/.

WDFW. 2022b. SalmonScape Online Mapper. Accessed October 2022. https://apps.wdfw.wa.gov/salmonscape/map.html.

Appendix A. Wetland Delineation Methodology

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Wetland Delineation Methodology

Wetlands are defined as areas saturated or inundated by surface or groundwater at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation adapted for life in saturated soil conditions. The methods used to delineate the on-site wetlands conform to methods described in the *Corps of Engineers Wetland Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys and Coast Region* (USACE 2010). All delineated wetlands were instrument-surveyed and mapped on project base maps.

To be considered a wetland, an area must have hydrophytic vegetation, hydric soils, and wetland hydrology. HDR staff collected data on these parameters in areas representative of typical site conditions. Staff collected additional data in associated uplands, as needed, to confirm wetland boundaries. Wetland boundaries and wetland data plot locations in the study area were marked with sequentially numbered flagging.

Vegetation

The dominant plants and their wetland indicator status were evaluated to determine if the vegetation was hydrophytic. To determine which plants were dominant at a sample plot, biologists applied the 50/20 rule per U.S. Army Corps of Engineers (USACE) recommendations. Under this guidance, absolute cover estimates were made for each species found rooted within the sample plot, for each vegetative strata found in the habitat (tree, sapling/shrub, herb, and woody vine). The species that had the most cover was included, along with the next species until the absolute cover of these totaled more than 50 percent of the total absolute cover. Any other species that represented at least 20 percent of the total absolute cover was also included as a dominant species for that vegetative stratum.

Sample plots varied in size depending on site topography and habitat complexity. The objective of establishing a plot was to depict particular plant associations that reflect specific water regimes or other ecological factors. Therefore, on steep-sided riparian areas, a plot may consist of a narrow strip along the water’s edge, or within a broader area, a plot may be a 30-foot-diameter circular area.

Hydrophytic vegetation is defined as vegetation adapted to wetland conditions. To meet the hydrophytic vegetation criterion, more than 50 percent of the dominant plants in each stratum must be Facultative, Facultative Wetland, or Obligate, based on the wetland indicator category assigned to each plant species on the National Wetland Plant List developed by USACE (2018). Table A-1 lists the definitions of the indicator categories. If the plant community failed to meet the above hydrophytic vegetation criterion, but indicators of hydric soil and wetland hydrology were both present, additional indicators of hydrophytic vegetation were assessed per USACE recommendations (USACE 2010).

Table A-1. Definitions of Wetland Plant Indicator Categories used to Determine the Presence of Hydrophytic Vegetation

Wetland Indicator Category	Symbol	Definition
Obligate Wetland Plants	OBL	Almost always occur in wetlands.
Facultative Wetland Plants	FACW	Usually occur in wetlands, but may occur in non-wetlands.
Facultative Plants	FAC	Occur in wetlands and non-wetlands.
Facultative Upland Plants	FACU	Usually occur in non-wetlands, but may occur in wetlands.
Upland Plants	UPL	Almost never occur in wetlands.

Source: Lichvar et al. (2012).

HDR biologists identified plants to species in the field and estimated percent cover of dominant plants. Scientific and common plant names follow currently accepted nomenclature and are consistent with *Flora of the Pacific Northwest* (Hitchcock and Cronquist 1973) and the PLANTS Database (NRCS 2022a). During the field investigation, staff observed and recorded the dominant plant species on data sheets for each data plot.

Soils

Generally, an area must contain hydric soils to be a wetland. Hydric soil forms when soils are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (12 inches). Biological activities in saturated soil result in reduced oxygen concentrations, and organisms turn to anaerobic processes for metabolism. Over time, anaerobic biological processes result in certain soil color patterns, which are used as indicators of hydric soil. Typically, low-chroma colors are formed in the soil matrix, and bright-colored redoximorphic features form within the matrix. Other important hydric soil indicators include organic matter accumulations in the surface horizon, reduced sulfur odors, and organic matter staining in the subsurface (NRCS 2018).

HDR staff examined soils by excavating sample pits to a depth of 20 inches to observe soil profiles, colors, and textures. In some case, a shallower soil pit was adequate to document hydric soil indicators. Munsell color charts (Munsell Color 2009) were used to describe soil colors.

Hydrology

Project staff examined the area for evidence of wetland hydrology. Wetland hydrology criteria were considered satisfied if evidence indicated that the area was inundated or saturated to the surface for a consecutive number of days greater than or equal to 12.5 percent of the growing season. The growing season for the area was determined based on the period in which temperatures are above 28 degrees Fahrenheit in 5 out of 10 years using the long-term climatological data collected by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS 2022b). Using the NRCS WETS table for the nearest station (Hoquiam Bowerman Airport), the growing season was approximated to be typically between February 2 and December 21, or a total of 322 days.

Wetland hydrology indicators are divided into two categories: primary and secondary (USACE 2010). Primary indicators of hydrology include surface inundation, high water table, and saturated soils. The presence of one primary indicator is sufficient to conclude that wetland hydrology is present. In the absence of a primary indicator, observation of two or more secondary indicators is required to conclude that wetland hydrology is present. Secondary indicators of hydrology include dry-season water table, shallow aquitard, and FAC-neutral test (USACE 2010).

References

Hitchcock, C.L., and A. Cronquist. 1973. *Flora of the Pacific Northwest*. University of Washington Press. Seattle, Washington.

Lichvar, R.W., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner. 2012. National Wetland Plant List Indicator Rating Definitions. July 2012. U.S. Army Corps of Engineers. Engineer Research and Development Center.

Munsell Color. 2009. *Munsell® Soil Color Charts*. Revised Edition. Munsell® Color, GretagMacBeth, New York.

NRCS (Natural Resources Conservation Service). 2018. Field Indicators of Hydric Soils in the United States, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA NRCS, in cooperation with the National Technical Committee for Hydric Soils.

NRCS. 2022a. The PLANTS Database. National Plant Data Team, Greensboro, NC. http://plants.usda.gov. Accessed October 2022.

NRCS. 2022b. USDA Field Office Climate Data for Hoquiam Bowerman Airport. WETS Table. Created October, 2022.

USACE (U.S. Army Corps of Engineers). 1987. *Corps of Engineers Wetland Delineation Manual*. Technical Report Y-87-1. Department of the Army, Waterways Experiment Station. Vicksburg, Mississippi. Prepared by Environmental Laboratory.

USACE. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). https://usace.contentdm.oclc.org/utils/getfile/collection/p266001coll1/id/7646.

USACE. 2018. National Wetland Plant List, Version 3.4. http://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2018/National/National_2018v1.pdf. U.S. Army Corps of Engineers Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire.

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Appendix B. Wetland Delineation Data Forms

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

Project/Site: Port of Grays harbor Terminal 4 Expansion   City/County: Aberdeen, Grays Harbor   Sampling Date: 6/23/2022

Applicant/Owner: The Port of Grays Harbor   State: WA   Sampling: SP 1-1

Investigators: DANIELSKI , DARTIGUENAVE   Section, Township, Range: T17N R9W S7

Landform (hillslope, terrace, etc.): Floodplain   Local Relief (concave, convex, none): Concave   Slope(%): 0

Subregion (LRR): A – Northwest Forest, Forage,   Lat: 46.966721   Long: -123.836388   Datum: WGS84

Soil Map Unit Name: Udorthents   NWI Classification: PEM1

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 a site map showing sampling point locations, transects, important features, etc.

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

Remarks:

Sample plot below HTL. Sample plot meets 3 of 3 wetland criteria and is within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 15x5)			
1. Symphiotrychum spp	50	Yes	FAC
2. Rumex crispus	20	Yes	FAC
3. Carex lyngbyei	20	Yes	OBL
4. Deschampsia caespitosa	10	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

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

Total Number of Dominant Species Across All Strata: 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	20	x1=	20
FACW species	10	x2=	20
FAC species	70	x3=	210
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	100 (A)		250 (B)

Prevalence Index = B/A= 2.50

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0¹
- ___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants¹
- ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Sample plot meets dominance test and prevalence index for hydrophytic vegetation.

SOIL

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 %	Type¹	Loc²	Texture	Remarks
0-5	7.5YR 3/2	55	5YR 4/6	20	C	M	Silt Loam	
	10YR 3/1	25						
5-7	10 yr 5/3	10					Silt Loam	
	10YR 4/1	15						
	7.5 yr 3/3	70	7.5 YR 5/8	5	C	M		
7-16	2.5 y 4/1	100					Silt Loam	

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Soils under aquic moisture regime. Turned redder throughout soil profile upon exposure to air. Sample plot meets hydric soil indicator F6 - redox dark surface and TF2 - red parent material

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		X	
Water Table Present?		X	
Saturation Present? (includes capillary fringe)	X		6.0

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

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

Remarks:

Tidally influenced, sampled at low tide. Sample plot meets primary hydrology indicators for saturation and sediment deposits.

Additional Reference Data: Photos

Photo Name: Photo_220623144233

Photo Name: Photo_220623144147

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

Project/Site: Port of Grays harbor Terminal 4 Expansion City/County: Aberdeen, Grays Harbor Sampling Date: 6/23/2022

Applicant/Owner: The Port of Grays Harbor State: WA Sampling Point: SP 1-2

Investigators: DANIELSKI, DARTIGUENAVE Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Convex Slope(%): 7

Subregion (LRR): A – Northwest Forest, Forage, Lat: 46.966637 Long: -123.836365 Datum: WGS84

Soil Map Unit Name: Udorthents NWI Classification: UPL

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 a 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:

Paired upland plot for wetland 1. Sample plot meets 1 of 3 wetland criteria and is not located within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 3x 15)			
1. Hordeum brachyantherum	50	Yes	FACW
2. Holcus lanatus	20	Yes	FAC
3. Symphiotrychum spp	5	No	FAC
4. Plantago lanceolata	5	No	FACU
5. Potentilla anserina	5	No	OBL
6. Deschampsia caespitosa	2	No	FACW
7.			
8.			
9.			
10.			
11.			
	89	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 11

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	5	x1=	5
FACW species	54	x2=	108
FAC species	25	x3=	75
FACU species	5	x4=	20
UPL species		x5=	0
Column Totals:	89 (A)		208 (B)

Prevalence Index = B/A= 2.34

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0¹
- ___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants¹
- ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Bare ground is quarry spall. Sample plot meets dominance test, and prevalence index for hydrophytic vegetation.

SOIL

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)	%	Type¹	Loc²	Texture	Remarks
0-4	10yr 3/2	100					Silt Loam	
4-11	10yr 4/3	100					Silty Clay Loam	
11-16	10YR 4/4	100					Silty Clay Loam	

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot lacks hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

___ Surface Water (A1)
___ High Water Tables (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 Aeriel Imagery (B
___ Sparsley Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aeriel 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? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

No primary or secondary hydrology indicators observed.

Additional Reference Data: Photos

Photo Name: Photo_220623161252

Photo Name: Photo_220623160723

Photo Name: Photo_220623153719

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

Project/Site: Port of Grays harbor Terminal 4 Expansion   City/County: Grays Harbor   Sampling Date: 8/19/2022
Applicant/Owner: The Port of Grays Harbor   State: WA   Sampling Point: SP 1-3
Investigators: STORY, DARTIGUENAVE   Section, Township, Range: T17N R9W S8
Landform (hillslope, terrace, etc.): Floodplain   Local Relief (concave, convex, none): Concave   Slope(%): 3
Subregion (LRR): A - Northwestern Forest,   Lat: 46.965904   Long: -123.836533   Datum: WGS84
Soil Map Unit Name: Udorthents   NWI Classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)
Are Vegetation: ___ Soil ___ or Hydrology ___ significantly disturbed?   Are "Normal Circumstances" present? Yes X No ___
Are Vegetation: ___ Soil ___ or Hydrology ___ naturally problematic?   (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach a 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:

Sample plot on bench slightly above OHWM of tidal channel. Surface water present in channel. Sample plot meets 3 of 3 wetland criteria and is located within a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Deschampsia caespitosa	70	Yes	FACW
2. Carex lyngbyei	30	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x1=	30
FACW species	70	x2=	140
FAC species		x3=	0
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	100 (A)		170 (B)

Prevalence Index = B/A= 1.70

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0¹
___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants¹
___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Sample plot meets rapid test, dominance test, and prevalence index for hydrophytic vegetation.

SOIL

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)	%	Type¹	Loc²	Texture	Remarks
0-10	10YR 3/2	90	7.5YR 3/4	10	C	M	Silt Loam	
10-15	10YR 4/1	85	7.5YR 4/6	15	C	M	Sandy Loam	Gravelly
15-17	10BG 3/1	100					Loamy Sand	
17-24	10B 2.5/1	100					Sandy Loam	Mucky

¹Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) (except MLRLA 1)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
X Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot meets hydric indicators for A11 - depleted below dark surface, F3 - depleted matrix, and F6 - redox dark surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

___ Surface Water (A1)
___ High Water Tables (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 Aeriel Imagery (B
___ Sparsley Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aeriel 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): 20.0
Saturation Present? Yes X No ___ Depth (inches): 13.0
(includes capillary fringe)

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Tidally influenced, sampled at low tide. Tidal channel with surface water level 2 feet below Sample Point.
Sample plot meets primary hydrology indicators for Saturation (A3).

Additional Reference Data: Photos

Photo Name: Photo_220819112455

Photo Name: Photo_220819113622

Photo Name: Photo_220819111731

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

Project/Site: Port of Grays harbor Terminal 4 Expansion City/County: Aberdeen, Grays Harbor Sampling Date: 8/19/2022

Applicant/Owner: The Port of Grays Harbor State: WA Sampling Point: SP 1-4

Investigators: STORY, DARTIGUENAVE Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Hillslope Local Relief (concave, convex, none): Convex Slope(%): 40

Subregion (LRR): A - Northwestern Forest, Lat: 46.965981 Long: -123.836487 Datum: WGS84

Soil Map Unit Name: Udorthents NWI Classification: UPL

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 ___ No X

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

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

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

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

Remarks:

Sample plot on steep fill slope above tidal channel. Soils obvious fill. Plot is 5 feet west and 4 feet above SP 1-3. Sample plot meets 0 of 3 wetland criteria and is not located within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Plantago lanceolata	35	Yes	FACU
2. Phalaris arundinacea	20	Yes	FACW
3. Equisetum telmateia	15	No	FACW
4. Hypochaeris radicata	10	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 20

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		x1=	
FACW species	35	x2=	70
FAC species		x3=	0
FACU species	45	x4=	180
UPL species		x5=	0
Column Totals:	80 (A)		250 (B)

Prevalence Index = B/A= 3.13

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0¹
___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants¹
___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

Veg is weedy roadside veg growing on fill slope. Likely mowed/maintained semi-regularly to control shrub establishment. Sample plot lacks indicators for hydrophytic vegetation, does not meet dominance test or prevalence index.

SOIL

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)	%	Type¹	Loc²	Texture	Remarks
0-6	7.5YR 4/3	100					Silt Loam	Gravelly
6-24	10YR 4/4	100					Sandy Loam	Gravelly

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Soils are gravelly fill material. Sample plot lacks hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

___ Surface Water (A1)
___ High Water Tables (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 Aeriel Imagery (B
___ Sparsley Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aeriel 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? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

No primary or secondary wetland hydrology indicators observed. Sample plot is 4 feet above SP 1-3, which is likely at or above HTL of tidal channel.

Additional Reference Data: Photos

Photo Name: Photo_220819113654

Photo Name: Photo_220819113700

Photo Name: Photo_220819113932

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

Project/Site: Port of Grays harbor Terminal 4 Expansion　City/County: Aberdeen, Grays Harbor　Sampling Date: 7/8/2022

Applicant/Owner: The Port of Grays Harbor　State: WA　Sampling Point: SP 2-1

Investigators: STORY, DARTIGUENAVE　Section, Township, Range: T17N R9W S7

Landform (hillslope, terrace, etc.): Depression　Local Relief (concave, convex, none): Concave　Slope(%): 3

Subregion (LRR): A - Northwestern Forest,　Lat: 46.966755　Long: -123.833694　Datum: WGS84

Soil Map Unit Name: Udorthents　NWI Classification: PEM/PAB

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 a site map showing sampling point locations, transects, important features, etc.

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

Remarks:

Sample plot located at edge of obvious seasonal inundation in excavated railroad drainage ditch. Plot located at toe of slope from POGH fill pad. Ditch drains fill pad and railroad berm. Limited vegetation, likely from frequent excavation. Sample plot meets 3 of 3 wetland criteria and is located within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 5m)			
1. Malus fusca	7	Yes	FACW
2.			
3.			
4.			
	7	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Epilobium ciliatum	15	Yes	FACW
2. Agrostis stolonifera	5	No	FAC
3. Equisetum telmateia	5	No	FACW
4. Juncus effusus	5	No	FACW
5. Phalaris arundinacea	3	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	33	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.	0		
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 67			

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		x1=	
FACW species	35	x2=	70
FAC species	5	x3=	15
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	40 (A)		85 (B)

Prevalence Index = B/A= 2.13

Hydrophytic Vegetation Indicators:

- X 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 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:

Sparse veg, vegetation located only along narrow fringe of seasonal ponding. Sample plot meets rapid test, dominance test, and prevalence index for hydrophytic vegetation.

