



## Site Plan Review Application

### Documents Required for Submittal:

\*NOTES: If a proposal is within the shoreline jurisdiction please use appropriate shoreline application form.

- Site Plan Review Application
- Site plan (provide detail and accurate information):
  - ◆ Dimensions of the property drawn to common scale (architectural, engineering)
  - ◆ Location of any wetlands, creeks/streams, critical habitat areas, or geological hazards, if known
  - ◆ Locations and dimensions of **all** existing and proposed structures on the site
  - ◆ Locations and dimensions of **all** existing and proposed impervious surfaces on the site
  - ◆ Stormwater plan (if applicable)
  - ◆ Location of the Ordinary High Water Mark (if applicable)
  - ◆ Distance of any structures to the Ordinary High Water Mark (OHWM) of any creeks, streams, rivers or lakes, (if applicable)
  - ◆ Location and dimensions of all areas to be cleared, filled, or excavated
  - ◆ Location of existing or proposed septic tank/drain field, and well or utility lines
  - ◆ preliminary topographic drawings depicting the basic elevation features of your property
  - ◆ Names and locations of all public or private roads
  - ◆ Location of all Easements
  - ◆ Show access from the County Road to the building area include the driveway length and width
  - ◆ North Arrow
  - ◆ Scale
- Completed, signed, and notarized Agent Authorization Form (if applicable)
- Required fees per current Unified Fee Schedule.

**Submit all application materials as PDF to [ePermits@co.whatcom.wa.us](mailto:ePermits@co.whatcom.wa.us)**

Note: Per UFS 2843 all permits and applications are subject to a 3% Technology fee. The 3% fee is calculated on the permit/application fees due.

**Property corners, road access point, and building corners MUST BE FLAGGED prior to staff site inspection – (Otherwise additional site inspection fees will be assessed – See current Unified Fee Schedule)**

Your feedback is important to us as we strive to improve our service to you. Please use this link <https://wa-whatcomcounty.civicplus.com/FormCenter/Planning-Development-Services-9/PDS-Customer-Survey-107> to complete a Customer Survey.



Site Plan Review Application

PRE2023-00097  
ABC Recycling

For Administration Use

Permit#(s) _____ _____ _____	Date Stamp <div style="border: 2px solid red; padding: 10px; text-align: center;"><b>RECEIVED</b> Date: 10/24/2023 Staff: AHK</div>
Received by: _____	
Total Fees: _____	Public Works      Archaeology      Health
Reviews:    CA Wetland/HCA    CA Geo Hazards    Flood    Watershed    Fire    Zoning	

Agent/Contact Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_ City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_ Phone # (    ) \_\_\_\_\_

Email: \_\_\_\_\_

Property Owner Name \_\_\_\_\_

Mailing Address: \_\_\_\_\_ City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_ Phone # (    ) \_\_\_\_\_

Email: \_\_\_\_\_

**Property Information**

Site address \_\_\_\_\_

Assessor's Parcel Number \_\_\_\_\_

Property Access Info (if needed): \_\_\_\_\_

Gate Code \_\_\_\_\_  Notify Owner Prior to Access

Parcel size: \_\_\_\_\_ in acres/square footage  
(If less than an acre please provide square footage)

Zoning: \_\_\_\_\_

Watershed District:

Lake Whatcom     Lake Samish     Lake Padden     Birch Bay     Drayton Harbor

NPDES Phase II     Other \_\_\_\_\_

Do you own any contiguous property, joining property or have control of joining property?

If yes, please provide parcel numbers

\_\_\_\_\_

Proposed water source for development:  No Water Source Required/Existing Service

Well  Water Association  Water District  Surface Water  Rain Water

Name of Water Purveyor (if applicable): \_\_\_\_\_

### Project Description

Include description of all proposed work for this application:

(include full project concept –attach additional pages if needed)

Select all that apply to this application from the following:

- Detached Structure
- Driveway
- Landscaping
- On Site Septic / Drainfield
- Parking
- Single Family Residence
- Well

### Property Physical Site Characteristics (Included on the Site Plan)

Check all characteristics that apply on and within 300 feet of the entire parcel.

- |                                                                  |                                                   |                                                     |
|------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Streams                                 | <input type="checkbox"/> Ponds and lakes          | <input type="checkbox"/> Forested areas             |
| <input type="checkbox"/> Drainage ditches                        | <input type="checkbox"/> Steep slopes             | <input type="checkbox"/> Brush / scrub              |
| <input type="checkbox"/> Frequently flooded areas                | <input type="checkbox"/> Landslide areas          | <input type="checkbox"/> Pasture, lawn, landscaping |
| <input type="checkbox"/> Wetlands/seasonally wet/<br>soggy areas | <input type="checkbox"/> Existing developed areas | <input type="checkbox"/> Wildlife features          |

**Disclaimer**

The permittee verifies, acknowledges and agrees by their signature that:

- 1) If this permit is for installation of a dwelling, the dwelling is/will be served by potable water;
- 2) The property owner is the owner of this Whatcom County Permit;
- 3) The signatory is the property owner or someone who has permission to represent the property owner in this transaction;
- 4) All construction is to be done in accordance with Whatcom County codes or ordinances-*referenced codes and ordinances are available for review from Whatcom County Planning and Development Services;*
- 5) This Whatcom County Permit does not permit or approve any violation of federal, state or local laws, codes or ordinances;
- 6) Submission of plans or additional information and subsequent approval may be required before this application can be processed;
- 7) Notwithstanding that this application has been submitted in the name of a company, I personally guarantee payment (or guarantee payment on behalf of the client I am representing, noted on the Agent Authorization Form) of the fees accrued according to the terms listed in the Whatcom County Unified Fee Schedule, including the Application of Fees from Different UFS Schedule Policy PL1-74-003Z, and agree to be bound personally as a principal and not as a surety. I recognize my personal guarantee is part of the consideration for review of the application.

*ANDY ANTHONY*

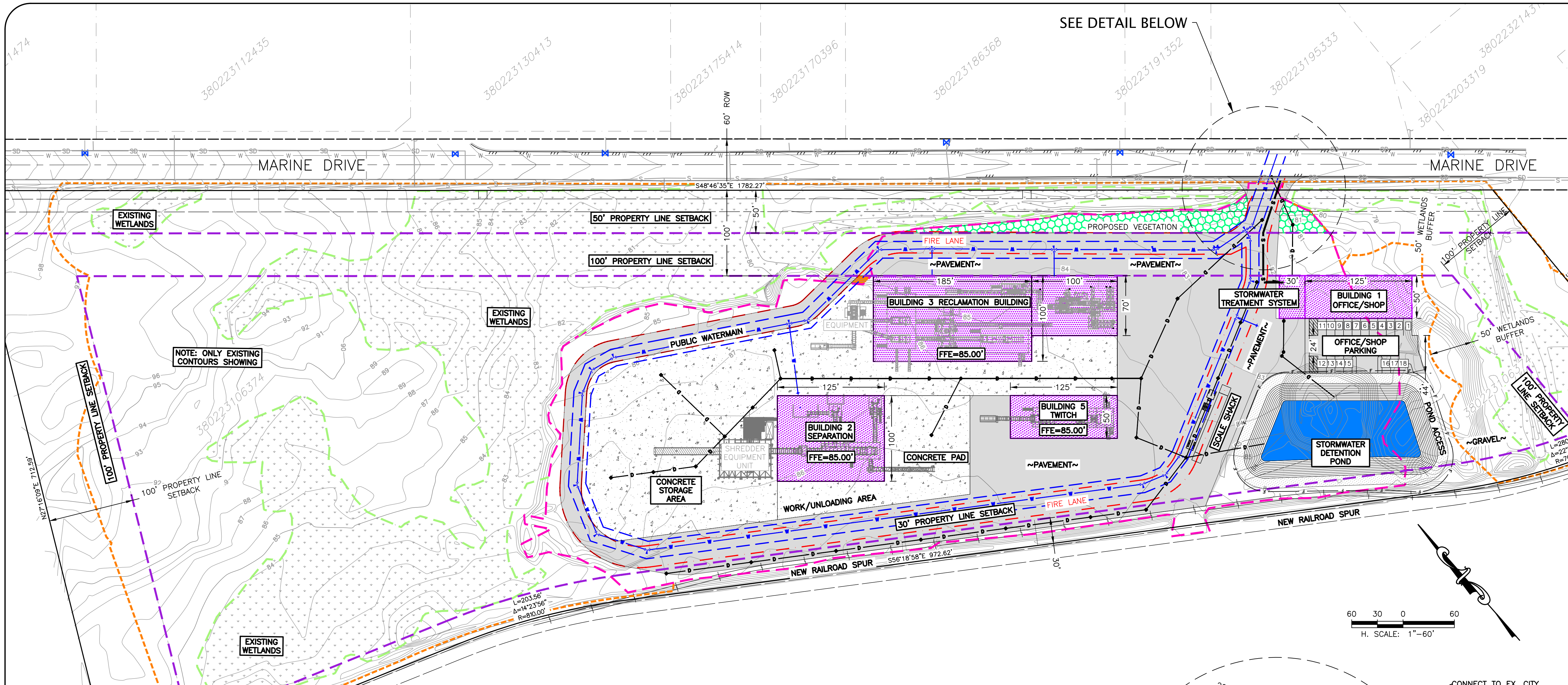
Print Name

Sign here

*AA*

Owner or Agent Signature

Date

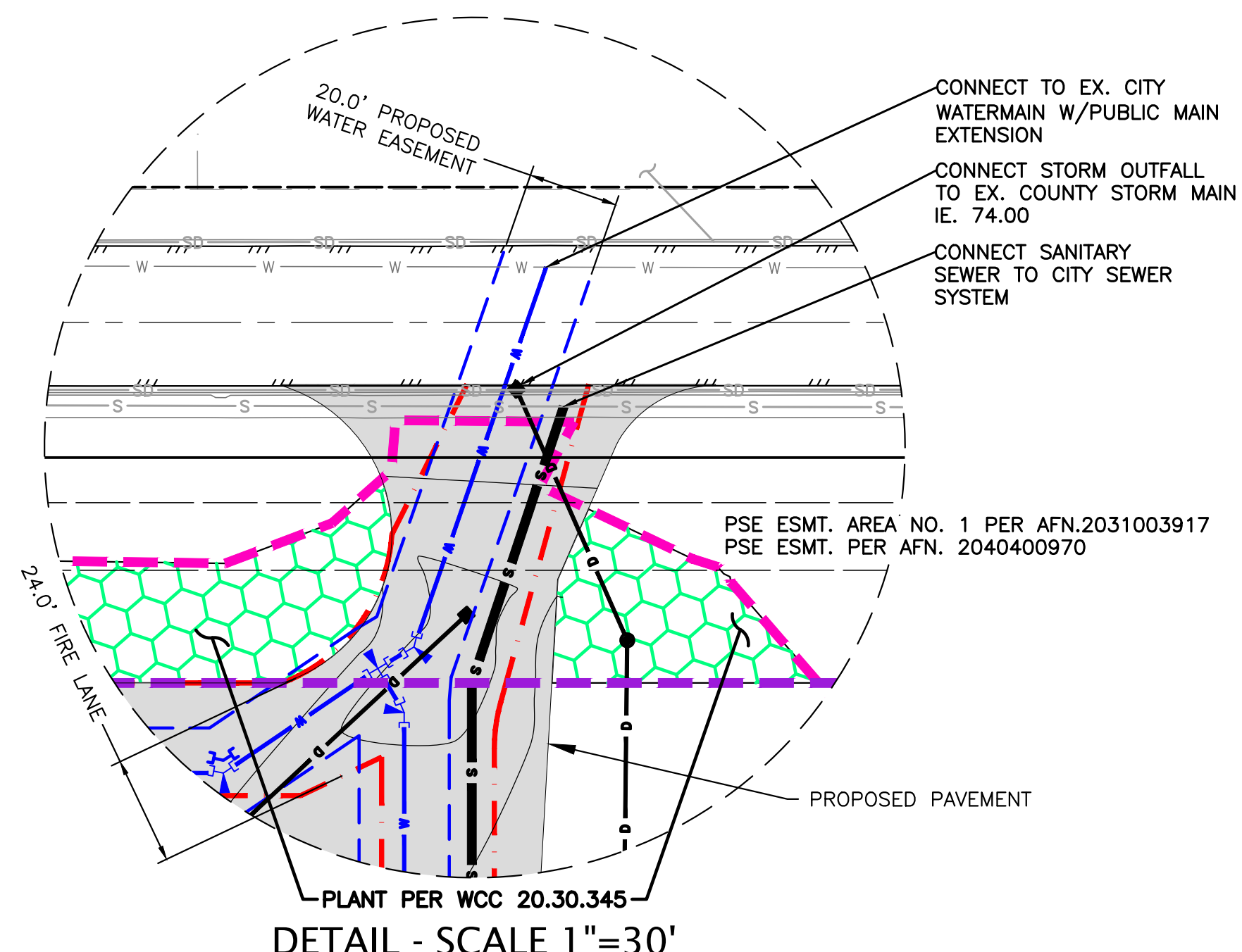


SEE DETAIL BELOW

NOTE: ONLY EXISTING CONTOURS SHOWING

**LEGEND**

- PROPOSED STORM PIPE
- PROPOSED WATER EASEMENT
- ▽—▽—▽— PROPOSED WATER LINE
- POND BOTTOM ELEVATION 74.0'
- POND FILL TO DAYLIGHT
- PROPOSED PARKING
- PROPOSED GRAVEL
- EXISTING PROPERTY LINE
- EXISTING RIGHT OF WAY CENTERLINE
- EXISTING RIGHT OF WAY
- EXISTING RAILROAD
- EXISTING ASPHALT
- EXISTING WETLANDS
- EXISTING WATER LINE
- EXISTING CURB
- EXISTING STORM LINE
- EXISTING EASEMENT
- PROPOSED BUILDINGS
- PROPOSED CONCRETE
- LIMITS OF EXISTING FILL
- PROPOSED VEGETATION PLANTINGS
- 50' & 100' SETBACKS
- FIRELANE
- PROPOSED PAVEMENT
- WETLAND BUFFER
- WETLAND LIMITS



ABC RECYCLING  
 OVERALL SITE PLAN  
 PRELIMINARY  
 741 MARINE DRIVE  
 BELLINGHAM, WASHINGTON 98226

REV	DATE	BY	DESCRIPTION
PROJECT NUMBER: 21029			
DESIGNED/DRAWN BY: BLS			
CHECKED BY: SIG			
ISSUE DATE: 10-19-2023			
5			
OF: 25			

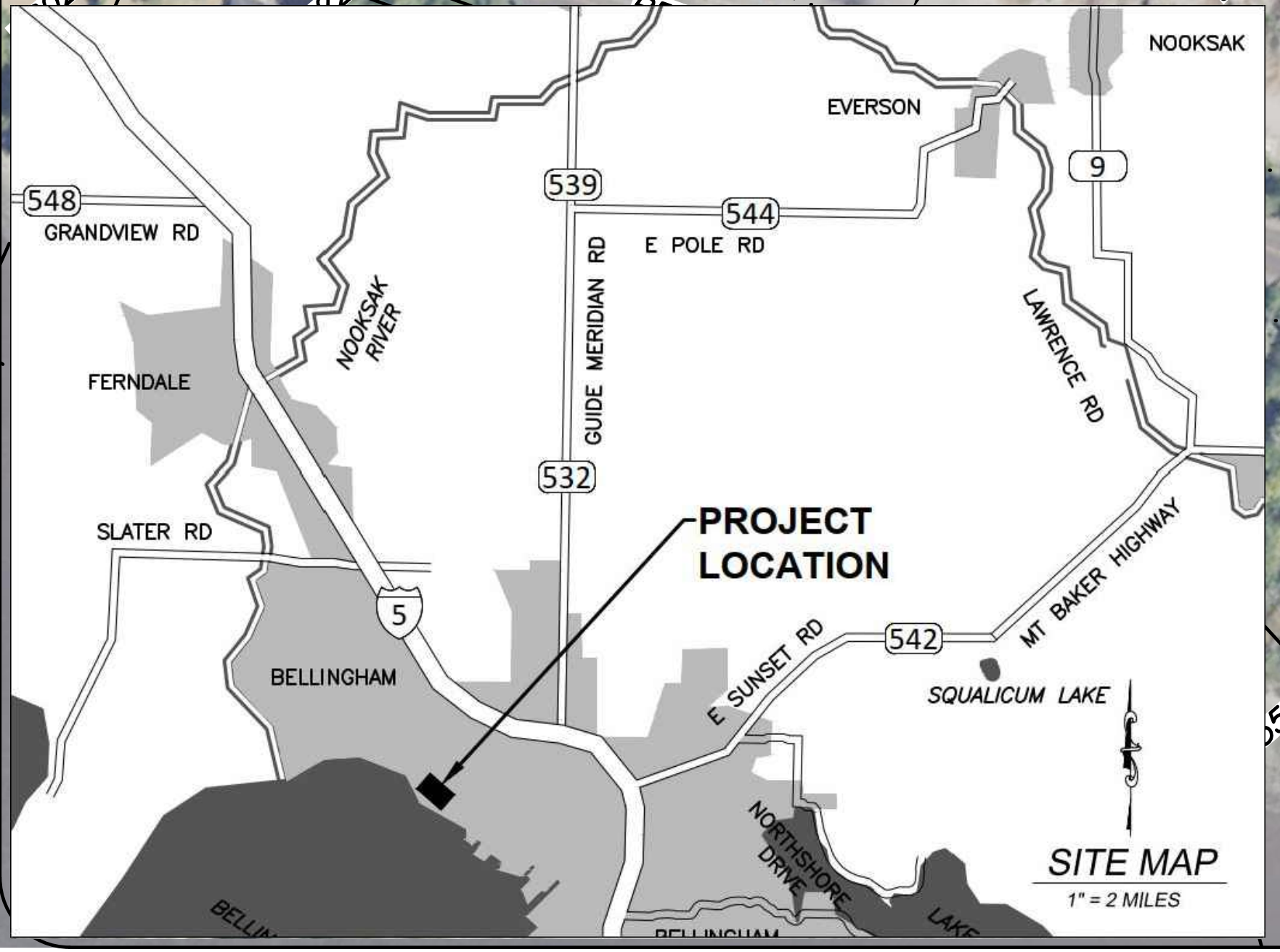


**ABC RECYCLING**  
**OVERALL SITE PLAN - 100 SCALE**  
 PRELIMINARY  
 741 MARINE DRIVE  
 BELLINGHAM, WASHINGTON 98226

REV	DATE	DESCRIPTION

PROJECT NUMBER:  
 21029  
 DESIGNED/DRAWN BY:  
 BLS  
 CHECKED BY:  
 SIG  
 ISSUE DATE:  
 10-19-2023

6  
 OF: 25



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October 2023  
Marine Drive Proposed Development Project



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# Wetland Delineation and Critical Areas Report

Prepared for ABC Recycling

October 2023  
Marine Drive Proposed Development Project

# Wetland Delineation and Critical Areas Report

**Prepared for**  
ABC Recycling  
8081 Meadow Avenue  
Burnaby, British Columbia, V3N 2V9  
Canada

**Prepared by**  
Anchor QEA, LLC  
1201 3rd Avenue  
Suite 2600  
Seattle, Washington 98101



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Appendix B	Precipitation Data
Appendix C	Ecology Wetland Ratings Forms and Figures
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## ABBREVIATIONS

DGPS	Differential Geographic Positioning System
Ecology	Washington State Department of Ecology
FAC	facultative
FACW	facultative wetland
HGM	Hydrogeomorphic (Classification system)
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
OBL	obligate wetland
OHWM	ordinary high water mark
PEM	palustrine emergent
PFO	palustrine forested
PHS	Priority Habitats and Species
Project	ABC Recycling Development Project
PSS	Palustrine scrub-shrub
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WCC	Whatcom County Code
WDFW	Washington Department of Fish and Wildlife

# 1 Introduction

ABC Recycling is collecting information for proposed development of a property located on Marine Drive in Whatcom County, Washington, Township 38 North, Range 2 East, Section 44. The Study Area consists of an approximately 18-acre portion of a larger parcel. A vicinity map is shown in Figure 1 and an aerial photograph of the Study Area is shown in Figure 2.