SOIL

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²		
0-5	10YR 3/1	60	10YR 4/4	10	C	M	Silt Loam	
	10YR 3/2	30						
5-24	10YR 5/1	80	5YR 4/6	10	C	M	Silty Clay Loam	
			5YR 3/4	10	C	PL RC		

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot meets hydric soil indicators F3 - depleted matrix and F6 - redox dark surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aeriel 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? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

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

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

Remarks:

No saturation or water table, but soil is moist at 20 inches. Surface soil cracks, water marks, and algal mats indicate long term ponding.
Sample plot meets primary hydrology indicators for algal mat or crust (B4), and surface soil cracks (B6).

Additional Reference Data: Photos

Photo Name: Photo_220708111355

Photo Name: Photo_220708110906

Photo Name: Photo_220708110857

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

Project/Site: Port of Grays harbor Terminal 4 Expansion   City/County: Aberdeen, Grays Harbor   Sampling Date: 7/8/2022

Applicant/Owner: The Port of Grays Harbor   State: WA   Sampling Point: SP 2-2

Investigators: STORY, DARTIGUENAVE   Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Flat   Local Relief (concave, convex, none): Convex   Slope(%): 10

Subregion (LRR): A - Northwestern Forest,   Lat: 46.967751   Long: -123.832756   Datum: WGS84

Soil Map Unit Name: Udorthents   NWI Classification: UPL

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 ___ No X

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

SUMMARY OF FINDINGS - Attach a 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:

Sample located on fill slope 6 feet south and 3 feet above SP 2-1. Sample plot meets 1 of 3 wetland criteria and is not located within a wetland.

VEGETATION – Use scientific names of plants.

Tree Statum (Plot size: 5m)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1. Reynoutria japonica	45	Yes	FACU
2. Ilex aquifolium	4	No	FACU
3.			
4.			
5.			
	49	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Equisetum telmateia	60	Yes	FACW
2. Epilobium ciliatum	3	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	63	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 37

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		x1=
FACW species	63	x2= 126
FAC species		x3= 0
FACU species	49	x4= 196
UPL species		x5= 0
Column Totals:	112 (A)	322 (B)

Prevalence Index = B/A= 2.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants¹

___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Sample plot does not meet dominance test, prevalence index not applicable due to lack of hydric soil and hydrology.

SOIL

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)	%	Type¹	Loc²	Texture	Remarks
0-8	10YR 4/4	98	7.5YR 5/4	2	C	M	Silty Clay	
8-16	10YR 5/2	8	7.5YR 5/6	2	C	M	Clay Loam	
	10YR 4/3	90						
16-24	10YR 5/1	95	7.5YR 5/6	5	C	M	Clay Loam	

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot lacks hydric soil indicators. Depleted matrix starts too deep and upper 8 inches too bright to meet indicator F3.

HYDROLOGY

Wetland Hydrology Indicators:

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

___ Surface Water (A1)
___ High Water Tables (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 Aeriel Imagery (B
___ Sparsley Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aeriel 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? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

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

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

Remarks:

No primary or secondary wetland hydrology indicators. Dry to 24

Additional Reference Data: Photos

Photo Name: Photo_220708115824

Photo Name: Photo_220708115019

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

Project/Site: Port of Grays harbor Terminal 4 Expansion City/County: Aberdeen, Grays Harbor Sampling Date: 7/8/2022
Applicant/Owner: The Port of Grays Harbor State: WA Sampling Point: SP 2-3
Investigators: STORY, DARTIGUENAVE Section, Township, Range: T17N R9W S8
Landform (hillslope, terrace, etc.): Flat Local Relief (concave, convex, none): None Slope(%): 0
Subregion (LRR): A - Northwestern Forest, Lat: 46.967670 Long: -123.832817 Datum: WGS84
Soil Map Unit Name: Udorthents NWI Classification: UPL
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If No, explain in Remarks)
Are Vegetation: ___ 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 a site map showing sampling point locations, transects, important features, etc.

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

Remarks:
Sample plot located on RR fill prism, upslope of WL boundary. Sample plot meets 0 of 3 wetland criteria and is not located within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Plantago lanceolata	15	Yes	FACU
2. Hypochaeris radicata	5	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 80			

Dominance Test Worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A= 4.00

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 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:
Veg largely disturbance tolerant species. Sparse, patchy veg. Sample plot lacks indicators for hydrophytic vegetation.

SOIL

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 %	Type¹	Loc²	Texture	Remarks
0-11	10YR 3/2	100					Silt Loam	Gravelly
11-21	10YR 3/2	95	7.5YR 4/4	5	C	M	Sandy Loam	Fill material, Gravel and cobble

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot lacks hydric soil indicators. Refusal at 21 due to compact cobble.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Tables (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 Aeriel Imagery (B
- ___ Sparsley Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

No primary or secondary hydrology observed. Dry to 21 inches

Additional Reference Data: Photos

Photo Name: Photo_220708122546

Photo Name: Photo_220708122540

Photo Name: Photo_220708122536

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

Project/Site: Port of Grays harbor Terminal 4 Expansion City/County: Aberdeen, Grays Harbor Sampling Date: 7/8/2022

Applicant/Owner: The Port of Grays Harbor State: WA Sampling Point: SP 4-1

Investigators: DARTIGUENAVE, STORY Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Depression Local Relief (concave, convex, none): None Slope(%): 0

Subregion (LRR): A – Northwest Forest, Forage, Lat: 46.966736 Long: -123.836151 Datum: WGS84

Soil Map Unit Name: Udorthents NWI Classification: PEM

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 a 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:

Sample plot meets 3 of 3 wetland criteria and is located within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1. Alnus rubra	2	Yes	FAC
2.			
3.			
4.			
	2	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Phalaris arundinacea	90	Yes	FACW
2. Galium aparine	5	No	FACU
3. Equisetum telmateia	2	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	97	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 3

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		x1=	
FACW species	92	x2=	184
FAC species	2	x3=	6
FACU species	5	x4=	20
UPL species		x5=	0
Column Totals:	99 (A)		210 (B)

Prevalence Index = B/A= 2.12

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0¹
- ___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants¹
- ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No

Remarks:

Sample plot meets dominance test and prevalence index for hydrophytic vegetation.

SOIL

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 %	Type¹	Loc²	Texture	Remarks
0-9	10YR 2/1	100					Silt Loam	
9-15	2.5Y 4/1	80	7.5YR 4/4	15	C	M	Sandy Loam	
			5YR 3/4	5	C	PL RC		
15-19	10GY 3/1	100					Loamy Sand	
19-24	10Y 3/1	90					Sandy Clay	
	5B 2.5/1	10						

¹Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRLA 1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot meets hydric soil indicators A11 - depleted below dark surface and F3 - depleted matrix.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Tables (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 Aeriel Imagery (B
- ___ Sparsley Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?			
Water Table Present?	X		12.0
Saturation Present? (includes capillary fringe)	X		8.0

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

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

Remarks:

Water table perched above clay layer. Sample plot meets primary hydrology indicators for high water table and saturation.

Additional Reference Data: Photos

Photo Name: Photo_220708142048

Photo Name: Photo_220708142113

Photo Name: Photo_220708142035

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

Project/Site: Port of Grays harbor Terminal 4 Expansion City/County: Aberdeen, Grays Harbor Sampling Date: 7/8/2022

Applicant/Owner: The Port of Grays Harbor State: WA Sampling Point: SP 4-2

Investigators: STORY, DARTIGUENAVE Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Flat Local Relief (concave, convex, none): Convex Slope(%): 2

Subregion (LRR): A - Northwestern Forest, Lat: 46.966717 Long: -123.836136 Datum: WGS84

Soil Map Unit Name: Udorthents NWI Classification: UPL

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 a 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:

Sample plot located on fill slope above swale with SP 4-1. Located 5 feet N and 2 feet above 4-1. Dense roots from ALRU in sample plot. Sample plot meets 1 of 3 wetland criteria and is not within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 5m)			
1. Alnus rubra	60	Yes	FAC
2.			
3.			
4.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1. Rubus armeniacus	30	Yes	FAC
2. Reynoutria japonica	20	Yes	FACU
3.			
4.			
5.			
	50	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Equisetum telmateia	45	Yes	FACW
2. Dactylis glomerata	30	Yes	FACU
3. Cirsium vulgare	10	No	FACU
4. Phalaris arundinacea	7	No	FACW
5. Geranium robertianum	5	No	FACU
6. Epilobium ciliatum	3	No	FACW
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test Worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1=	
FACW species	55	x2=	110
FAC species	90	x3=	270
FACU species	65	x4=	260
UPL species		x5=	0
Column Totals:	210 (A)		640 (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 ≤3.0¹

___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants¹

___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Veg is largely disturbance tolerant/weedy. Sample plot meets dominance test for hydrophytic vegetation.

SOIL

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type¹	Loc²		
0-12	7.5YR 3/4	100					Silt Loam	Gravel and angular cobble (quarry

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot lacks hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Tables (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 Aeriel Imagery (B
- ___ Sparsley Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aeriel 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 Date (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary or secondary wetland hydrology indicators observed. Dry to 12 inches.

Additional Reference Data: Photos

Photo Name: Photo_220708145231

Photo Name: Photo_220708145239

Photo Name: Photo_220708145248

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

Project/Site: Port of Grays harbor Terminal 4 Expansion | City/County: Aberdeen, Grays Harbor | Sampling Date: 8/5/2022

Applicant/Owner: The Port of Grays Harbor | State: WA | Sampling Point: SP 5-1

Investigators: STORY | Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Flat | Local Relief (concave, convex, none): Concave | Slope(%): 1

Subregion (LRR): A - Northwestern Forest, | Lat: 46.967319 | Long: -123.824432 | Datum: WGS84

Soil Map Unit Name: Udorthents | NWI Classification: PEM

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

Are Vegetation: ___ 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 a site map showing sampling point locations, transects, important features, etc.

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

Remarks:

Sample plot in low point of ditch adjacent to RR tracks. Ditch situated between tracks and fill pad. Obvious signs of ponding and hydric soils, sparse veg. Likely frequently dredged/excavated. Sample plot meets 3 of 3 wetland criteria and is located within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Juncus bufonius	7	Yes	FACW
2. Phalaris arundinacea	5	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	12	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 88			

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		x1=	
FACW species	12	x2=	24
FAC species		x3=	0
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	12 (A)		24 (B)

Prevalence Index = B/A= 2.00

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0¹
- ___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants¹
- ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Bare ground in ditch from ponding, also likely from frequent excavation/dredging. Sample plot meets rapid test, dominance test, and prevalence index for hydrophytic vegetation.

SOIL

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 %	Type¹	Loc²	Texture	Remarks
0-4	5GY 3/1	70	10YR 3/6	30	C	M	Sandy Clay Loam	
4-16	5Y 3/1	55					Loamy Sand	
	5GY 3/1	40	10YR 3/6	5	C	M		
16-24	10GY 4/1	85	10YR 4/4	15	C	M	Clay	

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot meets hydric soil indicators for F6 - redox dark surface and S5 - sandy redox.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

	Yes		No		Depth (inches):
Surface Water Present?	Yes		No	X	
Water Table Present?	Yes		No	X	
Saturation Present? (includes capillary fringe)	Yes	X	No		13.0

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

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

Remarks:

Saturated from 13 to start of clay layer at 16. Saturation perched on clay layer, no water table. Clear water marks on soil/rocks, surface soil cracks, and sparsely vegetated concave surface. Sample plot meets primary hydrology indicators for water marks (B1), surface soil cracks (B6), and sparsely vegetated concave surface (B8).

Additional Reference Data: Photos

Photo Name: Photo_220805132159

Photo Name: Photo_220805132144

Photo Name: Photo_220805132208

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

Project/Site: Port of Grays harbor Terminal 4 Expansion   City/County: Aberdeen, Grays Harbor   Sampling Date: 8/5/2022

Applicant/Owner: The Port of Grays Harbor   State: WA   Sampling Point: SP 5-2

Investigators: STORY, DARTIGUENAVE   Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Flat   Local Relief (concave, convex, none): None   Slope(%): 0

Subregion (LRR): A - Northwestern Forest,   Lat: 46.967754   Long: -123.825012   Datum: WGS84

Soil Map Unit Name: Udorthents   NWI Classification: UPL

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

Are Vegetation: ___ 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 a site map showing sampling point locations, transects, important features, etc.

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

Remarks:

Sample plot located on fill pad, 6 feet NW and 1 foot above SP 5-1. Obvious gravel fill. Sample plot meets 0 of 3 wetland criteria and is not within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Matricaria discoidea	20	Yes	FACU
2. Lotus corniculatus	15	Yes	FAC
3. Phalaris arundinacea	10	No	FACW
4. Schedonorus arundinaceus	4	No	FAC
5. Trifolium pratense	3	No	FACU
6. Trifolium repens	2	No	FAC
7.			
8.			
9.			
10.			
11.			
	54	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.			
2.			
		= Total Cover	
% Bare Ground in Herb Stratum 46			

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		x1=	
FACW species	10	x2=	20
FAC species	21	x3=	63
FACU species	23	x4=	92
UPL species		x5=	0
Column Totals:	54 (A)		175 (B)

Prevalence Index = B/A= 3.24

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0¹
___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants¹
___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

Unknown astragalus 5%. Sample plot lacks indicators for hydrophytic vegetation.

SOIL

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)	%	Type¹	Loc²	Texture	Remarks
0-4	10YR 3/3	100					Silt Loam	Gravelly fill material.

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Refusal at 4”. Dense compact gravel fill. Sample plot lacks hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

___ Surface Water (A1)
___ High Water Tables (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 Aeriel Imagery (B
___ Sparsley Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aeriel 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? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

No primary or secondary wetland hydrology indicators observed. Dry to 4 inches. No evidence of ponding.

Additional Reference Data: Photos

Photo Name: Photo_220805134049

Photo Name: Photo_220805134957

Photo Name: Photo_220805134056

Additional Reference Data: Photos

Photo Name: Photo_220805134043

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

Project/Site: Port of Grays harbor Terminal 4 Expansion   City/County: Aberdeen, Grays Harbor   Sampling Date: 8/5/2022

Applicant/Owner: The Port of Grays Harbor   State: WA   Sampling Point: SP 6-1

Investigators: STORY, DARTIGUENAVE   Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Flat   Local Relief (concave, convex, none): Concave   Slope(%): 1

Subregion (LRR): A - Northwestern Forest,   Lat: 46.966774   Long: -123.825203   Datum: WGS84

Soil Map Unit Name: Udorthents   NWI Classification: PEM

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 a site map showing sampling point locations, transects, important features, etc.

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

Remarks:

Sample plot at low point of RR ditch on SW side of tracks between RR and access road. Sample plot meets 3 of 3 wetland criteria and is located within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Agrostis capillaris	20	Yes	FAC
2. Phalaris arundinacea	20	Yes	FACW
3. Juncus effusus	10	No	FACW
4. Lotus corniculatus	5	No	FAC
5. Typha latifolia	2	No	OBL
6.			
7.			
8.			
9.			
10.			
11.			
	57	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 43			

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	2	x1=	2
FACW species	30	x2=	60
FAC species	25	x3=	75
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	57 (A)		137 (B)

Prevalence Index = B/A= 2.40

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0¹

___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants¹

___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Sample plot meets the dominance test and prevalence index for hydrophytic vegetation.

SOIL

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 %	Type¹	Loc²	Texture	Remarks
0-9	10YR 3/1	60					Silty Clay Loam	
	2.5Y 4/1	30	10YR 4/6	10	C	M		
9-15	2.5Y 4/2	80	7.5YR 4/4	20	C	PL M	Silty Clay	
15-24	2.5Y 4/1	95	10YR 3/6	5	C	PL	Silty Clay	

¹Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1) (except MLRLA 1)
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
X Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot meets hydric soil indicators for A11 - depleted below dark surface, F3 - depleted matrix, and F6 - redox dark surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
___ Drainage Patterns (B10)
X Dry-Season Water Table (C2)
___ Saturation Visible on Aeriel 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):	20.0
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	14.0

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Algal may and water marks easily observable. Oxidized rhizospheres from 9-24. Sample plot meets primary hydrology indicators for algal mat or crust, surface soil cracks, sparsely vegetated concave surface, oxidized rhizospheres along living roots, and secondary hydrology indicator for dry-season water table.

Additional Reference Data: Photos

Photo Name: Photo_220805141150

Photo Name: Photo_220805141126

Photo Name: Photo_220805141145

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

Project/Site: Port of Grays harbor Terminal 4 Expansion City/County: Aberdeen, Grays Harbor Sampling Date: 8/5/2022

Applicant/Owner: The Port of Grays Harbor State: WA Sampling Point: SP 6-2

Investigators: STORY, DARTIGUENAVE Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Flat Local Relief (concave, convex, none): Convex Slope(%): 5

Subregion (LRR): A - Northwestern Forest, Lat: 46.967445 Long: -123.825592 Datum: WGS84

Soil Map Unit Name: Udorthents NWI Classification: UPL

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

Remarks:

Sample plot on RR ballast. Limited soil, limited veg. Plot is 3 feet NW and 2 feet above SP 6-1.
Sample plot meets 1 of 3 wetland criteria and is not located within a wetland.

VEGETATION – Use scientific names of plants.

Tree Statum (Plot size: 5m)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Equisetum arvense	30	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	30	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 70

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1=	
FACW species		x2=	0
FAC species	30	x3=	90
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	30	(A)	90 (B)

Prevalence Index = B/A= 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0¹
___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants¹
___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Sample plot meets dominance test for hydrophytic vegetation, but is sparsely vegetated.

SOIL

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)	%	Type¹	Loc²	Texture	Remarks
0-4	10YR 3/2	100					Sandy Loam	Quarry spall and gravel fill. Refusal

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

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

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

Indicators for Problematic Hydric Soils³:

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

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

Restrictive Layer (if present):

Type: Quarry spall and gravel fill

Depth (inches): 4

Hydric Soil Present? Yes ___ No X

Remarks:

Sample plot lacks hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

___ Surface Water (A1)
___ High Water Tables (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 Aeriel Imagery (B
___ Sparsley Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aeriel 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 Date (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary or secondary wetland hydrology indicators observed.

Additional Reference Data: Photos

Photo Name: Photo_220805142804

Photo Name: Photo_220805142754

Photo Name: Photo_220805143018

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

Project/Site: Port of Grays harbor Terminal 4 Expansion City/County: Aberdeen, Grays Harbor Sampling Date: 8/5/2022
Applicant/Owner: The Port of Grays Harbor State: WA Sampling Point: SP 7-1
Investigators: STORY, DARTIGUENAVE Section, Township, Range: T17N R9W S8
Landform (hillslope, terrace, etc.): Flat Local Relief (concave, convex, none): Concave Slope(%): 0
Subregion (LRR): A – Northwest Forest, Forage, Lat: 46.966171 Long: -123.827484 Datum: WGS84
Soil Map Unit Name: Udorthents NWI Classification: PEM
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 a site map showing sampling point locations, transects, important features, etc.

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

Remarks:
Sample plot meets 3 of 3 wetland criteria and is located within a wetland.

VEGETATION – Use scientific names of plants.

Tree Statum (Plot size: 5m)	Absolute % Cover	Dominant Species?	Indicator Status
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Phalaris arundinacea	10	Yes	FACW
2. Juncus bufonius	7	Yes	FACW
3. Juncus effusus	5	No	FACW
4. Typha latifolia	3	No	OBL
5. Equisetum arvense	2	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	27	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= 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: 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	3	x1=	3
FACW species	22	x2=	44
FAC species	2	x3=	6
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	27 (A)		53 (B)

Prevalence Index = B/A= 1.96

Hydrophytic Vegetation Indicators:
X 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0¹
___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants¹
___ Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks:
Sample plot meets rapid test, dominance test, and prevalence index for hydrophytic vegetation.

SOIL

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 %	Type¹	Loc²	Texture	Remarks
0-10	2.5Y4/2	40					Sandy Clay Loam	
	10YR3/1	55	7.5YR4/4	5	C	PL M		
10-17	2.5Y4/1	70	5YR4/6	30	C	PL M	Silty Clay Loam	
17-24	5GY4/1	90	10YR4/6	5	C	M	Silty Clay	
			7.5YR3/4	5	C	PL		

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot meets hydric soil indicators for F3 - depleted matrix.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

- ___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aeriel 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 X No ___

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

Remarks:

Moist at 15 inches, but not saturated. Rhizospheres in second and third layer.
Sample plot meets primary hydrology indicator for algal mat or crust (B4), surface soil cracks (B6), and oxidized rhizospheres along living roots (C3).

Additional Reference Data: Photos

Photo Name: Photo_220805150155

Photo Name: Photo_220805150207

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

Project/Site: Port of Grays harbor Terminal 4 Expansion City/County: Aberdeen, Grays Harbor Sampling Date: 8/5/2022

Applicant/Owner: The Port of Grays Harbor State: WA Sampling Point: SP 7-2

Investigators: STORY, DARTIGUENAVE Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Flat Local Relief (concave, convex, none): None Slope(%): 0

Subregion (LRR): A – Northwest Forest, Forage, Lat: 46.966228 Long: -123.827454 Datum: WGS84

Soil Map Unit Name: Udorthents NWI Classification: UPL

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

Remarks:

Sample plot meets 1 of 3 wetland criteria and is not located within a wetland. Sample plot located on gravel road shoulder approximately 2 feet above SP 7-1. Limited soil development and patchy vegetation.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Equisetum arvense	15	Yes	FAC
2. Rubus armeniacus	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 85			

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		x1=	
FACW species		x2=	0
FAC species	20	x3=	60
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	20	(A)	60 (B)

Prevalence Index = B/A= 3.00

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0¹
- ___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants¹
- ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Sample plot meets dominance test for hydrophytic vegetation.

SOIL

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 %	Type¹	Loc²	Texture	Remarks
0-5	10YR3/3	100					Sandy Loam	Gravel fill

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot lacks hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

___ Surface Water (A1)
___ High Water Tables (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 Aeriel Imagery (B
___ Sparsley Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aeriel 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? Yes ___ No X Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

Sample plot lacks primary and secondary hydrology indicators.

Additional Reference Data: Photos

Photo Name: Photo_220805152013

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

Project/Site: Port of Grays harbor Terminal 4 Expansion
City/County: Aberdeen, Grays Harbor
Sampling Date: 8/19/2022

Applicant/Owner: The Port of Grays Harbor
State: WA
Sampling Point: SP 8-1

Investigators: STORY, DARTIGUENAVE
Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Flat
Local Relief (concave, convex, none): Concave
Slope(%): 2

Subregion (LRR): A – Northwest Forest, Forage,
Lat: 46.966244
Long: -123.830734
Datum: WGS84

Soil Map Unit Name: Udorthents
NWI Classification: PEM

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 a site map showing sampling point locations, transects, important features, etc.

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

Remarks:

Sample plot meets 3 of 3 wetland criteria and is located within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Lotus corniculatus	40	Yes	FAC
2. Phalaris arundinacea	25	Yes	FACW
3. Juncus effusus	20	No	FACW
4. Rubus armeniacus	10	No	FAC
5. Equisetum telmateia	7	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	102	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test Worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1=	
FACW species	52	x2=	104
FAC species	50	x3=	150
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	102 (A)		254 (B)

Prevalence Index = B/A= 2.49

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0¹
___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants¹
___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

Sample plot meets dominance test and prevalence index for hydrophytic vegetation.

SOIL

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)	%	Type¹	Loc²	Texture	Remarks
0-8	10YR 3/1	95	10YR 4/4	5	C	M	Silt Loam	
8-14	10YR 4/2	50	10YR 4/4	50	C	M	Sandy Loam	
14-24	10YR 4/1	85	7.5YR 4/4	15	C	PL M	Clay Loam	

¹Type: C= Concentration, D= Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRLA 1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot meets hydric soil indicator F3 - depleted matrix, F6 - redox dark surface, and A11 - depleted below dark surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Tables (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 Aeriel Imagery (B
- ___ Sparsley Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aeriel 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	___	No	X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Dry to 24 inches. Sample plot meets secondary hydrologic indicators for Geomorphic Position (D2) and Fac-Neutral Test (D5).

Additional Reference Data: Photos

Photo Name: Photo_220819102226

Photo Name: Photo_220819102238

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

Project/Site: Port of Grays harbor Terminal 4 Expansion City/County: Aberdeen, Grays Harbor Sampling Date: 8/19/2022

Applicant/Owner: The Port of Grays Harbor State: WA Sampling Point: SP 8-2

Investigators: STORY, DARTIGUENAVE Section, Township, Range: T17N R9W S8

Landform (hillslope, terrace, etc.): Flat Local Relief (concave, convex, none): Convex Slope(%): 2

Subregion (LRR): A – Northwest Forest, Forage, Lat: 46.966221 Long: -123.830811 Datum: WGS84

Soil Map Unit Name: Udorthents NWI Classification: UPL

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

Are Vegetation: ___ 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 a 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:

Sample plot located on gravel access road shoulder approximately 1 foot above and 8 feet NW from SP 8-1. Sample plot meets 0 of 3 wetland criteria and is not located within a wetland. No soil development, and sparse, patchy vegetation.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Plantago lanceolata	25	Yes	FACU
2. Poa annua	15	Yes	FAC
3. Holcus lanatus	10	No	FAC
4. Equisetum telmateia	7	No	FACW
5. Lotus corniculatus	5	No	FAC
6. Hypochaeris radicata	5	No	FACU
7.			
8.			
9.			
10.			
11.			
	67	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 33

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		x1=	
FACW species	7	x2=	14
FAC species	30	x3=	90
FACU species	30	x4=	120
UPL species		x5=	0
Column Totals:	67 (A)		224 (B)

Prevalence Index = B/A= 3.34

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0¹
___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants¹
___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

Sample plot lacks indicators for hydrophytic vegetation.

SOIL

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 %	Type¹	Loc²	Texture	Remarks
								Gravel road shoulder - no soil

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:
Sample plot is located on shoulder of gravel access road. No soil development. Substrate is impenetrable, compact gravel fill.

HYDROLOGY

Wetland Hydrology Indicators:

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

___ Surface Water (A1)
___ High Water Tables (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 Aeriel Imagery (B
___ Sparsley Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks:
No primary or secondary hydrology indicators observed.

Additional Reference Data: Photos

Photo Name: Photo_220819103433

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

Project/Site: Port of Grays harbor Terminal 4 Expansion | City/County: Hoquiam, Grays Harbor | Sampling Date: 8/19/2022

Applicant/Owner: The Port of Grays Harbor | State: WA | Sampling Point: SP 9-1

Investigators: STORY, DARTIGUENAVE | Section, Township, Range: T17N R9W S7

Landform (hillslope, terrace, etc.): Floodplain | Local Relief (concave, convex, none): Concave | Slope(%): 3

Subregion (LRR): A – Northwest Forest, Forage, | Lat: 46.967815 | Long: -123.859856 | Datum: WGS84

Soil Map Unit Name: Udorthents | NWI Classification: PEM

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 a 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:

Sample plot on slope slightly above ditch. Vegetation in channel appears less salt tolerant than other similar channels. Sample plot meets 3 of 3 wetland criteria and is located within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1.	0		
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Agrostis capillaris	60	Yes	FAC
2. Eleocharis acicularis	40	Yes	OBL
3. Typha latifolia	20	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	120	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x1=	60
FACW species		x2=	0
FAC species	60	x3=	180
FACU species		x4=	0
UPL species		x5=	0
Column Totals:	120 (A)		240 (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 ≤3.0¹

___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants¹

___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks:

5% unknown Rumex. Sample plot meets dominance test and prevalence index for hydrophytic vegetation.

SOIL

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 %	Type¹	Loc²	Texture	Remarks
0-8	10YR 3/2	90	10YR 4/4	10	C	M	Silt Loam	
8-18	5GY 3/1	95	10YR 3/4	5	C	M	Sandy Loam	Gravelly

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Sample plot meets hydric soil indicators for F6 - redox dark surface.

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- ___ High Water Tables (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 Aeriel Imagery (B
- ___ Sparsley Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aeriel 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):	8.0
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	6.0

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

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

Remarks:

Sample plot is at or slightly above water marks in channel. Surface water observed in channel ~2 feet below plot. Site visit occurred at ~4 foot low tide. Sample plot meets primary hydrology indicators for surface water (A1) and saturation (A3).

Additional Reference Data: Photos

Photo Name: Photo_220819132330

Photo Name: Photo_220819131456

Photo Name: Photo_220819131519

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

Project/Site: Port of Grays harbor Terminal 4 Expansion City/County: Hoquiam, Grays Harbor Sampling Date: 8/19/2022

Applicant/Owner: The Port of Grays Harbor State: WA Sampling Point: SP 9-2

Investigators: STORY, DARTIGUENAVE Section, Township, Range: T17N R9W S7

Landform (hillslope, terrace, etc.): Floodplain Local Relief (concave, convex, none): Convex Slope(%): 45

Subregion (LRR): A - Northwestern Forest, Lat: 46.971287 Long: -123.857796 Datum: WGS84

Soil Map Unit Name: Udorthents NWI Classification: UPL

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

Are Vegetation: ___ 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 a site map showing sampling point locations, transects, important features, etc.

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

Remarks:

Sample plot on steep fill slope above channel/ditch. Soil is dense gravel and cobble fill. Sample plot approximately 6 feet above SP 9-1. Sample plot meets 0 of 3 wetland criteria and is not located within a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Statum (Plot size: 5m)			
1.	0		
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 3m)			
1. Rubus armeniacus	2	Yes	FAC
2.			
3.			
4.			
5.			
	2	= Total Cover	
Herb Stratum (Plot size: 1m)			
1. Dactylis glomerata	65	Yes	FACU
2. Plantago lanceolata	15	No	FACU
3. Equisetum telmateia	10	No	FACW
4. Lotus corniculatus	5	No	FAC
5. Phalaris arundinacea	5	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 3m)			
1.	0		
2.			
	0	= Total Cover	
% Bare Ground in Herb Stratum 0			

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		x1=	
FACW species	15	x2=	30
FAC species	7	x3=	21
FACU species	80	x4=	320
UPL species		x5=	0
Column Totals:	102 (A)		371 (B)

Prevalence Index = B/A= 3.64

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0¹
___ 4 - Morphological Adaptations¹ (Provide data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants¹
___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

Sample plot lacks indicators for hydrophytic vegetation.

SOIL

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 %	Type¹	Loc²	Texture	Remarks
0-4	7.5YR 4/2	100					Loamy Sand	Gravelly.

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

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

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

Indicators for Problematic Hydric Soils³:

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

³Indicators 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:

Refusal at 4, compact road fill. Sample plot lacks hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

___ Surface Water (A1)
___ High Water Tables (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 Aeriel Imagery (B
___ Sparsley Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9) (**except MRLA 1, 2, 4A, and 4B**)
___ Salt Crust (B11)
___ Aquatic Invertebrates (B13)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres along Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Stunted or Stressed Plants (D1) (**LRR A**)
___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

___ Water Stained Leaves (B9) (**MRLA 1, 2, 4A, and 4B**)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Saturation Visible on Aeriel 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 Date (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No primary or secondary wetland hydrology indicators observed. Dry to 4 inches. 6 feet above OHWM.

Additional Reference Data: Photos

Photo Name: Photo_220819133458

Photo Name: Photo_220819133449

Photo Name: Photo_220819133439

Appendix C. Wetland Rating Forms

Wetland name or number WL1

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland 1 Date of site visit: 8/19/2022

Rated by T. Story Trained by Ecology? ☑ Yes ☐ No Date of training 03/15

HGM Class used for rating Estuarine Wetland has multiple HGM classes? ☐ Y ☑ N

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

Source of base aerial photo/map N/A

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

1. Category of wetland based on FUNCTIONS

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

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

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

☐ **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	0	0	0	0

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	☐

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
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 WL1

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 WL1

☐ 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 is Estuarine. Rated as Category II based on special characteristics.

WDFW Priority Habitats

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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 WL1

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	II

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RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland 2 Date of site visit: 7/8/22

Rated by Tobin Story Trained by Ecology? ☑ Yes ☐ No Date of training 03/15

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Y ☑ N

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

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

1. Category of wetland based on FUNCTIONS

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

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

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

☐ **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	8	3	18

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number WL2

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	2-1
Hydroperiods	D 1.4, H 1.2	2-2
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	2-2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	2-3
Map of the contributing basin	D 4.3, D 5.3	2-4
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	2-5
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	A1
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	A2

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 WL2

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 WL2

☑ 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 located in broad, shallow swale. Significant evidence of impounded water throughout wetland.