This Wetland Delineation and Critical Areas Report for the Marine Drive Proposed Development Project (Project) provides information regarding the presence of wetlands and streams within the property, as defined in the Whatcom County Code (WCC) Critical Areas Chapter 16.16 (Whatcom County 2020). The wetland boundaries provided in this report document the existing conditions within the Study Area and are intended to be used as part of the environmental analysis for proposed development.

In October 2020, wetland scientists from Anchor QEA, LLC, completed field studies and identified three wetlands within the Study Area (Wetlands A, B, and C). Some surface water was present within Wetland A at the time of the delineation in small depressions and a small unmaintained ditch-like feature. Ponded water was also observed to the south of Wetland A in a gravel-lined ditch along the railroad tracks, which is outside of the Study Area. Ponded water in the ditch adjacent to the railroad was not flowing. The gravel ditch did not connect to another water or culvert and it is assumed that water in the ditch infiltrates within the railroad parcel. In addition, natural resource information does not identify any stream systems within the Study Area or within 700 feet of the Study Area. Because no defined channels were observed within the Study Area outside of wetland boundaries, no delineation of channel ordinary high water marks (OHWMs) within the Study Area was performed.

The following sections describe the methods used in the field investigation and Anchor QEA's findings. Section 2 describes the Study Area, and Section 3 describes the findings of the wetland delineation. Wetland field data forms are included in Appendix A, and precipitation data are included in Appendix B. The Washington State Department of Ecology (Ecology) wetland rating forms and associated figures are included in Appendix C. Photographs of wetland features (taken in October 2020) are included in Appendix D.

## 1.1 Review of Existing Information

As part of the analysis to identify natural resources and critical areas in the Study Area, Anchor QEA wetland scientists reviewed the following sources of information to support field observations:

- Natural Resource Conservation Service (NRCS) Web Soil Survey (USDA 2020)
- U.S. Fish and Wildlife Service (USFWS) Wetlands Mapper for National Wetlands Inventory (NWI) map information (USFWS 2020)
- WCC (Whatcom County 2020)

- Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) maps (WDFW 2020a)
- WDFW SalmonScape website (WDFW 2020b)
- Aerial photographs, Google Earth, October 2020

## 2 Study Area Description

The Study Area is a rectangular-shaped parcel encompassing approximately 18 acres (Figure 2). The western third and a small portion of the eastern edge of the Study Area are undeveloped and the rest is a mix of staging area, storage, and active maintenance for shipping and receiving. Vegetation within the undeveloped portions of the Study Area includes a variety of native and non-native tree, shrub, grass, and herbaceous species associated with upland and wetland habitats. The western third of the Study Area is forested and dominated by deciduous trees with a few conifers and a dense understory of native shrubs. The eastern end of the parcel is a dense scrub-shrub habitat dominated by primarily invasive species. The developed central core of the parcel has little to no vegetation and is primarily compacted gravel, rock, and recycled crushed concrete.

Land use surrounding the Study Area is dominated by active railroad tracks to the south, a paved two lane road (Marine Drive) with sidewalks to the north, an undeveloped forested/scrub-shrub area to the west, and commercial property with a parking lot and mowed and maintained grass to the east. A property (Lehigh Cement) with industrial land use is located south of the Study Area across the railroad tracks.

### 2.1 Topography

The topography of the Study Area is relatively level, with higher elevation to the northwest of 101 feet and sloping gradually to the low elevation at 71 feet in the southeast extent of the parcel. There are gentle slopes in the western forested area and the eastern end but relatively no slope in the developed interior. The forested area includes a mosaic of upland hummocks and wetland depressions.

### 2.2 Soils

The NRCS Web Soil Survey (USDA 2020) identifies one soil series within the Study Area: Urban land–Whatcom–Labounty complex, 0% to 8% slopes. The NRCS identifies portions of the Whatcom–Labounty complex as hydric with non-hydric inclusions. Approximately half of the Study Area also has modified soils that support historical and current industrial uses of storage/staging activities. The soils are modified with crushed concrete, angular rock, and mixed grades of sand and fines.

In Section 3.2, Wetland Delineation Results, sample plot soil profiles are described for the wetlands within the Study Area. Soils data collected at each sample plot are provided in the field data forms in Appendix A. Soils observed in the sample plots were generally consistent in texture, color, and soil profile with the mapped soil series.

## 2.3 Hydrology

The Project is located in the Nooksack Basin Water Resource Inventory Area 1 (Ecology 2019). Hydrologic characteristics in the Study Area are influenced by regional groundwater, direct precipitation, and surface water runoff. No defined stream channels were identified within the Study Area during the investigation; however, a small ditch-like channel was observed within Wetland A. There is an unnamed SalmonScape-mapped intermittent/ephemeral stream located about 750 feet west of the Study Area. Another SalmonScape-mapped perennial stream (Little Squalicum Creek) is approximately 1,400 feet east of the Study Area (WDFW 2020b). At the time of the delineation, water was present within Wetland A in small depressions and a unmaintained ditch-like channel. .

Precipitation levels in Bellingham were above average in August but below average in September and October, as shown in the precipitation data in Appendix B.

Sample plot hydrology is described for the wetlands in Section 3.2, Wetland Delineation Results. Hydrology data collected at each sampling plot are provided in the field data forms in Appendix A.

## 2.4 Plant Communities and Habitats

Vegetation within the Study Area includes a variety of native and non-native tree, shrub, grass, and herbaceous species associated with upland and wetland habitat. The western third of the Study Area is dominated by a forested habitat with a dense understory of native shrubs and ferns. The eastern quarter of the Study Area is a mix of mostly native and non-native shrubs and some scattered trees. The USFWS Wetlands Mapper for NWI Map Information identifies two wetlands within the Study Area as palustrine scrub-shrub (PSS) wetland habitats (USFWS 2020). WDFW PHS maps (WDFW 2020a) also identify the same areas as freshwater wetland habitats within the Study Area. Figure 4 shows the NWI information for the Study Area.

Wetland and upland vegetation for the wetland areas is described in Section 3.2, Wetland Delineation Results. Vegetation data collected at each sampling plot are provided in the field data forms in Appendix A.

## 3 Wetland Delineation

On October 20 and 26, 2020, Anchor QEA wetland scientists performed a wetland delineation and wetland rating analysis of wetland habitat in the Study Area. Three wetlands (Wetlands A, B, and C) were identified and delineated. Wetland A is a narrow depressional and slope wetland system that hugs the eastern extent of the Study Area. Wetland B is a large depressional/slope wetland system located within the forested habitat in the western third of the Study Area and across the north central scrub-shrub extent of the Study Area. Wetland C is a very small isolated depressional wetland in the northwest corner of the forested Study Area.

A complete description of Wetlands A, B, and C is provided in Section 3.2, Wetland Delineation Results. Vegetation, soils, and hydrology data collected at each data plot are provided in the field data forms in Appendix A.

### 3.1 Methods

This section describes the methodology used to perform the wetland delineation, including the review of existing information (described in Section 1.1) and field investigation procedures. These methods are consistent with current federal and state agency requirements, as well as local (Whatcom County) jurisdiction requirements, for performing wetland delineations and identifying protective wetland buffer widths.

#### 3.1.1 Data Collection

As specified by the WCC (Whatcom County 2020), the wetland delineation was conducted according to the methods defined in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (USACE 2010), and *Ecology's Washington State Wetland Identification and Delineation Manual* (Ecology 1997). Soil colors were classified by their numerical description, as identified on a Munsell Soil Color Chart (Munsell 1994).

The U.S. Army Corps of Engineers (USACE; Environmental Laboratory 1987) defines wetlands 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. Wetlands generally include swamps, marshes, bogs, and similar areas.” The method for delineating wetlands is based on the presence of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation is “the macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.” Hydric soils are “formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.”



Wetland hydrology “encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season” (Ecology 1997). Data collection methods for each of these parameters are described in the following subsections.

A total of 14 data plots were sampled and recorded, and each sample plot was identified numerically with odd numbers representing the wetland plot and the even numbers representing the upland plot (e.g., DP-01 [Wet], DP-02 [Up], DP-03 [Wet], DP-04 [Up]). Vegetation, soils, and hydrology information were collected at each of the plots and recorded on field datasheets. Field data forms are provided in Appendix A. Wetland boundaries were determined based on plot data and visual observations of the wetland. Each wetland location, wetland boundary, and data plot location was flagged for potential survey, and recorded using a Trimble Differential Geographic Positioning System (DGPS) unit.

### 3.1.1.1 Vegetation

Plant species occurring in each plot were recorded on field data forms, with one data form per plot (Appendix A). Percent cover for each plant species was estimated in the plot, and dominant plant species were identified. At each plot, trees within a 30-foot radius, shrubs within a 15-foot radius, and emergents within a 3-foot radius from the center of the plot were identified and recorded. A plant indicator status, designated by USFWS (Reed 1988, 1993), was assigned to each species, and a determination was made as to whether the vegetation in the plot was hydrophytic. To meet the hydrophytic parameter, more than 50% of the dominant species, with 20% or greater cover, must have an indicator of obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC). Table 1 provides the wetland indicator status categories.

**Table 1**  
**Wetland Plant Indicator Definitions**

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

### 3.1.1.2 Soils

Soils were sampled in each plot and evaluated for hydric soil indicators. Soil pits were dug to a depth of 18 inches, unless prevented by impenetrable substrate. Hydric soil indicators include low soil matrix chroma, gleying, and redoximorphic (or “redox”) features. Redox features are spots of contrasting color that occur within the soil matrix (the predominant soil color). Gleyed soils are predominantly bluish, greenish, or grayish in color. Soils having a chroma of 2 or less are positive indicators of hydric soils (Environmental Laboratory 1987; USACE 2010).

### 3.1.1.3 Hydrology

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

### 3.1.1.4 Other Data Sources

Existing information was referenced to identify potential wetlands or site characteristics indicative of wetlands in the Study Area. The sources of reference information that supported field observations are identified in Section 1.1, Review of Existing Information.

## 3.1.1 *Wetland Classifications*

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

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

### 3.1.2 *State Hydrogeomorphic Classification System*

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

The *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014) incorporates the HGM Classification system as part of the questionnaire for characterizing a wetland's functions. The rating system uses only the highest grouping in the classification, i.e., wetland class. Wetland classes are based on geomorphic settings, such as Riverine, Slope, Lake-fringe, or Depressional. A classification key is provided within the rating form to help identify which of the following HGM Classifications apply to the wetland: Riverine, Depressional, Slope, Lake-fringe, Tidal Fringe, or Flats.

### 3.1.3 *Wetland Ratings*

Wetland ratings were determined using the most current version of Ecology guidance in the *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014) and according to Whatcom County wetland rating criteria, as defined in the WCC (Whatcom County 2020).

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

Per Ecology's rating system, wetlands are categorized according to the following criteria and to points given:

- **Category I wetlands (23 or more points)** represent a unique or rare wetland type, are more sensitive to disturbance, or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime.
- **Category II wetlands (20 to 22 points)** are difficult, though not impossible, to replace, and provide high levels of some functions.

- **Category III wetlands (16 to 19 points)** have moderate levels of functions. They have been disturbed in some ways and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.
- **Category IV wetlands (less than 16 points)** have the lowest levels of functions and are often heavily disturbed.

The WCC classifies wetlands into four categories (Categories I, II, III, and IV) based on the updated 2014 Ecology Wetland Rating System for Western Washington (Whatcom County 2020).

### 3.1.4 Wetland Functional Assessment

The functional values of wetlands were rated according to *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014). Using Ecology’s system, wetlands were rated based on a point system where points were awarded to three functional value categories (water quality improvement, hydrologic functions, and habitat). Detailed scoring, based on Ecology wetland rating forms and figures, is provided in Appendix C.

## 3.2 Wetland Delineation Results

This section describes the methodology used to perform the wetland delineation, including the review of existing information (described in Section 1.1) and field investigation procedures.

### 3.2.1 Wetland A

Wetland A is an approximately 0.58-acre (25,293-square-foot) wetland with mostly PSS vegetation classes and a small area of PFO with depression and slope HGM classes (Figure 5). Wetland A is a long, narrow system that flanks the northeast and eastern boundary of the Study Area. Due to the narrow wetland shape, habitat features associated with Wetland A are limited; four data plots were established to identify the wetland boundary in key areas that represent the overall vegetation and delineate changes in wetland shape. In addition to the four established data plots, soil and hydrology characteristics were consistently examined throughout the Study Area in both the scrub-shrub and small forested habitats to identify the wetland boundary because vegetation changes between the upland and wetland areas were often very subtle or indistinct. Photographs of Wetland A (taken in October 2020) are presented in Appendix D.

The entire boundary of Wetland A was delineated during the investigation. Wetland A includes two distinct vegetation communities: the northern 95% of the wetland, which is scrub-shrub dominated, and a small patch of forested habitat in the southeast corner. Dominant vegetation in the scrub-shrub habitat includes, Himalayan blackberry (*Rubus armeniacus*: FAC), English hawthorn (*Crataegus monogyna*: FAC), red-twigged dogwood (*Cornus sericea*: FACW), and Chinese privet (*Ligustrum sinense*: FAC). The privet was so dense in areas that no other vegetation was observed due to limited sunlight.

Some emergent species observed in the wetland include reed canarygrass (*Phalaris arundinacea*: FACW) and field horsetail (*Equisetum arvense*: FAC).

The small forested habitat of Wetland A contained the scrub-shrub species but also paper birch (*Betula papyrifera*: FAC) and Scouler's willow (*Salix scouleriana*: FAC). The small forest had a very dense shrub understory of non-native species listed above. The small forested habitat also included a mosaic of hummocks and wetland depressions associated with an old ditch within the wetland boundary.

Dominant buffer vegetation of Wetland A included a maintained mowed lawn to the east and outside of the Study Area. Buffer to the north and south was limited due to paved roads and gravel railroad right-of-way but mostly was dominated by Himalayan blackberry and common snowberry (*Symphoricarpos albus*: FACU). The buffer to the west was more diverse and contained black cottonwood (*Populus trichocarpa*: FAC), red alder (*Alnus rubra*: FAC), Indian plum (*Oemleria cerasiformis*: FACU), and Himalayan blackberry.

Soils in the Wetland A scrub-shrub and forested habitat typically ranged from very dark gray (10YR 3/1) to gray (10YR 5/1) silty loams with redox features typically redish brown (10YR 5/6) to brown (10YR 5/3) below about 10 inches.

Soils in the adjacent forested habitat upland plots typically ranged from very dark grayish brown (10YR 3/2) to dark grayish brown (10YR 4/2) to dark brown (10YR 3/3) silty clay loams and sandy loam with no redox features within 18 inches of the surface. The soils appeared mixed and were likely placed as fill or excavated at one point.

Water was present within Wetland A at the time of the delineation in small depressions and within a small relic ditch that runs north to south. Ponded water was observed extending outside of the wetland within a gravel-lined ditch within the railroad parcel to the south. The ponded water did not connect to another waterbody and appears to infiltrate within the railroad parcel.

In the Wetland A scrub-shrub habitat, soil saturation was often within 12 inches of the surface and the water table was typically located within a few inches below saturation. In small depressions standing water was only a few inches deep, but up to 12 inches deep within the ditch that runs north to south.