Wetland name or number WL2

DEPRESSIONAL AND FLATS WETLANDS

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

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

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

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

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

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? ☐ Yes = 1 ☑ No = 0	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	0
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	2

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

D1.3 - Much of wetland is not vegetated, consists of bare ground
D3.1, D3.2 - no waters within 1 mile (or within sub-basin) on the 303(d) list.
D3.3 - Wetland is located within watershed for Grays Harbor Dioxin TMDL (https://apps.ecology.wa.gov/publications/documents/9210202.pdf)
D6.1 - Wetland is located within flood zone AE, panel 53027C0904D

Wetland name or number WL2

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	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* ☐ Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 ☐ Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 ☑ Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 ☐ The wetland is a "headwater" wetland points = 3 ☐ Wetland is flat but has small depressions on the surface that trap water points = 1 ☐ Marks of ponding less than 0.5 ft (6 in) points = 0	3
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	3
Total for D 4 Add the points in the boxes above	8

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

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? ☑ Yes = 1 ☐ No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? ☑ Yes = 1 ☐ No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? ☑ Yes = 1 ☐ No = 0	1
Total for D 5 Add the points in the boxes above	3

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

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* 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

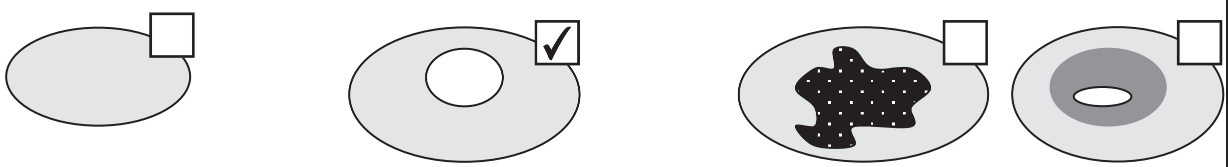
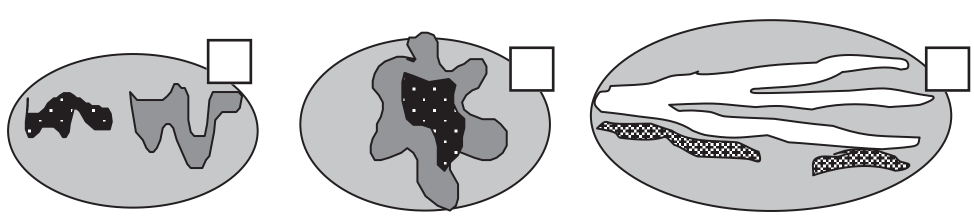
Rating of Value If score is: ☑ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number WL2

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

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

Wetland name or number WL2

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

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0.00 + [(% moderate and low intensity land uses)/2] 0.25 = 0.25 % If total accessible habitat is: ☐ > $^1/_3$ (33.3%) of 1 km Polygon — points = 3 ☐ 20-33% of 1 km Polygon — points = 2 ☐ 10-19% of 1 km Polygon — points = 1 ☑ < 10% of 1 km Polygon — points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 0.00 + [(% moderate and low intensity land uses)/2] 1.25 = 1.25 % ☐ 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	0
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	-2

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

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: ☐ — points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ 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	0

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

WDFW Priority Habitats

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number WL2

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 WL2

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	

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FIGURE 2 - 1

WETLAND 2

COWARDIN

FIGURE 2 - 2

WETLAND 2

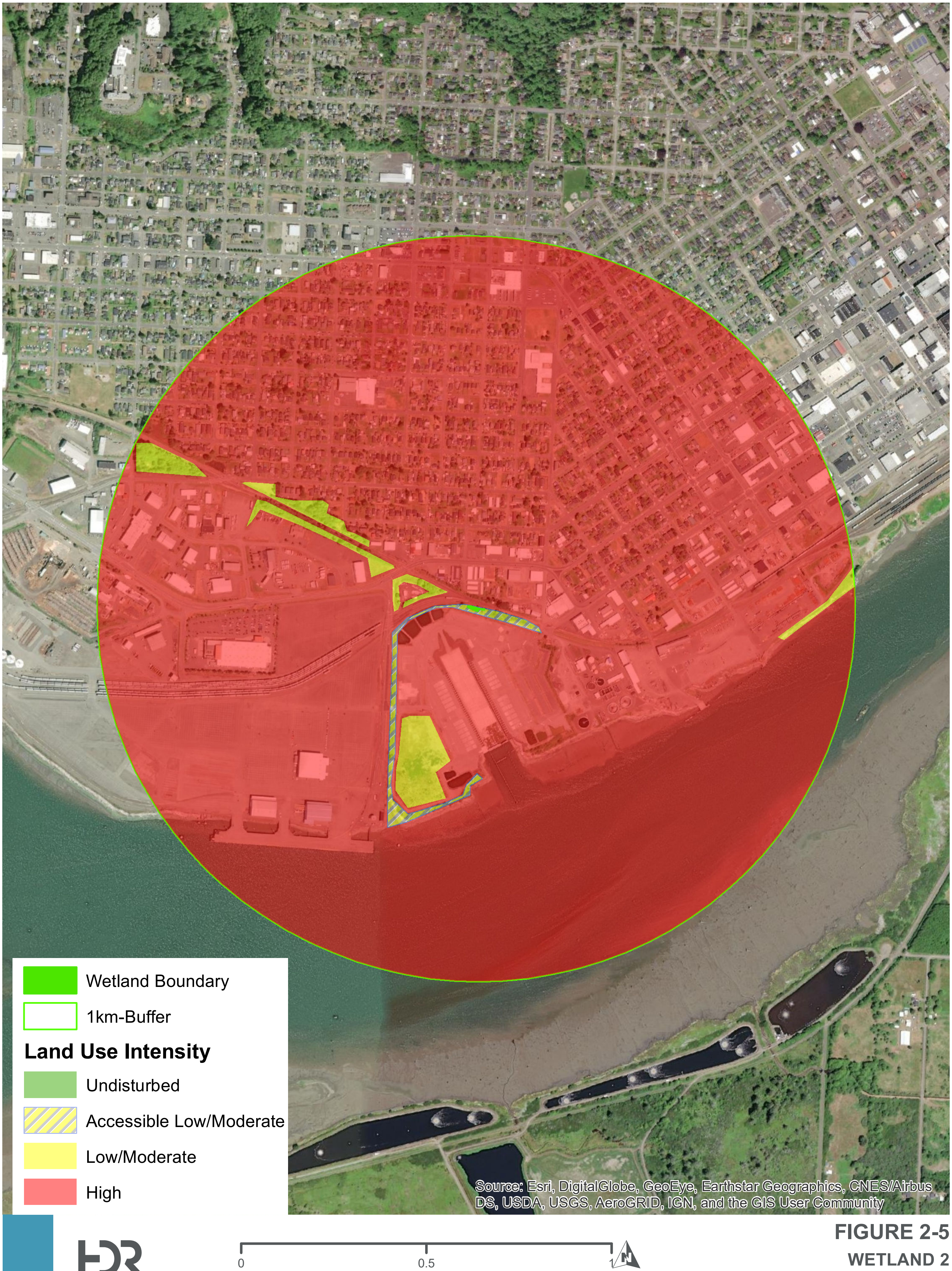
HYDROPERIOD

FIGURE 2-3

WETLAND 2

150FT BUFFER

FIGURE 2 - 4
WETLAND 2
CONTRIBUTING BASIN



HDR

FIGURE 2-5

WETLAND 2

1-KM HABITAT

Wetland name or number 4

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland 4 Date of site visit: 7/8/22

Rated by Tobin Story Trained by Ecology? ☑ Yes ☐ No Date of training 03/15

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Y ☑ N

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

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

1. Category of wetland based on FUNCTIONS

☐ **Category I** – Total score = 23 - 27
☐ **Category II** – Total score = 20 - 22
☑ **Category III** – Total score = 16 - 19
☐ **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	3	17

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number 4

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	4-1
Hydroperiods	D 1.4, H 1.2	4-2
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	4-2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	4-3
Map of the contributing basin	D 4.3, D 5.3	4-4
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	4-5
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	A1
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	A2

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	

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 4

☑ 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 located in narrow ditch. Impounds water throughout wetland. Rated as depressional.

Wetland name or number 4

DEPRESSIONAL AND FLATS WETLANDS **Water Quality Functions** - Indicators that the site functions to improve water quality	
D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: ☐ Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 ☑ Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 ☐ Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 ☐ Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. ☐ Yes = 4 ☑ No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): ☑ Wetland has persistent, ungrazed, plants > 95% of area points = 5 ☐ Wetland has persistent, ungrazed, plants > ½ of area points = 3 ☐ Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 ☐ Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	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	4
Total for D 1 Add the points in the boxes above	11

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

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

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

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? ☐ Yes = 1 ☑ No = 0	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	0
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	2

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

D3.1, D3.2 - no waters within 1 mile (or within sub-basin) on the 303(d) list.
D3.3 - Wetland is located within watershed for Grays Harbor Dioxin TMDL
(https://apps.ecology.wa.gov/publications/documents/9210202.pdf)
D6.1 - Wetland is located within flood zone AE, panel 53027C0904D

Wetland name or number 4

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 outletpoints = 2 ☐ Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 ☐ Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* ☐ Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 ☐ Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 ☐ Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 ☐ The wetland is a "headwater" wetland points = 3 ☐ Wetland is flat but has small depressions on the surface that trap water points = 1 ☑ Marks of ponding less than 0.5 ft (6 in) points = 0	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	3
Total for D 4 Add the points in the boxes above	5

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

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? ☑ Yes = 1 ☐ No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? ☑ Yes = 1 ☐ No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? ☑ Yes = 1 ☐ No = 0	1
Total for D 5 Add the points in the boxes above	3

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

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* 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: ☑ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number 4

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

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

- ☐ Aquatic bed
- ☑ Emergent
- ☑ Scrub-shrub (areas where shrubs have > 30% cover)
- ☐ Forested (areas where trees have > 30% cover)

If the unit has a Forested class, check if:

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

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

Score: 1

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

- ☐ Permanently flooded or inundated
- ☑ 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**

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

Score: 1

H 1.3. Richness of plant species

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

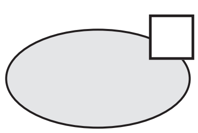
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

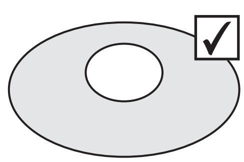
Score: 1

H 1.4. Interspersion of habitats

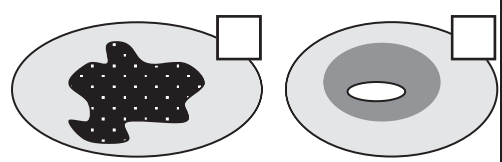
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



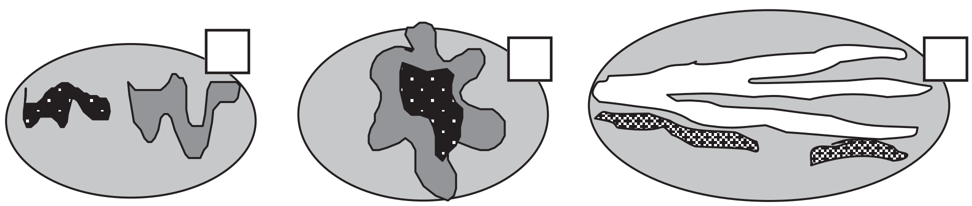
☐ **None** = 0 points



☑ **Low** = 1 point



☐ ☐ **Moderate** = 2 points



☐ ☐ ☐ All three diagrams in this row are **HIGH** = 3points

Score: 1

Wetland name or number 4

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

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0.00 + [(% moderate and low intensity land uses)/2] 0.30 = 0.30 % If total accessible habitat is: ☐ > $^{1}/_{3}$ (33.3%) of 1 km Polygon — points = 3 ☐ 20-33% of 1 km Polygon — points = 2 ☐ 10-19% of 1 km Polygon — points = 1 ☑ < 10% of 1 km Polygon — points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 0.00 + [(% moderate and low intensity land uses)/2] 1.60 = 1.60 % ☐ 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	0
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	-2

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

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: ☐ — points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ 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	0