Data for Wetland A were collected at four data plots: DP-01 through DP-04 (Appendix A). The wetland plots contained indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. The upland plots typically had indicators of hydrophytic vegetation and no hydrology, and they lacked indicators of hydric soils.

### 3.2.2 Wetland B

Wetland B is an approximately 4.02-acre (174,985-square-foot) wetland with a PSS and PFO vegetation class and depressional and slope HGM classes (Figure 5). The entire boundary of Wetland B was delineated within the Study Area. Wetland vegetation is dominated by paper birch, Scouler's willow, Pacific willow (*Salix lasiandra*: FACW), red-osier dogwood, twinberry (*Lonicera involucrate*: FAC), and Himalayan blackberry with some understory of piggyback plant (*Tolmiea menziesii*: FAC) field horsetail, and slough sedge (*Carex obnupta*: OBL). Photographs of Wetland B (taken in October 2020) are presented in Appendix D.

Dominant buffer vegetation of Wetland B includes red alder, Big-leaf maple (*Acer macrophyllum*: FACU) western red cedar (*Thuja plicata*: FAC), English hawthorn, Nootka rose (*Rosa nutkana*: FAC), Indian plum, snowberry, and Himalayan blackberry.

Soils consisted of very dark gray (10YR 3/1) to gray (10YR 5/1) silty loams with dark yellowish brown (10YR 5/6) redox features below about 10 inches. Soils in the upland plot were very dark grayish brown (10YR 3/2) to very dark gray (10YR 3/1) silt loam with no redox features within 18 inches of the surface. Upland soils often contained crushed rock and gravel from adjacent industrial areas.

In the Wetland B data plots, soil saturation varied due to the size and slope or depressional elements of the wetland. The water table was typically located within 12 inches of the surface. In some areas no water table was found, but other hydrology indicators were present such as matted leaves, oxidized rhizospheres, and closed depressions with no vegetation, indicating frequent standing water within the wetland. In the upland data plot the only saturation was near the surface due to recent precipitation events.

Data were collected at six data plots: DP-05 through DP-12 (Appendix A). The wetland plots contained indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. The upland plots often had indicators of hydrophytic vegetation, but hydrology and hydric soil indicators were lacking.

### 3.2.3 Wetland C

Wetland C is an approximately 0.11-acre (4,577-square-foot) wetland with a PSS vegetation class and depressional HGM class (Figure 5). The entire boundary of Wetland C was delineated within the Study Area. Wetland vegetation is dominated by Scouler's willow and red-osier dogwood. The dogwood and willow were so thick that no herbaceous or emergent vegetation was observed. Photographs of Wetland C (taken in October 2020) are presented in Appendix D.

Dominant buffer vegetation of Wetland C was very similar to the buffer of Wetland B and included red alder, Big-leaf maple, paper birch, Western red cedar, Nootka rose, Indian plum, snowberry, and bracken fern (*Pteridium aquilinum*: FACU).

Soils consisted of very dark gray (10YR 3/1) to gray (10YR 5/1) silty loams with dark yellowish brown (10YR 5/6) redox features below about 10 inches. Soils in the upland plot were very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3) silt loam with no redox features within 18 inches of the surface.

In the Wetland C data plots, soil saturation was within 16 inches of the surface but in the middle of the wetland depression, saturation was within 4 inches of the soil surface. Wetland C is a closed depression with no emergent vegetation, indicating frequent standing water within the wetland and low light due to dense shrub-scrub habitat. In the upland data plot the only saturation was near the surface due to recent precipitation events.

Data were collected at two data plots: DP-13 and DP-14 (Appendix A). The wetland plot contained indicators of hydrophytic vegetation, wetland hydrology, and hydric soils. The upland plot had indicators of hydrophytic vegetation, but hydrology and hydric soil indicators were lacking.

### 3.3 Regulatory Framework

Guidance from USFWS, Ecology, and Whatcom County was used to determine the wetland classifications. Information and excerpts from the specific guidance language are provided in the following subsections.

#### 3.3.1 U.S. Fish and Wildlife Service Classification

The wetlands identified in the Study Area have been classified using the system developed by Cowardin et al. (1979) for use in the NWI. Table 2 lists the USFWS classifications for the wetlands and their connections to surface water.

**Table 2**  
**U.S. Fish and Wildlife Service Wetland Classifications**

Wetland	USFWS Classification	Surface Water Connection
Wetland A	PSS	None
Wetland B	PFO, PSS	None
Wetland C	PSS	None

#### 3.3.2 Ecology Rating, Classification, and Functions and Values Scores

Per the WCC (Whatcom County 2020), wetland ratings are determined using Ecology’s *Washington State Wetlands Rating System – Western Washington: 2014 Update* (Hruby 2014). Under the 2014

Ecology wetland rating systems, Wetland A is a Category IV wetland and Wetland B and C are rated as Category III wetlands. Table 3 lists the 2014 Ecology and local (Whatcom County) wetland rating and classification.

**Table 3**  
**Summary of Wetland Classes and Ratings Using Ecology 2014 Wetlands Rating Systems**

Wetland	Area (acres)	HGM Classification	2014 <sup>1</sup> State Rating (Ecology)	Local Rating (Whatcom County) <sup>2</sup>
Wetland A	0.58	Slope and Depressional	IV	IV
Wetland B	4.02	Slope and Depressional	III	III
Wetland C	0.11	Depressional	III	III

Notes:

1. Hruby, T., 2014. *Washington State Wetlands Rating System for Western Washington: 2014 Update*. Publication No. 14-06-029. Olympia, WA: Washington State Department of Ecology.
2. Whatcom County, 2020. Whatcom County Code. Accessed Nov. 2, 2020. Available at: <http://www.codepublishing.com/wa/snohomishcounty/>.

For the 2014 Ecology wetland rating system (Hruby 2014), a low, moderate, or high rating is based on three functions: 1) Water Quality Improvement; 2) Hydrologic; and 3) Habitat. Within each of these three functions are three subfunction categories: 1) Site Potential; 2) Landscape Potential; and 3) Value. Each of these subfunction categories is rated as low, moderate, or high. Wetland functional values and scores for Wetlands A, B, and C under the 2014 Ecology rating system are shown in Table 4. The 2014 Ecology wetland rating forms and figures are provided in Appendix C.

**Table 4**  
**Summary of Functions and Values 2014 Wetland Rating Scores**

Wetland and Function	Water Quality Improvement	Hydrologic	Habitat	Total Functions Score <sup>1</sup>
<b>Wetland A</b>				
Site Potential	Moderate	Low	Low	-
Landscape Potential	High	High	Low	-
Value	Low	Low	Moderate	-
Score Based on Rating <sup>1</sup>	6	5	4	15
<b>Wetland B</b>				
Site Potential	Moderate	Moderate	Moderate	-
Landscape Potential	High	High	Low	-
Value	Low	Low	Moderate	-
Score Based on Rating <sup>1</sup>	6	6	5	17
<b>Wetland C</b>				



Wetland and Function	Water Quality Improvement	Hydrologic	Habitat	Total Functions Score <sup>1</sup>
Site Potential	Moderate	High	Low	-
Landscape Potential	High	Moderate	Low	-
Value	Low	Low	Moderate	-
Score Based on Rating <sup>1</sup>	6	6	4	16

Note:

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

### 3.4 Wetland Functional Assessment

The following subsections provide a description of the functions of Wetlands A, B, and C based on the 2014 Ecology wetland rating system.

#### 3.4.1 Water Quality Improvement Functions

All three wetlands have the opportunity to improve water quality based on their location within a mixed heavy to light industrial environment and the presence of a railroad right-of-way to the south and industrial/commercial land use areas outside the Study Area.

Wetlands A, B, and C have a moderate function score for the “site potential” to improve water quality functions due to the lack of surface water outflows from the wetlands and the depressional nature of the wetlands, which influences their ability to trap sediments during storm events. None of the wetlands have soil characteristics that include clay or organic material, which contributes to the moderate or low function scores.

Wetlands A, B, and C all have a high function score for the “landscape potential” to support water quality functions of the site because of the potential of the surrounding land uses to generate pollutants and discharge stormwater to the wetlands. Past and active homeless encampments within and adjacent to all three wetlands contribute to the high function score.

Wetlands A, B, and C have a low function score to provide water quality improvement “value” to society because they are not located in the vicinity of aquatic resources that are on the Ecology 303(d) list or connected to a waterbody that has a Total Maximum Daily Load for the basin or subbasin. All three wetlands have a low function score because no surface water flows from the wetlands or discharges to other waterbodies outside of the Study Area.

#### 3.4.2 Hydrologic Functions

Wetland A provides a low “site potential” for hydrologic function due to there being an unconstricted outlet but no evidence of ponding within the wetland more than 0.5 foot. Wetlands B

and C both have a high “site potential” due to not having a more constricted or no surface water outflow.

Wetlands A and B provide a high function score for “landscape potential” to improve hydrologic function due to the close proximity to development and active stormwater inputs. Wetland C has a lower “landscape potential” of moderate due to its smaller size and intact forest surrounding more than 75% of its boundary within the Study Area.

All three wetlands have low function scores to provide “value” to society because they are located in a landscape where any surface water infiltrates and does not connect to other waterbodies. Similarly, none of the wetlands are part of a regional flood control plan to maximize storage or reduce flooding downgradient from the Study Area.

### **3.4.3 *Habitat Functions***

Wetlands A and C have a low function habitat “site potential” score because they lack diversity in Cowardin classes, hydroperiods, and complexity of plant species. Wetland B has a moderate function habitat “site potential” score due to the size of the wetland, diversity of Cowardin plant classes, its complexity, and the occurrence of multiple hydroperiods.

Wetlands A, B, and C have low scores for the “landscape potential” due to the intensity of industrial and commercial development that surrounds the Study Area. There are limited patches of undisturbed habitats within a 1 kilometer of the Study Area. The characteristics of the disturbed habitats surrounding the wetlands and the land-use intensity of the surrounding area limit habitat function.

Wetlands A, B, and C have moderate habitat scores as it relates to habitat “value.” All three wetlands provide habitat functions to society because of the proximity of WDFW priority habitats in the vicinity of the wetlands.

## **3.5 Whatcom County Wetland Buffer Guidance**

Required wetland buffers have been identified according to the current WCC Chapter 16.16.630 (Whatcom County 2020). The WCC identifies minimum protective buffer widths based on the wetland category, land use intensity, and the Ecology habitat rating score, per the 2014 Ecology rating system. Wetlands A is a Category IV with an Ecology habitat rating score of 4. Wetlands B and C are both Category III wetlands with Ecology habitat rating scores of 5 and 4 points respectively.

The limits, extents, and functions of wetland buffers are defined in the Critical Areas Chapter of the WCC. Per WCC 16.16.630 A, “Wetland buffers shall be measured horizontally from a perpendicular line established by the wetland boundary based on the base buffer width identified in Table 1. Buffers shall not include areas that are functionally and effectively disconnected from the wetland by an existing,

legally established road or other substantial developed surface.” The central portion of the Study Area is maintained and has been cleared and regraded or filled as part of historical activities, with storage of equipment scattered throughout, as is shown as “Extent of Historically Developed Area” in Figure 5. This area consists of either compacted gravel, sand, and rock fill or regraded soils and stored equipment from past historical land use activities. Anchor QEA biologists delineated and mapped the maintained fill or regraded area using visual observation, shovel probes, documenting existing site equipment and debris, and collecting locations using a DGPS unit. The historically developed area was mapped west of Wetland A and south and east of Wetland B. The historically developed area was found to be functionally disconnected from the wetland and existing wetland buffers due to the maintained and developed surfaces. Buffers were applied to Wetlands A and B and extended to the edge of the delineated fill following the WCC 16.16.630 A.

Wetlands A and B are both adjacent to Study Area activities that are considered high land use intensity. Wetland A is a Category IV wetland with a habitat rating score of 4, which requires a 50-foot buffer be applied. Wetland B is a Category III wetland with a habitat rating score of 5, which requires a 150-foot buffer be applied due to the high land use intensity. Wetland C is unusual because the adjacent land use intensity is low due to the undisturbed forested habitat that surrounds more than 75% of the wetland. There are currently no proposed changes to the forested area adjacent to Wetland C so a buffer of 50 feet was applied to this Category III wetland. Wetland boundaries and buffers are shown in Figure 5. Table 5 summarizes WCC ratings and buffer widths based on the 2014 Ecology rating system and land use intensity.

**Table 5  
Wetland Rating and Standard Buffer Widths**

Wetland	2014 State Rating (Ecology)	Local Rating (Whatcom County)	Ecology Habitat Rating Score	Low-Intensity Land Use Buffer Width (feet) <sup>1</sup>	High-Intensity Land Use Buffer Width (feet) <sup>2</sup>
Wetland A	IV	IV	4	-	50
Wetland B	III	III	5	-	150
Wetland C	III	III	4	50	-

Note:

1. Whatcom County, 2020. Whatcom County Code. Accessed Nov. 2, 2020. Available at: <https://www.codepublishing.com/WA/WhatcomCounty/>

### 3.6 Wetland Delineation and Typing Limitations

Wetland identification is an inexact science, and differences of professional opinion occasionally occurs between trained individuals. Final determinations for wetland boundaries and typing concurrence or adjustments to these are the responsibility of the regulating resource agency. Wetlands are, by definition, transitional areas; their boundaries can be altered by changes in

hydrology or land use. In addition, the definition of jurisdictional wetlands may change. If a physical change occurs in the basin, or if 3 years pass before the proposed project is undertaken, another wetland survey should be conducted. The results and conclusions expressed herein represent Anchor QEA's professional judgment based on the information available. No other warranty, expressed or implied, is made.

## 4 References

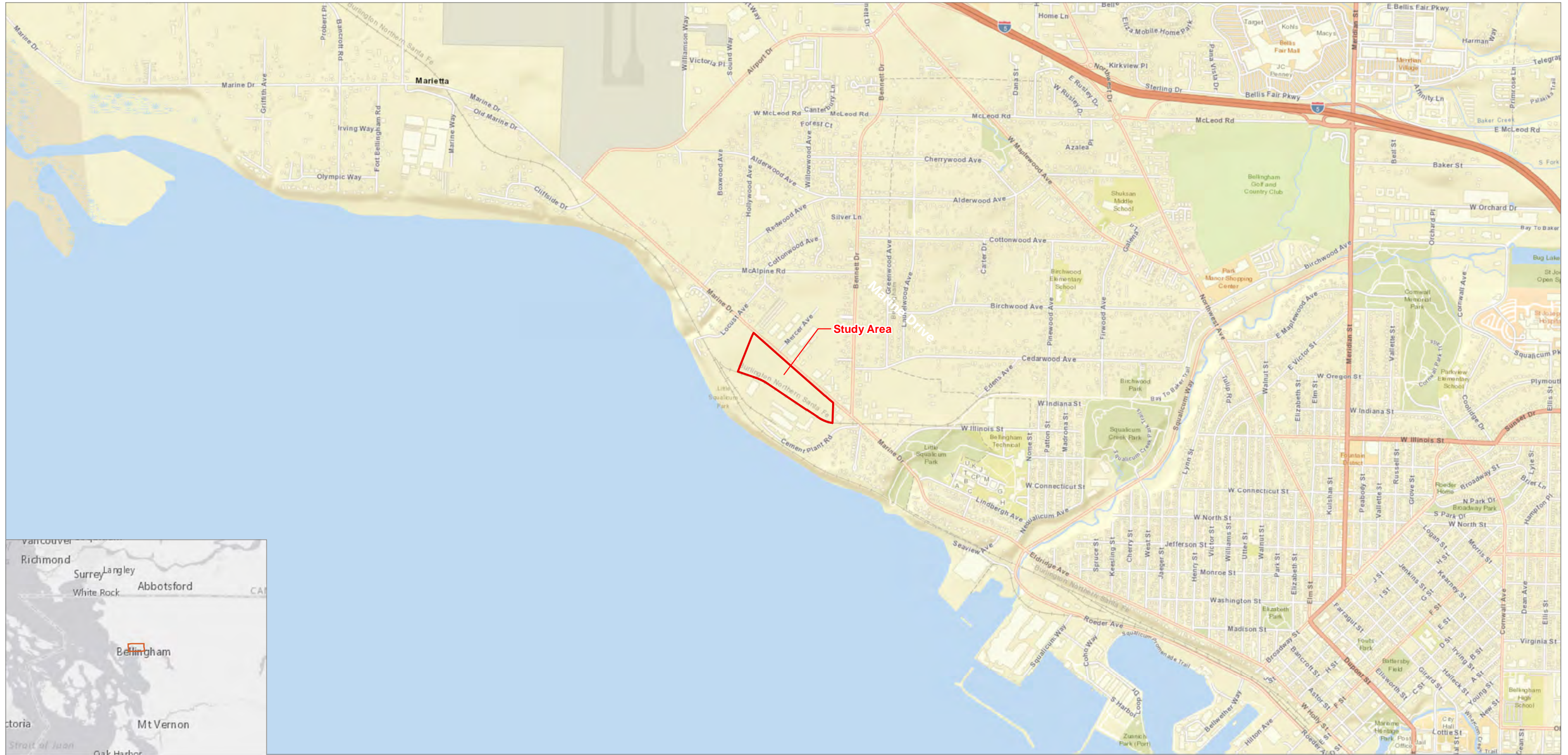
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## Figures

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**LEGEND:**  
 Study Area

  
  
 0 4,000  
 Feet

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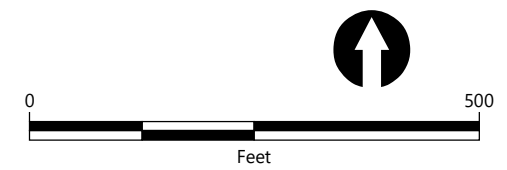


**Figure 1**  
**Vicinity Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project





**LEGEND:**  
Study Area





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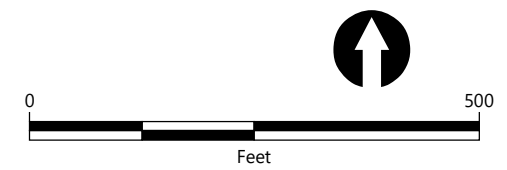


**Figure 2**  
**Aerial Overview Map**  
Wetland Delineation and Critical Areas Report  
Marine Drive Proposed Development Project



**LEGEND:**

-  Study Area
-  Urban land - Whatcom-Labounty complex, 0 to 8 percent slopes

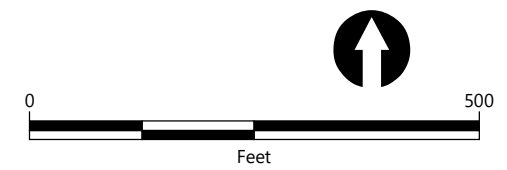


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**LEGEND:**

- Study Area
- Freshwater Forested/Shrub Wetland (PSSC)
- Riverine (R4SBC)
- Estuarine and Marine Wetland (E2AB/USN)
- Estuarine and Marine Wetland (E2USN)
- Estuarine and Marine Deepwater (E1UBL)



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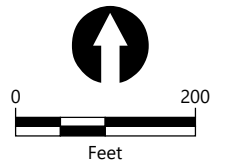


**Figure 4**  
**USFWS National Wetlands Inventory Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
  - Extent of Historically Developed Area
  - Delineated Wetland
  - 1-Foot Contour
  - Wetland Buffer
  - Data Plot

- NOTES:**
1. Contours are from topographic survey conducted by Wilson Engineering. May 2021.
  2. Horizontal datum is NAD83 Washington State Plane North Zone, U.S. Feet.
  3. Vertical datum is North American Vertical Datum of 1988, Feet.



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**Figure 5**  
**Wetland and Wetland Buffer Delineation Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project

# Appendix A

## Field Data Forms

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-01  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): Hillslope/Depression Mosaic Local relief (concave, convex, none): Concave Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

**VEGETATION**

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>					
<u>Sapling/Shrub Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Prevalence Index Worksheet:</b>	
1. <u>Cornus sericea</u>	<u>60</u>	<u>Yes</u>	<u>FACW</u>	Total % Cover of: _____ Multiply by: _____	
2. <u>Crataegus monogyna</u>	<u>10</u>	<u>No</u>	<u>FAC</u>	OBL species <u>0</u> x1 = <u>0</u>	
3. <u>Ligustrum sinense</u>	<u>30</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>60</u> x2 = <u>120</u>	
4. _____	_____	_____	_____	FAC species <u>45</u> x3 = <u>135</u>	
5. _____	_____	_____	_____	FACU species <u>0</u> x4 = <u>0</u>	
50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u>					
<u>Herb Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	UPL species <u>0</u> x5 = <u>0</u>	
1. <u>Equisetum arvense</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	Column Totals: <u>105</u> (A) <u>255</u> (B)	
2. _____	_____	_____	_____	Prevalence Index = B/A = <u>2.4</u>	
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
50%= <u>2.5</u> 20%= <u>1</u> Total Cover: <u>5</u>					
<u>Woody Vine Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Hydrophytic Vegetation Indicators:</b>	
1. _____	_____	_____	_____	_____ 1 - Rapid Test for Hydrophytic Vegetation	
2. _____	_____	_____	_____	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
				<input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup>	
				_____ 4 - Morphological Adaptation <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
				_____ 5 - Wetland Non-Vascular Plants <sup>1</sup>	
				_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.					
Total Cover: <u>0</u>				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____	
% Bare Ground in Herb Stratum <u>95</u> % Cover of Biotic Crust _____					

Remarks: The dogwood and privet scrub-shrub layer was so dense there was almost no herb layer. The privet has become vine-like and is climbing the dogwood.

**SOIL**

Sampling Point: DP-01

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	10YR 3/1	100					SiL	
10-12	10YR 3/1	95	10YR 4/6	5	C	M	SiL	Bright redox concentrations, saturation
12-18	10YR 5/1	85	10YR 4/6	5	C	M	SiL	Redox in the depleted layer.
	10YR 6/3	10						

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

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

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: Transition from dark soil above 12 inches to depleted layer below 12 inches was abrupt.

**HYDROLOGY**

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

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present?      Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>16</u> Saturation Present?        Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Evidence (water stained leaves) of ponded water in depression was observed. The dogwood roots seem elevated due to saturation or seasonal inundation.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-02  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

**VEGETATION**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Dominance Test worksheet:
1. <u>Populus balsamifera</u>	15	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u>Alnus rubra</u>	10	Yes	FAC	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50%= <u>12.5</u> 20%= <u>5</u> Total Cover: <u>25</u>				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Prevalence Index Worksheet:
1. <u>Rubus armeniacus</u>	15	No	FAC	Total % Cover of: _____ Multiply by: _____
2. <u>Rubus ursinus</u>	5	No	FACU	OBL species <u>0</u> x1 = <u>0</u>
3. <u>Ligustrum sinense</u>	15	No	FAC	FACW species <u>0</u> x2 = <u>0</u>
4. <u>Symphoricarpos albus</u>	15	No	FACU	FAC species <u>105</u> x3 = <u>315</u>
5. <u>Crataegus monogyna</u>	50	Yes	FAC	FACU species <u>40</u> x4 = <u>160</u>
50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u>				UPL species <u>0</u> x5 = <u>0</u>
Column Totals: <u>145</u> (A) <u>475</u> (B)				Prevalence Index = B/A = <u>3.3</u>
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Indicators:
1. <u>Pteridium aquilinum</u>	20	Yes	FACU	1 - Rapid Test for Hydrophytic Vegetation
2. _____	_____	_____	_____	<u>X</u> 2 - Dominance Test is >50%
3. _____	_____	_____	_____	3 - Prevalence Index is ≤3.0 <sup>1</sup>
4. _____	_____	_____	_____	4 - Morphological Adaptation <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	5 - Wetland Non-Vascular Plants <sup>1</sup>
6. _____	_____	_____	_____	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
7. _____	_____	_____	_____	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50%= <u>10</u> 20%= <u>4</u> Total Cover: <u>20</u>				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes <u>X</u> No _____
2. _____	_____	_____	_____	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>80</u> % Cover of Biotic Crust _____				

**Remarks:** The upland data plot was located on a steep hillside of folded soils and fill that did not have normal soil structure and drainage of a steep slope.



**SOIL**

Sampling Point: DP-02

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR 3/2	100					SiL	wet at surface with gravel
6-18	10YR 4/2	50					SiL	Folded soil with sand and gravel
	10YR 3/2	50					SiL	gravel in soil

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

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

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes _____ No <u>X</u>
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Remarks: Soils seemed folded in layers with gravel and sand.

**HYDROLOGY**

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

<b>Field Observations:</b> Surface Water Present?    Yes _____ No <u>X</u> Depth (inches): _____ Water table Present?      Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present?        Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____ No <u>X</u>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was saturated due to recent rain events. No hydrology observed below 2 inches.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-03  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): Road side depression/ditch Local relief (concave, convex, none): Concave Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes  No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

**VEGETATION**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Dominance Test worksheet:</b>	
1. <u>Pinus resinosa</u>	5	Yes	NI	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>4</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
50%= <u>2.5</u> 20%= <u>1</u> Total Cover: <u>5</u>					
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Prevalence Index Worksheet:</b>	
1. <u>Cornus sericea</u>	50	Yes	FACW	Total % Cover of: _____ Multiply by: _____	
2. <u>Crataegus monogyna</u>	20	Yes	FAC	OBL species <u>0</u> x1 = <u>0</u>	
3. <u>Ligustrum sinense</u>	15	No	FAC	FACW species <u>50</u> x2 = <u>100</u>	
4. <u>Rubus armeniacus</u>	15	No	FAC	FAC species <u>90</u> x3 = <u>270</u>	
5. _____	_____	_____	_____	FACU species <u>0</u> x4 = <u>0</u>	
50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u>				UPL species <u>0</u> x5 = <u>0</u>	
Column Totals: <u>140</u> (A) <u>370</u> (B)				Prevalence Index = B/A = <u>2.6</u>	
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>Equisetum arvense</u>	15	Yes	FAC	_____ 1 - Rapid Test for Hydrophytic Vegetation	
2. <u>Agrostis stolonifera</u>	25	Yes	FAC	<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
3. _____	_____	_____	_____	<input checked="" type="checkbox"/> 3 - Prevalence Index is $\leq 3.0^1$	
4. _____	_____	_____	_____	_____ 4 - Morphological Adaptation <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
5. _____	_____	_____	_____	_____ 5 - Wetland Non-Vascular Plants <sup>1</sup>	
6. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
7. _____	_____	_____	_____	_____ <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
8. _____	_____	_____	_____		
9. _____	_____	_____	_____		
50%= <u>20</u> 20%= <u>8</u> Total Cover: <u>40</u>					
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Hydrophytic Vegetation Present?</b>	
1. _____	_____	_____	_____	Yes <input checked="" type="checkbox"/> No _____	
2. _____	_____	_____	_____		
Total Cover: <u>0</u>					
% Bare Ground in Herb Stratum <u>60</u> % Cover of Biotic Crust _____					

Remarks: The scrub-shrub layer was so dense that there was limited herb layer.

**SOIL**

Sampling Point: DP-03

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	10YR 3/1	100	10YR 4/6	5	C	M	SiL	OR's in upper 6 inches. Sand and gravel.
12-16	10YR 4/1	90	10YR 4/6	10	C	M	SiL	Redox concentrations, saturation
16-18	10YR 5/1	80	10YR 4/6	20	C	M	SiL	Redox in the depleted layer.

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

<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <p>___ Histosol (A1)</p> <p>___ Histic Epipedon (A2)</p> <p>___ Black Histic (A3)</p> <p>___ Hydrogen Sulfide (A4)</p> <p><input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p>___ Thick Dark Surface (A12)</p> <p>___ Sandy Muck Mineral (S1)</p> <p>___ Sandy gleyed Matrix (S4)</p>	<p>___ Sandy Redox (S5)</p> <p>___ Stripped Matrix (S6)</p> <p>___ Loamy Mucky Mineral (F1) (<b>except MLRA 1</b>)</p> <p>___ Loamy Gleyed Matrix (F2)</p> <p>___ Depleted Matrix (F3)</p> <p>___ Redox Dark Surface (F6)</p> <p>___ Depleted Dark Surface (F7)</p> <p>___ Redox Depressions (F8)</p>	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <p>___ 2 cm Muck (A10) (<b>LRR B</b>)</p> <p>___ Red Parent Material (TF2)</p> <p>___ Very Shallow Dark Surface (TF12)</p> <p>___ Other (Explain in Remarks)</p> <p><sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p><b>Hydric Soil Present?</b>      Yes <input checked="" type="checkbox"/>      No _____</p>
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Remarks: Oxidized roots in upper 6 inches with sand and gravel from adjacent fill in soil.

**HYDROLOGY**

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

<p><b>Field Observations:</b></p> <p>Surface Water Present?    Yes _____    No <input checked="" type="checkbox"/>    Depth (inches): _____</p> <p>Water table Present?      Yes <input checked="" type="checkbox"/>    No _____    Depth (inches): <u>16</u></p> <p>Saturation Present?        Yes <input checked="" type="checkbox"/>    No _____    Depth (inches): <u>12</u></p> <p>(includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b>      Yes <input checked="" type="checkbox"/>      No _____</p>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Saturated soils at 1 inche with slowly filling water table to 16 inches in pit.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-04  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Convex Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labouny complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan."

**VEGETATION**

<p><u>Tree Stratum</u> (Plot size: _____)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td>50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><u>Sapling/Shrub Stratum</u> (Plot size: _____)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>1. <u>Rubus armeniacus</u></td><td>45</td><td>Yes</td><td>FAC</td></tr> <tr><td>2. <u>Rubus ursinus</u></td><td>10</td><td>No</td><td>FACU</td></tr> <tr><td>3. <u>Crataegus monogyna</u></td><td>20</td><td>Yes</td><td>FAC</td></tr> <tr><td>4. <u>Symphoricarpos albus</u></td><td>25</td><td>Yes</td><td>FACU</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td>50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><u>Herb Stratum</u> (Plot size: _____) <b>CHECK RANKED VALUES</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>1. <u>Pteridium aquilinum</u></td><td>20</td><td>Yes</td><td>FACU</td></tr> <tr><td>2. <u>Hypericum perforatum</u></td><td>20</td><td>Yes</td><td>FACU</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>6. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>7. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>8. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>9. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td>50%= <u>20</u> 20%= <u>8</u> Total Cover: <u>40</u></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><u>Woody Vine Stratum</u> (Plot size: _____)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td>Total Cover: <u>0</u></td> <td></td> <td></td> <td></td> </tr> <tr> <td>% Bare Ground in Herb Stratum <u>60</u> % Cover of Biotic Crust _____</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Absolute % Cover	Dominant Species?	Indicator Status?	1. _____	_____	_____	_____	2. _____	_____	_____	_____	3. _____	_____	_____	_____	4. _____	_____	_____	_____	5. _____	_____	_____	_____	50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>				1. <u>Rubus armeniacus</u>	45	Yes	FAC	2. <u>Rubus ursinus</u>	10	No	FACU	3. <u>Crataegus monogyna</u>	20	Yes	FAC	4. <u>Symphoricarpos albus</u>	25	Yes	FACU	5. _____	_____	_____	_____	50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u>				1. <u>Pteridium aquilinum</u>	20	Yes	FACU	2. <u>Hypericum perforatum</u>	20	Yes	FACU	3. _____	_____	_____	_____	4. _____	_____	_____	_____	5. _____	_____	_____	_____	6. _____	_____	_____	_____	7. _____	_____	_____	_____	8. _____	_____	_____	_____	9. _____	_____	_____	_____	50%= <u>20</u> 20%= <u>8</u> Total Cover: <u>40</u>				1. _____	_____	_____	_____	2. _____	_____	_____	_____	Total Cover: <u>0</u>				% Bare Ground in Herb Stratum <u>60</u> % Cover of Biotic Crust _____				<p><b>Dominance Test worksheet:</b></p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>5</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)</p> <p><b>Prevalence Index Worksheet:</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> </thead> <tbody> <tr> <td>OBL species <u>0</u> x1 = <u>0</u></td> <td></td> </tr> <tr> <td>FACW species <u>0</u> x2 = <u>0</u></td> <td></td> </tr> <tr> <td>FAC species <u>65</u> x3 = <u>195</u></td> <td></td> </tr> <tr> <td>FACU species <u>75</u> x4 = <u>300</u></td> <td></td> </tr> <tr> <td>UPL species <u>0</u> x5 = <u>0</u></td> <td></td> </tr> <tr> <td>Column Totals: <u>140</u> (A)</td> <td><u>495</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.5</u></td> </tr> </tbody> </table> <p><b>Hydrophytic Vegetation Indicators:</b></p> <p>_____ 1 - Rapid Test for Hydrophytic Vegetation</p> <p>_____ 2 - Dominance Test is &gt;50%</p> <p>_____ 3 - Prevalence Index is ≤3.0<sup>1</sup></p> <p>_____ 4 - Morphological Adaptation<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)</p> <p>_____ 5 - Wetland Non-Vascular Plants<sup>1</sup></p> <p>_____ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</p> <p><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <p><b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>X</u></p>	Total % Cover of:	Multiply by:	OBL species <u>0</u> x1 = <u>0</u>		FACW species <u>0</u> x2 = <u>0</u>		FAC species <u>65</u> x3 = <u>195</u>		FACU species <u>75</u> x4 = <u>300</u>		UPL species <u>0</u> x5 = <u>0</u>		Column Totals: <u>140</u> (A)	<u>495</u> (B)	Prevalence Index = B/A = <u>3.5</u>	
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Remarks: The upland vegetation shows signs of frequent disturbance by adjacent land use activities.

**SOIL**

Sampling Point: DP-04

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-14	10YR 4/3	100					SiL	50% rock and coarse sand
14-18	10YR 4/2	30					SiL	Less rock in soil
	10YR 4/3	70					SiL	

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

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

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

Remarks: Upper soil layer has 50% angular rock and coarse sand.

**HYDROLOGY**

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

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

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

Remarks: The soil surface was moist due to recent rain events.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-05  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): Narrow depression Local relief (concave, convex, none): Concave Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020."

**VEGETATION**

Tree Stratum	(Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	
1. _____					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____					
3. _____					
4. _____					
5. _____					
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>					
Sapling/Shrub Stratum	(Plot size: _____)				
1. <u>Cornus sericea</u>		20	Yes	FACW	<b>Prevalence Index Worksheet:</b> Total % Cover of: Multiply by: OBL species <u>0</u> x1 = <u>0</u> FACW species <u>45</u> x2 = <u>90</u> FAC species <u>95</u> x3 = <u>285</u> FACU species <u>0</u> x4 = <u>0</u> UPL species <u>0</u> x5 = <u>0</u> Column Totals: <u>140</u> (A) <u>375</u> (B) Prevalence Index = B/A = <u>2.7</u>
2. <u>Crataegus monogyna</u>		20	Yes	FAC	
3. <u>Rubus armeniacus</u>		40	Yes	FAC	
4. <u>Salix scouleriana</u>		20	Yes	FAC	
5. _____					
50%= <u>50</u> 20%= <u>20</u> Total Cover: <u>100</u>					
Herb Stratum	(Plot size: _____)	<b>CHECK RANKED VALUES</b>			
1. <u>Equisetum arvense</u>		15	Yes	FAC	<b>Hydrophytic Vegetation Indicators:</b> _____ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptation <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Phalaris arundinacea</u>		25	Yes	FACW	
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
50%= <u>20</u> 20%= <u>8</u> Total Cover: <u>40</u>					
Woody Vine Stratum	(Plot size: _____)				
1. _____					<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
2. _____					
Total Cover: <u>0</u>					
% Bare Ground in Herb Stratum <u>60</u> % Cover of Biotic Crust _____					

**Remarks:** Recent hydrology increase appears to have killed Red alder (*Alnus rubra*) in the dat plot area.

**SOIL**

Sampling Point: DP-05

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	10YR 3/1						SiL	Some angular gravel in soil.
10-14	10YR 3/1	95	10YR 4/6	5	C	M	SiL	Redox concentrations and saturation
14-18	10YR 5/1	85	10YR 4/6	15	C	M	SCL	Redox bright in depleted layer

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

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

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

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

Remarks: Small rocks below 16 inches. Top 2 inches had coarse Phalaris roots.