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

WDFW Priority Habitats

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number 4

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 4

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	

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LEGEND

Wetland Boundary

Cowardin

PEM

PSS

0 40
Feet

FIGURE 4 - 1

WETLAND 4

COWARDIN

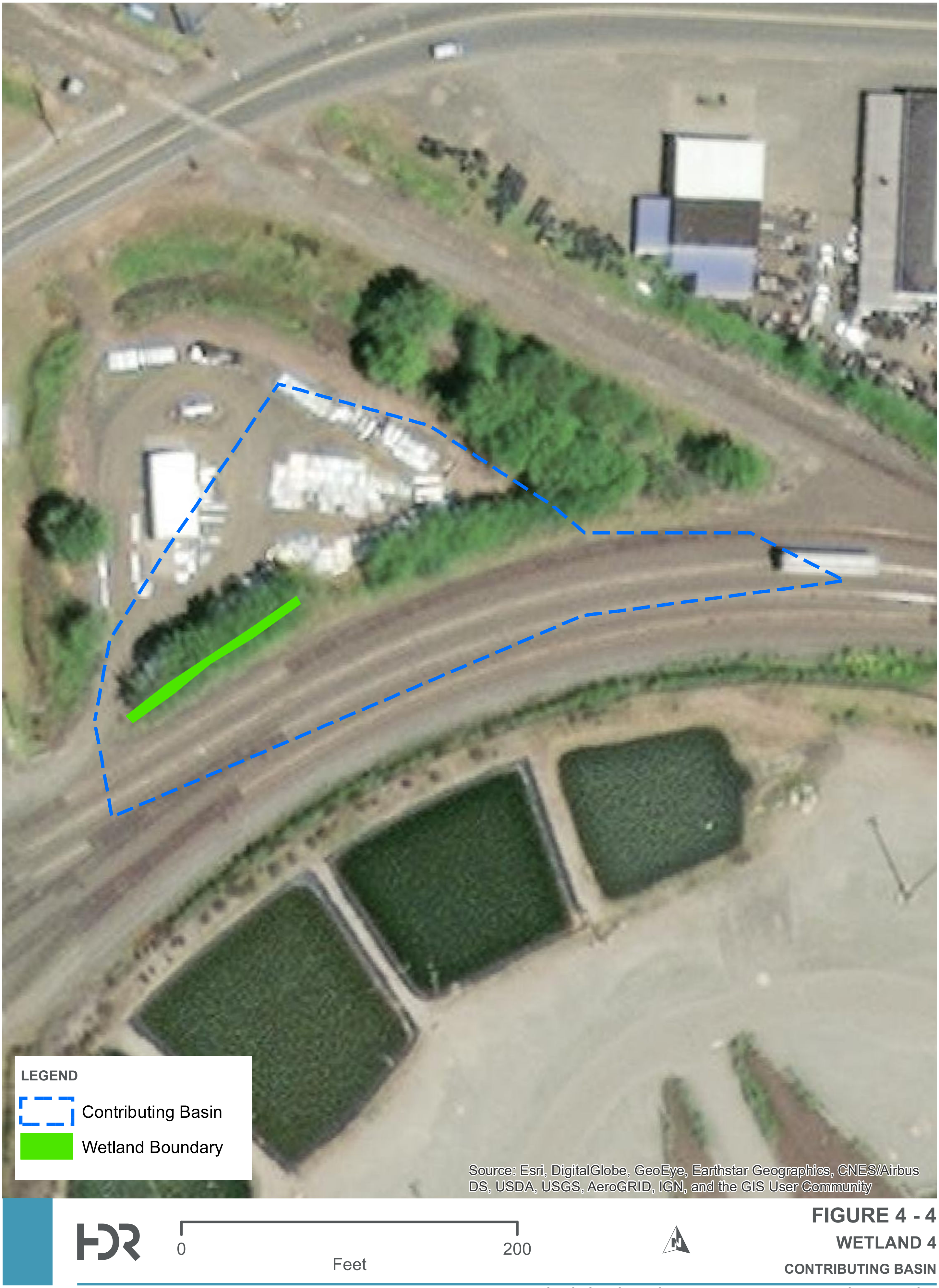
HDR

FIGURE 4 - 2

WETLAND 4

HYDROPERIOD

FIGURE 4-3
WETLAND 4
150FT BUFFER



HDR

FIGURE 4 - 4
WETLAND 4
CONTRIBUTING BASIN

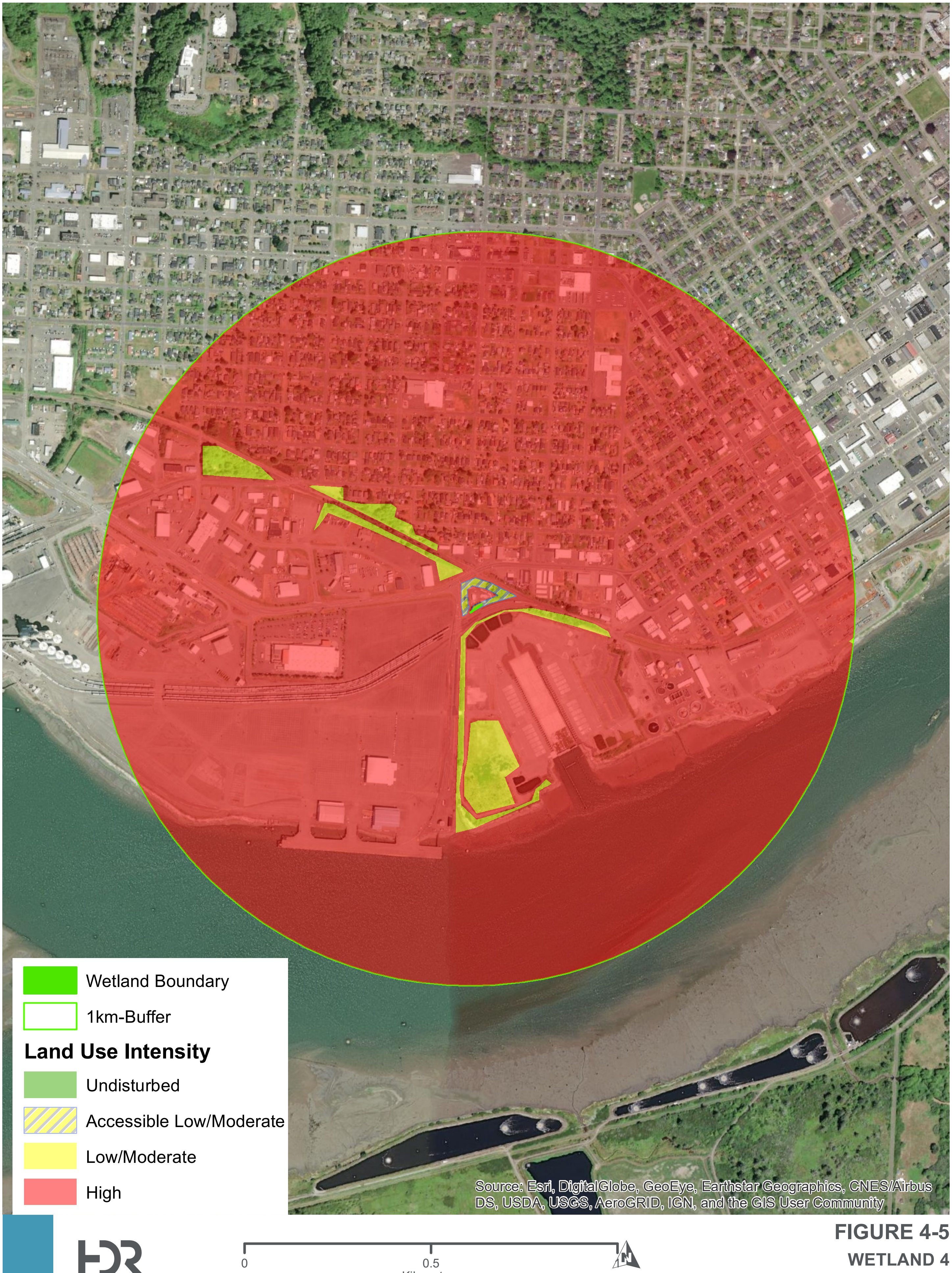


FIGURE 4-5
WETLAND 4
1-KM HABITAT

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland 5 Date of site visit: 8/5/22

Rated by Tobin Story Trained by Ecology? ☑ Yes ☐ No Date of training 03/15

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Y ☑ N

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

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

1. Category of wetland based on FUNCTIONS

☐ **Category I** – Total score = 23 - 27
☐ **Category II** – Total score = 20 - 22
☑ **Category III** – Total score = 16 - 19
☐ **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	6	7	3	16

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number WL 5

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	5-1
Hydroperiods	D 1.4, H 1.2	5-2
Location of outlet *(can be added to map of hydroperiods)*	D 1.1, D 4.1	5-2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	5-3
Map of the contributing basin	D 4.3, D 5.3	5-4
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	5-5
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	A1
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	A2

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 WL 5

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 WL 5

☑ 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 located in narrow, relatively shallow ditch. Water ponds in multiple places where outlet is higher than center of wetland. Rated as depressional.

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	1
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (*use NRCS definitions*). ☐ Yes = 4 ☑ No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): ☐ Wetland has persistent, ungrazed, plants > 95% of area points = 5 ☐ Wetland has persistent, ungrazed, plants > ½ of area points = 3 ☐ Wetland has persistent, ungrazed plants > $^{1}/_{10}$ of area points = 1 ☑ Wetland has persistent, ungrazed plants < $^{1}/_{10}$ of area points = 0	0
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* ☑ Area seasonally ponded is > ½ total area of wetland points = 4 ☐ Area seasonally ponded is > ¼ total area of wetland points = 2 ☐ Area seasonally ponded is < ¼ total area of wetland points = 0	4
Total for D 1 Add the points in the boxes above	5

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

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

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

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? ☐ Yes = 1 ☑ No = 0	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	0
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	2

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

D1.3 - Much of wetland is not vegetated, consists of bare ground. Plants that are present are all regularly mowed.
D3.1, D3.2 - no waters within 1 mile (or within sub-basin) on the 303(d) list.
D3.3 - Wetland is located within watershed for Grays Harbor Dioxin TMDL
(https://apps.ecology.wa.gov/publications/documents/9210202.pdf)
D6.1 - Wetland is located within flood zone AE, panel 53027C0904D

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	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.* ☐ 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	0
Total for D 4 Add the points in the boxes above	0

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

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

D 5.1. Does the wetland receive stormwater discharges? ☑ Yes = 1 ☐ No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? ☑ Yes = 1 ☐ No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? ☑ Yes = 1 ☐ No = 0	1
Total for D 5 Add the points in the boxes above	3

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

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

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

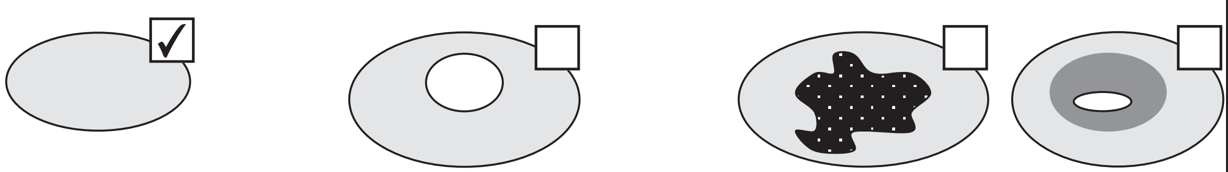
Rating of Value If score is: ☑ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

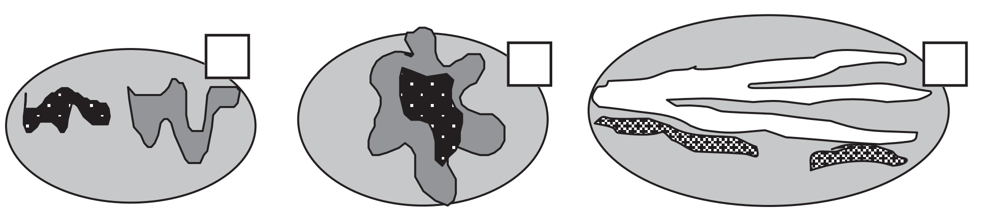
H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed — 4 structures or more: ☐ points = 4 ☑ Emergent — 3 structures: ☐ points = 2 ☐ Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: ☐ points = 1 ☐ Forested (areas where trees have > 30% cover) — 1 structure: ☑ points = 0 *If the unit has a Forested class, check if:* ☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	0
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ☐ Permanently flooded or inundated — 4 or more types present: ☐ points = 3 ☑ Seasonally flooded or inundated — 3 types present: ☐ points = 2 ☐ Occasionally flooded or inundated — 2 types present: ☐ points = 1 ☐ Saturated only — 1 type present: ☑ points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** — ☐ **2 points** ☐ **Freshwater tidal wetland** — ☐ **2 points**	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: > 19 species ☐ 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.*	0



None = 0 points **Low** = 1 point **Moderate** = 2 points

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



H 1.5. Special habitat features:	0
Check the habitat features that are present in the wetland. *The number of checks is the number of points.*	
☐ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long).	
☐ Standing snags (dbh > 4 in) within the wetland	
☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)	
☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)*	
☐ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*	
☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	
Total for H 1 — Add the points in the boxes above	0

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*).	0
Calculate: % undisturbed habitat 0.00 + [(% moderate and low intensity land uses)/2] 0.00 = 0.00 %	
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	
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.	0
Calculate: % undisturbed habitat 6.00 + [(% moderate and low intensity land uses)/2] 2.00 = 8.00 %	
☐ 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	
H 2.3. Land use intensity in 1 km Polygon: If	-2
☑ > 50% of 1 km Polygon is high intensity land use — points = (- 2)	
☐ ≤ 50% of 1 km Polygon is high intensity — points = 0	
Total for H 2 — Add the points in the boxes above	-2

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

H 3.0. Is the habitat provided by the site valuable to society?

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

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

WDFW Priority Habitats

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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** ☐

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	

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FIGURE 5 - 1
WETLAND 5
COWARDIN

HDR

FIGURE 5 - 2
WETLAND 5
HYDROPERIOD

FIGURE 5-3
WETLAND 5
150FT BUFFER

FIGURE 5 - 4

WETLAND 5

CONTRIBUTING BASIN

HDR

FIGURE 5-5

WETLAND 5

1-KM HABITAT

Wetland name or number WL 6

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland 6 Date of site visit: 8/15/22

Rated by Tobin Story Trained by Ecology? ☑ Yes ☐ No Date of training 03/15

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Y ☑ N

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

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

1. Category of wetland based on FUNCTIONS

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

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

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

☐ **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	3	17

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number WL 6

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	6-1
Hydroperiods	D 1.4, H 1.2	6-2
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	6-2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	6-2
Map of the contributing basin	D 4.3, D 5.3	6-4
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	6-5
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	A1
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	A2

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 WL 6

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 WL 6

☑ 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 located in ditch, largely flows unidirectionally but impounds water in several locations, and outlet is higher than center of wetland. Rated as depressional.

Wetland name or number WL 6

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	1
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. ☐ Yes = 4 ☑ No = 0	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	4
Total for D 1 Add the points in the boxes above	8

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

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

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

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? ☐ Yes = 1 ☑ No = 0	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	0
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	2

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

D1.3 - Approximately 1/2 of wetland is not vegetated, consists of bare ground
D3.1, D3.2 - no waters within 1 mile (or within sub-basin) on the 303(d) list.
D3.3 - Wetland is located within watershed for Grays Harbor Dioxin TMDL (https://apps.ecology.wa.gov/publications/documents/9210202.pdf)
D6.1 - Wetland is located within flood zone AE, panel 53027C0904D

Wetland name or number WL 6

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	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.* ☐ 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	0
Total for D 4 Add the points in the boxes above	0

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

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? ☑ Yes = 1 ☐ No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? ☑ Yes = 1 ☐ No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? ☑ Yes = 1 ☐ No = 0	1
Total for D 5 Add the points in the boxes above	3

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

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* 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

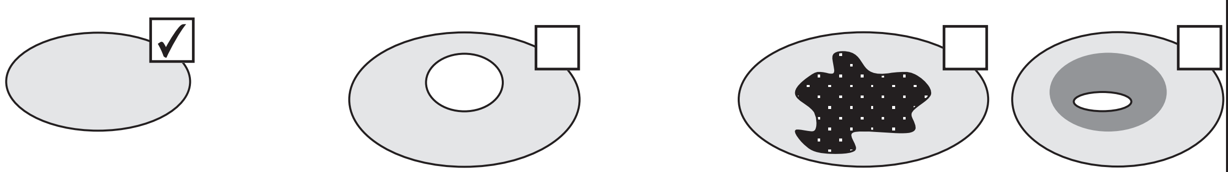
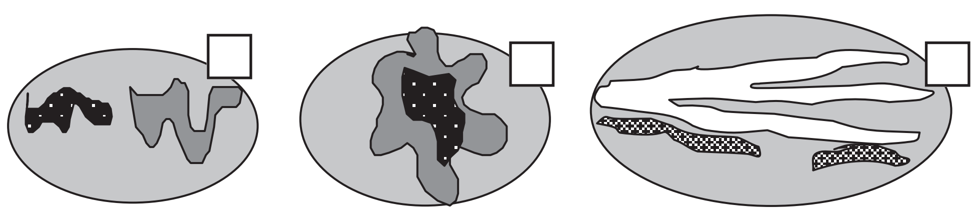
Rating of Value If score is: ☑ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number WL 6

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed — 4 structures or more: ☐ points = 4 ☑ Emergent — 3 structures: ☐ points = 2 ☐ Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: ☐ points = 1 ☐ Forested (areas where trees have > 30% cover) — 1 structure: ☑ points = 0 *If the unit has a Forested class, check if:* ☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	0
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ☐ Permanently flooded or inundated — 4 or more types present: ☐ points = 3 ☑ Seasonally flooded or inundated — 3 types present: ☐ points = 2 ☐ Occasionally flooded or inundated — 2 types present: ☐ points = 1 ☐ Saturated only — 1 type present: ☑ points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** — ☐ **2 points** ☐ **Freshwater tidal wetland** — ☐ **2 points**	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: > 19 species ☐ points = 2 5 - 19 species ☑ points = 1 < 5 species ☐ points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points — **Low** = 1 point — **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	0

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.*	0
☐ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ☐ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ☐ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	
Total for H 1 — Add the points in the boxes above	1

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*).	0
Calculate: % undisturbed habitat 0.00 **+** [(% moderate and low intensity land uses)/2] 0.00 **=** 0.00 % 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	
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 6.00 **+** [(% moderate and low intensity land uses)/2] 2.00 **=** 8.00 % ☐ 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	0
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	-2

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

H 3.0. Is the habitat provided by the site valuable to society?

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

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

WDFW Priority Habitats

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number WL 6

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 WL 6

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	

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FIGURE 6 - 1

WETLAND 6

COWARDIN

FIGURE 6 - 2

WETLAND 6

HYDROPERIOD

FIGURE 6-3

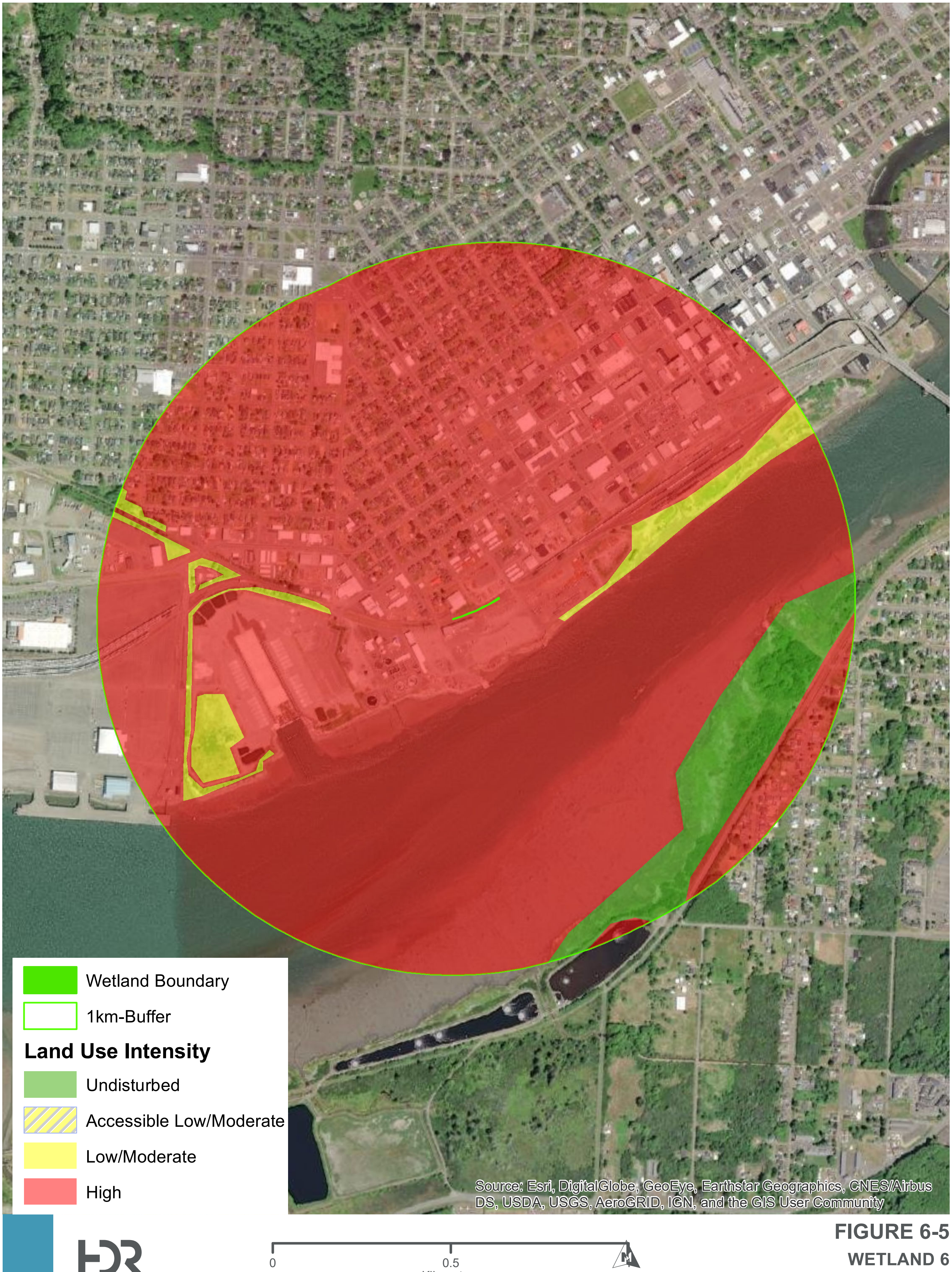
WETLAND 6

150FT BUFFER

FIGURE 6 - 4

WETLAND 6

CONTRIBUTING BASIN



HDR

FIGURE 6-5

WETLAND 6

1-KM HABITAT

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland 7 Date of site visit: 8/5/22

Rated by Tobin Story Trained by Ecology? ☑ Yes ☐ No Date of training 03/15

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Y ☑ N

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

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

1. Category of wetland based on FUNCTIONS

☐ **Category I** – Total score = 23 - 27
☐ **Category II** – Total score = 20 - 22
☑ **Category III** – Total score = 16 - 19
☐ **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	3	17

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number WL 7

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	7-1
Hydroperiods	D 1.4, H 1.2	7-2
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	7-2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	7-3
Map of the contributing basin	D 4.3, D 5.3	7-4
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	7-5
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	A1
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	A2

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 WL 7

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 WL 7

☑ 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 located in ditch, largely flows unidirectionally but impounds water in several locations, and outlet is higher than center of wetland. Rated as depressional.