**HYDROLOGY**

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

<b>Field Observations:</b> Surface Water Present?    Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present?      Yes <input checked="" type="checkbox"/> No _____    Depth (inches): <u>14</u> Saturation Present?        Yes <input checked="" type="checkbox"/> No _____    Depth (inches): <u>10</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Narrow swale between sidewalk and adjacent industrial fill area.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-06  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): Hillslope/terrace Local relief (concave, convex, none): Convex Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labouny complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

**VEGETATION**

<p><u>Tree Stratum</u> (Plot size: _____)</p> <p>1. _____ Absolute % Cover _____ Dominant Species? _____ Indicator Status? _____</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p> <p>5. _____</p> <p>50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u></p> <p><u>Sapling/Shrub Stratum</u> (Plot size: _____)</p> <p>1. <u>Rubus armeniacus</u> 45 Yes FAC</p> <p>2. <u>Rosa nutkana</u> 15 No FAC</p> <p>3. <u>Crataegus monogyna</u> 20 Yes FAC</p> <p>4. <u>Symphoricarpos albus</u> 15 No FACU</p> <p>5. _____</p> <p>50%= <u>47.5</u> 20%= <u>19</u> Total Cover: <u>95</u></p> <p><u>Herb Stratum</u> (Plot size: _____) <b>CHECK RANKED VALUES</b></p> <p>1. <u>Pteridium aquilinum</u> 5 No FACU</p> <p>2. <u>Hypericum perforatum</u> 15 Yes FACU</p> <p>3. <u>Festuca rubra</u> 30 Yes FAC</p> <p>4. <u>Jacobaea vulgaris</u> 15 Yes FACU</p> <p>5. _____</p> <p>6. _____</p> <p>7. _____</p> <p>8. _____</p> <p>9. _____</p> <p>50%= <u>32.5</u> 20%= <u>13</u> Total Cover: <u>65</u></p> <p><u>Woody Vine Stratum</u> (Plot size: _____) <b>CHECK RANKED VALUES</b></p> <p>1. _____</p> <p>2. _____</p> <p>Total Cover: <u>0</u></p> <p>% Bare Ground in Herb Stratum <u>35</u> % Cover of Biotic Crust _____</p>	<p><b>Dominance Test worksheet:</b></p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>5</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60%</u> (A/B)</p> <p><b>Prevalence Index Worksheet:</b></p> <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u> x1 = <u>0</u></td> <td></td> </tr> <tr> <td>FACW species <u>0</u> x2 = <u>0</u></td> <td></td> </tr> <tr> <td>FAC species <u>110</u> x3 = <u>330</u></td> <td></td> </tr> <tr> <td>FACU species <u>50</u> x4 = <u>200</u></td> <td></td> </tr> <tr> <td>UPL species <u>0</u> x5 = <u>0</u></td> <td></td> </tr> <tr> <td>Column Totals: <u>160</u> (A)</td> <td><u>530</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>3.3</u></td> </tr> </table> <p><b>Hydrophytic Vegetation Indicators:</b></p> <p>_____ 1 - Rapid Test for Hydrophytic Vegetation</p> <p><u>X</u> 2 - Dominance Test is &gt;50%</p> <p>_____ 3 - Prevalence Index is ≤3.0<sup>1</sup></p> <p>_____ 4 - Morphological Adaptation<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)</p> <p>_____ 5 - Wetland Non-Vascular Plants<sup>1</sup></p> <p>_____ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</p> <p><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <p><b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____</p>	Total % Cover of:	Multiply by:	OBL species <u>0</u> x1 = <u>0</u>		FACW species <u>0</u> x2 = <u>0</u>		FAC species <u>110</u> x3 = <u>330</u>		FACU species <u>50</u> x4 = <u>200</u>		UPL species <u>0</u> x5 = <u>0</u>		Column Totals: <u>160</u> (A)	<u>530</u> (B)	Prevalence Index = B/A = <u>3.3</u>	
Total % Cover of:	Multiply by:																
OBL species <u>0</u> x1 = <u>0</u>																	
FACW species <u>0</u> x2 = <u>0</u>																	
FAC species <u>110</u> x3 = <u>330</u>																	
FACU species <u>50</u> x4 = <u>200</u>																	
UPL species <u>0</u> x5 = <u>0</u>																	
Column Totals: <u>160</u> (A)	<u>530</u> (B)																
Prevalence Index = B/A = <u>3.3</u>																	

**Remarks:** The upland vegetation shows signs of frequent disturbance by adjacent land use activities.



**SOIL**

Sampling Point: DP-06

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-18	10YR 4/3	70					SiL	50% rock and coarse sand
	10YR 4/2	30						No sand or rock

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

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

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes _____      No <u>X</u>
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Remarks: Soils seemed foled with layers of sand and rock.

**HYDROLOGY**

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

<b>Field Observations:</b> Surface Water Present?    Yes _____    No <u>X</u> Depth (inches): _____ Water table Present?      Yes _____    No <u>X</u> Depth (inches): _____ Saturation Present?        Yes _____    No <u>X</u> Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes _____      No <u>X</u>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was moist due to recent rain events

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-07  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): Narrow depression Local relief (concave, convex, none): Concave Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

**VEGETATION**

	Absolute % Cover	Dominant Species?	Indicator Status?	
<b>Tree Stratum</b> (Plot size: _____)				
1. <u>Salix scouleriana</u>	30	Yes	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u>Betula papyrifera</u>	25	Yes	FAC	
3. _____				
4. _____				
5. _____				
50%= <u>27.5</u> 20%= <u>11</u> Total Cover: <u>55</u>				
<b>Sapling/Shrub Stratum</b> (Plot size: _____)				
1. <u>Cornus sericea</u>	40	Yes	FACW	<b>Prevalence Index Worksheet:</b> Total % Cover of: Multiply by: OBL species <u>0</u> x1 = <u>0</u> FACW species <u>40</u> x2 = <u>80</u> FAC species <u>100</u> x3 = <u>300</u> FACU species <u>0</u> x4 = <u>0</u> UPL species <u>0</u> x5 = <u>0</u> Column Totals: <u>140</u> (A) <u>380</u> (B) Prevalence Index = B/A = <u>2.7</u>
2. <u>Crataegus monogyna</u>	10	No	FAC	
3. <u>Rubus armeniacus</u>	5	No	FAC	
4. <u>Lonicera involucrata</u>	15	No	FAC	
5. <u>Salix scouleriana</u>	15	No	FAC	
50%= <u>42.5</u> 20%= <u>17</u> Total Cover: <u>85</u>				
<b>Herb Stratum</b> (Plot size: _____) <b>CHECK RANKED VALUES</b>				
1. _____				<b>Hydrophytic Vegetation Indicators:</b> _____ 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u>X</u> 3 - Prevalence Index is ≤3.0 <sup>1</sup> _____ 4 - Morphological Adaptation <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) _____ 5 - Wetland Non-Vascular Plants <sup>1</sup> _____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>				
<b>Woody Vine Stratum</b> (Plot size: _____)				
1. _____				<b>Hydrophytic Vegetation Present?</b> Yes <u>X</u> No _____
2. _____				
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>100</u> % Cover of Biotic Crust _____				

Remarks: Dense shrubs prevent the herb layer from developing.

**SOIL**

Sampling Point: DP-07

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	10YR 3/1	90	10YR 4/6	10	C	M	SiL	Some angular gravel in soil.
12-18	10YR 5/1	85	10YR 4/6	15	C	M	SCL	Redox in depleted soil, saturation

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

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

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

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks: Depleted soils at 12 inches with water at 16 inches.

**HYDROLOGY**

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

<b>Field Observations:</b> Surface Water Present?    Yes _____    No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present?      Yes <input checked="" type="checkbox"/> No _____    Depth (inches): <u>16</u> Saturation Present?      Yes <input checked="" type="checkbox"/> No _____    Depth (inches): <u>12</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Depleted layer was dense and took several hours to fill with water to 16 inches BGS. Hydrology was flowing in at 12 inches.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-08  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): Hillslope/terrace Local relief (concave, convex, none): Convex Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labouny complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

**VEGETATION**

<p><u>Tree Stratum</u> (Plot size: _____)</p> <p>1. _____ Absolute % Cover _____ Dominant Species? _____ Indicator Status? _____</p> <p>2. _____</p> <p>3. _____</p> <p>4. _____</p> <p>5. _____</p> <p>50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u></p> <p><u>Sapling/Shrub Stratum</u> (Plot size: _____)</p> <p>1. <u>Rubus armeniacus</u> 25 Yes FAC</p> <p>2. <u>Rosa nutkana</u> 25 Yes FAC</p> <p>3. <u>Rubus ursinus</u> 10 No FAC</p> <p>4. <u>Symphoricarpos albus</u> 10 No FACU</p> <p>5. _____</p> <p>50%= <u>35</u> 20%= <u>14</u> Total Cover: <u>70</u></p> <p><u>Herb Stratum</u> (Plot size: _____) <b>CHECK RANKED VALUES</b></p> <p>1. <u>Jacobaea vulgaris</u> 15 Yes FACU</p> <p>2. <u>Hypericum perforatum</u> 15 Yes FACU</p> <p>3. _____</p> <p>4. _____</p> <p>5. _____</p> <p>6. _____</p> <p>7. _____</p> <p>8. _____</p> <p>9. _____</p> <p>50%= <u>15</u> 20%= <u>6</u> Total Cover: <u>30</u></p> <p><u>Woody Vine Stratum</u> (Plot size: _____)</p> <p>1. _____</p> <p>2. _____</p> <p>Total Cover: <u>0</u></p> <p>% Bare Ground in Herb Stratum <u>70</u> % Cover of Biotic Crust _____</p>	<p><b>Dominance Test worksheet:</b></p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>4</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)</p> <p><b>Prevalence Index Worksheet:</b></p> <p>Total % Cover of: Multiply by:</p> <p>OBL species <u>0</u> x1 = <u>0</u></p> <p>FACW species <u>0</u> x2 = <u>0</u></p> <p>FAC species <u>60</u> x3 = <u>180</u></p> <p>FACU species <u>40</u> x4 = <u>160</u></p> <p>UPL species <u>0</u> x5 = <u>0</u></p> <p>Column Totals: <u>100</u> (A) <u>340</u> (B)</p> <p>Prevalence Index = B/A = <u>3.4</u></p> <p><b>Hydrophytic Vegetation Indicators:</b></p> <p>_____ 1 - Rapid Test for Hydrophytic Vegetation</p> <p>_____ 2 - Dominance Test is &gt;50%</p> <p>_____ 3 - Prevalence Index is ≤3.0<sup>1</sup></p> <p>_____ 4 - Morphological Adaptation<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)</p> <p>_____ 5 - Wetland Non-Vascular Plants<sup>1</sup></p> <p>_____ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</p> <p><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <p><b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>X</u></p>
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**Remarks:** The upland vegetation shows signs of frequent disturbance and is within 15 feet of stored and staged shipping containers.

**SOIL**

Sampling Point: DP-08

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-18	10YR 6/3	100					LS	Rock, and debris in soil

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

<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Muck Mineral (S1)</p> <p><input type="checkbox"/> Sandy gleyed Matrix (S4)</p>	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (<b>except MLRA 1</b>)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p><input type="checkbox"/> 2 cm Muck (A10) (<b>LRR B</b>)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p><sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p><b>Hydric Soil Present?</b>      Yes _____ No <u>X</u></p>
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Remarks: The soil was very light in color and appeared to be imported as part of the adjacent fill. The profile was 50-75% gravel, rock, and debris.

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p>Primary Indicators (minimum one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9) (<b>except MLRA 1, 2, 4A and 4B</b>)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1) (<b>LRR A</b>)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p><input type="checkbox"/> Water-Stained Leaves (B9) (<b>MLRA 1, 2, 4A and 4B</b>)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Raised Ant Mounds (D6) (<b>LRR A</b>)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7)</p>
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<p><b>Field Observations:</b></p> <p>Surface Water Present?    Yes _____ No <u>X</u>    Depth (inches): _____</p> <p>Water table Present?      Yes _____ No <u>X</u>    Depth (inches): _____</p> <p>Saturation Present?        Yes _____ No <u>X</u>    Depth (inches): _____ (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b>      Yes _____ No <u>X</u></p>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was moist due to recent rain events but no other hydrology observed.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-09  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): slop/depression mosaic Local relief (concave, convex, none): Concave Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

**VEGETATION**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Dominance Test worksheet:</b>	
1. <u>Salix scouleriana</u>	15	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)	
2. <u>Betula papyrifera</u>	25	Yes	FAC	Total Number of Dominant Species Across All Strata: <u>3</u> (B)	
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
4. _____					
5. _____					
50%= <u>20</u> 20%= <u>8</u> Total Cover: <u>40</u>					
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Prevalence Index Worksheet:</b>	
1. <u>Cornus sericea</u>	55	Yes	FACW	Total % Cover of: _____ Multiply by: _____	
2. <u>Salix scouleriana</u>	10	No	FAC	OBL species <u>0</u> x1 = <u>0</u>	
3. <u>Lonicera involucrata</u>	15	No	FAC	FACW species <u>55</u> x2 = <u>110</u>	
4. _____				FAC species <u>65</u> x3 = <u>195</u>	
5. _____				FACU species <u>0</u> x4 = <u>0</u>	
50%= <u>40</u> 20%= <u>16</u> Total Cover: <u>80</u>				UPL species <u>0</u> x5 = <u>0</u>	
				Column Totals: <u>120</u> (A) <u>305</u> (B)	
				Prevalence Index = B/A = <u>2.5</u>	
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Hydrophytic Vegetation Indicators:</b>	
1. _____				_____ 1 - Rapid Test for Hydrophytic Vegetation	
2. _____				<u>X</u> 2 - Dominance Test is >50%	
3. _____				<u>X</u> 3 - Prevalence Index is ≤3.0 <sup>1</sup>	
4. _____				_____ 4 - Morphological Adaptation <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
5. _____				_____ 5 - Wetland Non-Vascular Plants <sup>1</sup>	
6. _____				_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
7. _____					
8. _____					
9. _____					
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>					
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Hydrophytic Vegetation Present?</b>	
1. _____				Yes <u>X</u> No _____	
2. _____					
Total Cover: <u>0</u>					
% Bare Ground in Herb Stratum <u>100</u> % Cover of Biotic Crust _____					

**Remarks:** Dense shrubs prevent the herb layer from developing.

**SOIL**

Sampling Point: DP-09

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	10YR 3/1	100					SiL	
10-14	10YR 3/1	95	10YR 4/6	5	C	M	SiL	Bright redox concentrations, saturation
14-18	10YR 5/1	85	10YR 4/6	5	C	M	SiL	Redox in the depleted layer.

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

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

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: Depleted soils at 14 inches with water at 16 inches.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b>	
Primary Indicators (minimum one required; check all that apply)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present?      Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>16</u> Saturation Present?        Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>10</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:  
Remarks: Depleted layer was dense. Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 inches BGS.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-10  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): Hillslope/terrace Local relief (concave, convex, none): Convex Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labouny complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

**VEGETATION**

<p><u>Tree Stratum</u> (Plot size: _____)</p> <table border="1"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr> <td>1. <u>Acer macrophyllum</u></td> <td align="center">20</td> <td align="center">Yes</td> <td align="center">FACU</td> </tr> <tr> <td>2. <u>Thuja plicata</u></td> <td align="center">20</td> <td align="center">Yes</td> <td align="center">FAC</td> </tr> <tr> <td>3. <u>Betula papyrifera</u></td> <td align="center">15</td> <td align="center">Yes</td> <td align="center">FAC</td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>50%= <u>27.5</u> 20%= <u>11</u> Total Cover: <u>55</u></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><u>Sapling/Shrub Stratum</u> (Plot size: _____) <b>CHECK RANKED VALUES</b></p> <table border="1"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr> <td>1. <u>Symphoricarpos albus</u></td> <td align="center">45</td> <td align="center">Yes</td> <td align="center">FACU</td> </tr> <tr> <td>2. <u>Rosa nutkana</u></td> <td align="center">25</td> <td align="center">Yes</td> <td align="center">FAC</td> </tr> <tr> <td>3. <u>Cornus sericea</u></td> <td align="center">10</td> <td align="center">No</td> <td align="center">FAC</td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>50%= <u>40</u> 20%= <u>16</u> Total Cover: <u>80</u></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><u>Herb Stratum</u> (Plot size: _____)</p> <table border="1"> <thead> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status?</th> </tr> </thead> <tbody> <tr> <td>1. <u>Pteridium aquilinum</u></td> <td align="center">20</td> <td align="center">Yes</td> <td align="center">FACU</td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>8. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>9. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>50%= <u>10</u> 20%= <u>4</u> Total Cover: <u>20</u></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><u>Woody Vine Stratum</u> (Plot size: _____)</p> <table border="1"> <tbody> <tr> <td>1. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2. _____</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total Cover: <u>0</u></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>% Bare Ground in Herb Stratum <u>80</u> % Cover of Biotic Crust _____</p>		Absolute % Cover	Dominant Species?	Indicator Status?	1. <u>Acer macrophyllum</u>	20	Yes	FACU	2. <u>Thuja plicata</u>	20	Yes	FAC	3. <u>Betula papyrifera</u>	15	Yes	FAC	4. _____				5. _____				50%= <u>27.5</u> 20%= <u>11</u> Total Cover: <u>55</u>					Absolute % Cover	Dominant Species?	Indicator Status?	1. <u>Symphoricarpos albus</u>	45	Yes	FACU	2. <u>Rosa nutkana</u>	25	Yes	FAC	3. <u>Cornus sericea</u>	10	No	FAC	4. _____				5. _____				50%= <u>40</u> 20%= <u>16</u> Total Cover: <u>80</u>					Absolute % Cover	Dominant Species?	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**Remarks:** The upland vegetation scrub-shrub layer was very dense with only tall Bracken fern in the herb layer.