Wetland name or number WL 7

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	1
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. ☐ Yes = 4 ☑ No = 0	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	4
Total for D 1 Add the points in the boxes above	10

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

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

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

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? ☐ Yes = 1 ☑ No = 0	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	0
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	2

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

D3.1, D3.2 - no waters within 1 mile (or within sub-basin) on the 303(d) list.
D3.3 - Wetland is located within watershed for Grays Harbor Dioxin TMDL (https://apps.ecology.wa.gov/publications/documents/9210202.pdf)
D6.1 - Wetland is located within flood zone AE, panel 53027C0904D

Wetland name or number WL 7

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	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.* ☐ 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	3
Total for D 4 Add the points in the boxes above	3

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

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? ☑ Yes = 1 ☐ No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? ☑ Yes = 1 ☐ No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? ☑ Yes = 1 ☐ No = 0	1
Total for D 5 Add the points in the boxes above	3

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

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* 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

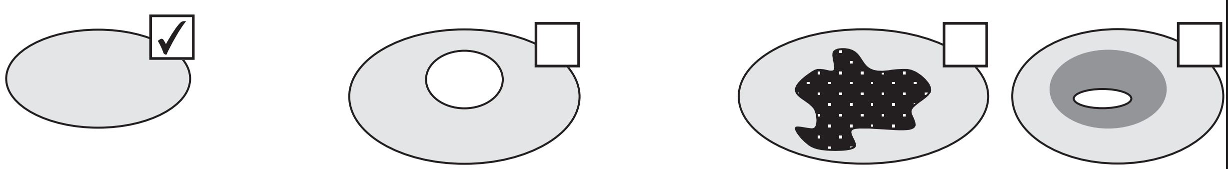
Rating of Value If score is: ☑ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

These questions apply to wetlands of all HGM classes.

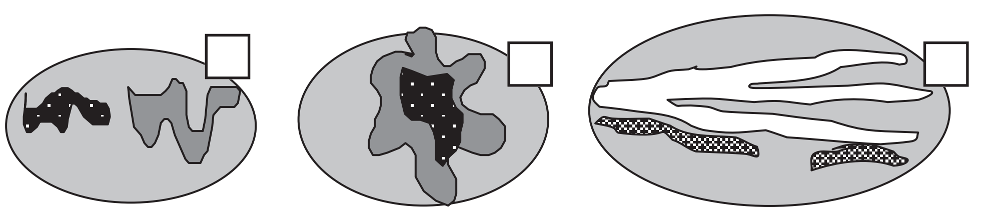
HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed — 4 structures or more: ☐ points = 4 ☑ Emergent — 3 structures: ☐ points = 2 ☐ Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: ☐ points = 1 ☐ Forested (areas where trees have > 30% cover) — 1 structure: ☑ points = 0 *If the unit has a Forested class, check if:* ☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	0
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ☐ Permanently flooded or inundated — 4 or more types present: ☐ points = 3 ☑ Seasonally flooded or inundated — 3 types present: ☐ points = 2 ☐ Occasionally flooded or inundated — 2 types present: ☐ points = 1 ☐ Saturated only — 1 type present: ☑ points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** ☐ **2 points** ☐ **Freshwater tidal wetland** ☐ **2 points**	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: > 19 species ☐ points = 2 5 - 19 species ☑ points = 1 < 5 species ☐ points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*	0



None = 0 points (☑) **Low** = 1 point (☐) **Moderate** = 2 points (☐ ☐)



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

Wetland name or number WL 7

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☑ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ☐ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ☐ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	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** ☑ **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 0.00 + [(% moderate and low intensity land uses)/2] 0.00 = 0.00 % If total accessible habitat is: ☐ > $^1/_3$ (33.3%) of 1 km Polygon — points = 3 ☐ 20-33% of 1 km Polygon — points = 2 ☐ 10-19% of 1 km Polygon — points = 1 ☑ < 10% of 1 km Polygon — points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 4.00 + [(% moderate and low intensity land uses)/2] 2.00 = 6.00 % ☐ 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	0
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	-2

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

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: — points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ 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	0

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

WDFW Priority Habitats

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number WL 7

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** ☐

SC 4.0. Forested Wetlands Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***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	

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FIGURE 7 - 1

WETLAND 7

COWARDIN

FIGURE 7 - 2

WETLAND 7

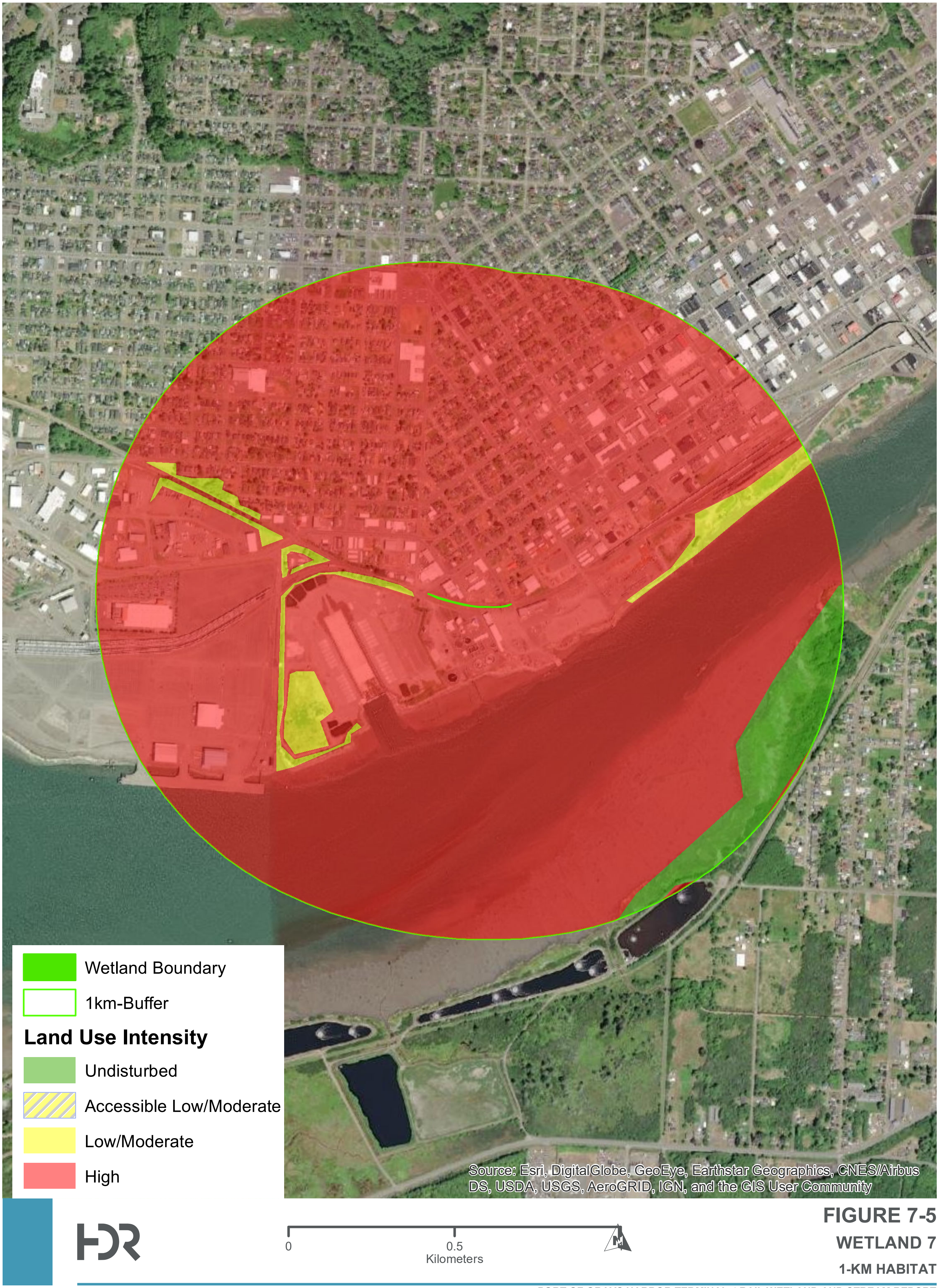
HYDROPERIOD

FIGURE 7-3
WETLAND 7
150FT BUFFER

FIGURE 7 - 4

WETLAND 7

CONTRIBUTING BASIN



FDR

FIGURE 7-5

WETLAND 7

1-KM HABITAT

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland 8 Date of site visit: 8/19/2022

Rated by T. Story Trained by Ecology? ☑ Yes ☐ No Date of training 03/15

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Y ☑ N

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

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

1. Category of wetland based on FUNCTIONS

☐ **Category I** – Total score = 23 - 27
☐ **Category II** – Total score = 20 - 22
☑ **Category III** – Total score = 16 - 19
☐ **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	6	7	3	16

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number WL8

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	8-1
Hydroperiods	D 1.4, H 1.2	8-2
Location of outlet *(can be added to map of hydroperiods)*	D 1.1, D 4.1	8-2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	8-3
Map of the contributing basin	D 4.3, D 5.3	8-4
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	8-5
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	A1
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	A2

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 WL8

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 WL8

☑ 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 WL8

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	1
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. ☐ Yes = 4 ☑ No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): ☐ Wetland has persistent, ungrazed, plants > 95% of area points = 5 ☐ Wetland has persistent, ungrazed, plants > ½ of area points = 3 ☐ Wetland has persistent, ungrazed plants > $^{1}/_{10}$ of area points = 1 ☑ Wetland has persistent, ungrazed plants < $^{1}/_{10}$ of area points = 0	0
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* ☑ Area seasonally ponded is > ½ total area of wetland points = 4 ☐ Area seasonally ponded is > ¼ total area of wetland points = 2 ☐ Area seasonally ponded is < ¼ total area of wetland points = 0	4
Total for D 1 Add the points in the boxes above	5

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

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

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

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? ☐ Yes = 1 ☑ No = 0	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	0
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	2

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

D1.3 - all vegetation in wetland regularly mowed
D3.1, D3.2 - no waters within 1 mile (or within sub-basin) on the 303(d) list.
D3.3 - Wetland is located within watershed for Grays Harbor Dioxin TMDL
(https://apps.ecology.wa.gov/publications/documents/9210202.pdf)
D6.1 - Wetland is located within flood zone AE, panel 53027C0904D

Wetland name or number WL8

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	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.* ☐ 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	3
Total for D 4 Add the points in the boxes above	3

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

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? ☑ Yes = 1 ☐ No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? ☑ Yes = 1 ☐ No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? ☑ Yes = 1 ☐ No = 0	1
Total for D 5 Add the points in the boxes above	3

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

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* 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: ☑ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

Wetland name or number WL8

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.* **Score: 0**

- ☐ Aquatic bed
- ☑ Emergent
- ☐ Scrub-shrub (areas where shrubs have > 30% cover)
- ☐ Forested (areas where trees have > 30% cover)

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

If the unit has a Forested class, check if:

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

H 1.2. Hydroperiods **Score: 0**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

- ☐ Permanently flooded or inundated
- ☑ Seasonally flooded or inundated
- ☐ Occasionally flooded or inundated
- ☐ Saturated only
- ☐ 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**

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

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

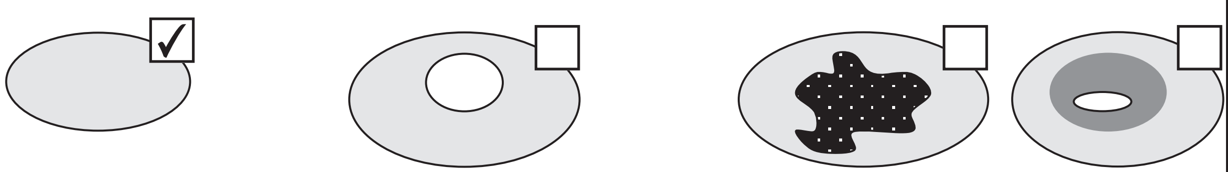
Count the number of plant species in the wetland that cover at least 10 ft^2.

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, Canadian thistle***

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

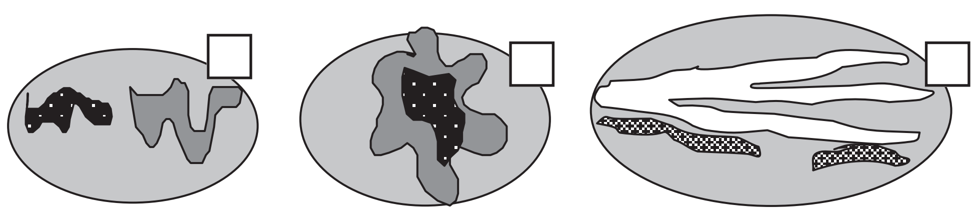
H 1.4. Interspersion of habitats **Score: 0**

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



None = 0 points (☑) **Low** = 1 point (☐) **Moderate** = 2 points (☐ ☐)

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



Wetland name or number WL8

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☐ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ☐ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ☐ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	1

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0.00 + [(% moderate and low intensity land uses)/2] 0.00 = 0.00 % If total accessible habitat is: ☐ > $^1/_3$ (33.3%) of 1 km Polygon points = 3 ☐ 20-33% of 1 km Polygon points = 2 ☐ 10-19% of 1 km Polygon points = 1 ☑ < 10% of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 2.00 + [(% moderate and low intensity land uses)/2] 1.00 = 3.00 % ☐ 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	0
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	-2

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

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: ☐ points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ 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	0

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

Wetland name or number WL8

WDFW Priority Habitats

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number WL8

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 WL8

SC 4.0. Forested Wetlands Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***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	NA