**SOIL**

Sampling Point: DP-10

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	10YR 3/2	100					SiL	coarse roots
12-18	10YR 3/1	100					SiL	moist soil, not saturated

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

<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Muck Mineral (S1)</p> <p><input type="checkbox"/> Sandy gleyed Matrix (S4)</p>	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (<b>except MLRA 1</b>)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p><input type="checkbox"/> 2 cm Muck (A10) (<b>LRR B</b>)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p><sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p><b>Hydric Soil Present?</b>      Yes _____ No <u>X</u></p>
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Remarks: The soil below 12 inches was dark and moist but not saturated and it had no redox.

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p>Primary Indicators (minimum one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>		<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9) (<b>except MLRA 1, 2, 4A and 4B</b>)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1) (<b>LRR A</b>)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p><input type="checkbox"/> Water-Stained Leaves (B9) (<b>MLRA 1, 2, 4A and 4B</b>)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Raised Ant Mounds (D6) (<b>LRR A</b>)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7)</p>
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<p><b>Field Observations:</b></p> <p>Surface Water Present?    Yes _____ No <u>X</u>    Depth (inches): _____</p> <p>Water table Present?      Yes _____ No <u>X</u>    Depth (inches): _____</p> <p>Saturation Present?        Yes _____ No <u>X</u>    Depth (inches): _____ (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b>      Yes _____ No <u>X</u></p>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was moist due to recent rain events.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-11  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): slop/depression mosaic Local relief (concave, convex, none): Concave Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

**VEGETATION**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Dominance Test worksheet:</b>	
1. <u>Salix scouleriana</u>	5	No	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)	
2. <u>Betula papyrifera</u>	30	Yes	FAC	Total Number of Dominant Species Across All Strata: <u>3</u> (B)	
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
4. _____					
5. _____					
50%= <u>17.5</u> 20%= <u>7</u> Total Cover: <u>35</u>					
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Prevalence Index Worksheet:</b>	
1. <u>Cornus sericea</u>	50	Yes	FACW	Total % Cover of: Multiply by:	
2. <u>Lonicera involucrata</u>	20	Yes	FAC	OBL species <u>0</u> x1 = <u>0</u>	
3. _____				FACW species <u>50</u> x2 = <u>100</u>	
4. _____				FAC species <u>55</u> x3 = <u>165</u>	
5. _____				FACU species <u>0</u> x4 = <u>0</u>	
50%= <u>35</u> 20%= <u>14</u> Total Cover: <u>70</u>				UPL species <u>0</u> x5 = <u>0</u>	
Column Totals: <u>105</u> (A)				<u>265</u> (B)	
				Prevalence Index = B/A = <u>2.5</u>	
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Hydrophytic Vegetation Indicators:</b>	
1. _____				_____ 1 - Rapid Test for Hydrophytic Vegetation	
2. _____				<u>X</u> 2 - Dominance Test is >50%	
3. _____				<u>X</u> 3 - Prevalence Index is ≤3.0 <sup>1</sup>	
4. _____				_____ 4 - Morphological Adaptation <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
5. _____				_____ 5 - Wetland Non-Vascular Plants <sup>1</sup>	
6. _____				_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
7. _____					
8. _____					
9. _____					
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>					
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Hydrophytic Vegetation Present?</b>	
1. _____				Yes <u>X</u> No _____	
2. _____					
Total Cover: <u>0</u>					
% Bare Ground in Herb Stratum <u>100</u> % Cover of Biotic Crust _____					

**Remarks:** Dense shrubs prevent the herb layer from developing.

**SOIL**

Sampling Point: DP-11

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	10YR 3/1	100					SiL	Coarse roots
8-13	10YR 3/1	95	10YR 4/6	5	C	M	SiL	Bright redox concentrations, saturation
13-18	10YR 5/1	85	10YR 4/6	5	C	M	SCL	Redox in the depleted layer.

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

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

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Remarks: Depleted soils at 13 inches with water at 16 inches.

**HYDROLOGY**

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

<b>Field Observations:</b> Surface Water Present?    Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present?      Yes <input checked="" type="checkbox"/> No _____    Depth (inches): <u>16</u> Saturation Present?        Yes <input checked="" type="checkbox"/> No _____    Depth (inches): <u>8</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:  
Remarks: Depleted layer was dense. Hydrology was flowing in at 13 inches over depleted layer. Water pooled at 16 inches BGS.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-12  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

**VEGETATION**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Dominance Test worksheet:
1. <u>Betula papyrifera</u>	20	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50%= <u>10</u> 20%= <u>4</u> Total Cover: <u>20</u>				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Prevalence Index Worksheet:
1. <u>Symphoricarpos albus</u>	50	Yes	FACU	Total % Cover of: _____ Multiply by: _____
2. <u>Rosa nutkana</u>	10	No	FAC	OBL species <u>0</u> x1 = <u>0</u>
3. <u>Cornus sericea</u>	20	Yes	FAC	FACW species <u>0</u> x2 = <u>0</u>
4. _____	_____	_____	_____	FAC species <u>50</u> x3 = <u>150</u>
5. _____	_____	_____	_____	FACU species <u>80</u> x4 = <u>320</u>
50%= <u>40</u> 20%= <u>16</u> Total Cover: <u>80</u>				UPL species <u>0</u> x5 = <u>0</u>
Column Totals: <u>130</u> (A) <u>470</u> (B)				Prevalence Index = B/A = <u>3.6</u>
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Indicators:
1. <u>Pteridium aquilinum</u>	30	Yes	FACU	_____ 1 - Rapid Test for Hydrophytic Vegetation
2. _____	_____	_____	_____	_____ 2 - Dominance Test is >50%
3. _____	_____	_____	_____	_____ 3 - Prevalence Index is ≤3.0 <sup>1</sup>
4. _____	_____	_____	_____	_____ 4 - Morphological Adaptation <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	_____ 5 - Wetland Non-Vascular Plants <sup>1</sup>
6. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50%= <u>15</u> 20%= <u>6</u> Total Cover: <u>30</u>				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>70</u> % Cover of Biotic Crust _____				

**Remarks:** The upland vegetation scrub-shrub layer was very dense with only tall Bracken fern in the herb layer.

**SOIL**

Sampling Point: DP-12

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-10	10YR 3/2	100					SiL	coarse roots
10-18	10YR 3/1	100					SiL	dense soil, very few roots.

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

<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <p><input type="checkbox"/> Histosol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Muck Mineral (S1)</p> <p><input type="checkbox"/> Sandy gleyed Matrix (S4)</p>	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Loamy Mucky Mineral (F1) (<b>except MLRA 1</b>)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p>	<p><input type="checkbox"/> 2 cm Muck (A10) (<b>LRR B</b>)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p><sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p><b>Hydric Soil Present?</b>      Yes _____ No <u>X</u></p>
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Remarks: The soil below 10 inches was very dense but had no OR's or redox.

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p>Primary Indicators (minimum one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>			<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9) (<b>except MLRA 1, 2, 4A and 4B</b>)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1) (<b>LRR A</b>)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>			<p><input type="checkbox"/> Water-Stained Leaves (B9) (<b>MLRA 1, 2, 4A and 4B</b>)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Raised Ant Mounds (D6) (<b>LRR A</b>)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7)</p>		
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<p><b>Field Observations:</b></p> <p>Surface Water Present?    Yes _____ No <u>X</u>    Depth (inches): _____</p> <p>Water table Present?      Yes _____ No <u>X</u>    Depth (inches): _____</p> <p>Saturation Present?        Yes _____ No <u>X</u>    Depth (inches): _____ (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b>      Yes _____ No <u>X</u></p>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was moist due to recent rain events.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-13  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): closed depression Local relief (concave, convex, none): Concave Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labounty complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020".

**VEGETATION**

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)	
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>					
<u>Sapling/Shrub Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Prevalence Index Worksheet:</b>	
1. <u>Cornus sericea</u>	50	Yes	FACW	Total % Cover of: Multiply by:	
2. <u>Lonicera involucrata</u>	10	No	FAC	OBL species <u>0</u> x1 = <u>0</u>	
3. <u>Salix scouleriana</u>	30	Yes	FAC	FACW species <u>50</u> x2 = <u>100</u>	
4. _____	_____	_____	_____	FAC species <u>40</u> x3 = <u>120</u>	
5. _____	_____	_____	_____	FACU species <u>0</u> x4 = <u>0</u>	
50%= <u>45</u> 20%= <u>18</u> Total Cover: <u>90</u>	UPL species <u>0</u> x5 = <u>0</u>				
Column Totals: <u>90</u> (A) <u>220</u> (B)	Prevalence Index = B/A = <u>2.4</u>				
<u>Herb Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Hydrophytic Vegetation Indicators:</b>	
1. _____	_____	_____	_____	_____ 1 - Rapid Test for Hydrophytic Vegetation	
2. _____	_____	_____	_____	<u>X</u> 2 - Dominance Test is >50%	
3. _____	_____	_____	_____	<u>X</u> 3 - Prevalence Index is ≤3.0 <sup>1</sup>	
4. _____	_____	_____	_____	_____ 4 - Morphological Adaptation <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
5. _____	_____	_____	_____	_____ 5 - Wetland Non-Vascular Plants <sup>1</sup>	
6. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
7. _____	_____	_____	_____	_____	
8. _____	_____	_____	_____	_____	
9. _____	_____	_____	_____	_____	
50%= <u>0</u> 20%= <u>0</u> Total Cover: <u>0</u>					
<u>Woody Vine Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	<b>Hydrophytic Vegetation Present?</b>	
1. _____	_____	_____	_____	Yes <u>X</u> No _____	
2. _____	_____	_____	_____		
Total Cover: <u>0</u>					
% Bare Ground in Herb Stratum <u>100</u> % Cover of Biotic Crust _____					

**Remarks:** Dense shrubs and closed depression prevent the herb layer from developing.

**SOIL**

Sampling Point: DP-13

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-6	10YR 3/1	100					SiL	Coarse roots
6-12	10YR 3/1	90	10YR 4/6	10	C	M	SiL	Bright redox concentrations, saturation
12-18	10YR 5/1	85	10YR 4/6	15	C	M	SCL	Redox in the depleted layer.

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

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

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks: Depleted soils at 12 inches with water at 16 inches.

**HYDROLOGY**

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

<b>Field Observations:</b> Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water table Present?      Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>16</u> Saturation Present?        Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8</u> (includes capillary fringe)	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Depleted layer was dense. Hydrology was flowing in at 12 inches over depleted layer. Water pooled at 16 inches BGS.

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

Project/Site: Marine Drive Proposed Development Project City/County: Whatcom County Sampling Date: Oct, 26 2020  
 Applicant/Owner: ABC Recycling State: WA Sampling Point: DP-14  
 Investigator(s): Joseph R. Pursley (Anchor QEA, LLC) Section, Township, Range: S44, T38, R2E  
 Landform (hillslope, terrace, etc.): Hillslope/terrace Local relief (concave, convex, none): Convex Slope: 0-8%  
 Subregion (LRR): Northwest Forests and Coast (LRR A) Lat: \_\_\_\_\_ Long: \_\_\_\_\_ Datum: \_\_\_\_\_  
 Soil Map Unit Name: Urban land – Whatcom - Labouny complex NWI Classification: PSSC  
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (If no, explain in Remarks)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" Present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

**Remarks:** For labeled Data Plot locations and site map please see Figure 2 in the "Wetland Verification and Non-Compensatory Mitigation Plan".

**VEGETATION**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Dominance Test worksheet:
1. <u>Acer macrophyllum</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u>Betula papyrifera</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	Total Number of Dominant Species Across All Strata: <u>6</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50%= <u>15</u> 20%= <u>6</u> Total Cover: <u>30</u>				
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Prevalence Index Worksheet:
1. <u>Symphoricarpos albus</u>	<u>45</u>	<u>Yes</u>	<u>FACU</u>	Total % Cover of: _____ Multiply by: _____
2. <u>Cornus sericea</u>	<u>25</u>	<u>Yes</u>	<u>FACW</u>	OBL species <u>0</u> x1 = <u>0</u>
3. <u>Rubus armeniacus</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	FACW species <u>25</u> x2 = <u>50</u>
4. _____	_____	_____	_____	FAC species <u>40</u> x3 = <u>120</u>
5. _____	_____	_____	_____	FACU species <u>65</u> x4 = <u>260</u>
50%= <u>45</u> 20%= <u>18</u> Total Cover: <u>90</u>				UPL species <u>0</u> x5 = <u>0</u>
				Column Totals: <u>130</u> (A) <u>430</u> (B)
				Prevalence Index = B/A = <u>3.3</u>
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Indicators:
1. <u>Pteridium aquilinum</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	_____ 1 - Rapid Test for Hydrophytic Vegetation
2. _____	_____	_____	_____	_____ 2 - Dominance Test is >50%
3. _____	_____	_____	_____	_____ 3 - Prevalence Index is ≤3.0 <sup>1</sup>
4. _____	_____	_____	_____	_____ 4 - Morphological Adaptation <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
5. _____	_____	_____	_____	_____ 5 - Wetland Non-Vascular Plants <sup>1</sup>
6. _____	_____	_____	_____	_____ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
7. _____	_____	_____	_____	_____ <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50%= <u>5</u> 20%= <u>2</u> Total Cover: <u>10</u>				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status?	Hydrophytic Vegetation Present?
1. _____	_____	_____	_____	Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
Total Cover: <u>0</u>				
% Bare Ground in Herb Stratum <u>90</u> % Cover of Biotic Crust _____				

**Remarks:** The upland vegetation scrub-shrub layer was very dense with only tall Bracken fern in the herb layer.



**SOIL**

Sampling Point: DP-14

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-8	10YR 3/3	100					SiL	coarse roots
8-18	10YR 3/2	100					SiL	moist soil, not saturated

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

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

<p><b>Restrictive Layer (if present):</b></p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p><b>Hydric Soil Present?</b>      Yes _____ No <u>X</u></p>
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Remarks: The soil below 12 inches was dark and moist but not saturated and it had no redox.

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p>Primary Indicators (minimum one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1)</p> <p><input type="checkbox"/> High Water Table (A2)</p> <p><input type="checkbox"/> Saturation (A3)</p> <p><input type="checkbox"/> Water Marks (B1)</p> <p><input type="checkbox"/> Sediment Deposits (B2)</p> <p><input type="checkbox"/> Drift Deposits (B3)</p> <p><input type="checkbox"/> Algal Mat or Crust (B4)</p> <p><input type="checkbox"/> Iron Deposits (B5)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)</p> <p><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)</p>	<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6)</p> <p><input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>	<p><input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Geomorphic Position (D2)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p> <p><input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)</p> <p><input type="checkbox"/> Frost-Heave Hummocks (D7)</p>
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<p><b>Field Observations:</b></p> <p>Surface Water Present?    Yes _____ No <u>X</u>    Depth (inches): _____</p> <p>Water table Present?      Yes _____ No <u>X</u>    Depth (inches): _____</p> <p>Saturation Present?      Yes _____ No <u>X</u>    Depth (inches): _____ (includes capillary fringe)</p>	<p><b>Wetland Hydrology Present?</b>      Yes _____ No <u>X</u></p>
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Describe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: The soil surface was moist due to recent rain events.