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FIGURE 8 - 1

WETLAND 8

COWARDIN

FIGURE 8 - 2

WETLAND 8

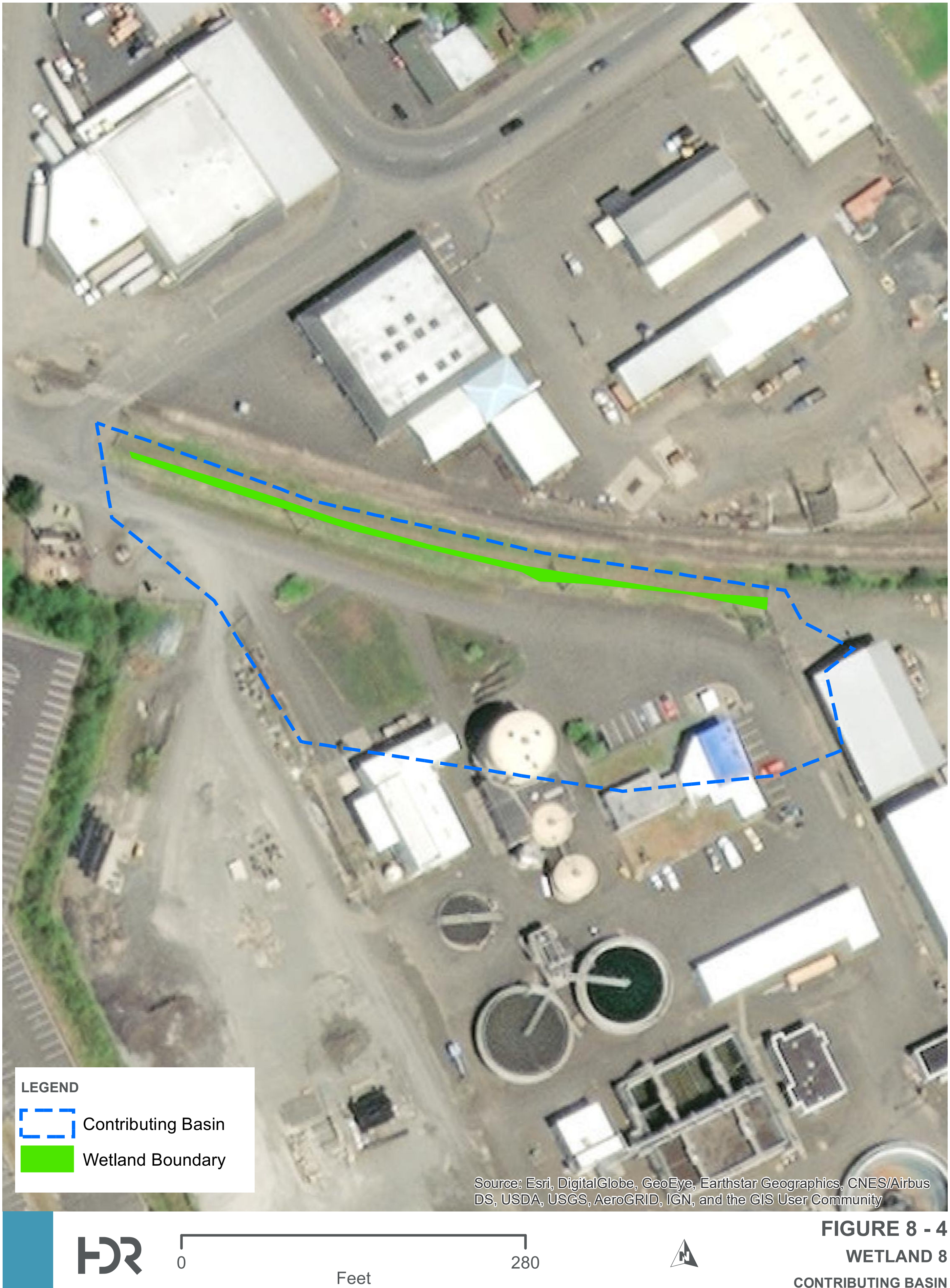
HYDROPERIOD

HDR

FIGURE 8-3

WETLAND 8

150FT BUFFER



FDR

FIGURE 8 - 4

WETLAND 8

CONTRIBUTING BASIN

FIGURE 8-5

WETLAND 8

1-KM HABITAT

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland 9 Date of site visit: 8/19/2022

Rated by T. Story Trained by Ecology? ☑ Yes ☐ No Date of training 03/15

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☐ Y ☑ N

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

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

1. Category of wetland based on FUNCTIONS

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

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
			Circle the appropriate ratings	
Site Potential	H ☑ M ☐ L ☐	H ☐ M ☑ L ☐	H ☐ M ☐ L ☑	
Landscape Potential	H ☐ M ☑ L ☐	H ☑ M ☐ L ☐	H ☐ M ☐ L ☑	
Value	H ☑ M ☐ L ☐	H ☑ M ☐ L ☐	H ☐ M ☐ L ☑	**TOTAL**
Score Based on Ratings	8	8	3	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	★

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	9-1
Hydroperiods	D 1.4, H 1.2	9-2
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	9-2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	9-3
Map of the contributing basin	D 4.3, D 5.3	9-4
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	9-5
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	A1
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	A2

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 WL9

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 WL9

☑ 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 WL9

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	1
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (*use NRCS definitions*). ☑ Yes = 4 ☐ No = 0	4
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): ☑ 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	12

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

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

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

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? ☐ Yes = 1 ☑ No = 0	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	0
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	2

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

Wetland name or number WL9

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	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.* ☐ 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	3
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	3
Total for D 4 Add the points in the boxes above	6

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

D 5.0. Does the landscape have the potential to support hydrologic 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: ☑ **3 = H** ☐ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* 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

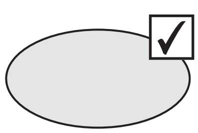
Rating of Value If score is: ☑ **2-4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

These questions apply to wetlands of all HGM classes.

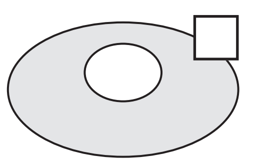
HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

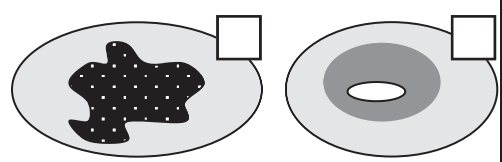
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed — 4 structures or more: ☐ points = 4 ☑ Emergent — 3 structures: ☐ points = 2 ☐ Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: ☐ points = 1 ☐ Forested (areas where trees have > 30% cover) — 1 structure: ☑ points = 0 *If the unit has a Forested class, check if:* ☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	0
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ☑ Permanently flooded or inundated — 4 or more types present: ☐ points = 3 ☑ Seasonally flooded or inundated — 3 types present: ☐ points = 2 ☐ Occasionally flooded or inundated — 2 types present: ☑ points = 1 ☐ Saturated only — 1 type present: ☐ points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** — ☐ **2 points** ☐ **Freshwater tidal wetland** — ☐ **2 points**	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species ☐ points = 2 5 - 19 species ☑ points = 1 < 5 species ☐ points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*	0



None = 0 points

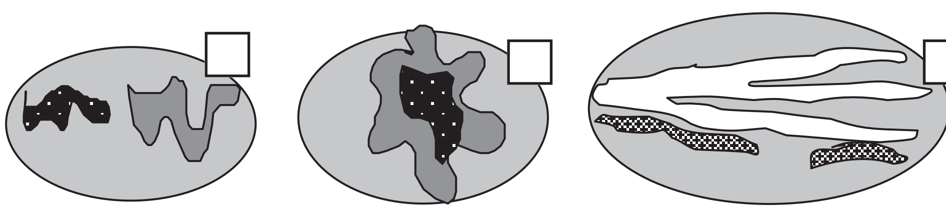


Low = 1 point



Moderate = 2 points

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



Wetland name or number WL9

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

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0.00 **+** [(% moderate and low intensity land uses)/2] 0.00 **=** 0.00 % If total accessible habitat is: ☐ > 1/3 (33.3%) of 1 km Polygon — points = 3 ☐ 20-33% of 1 km Polygon — points = 2 ☐ 10-19% of 1 km Polygon — points = 1 ☑ < 10% of 1 km Polygon — points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 8.00 **+** [(% moderate and low intensity land uses)/2] 2.00 **=** 10.00 % ☐ 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	-1

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

H 3.0. Is the habitat provided by the site valuable to society?

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

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

WDFW Priority Habitats

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number WL9

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** ☐

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	NA

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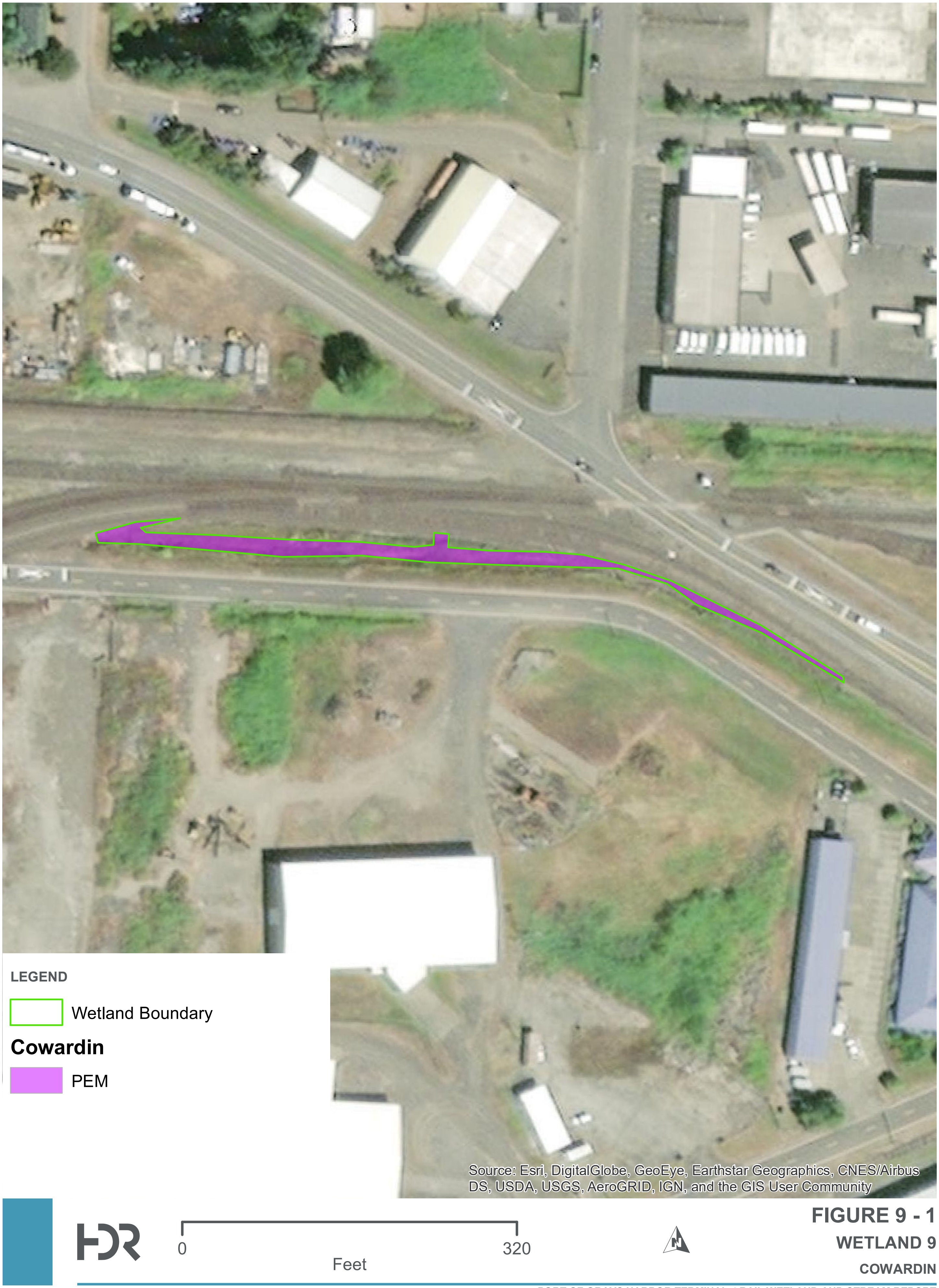