# Appendix B

## Precipitation Data

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# Marine Drive Wetland Delineation - Precipitation Data

January 2020 – Oct 2020

AgACIS								
<a href="#">Copy</a> <a href="#">CSV</a> <a href="#">Excel</a> <a href="#">PDF</a> <a href="#">Print</a> <a href="#">X</a>								
<b>WETS</b> Station: <b>BELLINGHAM INTL AP, WA</b> Requested years: 2000 - 2020								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	46.2	33.8	40.0	4.46	3.48	5.15	12	-
Feb	47.8	33.5	40.6	2.78	2.17	3.21	8	-
Mar	51.8	36.9	44.3	3.54	2.68	4.13	11	-
Apr	57.0	40.8	48.9	2.63	1.85	3.12	8	-
May	63.2	46.1	54.6	2.24	1.39	2.71	6	-
Jun	67.4	51.1	59.2	1.55	1.03	1.86	5	-
Jul	72.4	54.4	63.4	0.69	0.32	0.84	2	-
Aug	72.8	54.1	63.4	1.04	0.32	1.23	3	-
Sep	67.5	49.1	58.3	2.19	1.59	2.61	6	-
Oct	58.4	42.9	50.6	3.88	2.53	4.66	9	-
Nov	50.6	37.4	44.0	4.84	3.66	5.64	11	-
Dec	44.9	33.5	39.2	-	-	-	-	-
Annual:					-	-		
Average	58.3	42.8	50.5	-	-	-	-	-
Total	-	-	-	-			-	-

STATS TABLE - total precipitation (inches)												
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	7.02	3.94	2.96	1.43	3.08	2.05	0.86	1.28	2.19	3.50		

**Sources:**

AgACIS (Agricultural Applied Climate Information System), 2020. Bellingham International Airport: Monthly Summarized Precipitation. Accessed Nov. 2, 2020. Available at: <http://agacis.rcc-acis.org/>  
 AgACIS, 2020. WETS Table: Bellingham International Airport, WA, 1999 to 2019. Agricultural Applied Climate Information System. Accessed Nov. 2, 2020. Available at: <http://agacis.rcc-acis.org/>

## Appendix C

# Ecology Wetland Ratings Forms and Figures

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## Wetland A Rating Forms

Wetland name or number A

## RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A (Marine Drive, Whatcom Co.) Date of site visit: 10/20/2020  
 Rated by Joseph R. Pursley Trained by Ecology?  Yes  No Date of training 06/2015  
 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 Google Earth

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

### 1. Category of wetland based on FUNCTIONS

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

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

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

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

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

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	

Wetland name or number   A  

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

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	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 ( <i>can be added to another figure</i> )	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream ( <i>can be added to another figure</i> )	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

### Lake Fringe Wetlands

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

### Slope Wetlands

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





Wetland name or number   A  

NO – go to 6

YES – The wetland class is **Riverine**

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

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

NO – go to 7

YES – The wetland class is **Depressional**

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

NO – go to 8

YES – The wetland class is **Depressional**

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

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

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

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

Wetland name or number   A  

<b>DEPRESSIONAL AND FLATS WETLANDS</b>		
<b>Water Quality Functions - Indicators that the site functions to improve water quality</b>		
<b>D 1.0. Does the site have the potential to improve water quality?</b>		
D 1.1. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 3 points = 2 points = 1 points = 1	1
D 1.2. <u>The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0		0
D 1.3. <u>Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</u> Wetland has persistent, ungrazed, plants > 95% of area Wetland has persistent, ungrazed, plants > ½ of area Wetland has persistent, ungrazed plants > 1/10 of area Wetland has persistent, ungrazed plants < 1/10 of area	points = 5 points = 3 points = 1 points = 0	5
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > ½ total area of wetland Area seasonally ponded is > ¼ total area of wetland Area seasonally ponded is < ¼ total area of wetland	points = 4 points = 2 points = 0	0
Total for D 1 Add the points in the boxes above		<b>6</b>

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

<b>D 2.0. Does the landscape have the potential to support the water quality function of the site?</b>		
D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 No = 0	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 <u>Homeless encampment</u> (human and domestic animal waste).	Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above		<b>3</b>

**Rating of Landscape Potential** If score is:  3 or 4 = H  1 or 2 = M  0 = L Record the rating on the first page

<b>D 3.0. Is the water quality improvement provided by the site valuable to society?</b>		
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?	Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?	Yes = 1 No = 0	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	0
Total for D 3 Add the points in the boxes above		<b>0</b>

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

**DEPRESSIONAL AND FLATS WETLANDS**

**Hydrologic Functions** - Indicators that the site functions to reduce flooding and stream degradation

<b>D 4.0. Does the site have the potential to reduce flooding and erosion?</b>		
<b>D 4.1. Characteristics of surface water outflows from the wetland:</b>		
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	0
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
<b>D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.</b>		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	0
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	
<b>D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</b>		
The area of the basin is less than 10 times the area of the unit	points = 5	3
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
<b>Total for D 4</b>	<b>Add the points in the boxes above</b>	<b>3</b>

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

<b>D 5.0. Does the landscape have the potential to support hydrologic functions of the site?</b>		
<b>D 5.1. Does the wetland receive stormwater discharges?</b>	Yes = 1 No = 0	1
<b>D 5.2. Is &gt;10% of the area within 150 ft of the wetland in land uses that generate excess runoff?</b>	Yes = 1 No = 0	1
<b>D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at &gt;1 residence/ac, urban, commercial, agriculture, etc.)?</b>	Yes = 1 No = 0	1
<b>Total for D 5</b>	<b>Add the points in the boxes above</b>	<b>3</b>

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

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

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

Wetland name or number   A  

**RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**

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

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

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

*Record the rating on the first page*

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

**Rating of Landscape Potential** If score is:  3-6 = H     1 or 2 = M     0 = L

*Record the rating on the first page*

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

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

*Record the rating on the first page*

**RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**

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

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

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

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

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

<b>R 6.0. Are the hydrologic functions provided by the site valuable to society?</b>	
<p>R 6.1. Distance to the nearest areas downstream that have flooding problems?  <i>Choose the description that best fits the site.</i></p> <p>The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) <span style="float: right;">points = 2</span>                  Surface flooding problems are in a sub-basin farther down-gradient <span style="float: right;">points = 1</span>                  No flooding problems anywhere downstream <span style="float: right;">points = 0</span></p>	
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0
<b>Total for R 6</b>	Add the points in the boxes above

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

Wetland name or number     A    

**LAKE FRINGE WETLANDS**

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

<b>L 1.0. Does the site have the potential to improve water quality?</b>	
<b>L 1.1. Average width of plants along the lakeshore (use polygons of Cowardin classes):</b>	
Plants are more than 33 ft (10 m) wide	points = 6
Plants are more than 16 ft (5 m) wide and <33 ft	points = 3
Plants are more than 6 ft (2 m) wide and <16 ft	points = 1
Plants are less than 6 ft wide	points = 0
<b>L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.</b>	
Cover of herbaceous plants is >90% of the vegetated area	points = 6
Cover of herbaceous plants is > <sup>2</sup> / <sub>3</sub> of the vegetated area	points = 4
Cover of herbaceous plants is > <sup>1</sup> / <sub>3</sub> of the vegetated area	points = 3
Other plants that are not aquatic bed > <sup>2</sup> / <sub>3</sub> unit	points = 3
Other plants that are not aquatic bed in > <sup>1</sup> / <sub>3</sub> vegetated area	points = 1
Aquatic bed plants and open water cover > <sup>2</sup> / <sub>3</sub> of the unit	points = 0
<b>Total for L 1</b>	<b>Add the points in the boxes above</b>

**Rating of Site Potential** If score is:  8-12 = H  4-7 = M  0-3 = L

Record the rating on the first page

<b>L 2.0. Does the landscape have the potential to support the water quality function of the site?</b>	
<b>L 2.1. Is the lake used by power boats?</b>	Yes = 1 No = 0
<b>L 2.2. Is &gt; 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?</b>	Yes = 1 No = 0
<b>L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil?</b>	Yes = 1 No = 0
<b>Total for L 2</b>	<b>Add the points in the boxes above</b>

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

Record the rating on the first page

<b>L 3.0. Is the water quality improvement provided by the site valuable to society?</b>	
<b>L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?</b>	Yes = 1 No = 0
<b>L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)?</b>	Yes = 1 No = 0
<b>L 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 lake or basin in which the unit is found.</b>	Yes = 2 No = 0
<b>Total for L 3</b>	<b>Add the points in the boxes above</b>

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

Record the rating on the first page

Wetland name or number   A  

**LAKE FRINGE WETLANDS**

**Hydrologic Functions** - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?		
L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore ( <b>do not</b> include Aquatic bed): <i>Choose the highest scoring description that matches conditions in the wetland.</i>		
> ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 6	
> ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide	points = 4	
> ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 4	
Plants are at least 6 ft (2 m) wide (any type except Aquatic bed)	points = 2	
Plants are less than 6 ft (2 m) wide (any type except Aquatic bed)	points = 0	

**Rating of Site Potential:** If score is:  6 = M    0-5 = L

*Record the rating on the first page*

L 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
L 5.1. Is the lake used by power boats with more than 10 hp?	Yes = 1   No = 0	
L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance?	Yes = 1   No = 0	
Total for L 5	Add the points in the boxes above	

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

*Record the rating on the first page*

L 6.0. Are the hydrologic functions provided by the site valuable to society?		
L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.		
There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit	points = 2	
There are nature trails or other paths and recreational activities within 25 ft of OHWM	points = 1	
Other resources that could be impacted by erosion	points = 1	
There are no resources that can be impacted by erosion along the shores of the unit	points = 0	

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

*Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

**SLOPE WETLANDS**

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

S 1.0. Does the site have the potential to improve water quality?		
S 1.1. Characteristics of the average slope of the wetland: <i>(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)</i>		
Slope is 1% or less		points = 3
Slope is > 1%-2%		points = 2
Slope is > 2%-5%		points = 1
Slope is greater than 5%		points = 0
S 1.2. <u>The soil 2 in below the surface (or duff layer)</u> is true clay or true organic <i>(use NRCS definitions)</i> : Yes = 3 No = 0		
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. <i>Dense means you have trouble seeing the soil surface (&gt;75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.</i>		
Dense, uncut, herbaceous plants > 90% of the wetland area		points = 6
Dense, uncut, herbaceous plants > ½ of area		points = 3
Dense, woody, plants > ½ of area		points = 2
Dense, uncut, herbaceous plants > ¼ of area		points = 1
Does not meet any of the criteria above for plants		points = 0
Total for S 1	Add the points in the boxes above	

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

S 2.0. Does the landscape have the potential to support the water quality function of the site?		
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?		
		Yes = 1 No = 0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____		
		Yes = 1 No = 0
Total for S 2	Add the points in the boxes above	

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

S 3.0. Is the water quality improvement provided by the site valuable to society?		
S 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
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? <i>At least one aquatic resource in the basin is on the 303(d) list.</i>		
		Yes = 1 No = 0
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? <i>Answer YES if there is a TMDL for the basin in which unit is found.</i>		
		Yes = 2 No = 0
Total for S 3	Add the points in the boxes above	

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



Wetland name or number   A  

**SLOPE WETLANDS**

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

S 4.0. Does the site have the potential to reduce flooding and stream erosion?

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. <i>Stems of plants should be thick enough (usually &gt; 1/8 in), or dense enough, to remain erect during surface flows.</i>	
Dense, uncut, <b>rigid</b> plants cover > 90% of the area of the wetland	points = 1
All other conditions	points = 0

**Rating of Site Potential** If score is:  1 = M  0 = L

*Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff?	Yes = 1 No = 0
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**Rating of Landscape Potential** If score is:  1 = M  0 = L

*Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?

S 6.1. Distance to the nearest areas downstream that have flooding problems:	
The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2
Surface flooding problems are in a sub-basin farther down-gradient	points = 1
No flooding problems anywhere downstream	points = 0

S 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
--------------------------------------------------------------------------------------------------------------------------	----------------

Total for S 6	Add the points in the boxes above
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**Rating of Value** If score is:  2-4 = H  1 = M  0 = L

*Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

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

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

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

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

- |                                                                                                                                                                               |                                  |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed                                                                                                                                          | 4 structures or more: points = 4 | 0 |
| <input type="checkbox"/> Emergent                                                                                                                                             | 3 structures: points = 2         |   |
| <input checked="" type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover)                                                                                         | 2 structures: points = 1         |   |
| <input type="checkbox"/> Forested (areas where trees have > 30% cover)                                                                                                        | 1 structure: points = 0          |   |
| <i>If the unit has a Forested class, check if:</i>                                                                                                                            |                                  |   |
| <input type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon |                                  |   |

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

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

H 1.3. Richness of plant species

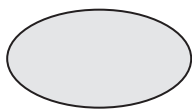
Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>.

*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*

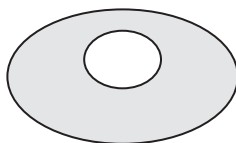
- |                              |            |   |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species               | points = 1 |   |
| < 5 species                  | points = 0 |   |

H 1.4. Interspersion of habitats

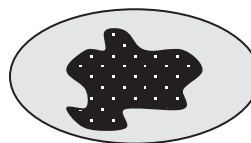
Decide from the diagrams below whether interspersions among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



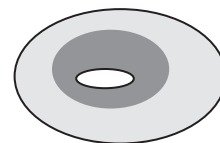
None = 0 points



Low = 1 point

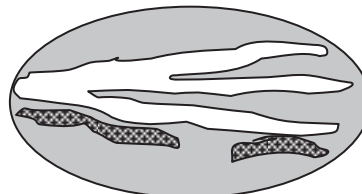
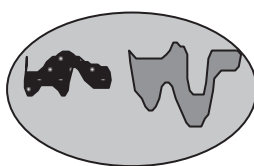


Moderate = 2 points



1

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



Wetland name or number     A    

<p>H 1.5. Special habitat features:          Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>  <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt; 4 in diameter and 6 ft long).  <input checked="" type="checkbox"/> Standing snags (dbh &gt; 4 in) within the wetland  <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)  <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt; 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)  <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)  <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>		2
Total for H 1	Add the points in the boxes above	<b>5</b>

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?		
<p>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>).  <i>Calculate:</i> 2 % undisturbed habitat <u>4</u> + [(% moderate and low intensity land uses)/2] <u>2</u> = <u>5</u> %          If total accessible habitat is:          &gt; 1/3 (33.3%) of 1 km Polygon <span style="float: right;">points = 3</span>          20-33% of 1 km Polygon <span style="float: right;">points = 2</span>          10-19% of 1 km Polygon <span style="float: right;">points = 1</span>          &lt; 10% of 1 km Polygon <span style="float: right;">points = 0</span></p>		0
<p>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.  <i>Calculate:</i> 43 % undisturbed habitat <u>4</u> + [(% moderate and low intensity land uses)/2] <u>2</u> = <u>47</u> %          Undisturbed habitat &gt; 50% of Polygon <span style="float: right;">points = 3</span>          Undisturbed habitat 10-50% and in 1-3 patches <span style="float: right;">points = 2</span>          Undisturbed habitat 10-50% and &gt; 3 patches <span style="float: right;">points = 1</span>          Undisturbed habitat &lt; 10% of 1 km Polygon <span style="float: right;">points = 0</span></p>		1
<p>H 2.3. Land use intensity in 1 km Polygon: If          &gt; 50% of 1 km Polygon is high intensity land use <span style="float: right;">points = (- 2)</span>          ≤ 50% of 1 km Polygon is high intensity <span style="float: right;">points = 0</span></p>		-2
Total for H 2	Add the points in the boxes above	<b>-1</b>

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

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

**Rating of Value** If score is:  2 = H  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	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
<p><b>SC 1.0. Estuarine wetlands</b>            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      <input type="radio"/> Yes – Go to <b>SC 1.1</b>   <input checked="" type="radio"/> No = <b>Not an estuarine wetland</b></p>	
<p>SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?      <input type="radio"/> Yes = <b>Category I</b>   <input type="radio"/> No - Go to <b>SC 1.2</b></p>	<input type="radio"/> Cat. I
<p>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 <i>Spartina</i>, 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 unmowed grassland.            — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.      <input type="radio"/> Yes = <b>Category I</b>   <input checked="" type="radio"/> No = <b>Category II</b></p>	<input type="radio"/> Cat. I  <input type="radio"/> Cat. II
<p><b>SC 2.0. Wetlands of High Conservation Value (WHCV)</b>            SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value?      <input type="radio"/> Yes – Go to <b>SC 2.2</b>   <input checked="" type="radio"/> No – Go to <b>SC 2.3</b>            SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?      <input type="radio"/> Yes = <b>Category I</b>   <input checked="" type="radio"/> No = <b>Not a WHCV</b>            SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland?  <a href="http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwtlands.pdf">http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwtlands.pdf</a>  <input type="radio"/> Yes – <b>Contact WNHP/WDNR and go to SC 2.4</b>   <input checked="" type="radio"/> No = <b>Not a WHCV</b>            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?      <input type="radio"/> Yes = <b>Category I</b>   <input checked="" type="radio"/> No = <b>Not a WHCV</b></p>	<input type="radio"/> Cat. I
<p><b>SC 3.0. Bogs</b>            Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i>            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?      <input type="radio"/> Yes – Go to <b>SC 3.3</b>   <input checked="" type="radio"/> No – Go to <b>SC 3.2</b>            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?      <input type="radio"/> Yes – Go to <b>SC 3.3</b>   <input checked="" type="radio"/> No = <b>Is not a bog</b>            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?      <input type="radio"/> Yes = <b>Is a Category I bog</b>   <input checked="" type="radio"/> No – Go to <b>SC 3.4</b>  <b>NOTE:</b> If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog.            SC 3.4. Is an area with peats or mucks forested (&gt; 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy?      <input type="radio"/> Yes = <b>Is a Category I bog</b>   <input checked="" type="radio"/> No = <b>Is not a bog</b></p>	<input type="radio"/> Cat. I

<p><b>SC 4.0. Forested Wetlands</b></p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife’s forests as priority habitats? <i><b>If you answer YES you will still need to rate the wetland based on its functions.</b></i></p> <ul style="list-style-type: none"> <li>— <b>Old-growth forests</b> (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.</li> <li>— <b>Mature forests</b> (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).</li> </ul> <p style="text-align: right;"> <input type="radio"/> Yes = <b>Category I</b>   <input checked="" type="radio"/> No = <b>Not a forested wetland for this section</b> </p>	<input type="radio"/> <b>Cat. I</b>
<p><b>SC 5.0. Wetlands in Coastal Lagoons</b></p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> <li>— The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</li> <li>— The lagoon in which the wetland is located contains ponded water that is saline or brackish (&gt; 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</li> </ul> <p style="text-align: right;"> <input type="radio"/> Yes – Go to <b>SC 5.1</b>   <input checked="" type="radio"/> No = <b>Not a wetland in a coastal lagoon</b> </p> <p>SC 5.1. Does the wetland meet all of the following three conditions?</p> <ul style="list-style-type: none"> <li>— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).</li> <li>— At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland.</li> <li>— The wetland is larger than 1/10 ac (4350 ft<sup>2</sup>)</li> </ul> <p style="text-align: right;"> <input type="radio"/> Yes = <b>Category I</b>   <input checked="" type="radio"/> No = <b>Category II</b> </p>	<input type="radio"/> <b>Cat. I</b>  <input type="radio"/> <b>Cat. II</b>
<p><b>SC 6.0. Interdunal Wetlands</b></p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i><b>If you answer yes you will still need to rate the wetland based on its habitat functions.</b></i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> <li>— Long Beach Peninsula: Lands west of SR 103</li> <li>— Grayland-Westport: Lands west of SR 105</li> <li>— Ocean Shores-Copalis: Lands west of SR 115 and SR 109</li> </ul> <p style="text-align: right;"> <input type="radio"/> Yes – Go to <b>SC 6.1</b>   <input checked="" type="radio"/> No = <b>not an interdunal wetland for rating</b> </p> <p>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)?</p> <p style="text-align: right;"> <input type="radio"/> Yes = <b>Category I</b>   <input checked="" type="radio"/> No – Go to <b>SC 6.2</b> </p> <p>SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p style="text-align: right;"> <input type="radio"/> Yes = <b>Category II</b>   <input checked="" type="radio"/> No – Go to <b>SC 6.3</b> </p> <p>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?</p> <p style="text-align: right;"> <input type="radio"/> Yes = <b>Category III</b>   <input checked="" type="radio"/> No = <b>Category IV</b> </p>	<input type="radio"/> <b>Cat I</b>  <input type="radio"/> <b>Cat. II</b>  <input type="radio"/> <b>Cat. III</b>  <input type="radio"/> <b>Cat. IV</b>
<p><b>Category of wetland based on Special Characteristics</b></p> <p>If you answered No for all types, enter “Not Applicable” on Summary Form</p>	