FIGURE 9 - 1

WETLAND 9

COWARDIN

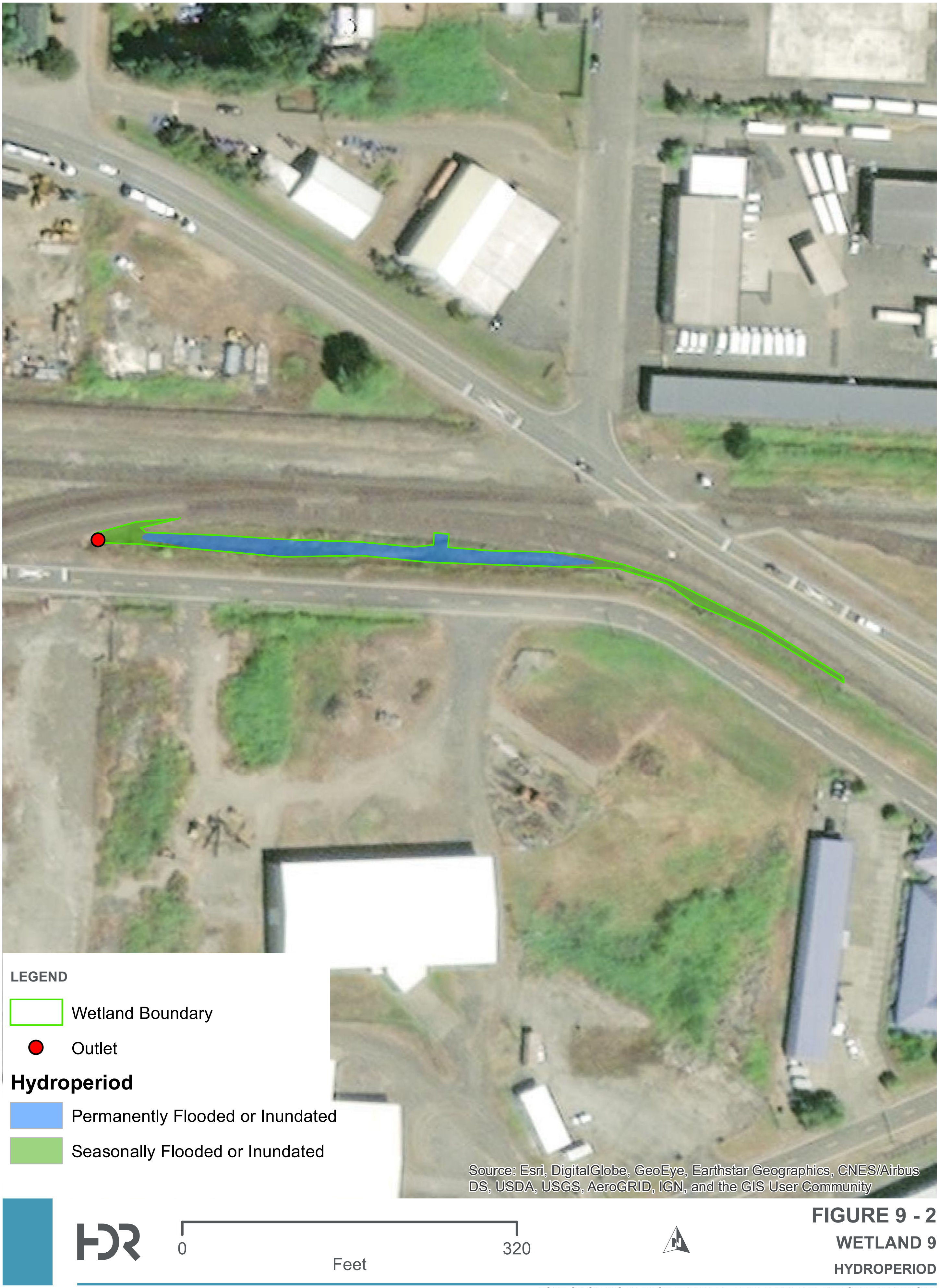


FIGURE 9 - 2

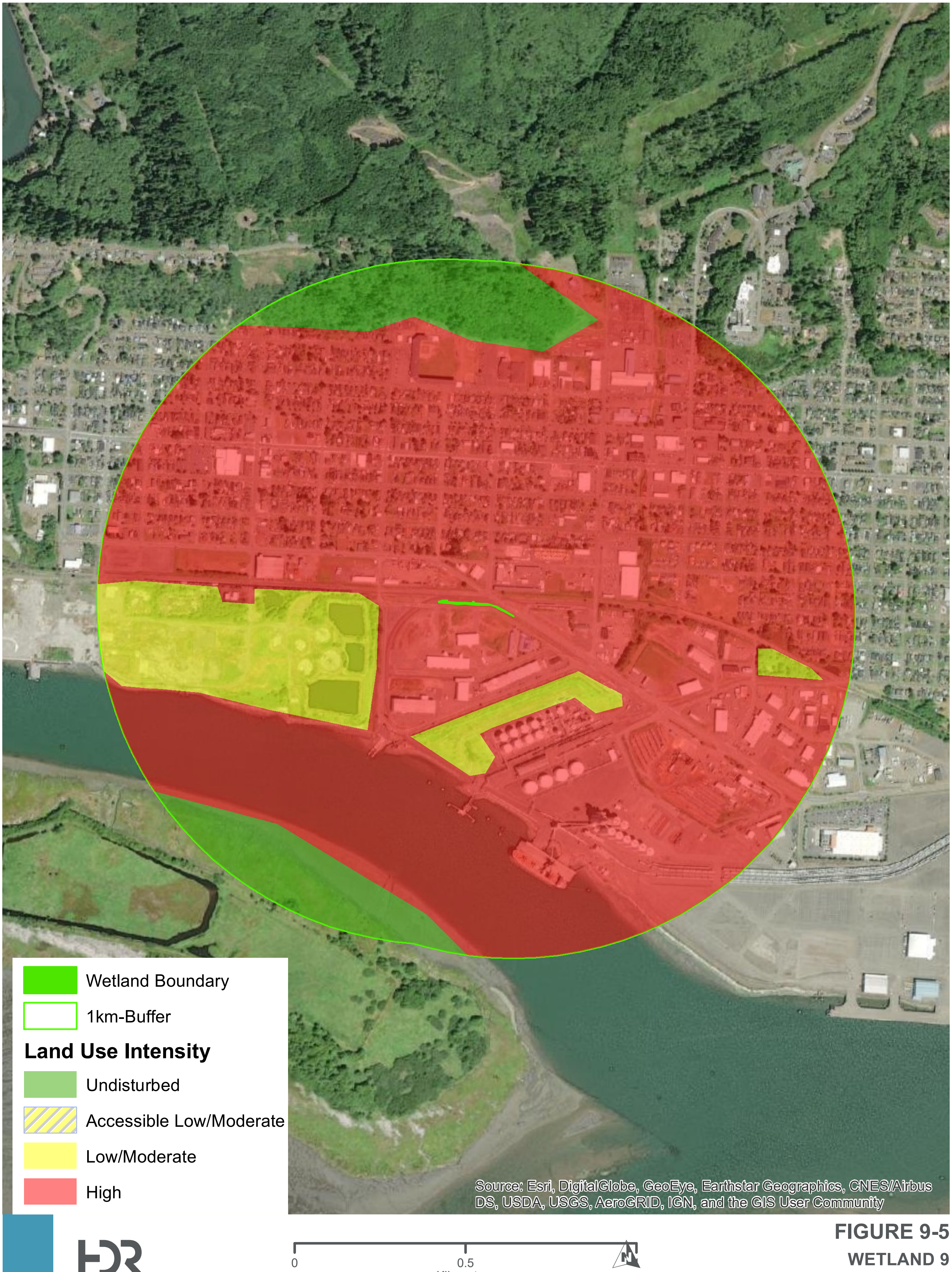
WETLAND 9

HYDROPERIOD

FIGURE 9-3
WETLAND 9
150FT BUFFER

HDR

FIGURE 9 - 4
WETLAND 9
CONTRIBUTING BASIN



HDR

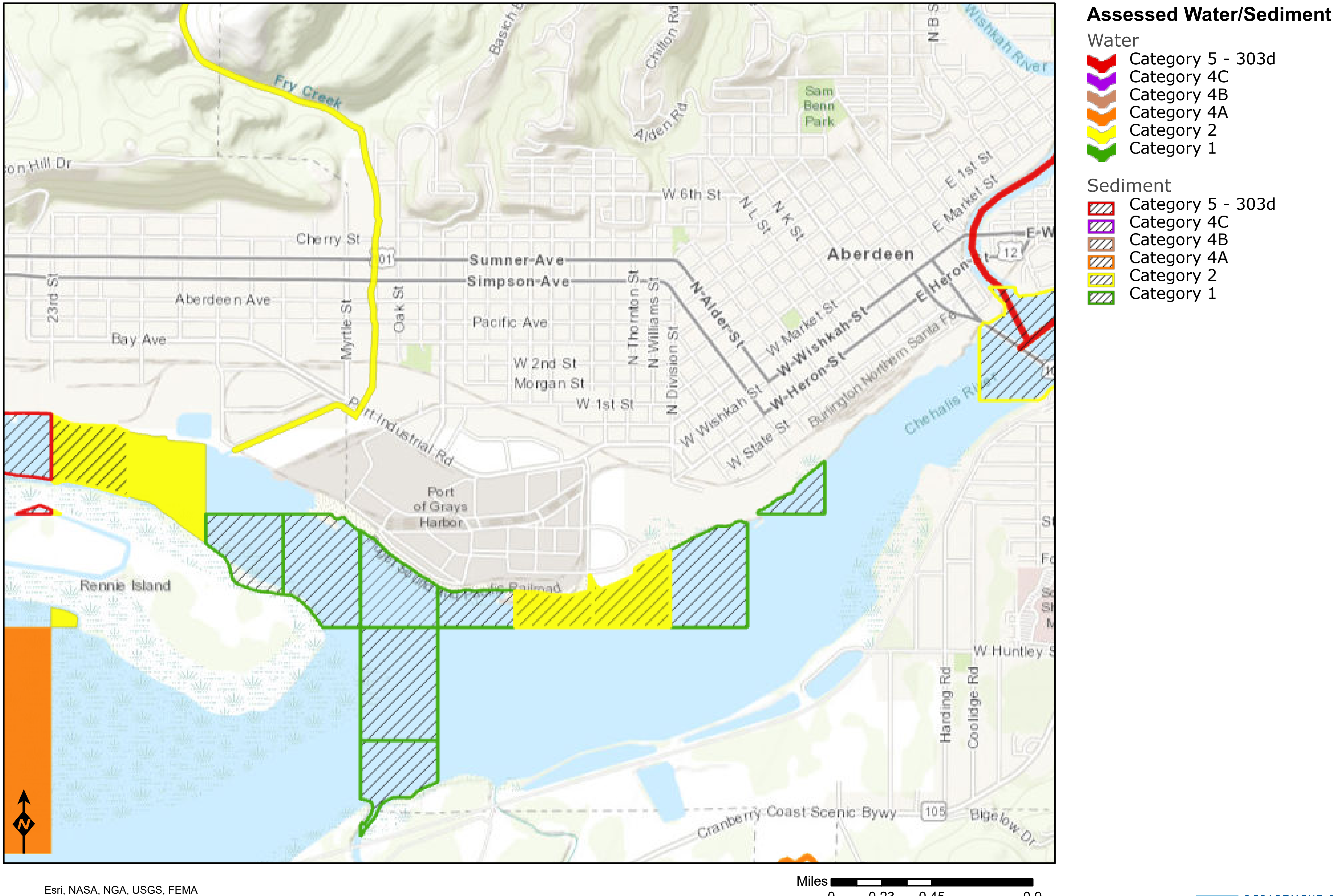
FIGURE 9-5

WETLAND 9

1-KM HABITAT

November 11, 2022

A1 - 303d Map



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

DEPARTMENT OF ECOLOGY State of Washington

DEPARTMENT OF ECOLOGY State of Washington

Grays Harbor County

Water quality improvement projects

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

Waterbody Name(s)	Pollutant(s)	Status	Project Lead(s)
Chehalis River Basin - Simpson Timberlands	Temperature	Approved by EPA	Lawrence Sullivan 360-407-6389
Chehalis River Basin - Upper Chehalis River Watershed	Dissolved Oxygen	Approved by EPA	Devan Rostorfer 360-690-4665
Chehalis River Basin - Wildcat Creek	Ammonia-N BOD (5-Day) Chlorine Fecal Coliform	Approved by EPA	Devan Rostorfer 360-690-4665
Grays Harbor	Dioxin Fecal Coliform	Approved by EPA	Devan Rostorfer 360-690-4665
Grays Harbor - Humptulips River	Temperature	Approved by EPA	Devan Rostorfer 360-690-4665
North Ocean Beaches - • Pacific Ocean • Moclips River	Shellfish Closure Response - Fecal Coliform Bacteria Source Investigation Study	Under development	Leanne Whitesell 360-407-6295

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

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Appendix D. Site Photos

Photo 1: Overview of Wetland 1, north of culverts. Photo taken facing northwest.

Photo 2: Overview of Wetland 1, south of culverts. Photo taken facing south.

Photo 3: Overview of Wetland 2. Photo taken facing west.

Photo 4: Overview of Wetland 2. Photo taken facing east.

Photo 5: Overview of Wetland 3. Photo taken facing west.

Photo 6: Overview of Wetland 4. Photo taken facing west.

Photo 7: Overview of Wetland 4. Photo taken facing east.

Photo 8: Overview of Wetland 5. Photo taken facing west.

Photo 9: Overview of Wetland 5. Photo taken facing east.

Photo 10: Overview of Wetland 6. Photo taken facing west.

Photo 11: Overview of Wetland 6. Photo taken facing east.

Photo 12: Overview of Wetland 7. Photo taken facing west.

Photo 13: Overview of Wetland 7. Photo taken facing east.

Photo 14: Overview of Wetland 8. Photo taken facing west.

Photo 15: Overview of Wetland 8. Photo taken facing east.

Photo 16: Overview of Wetland 9. Photo taken facing west.

Photo 17: Overview of Wetland 9. Photo taken facing east.

Photo 18: Overview of Fry Creek, north of the culvert. Photo taken facing north.

Photo 19: Overview of Fry Creek, south of the culvert. Photo taken facing northwest.

Photo 20: Overview of high tide line extent of the port. Photo taken facing west.

Photo 21: Overview of high tide line extent of the port. Photo taken facing east.

Photo 22: Overview of Ditch 1. Photo taken facing northwest.

Photo 23: Overview of Ditch 2. Photo taken facing west

Photo 24: Overview of Ditch 3. Photo taken facing west

Photo 25: Overview of Ditch 3. Photo taken facing east.

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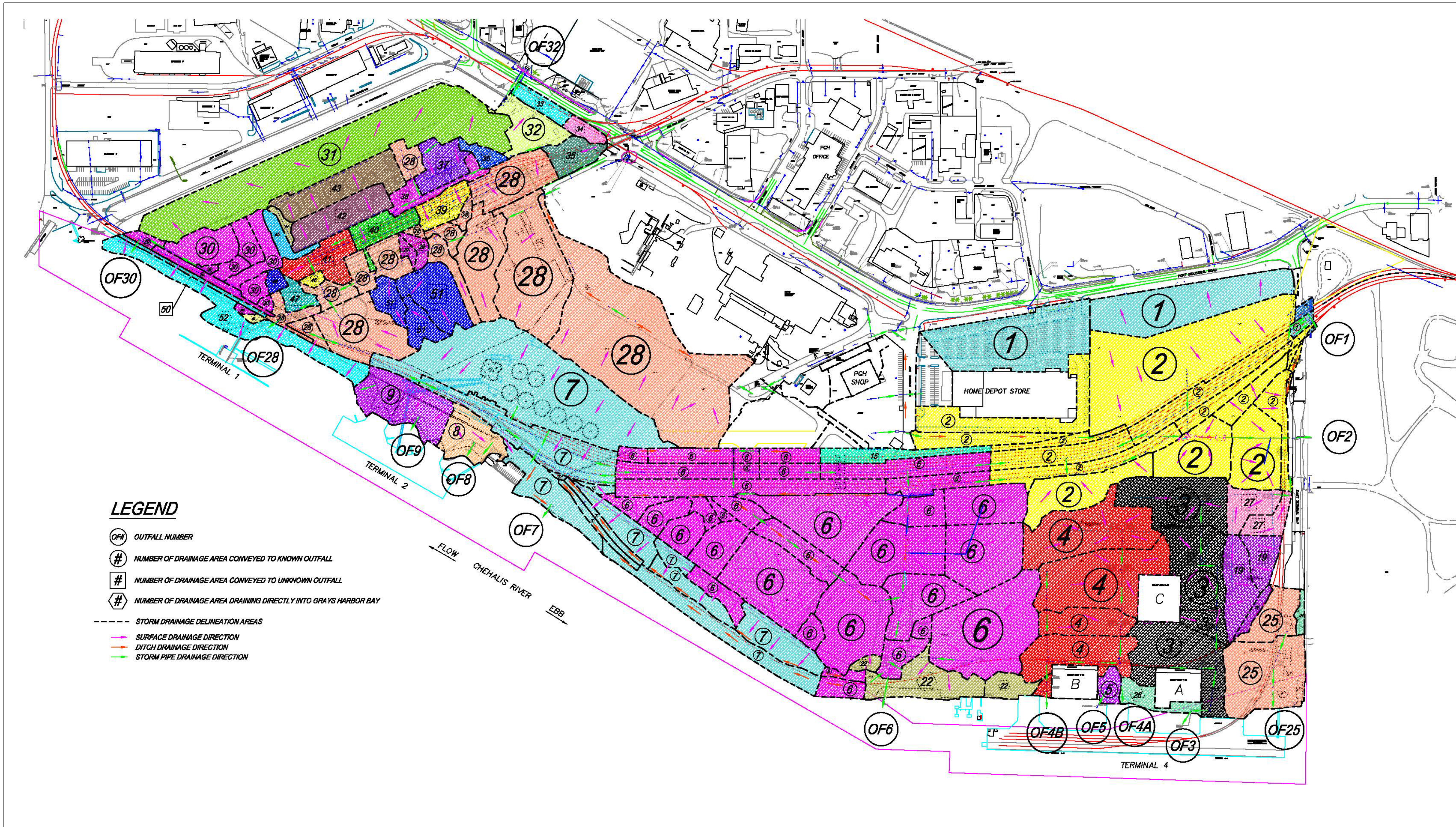
Appendix B

Existing Stormwater System Maps



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ANCHOR QEA

Figure B-1
Existing Stormwater System – Terminals 1, 2, and 4
Water Resources Technical Study
Port of Grays Harbor Terminal 4 Expansion and Redevelopment Project

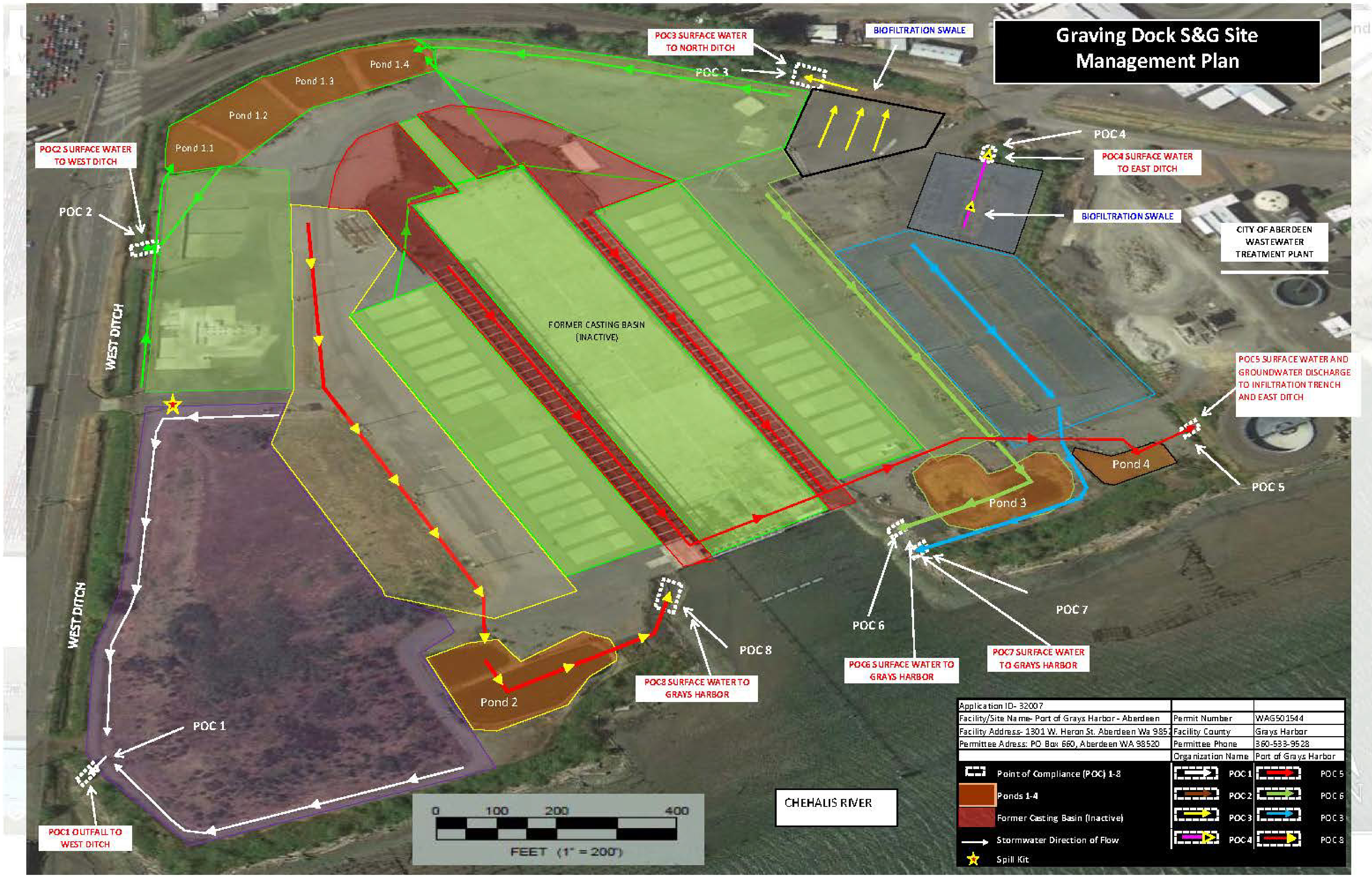

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Figure B-2
Existing Stormwater System – Casting Basin
Water Resources Technical Study
Port of Grays Harbor Terminal 4 Expansion and Redevelopment Project