Wetland name or number   A  

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- LEGEND:**
- Study Area
  - Extent of Observed Fill
  - Delineated Wetland
  - PFO/PSS
  - PSS



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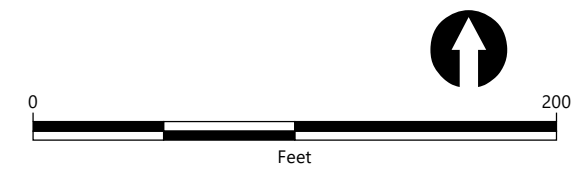
**Figure 1**  
**Wetland A Cowardin Classification Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project





**LEGEND:**

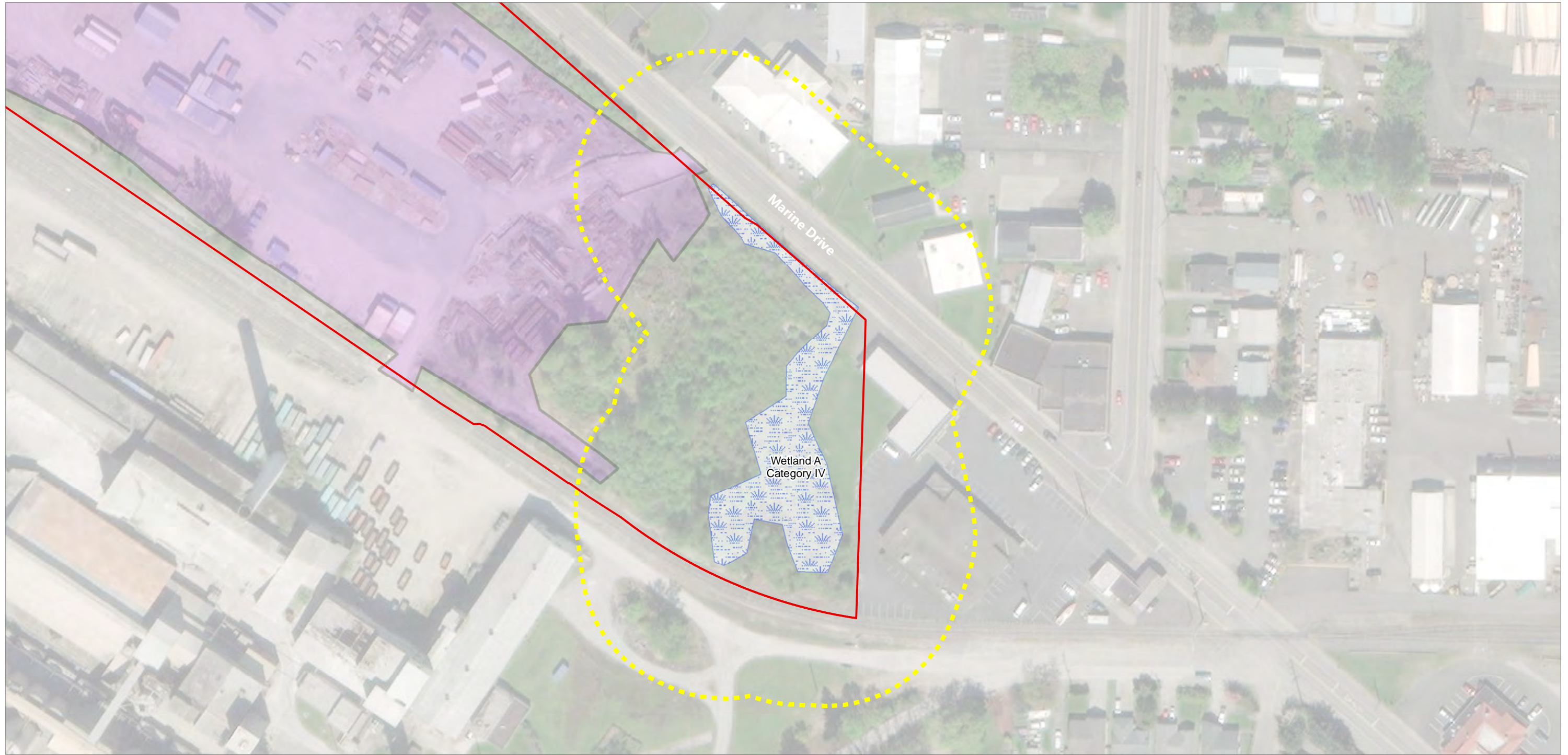
- Study Area
- Extent of Observed Fill
- Delineated Wetland
- Saturated Only
- Seasonally Flooded/Inundated



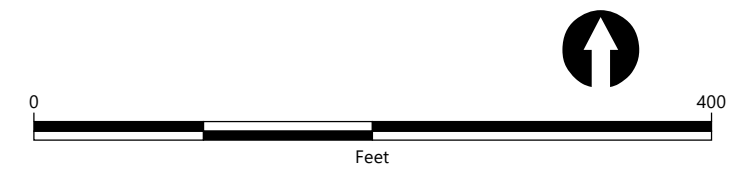
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**Figure 2**  
**Wetland A Hydroperiods Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



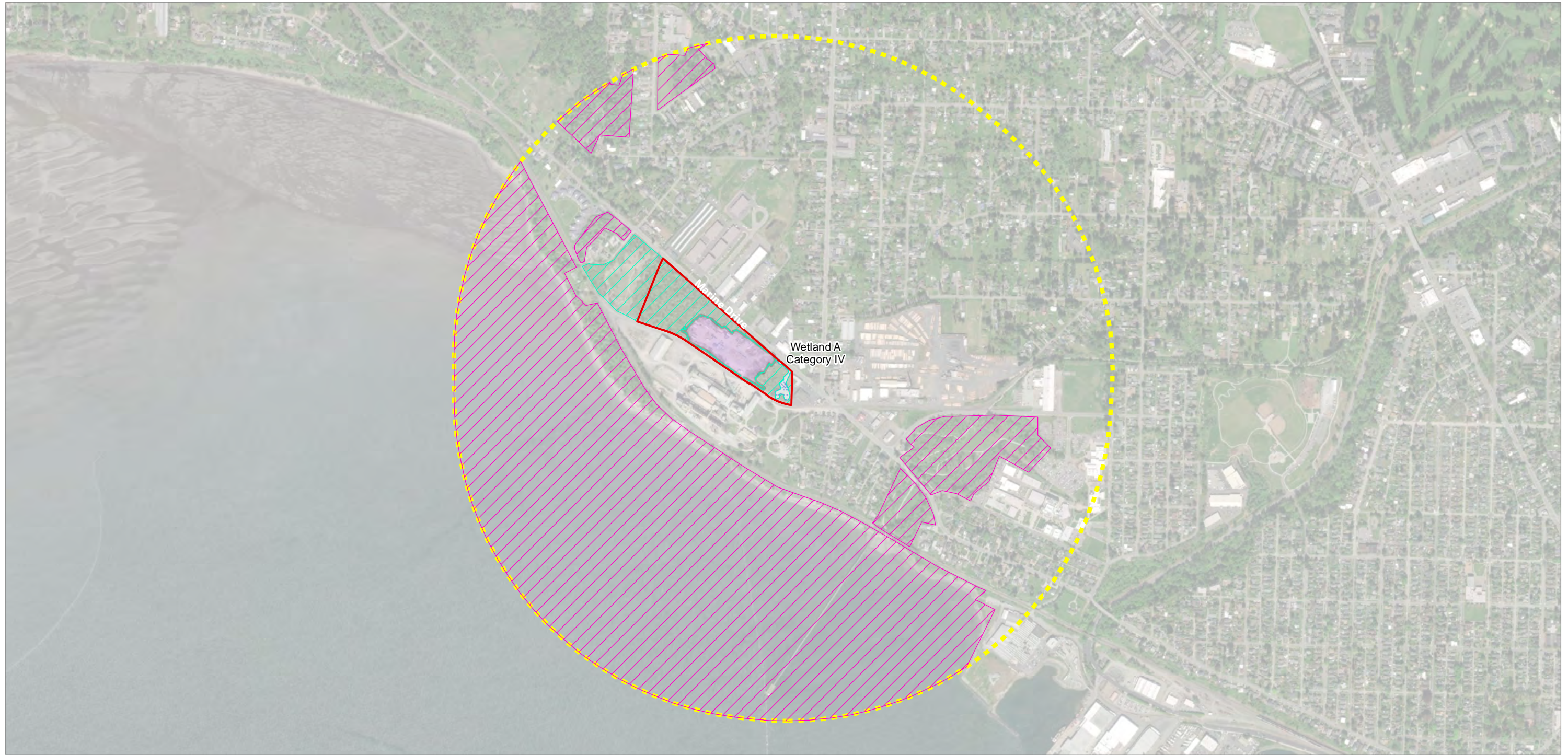
- LEGEND:**
- Study Area
  - Extent of Observed Fill
  - Delineated Wetland
  - 150-Foot Buffer



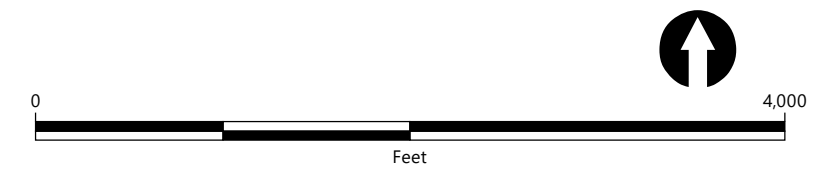
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**Figure 3**  
**Wetland A 150-Foot Buffer Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
  - Extent of Observed Fill
  - Delineated Wetland
  - Accessible Habitat
  - 1-Kilometer Polygon
  - Undisturbed Habitat



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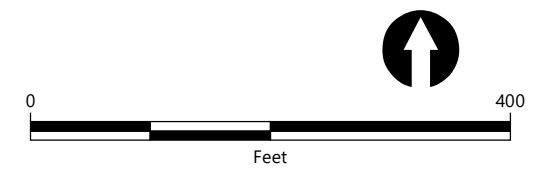


**Figure 4**  
**Wetland A 1-Kilometer Polygon Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



**LEGEND:**

- Study Area
- Extent of Observed Fill
- Contributing Basin
- Delineated Wetland



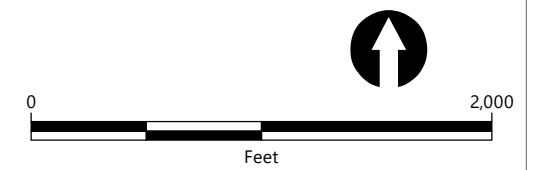
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**Figure 5**  
**Wetland A Contributing Basin Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
  - Extent of Observed Fill
  - Delineated Wetland
  - 303(d) Listed Waters



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**Figure 6**  
**Wetland A 303(d) Listed Waters Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



**LEGEND:**

Study Area	Extent of Observed Fill
Delineated Wetland	TMDLs in HUC12

0 2,000  
Feet

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**Figure 7**  
**Wetland A TMDLs by Basin Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project

## Wetland B Rating Forms

Wetland name or number B

## RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B (Marine Drive, Whatcom Co.) Date of site visit: 10/20/2020  
 Rated by Joseph R. Pursley Trained by Ecology?  Yes  No Date of training 06/2015  
 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 Google Earth

**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  
  X   Category III – Total score = 16 - 19  
         Category IV – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	H <input type="checkbox"/> M <input checked="" type="checkbox"/> L	H <input type="checkbox"/> M <input checked="" type="checkbox"/> L	H <input type="checkbox"/> M <input checked="" type="checkbox"/> L	
Landscape Potential	<input checked="" type="checkbox"/> H M L	<input checked="" type="checkbox"/> H M L	H M <input checked="" type="checkbox"/> L	
Value	H M <input checked="" type="checkbox"/> L	H M <input checked="" type="checkbox"/> L	H <input checked="" type="checkbox"/> M L	<b>TOTAL</b>
Score Based on Ratings	6	6	5	<b>17</b>

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

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

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

CHARACTERISTIC	CATEGORY
Estuarine	I    II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I    II
Interdunal	I   II   III   IV
None of the above	



Wetland name or number     B    

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

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	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 ( <i>can be added to another figure</i> )	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream ( <i>can be added to another figure</i> )	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

### Lake Fringe Wetlands

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

### Slope Wetlands

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



Wetland name or number   B  

NO – go to 6

YES – The wetland class is **Riverine**

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

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

NO – go to 7

YES – The wetland class is **Depressional**

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

NO – go to 8

YES – The wetland class is **Depressional**

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

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

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

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

Wetland name or number   B  

<b>DEPRESSIONAL AND FLATS WETLANDS</b>		
<b>Water Quality Functions - Indicators that the site functions to improve water quality</b>		
<b>D 1.0. Does the site have the potential to improve water quality?</b>		
D 1.1. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 3 points = 2 points = 1 points = 1	<b>3</b>
D 1.2. <u>The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0		<b>0</b>
D 1.3. <u>Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</u> Wetland has persistent, ungrazed, plants > 95% of area Wetland has persistent, ungrazed, plants > ½ of area Wetland has persistent, ungrazed plants > 1/10 of area Wetland has persistent, ungrazed plants < 1/10 of area	points = 5 points = 3 points = 1 points = 0	<b>5</b>
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > ½ total area of wetland Area seasonally ponded is > ¼ total area of wetland Area seasonally ponded is < ¼ total area of wetland	points = 4 points = 2 points = 0	<b>0</b>
<b>Total for D 1</b> Add the points in the boxes above		<b>8</b>

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

<b>D 2.0. Does the landscape have the potential to support the water quality function of the site?</b>		
D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 No = 0	<b>1</b>
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	<b>1</b>
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 No = 0	<b>0</b>
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 <u>Homeless encampment</u> waste and debris.	Yes = 1 No = 0	<b>1</b>
<b>Total for D 2</b> Add the points in the boxes above		<b>3</b>

**Rating of Landscape Potential** If score is:  3 or 4 = H  1 or 2 = M  0 = L Record the rating on the first page

<b>D 3.0. Is the water quality improvement provided by the site valuable to society?</b>		
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?	Yes = 1 No = 0	<b>0</b>
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	<b>0</b>
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	<b>0</b>
<b>Total for D 3</b> Add the points in the boxes above		<b>0</b>

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

**DEPRESSIONAL AND FLATS WETLANDS**

**Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation**

<b>D 4.0. Does the site have the potential to reduce flooding and erosion?</b>		
<b>D 4.1. Characteristics of surface water outflows from the wetland:</b>		
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	4
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
<b>D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.</b>		
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	3
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	
<b>D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</b>		
The area of the basin is less than 10 times the area of the unit	points = 5	3
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
<b>Total for D 4</b>	<b>Add the points in the boxes above</b>	<b>10</b>

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

<b>D 5.0. Does the landscape have the potential to support hydrologic functions of the site?</b>		
<b>D 5.1. Does the wetland receive stormwater discharges?</b>	Yes = 1 No = 0	1
<b>D 5.2. Is &gt;10% of the area within 150 ft of the wetland in land uses that generate excess runoff?</b>	Yes = 1 No = 0	1
<b>D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at &gt;1 residence/ac, urban, commercial, agriculture, etc.)?</b>	Yes = 1 No = 0	1
<b>Total for D 5</b>	<b>Add the points in the boxes above</b>	<b>3</b>

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

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

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

Wetland name or number     B    

**RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**

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

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

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

*Record the rating on the first page*

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

**Rating of Landscape Potential** If score is:  3-6 = H    1 or 2 = M    0 = L

*Record the rating on the first page*

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

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

*Record the rating on the first page*

**RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**

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

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

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

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

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

<b>R 6.0. Are the hydrologic functions provided by the site valuable to society?</b>	
<p>R 6.1. Distance to the nearest areas downstream that have flooding problems?  <i>Choose the description that best fits the site.</i></p> <p>The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) <span style="float:right">points = 2</span>                  Surface flooding problems are in a sub-basin farther down-gradient <span style="float:right">points = 1</span>                  No flooding problems anywhere downstream <span style="float:right">points = 0</span></p>	
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0
<b>Total for R 6</b>	Add the points in the boxes above

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

Wetland name or number     B    

**LAKE FRINGE WETLANDS**

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

<b>L 1.0. Does the site have the potential to improve water quality?</b>	
<b>L 1.1. Average width of plants along the lakeshore (use polygons of Cowardin classes):</b>	
Plants are more than 33 ft (10 m) wide	points = 6
Plants are more than 16 ft (5 m) wide and <33 ft	points = 3
Plants are more than 6 ft (2 m) wide and <16 ft	points = 1
Plants are less than 6 ft wide	points = 0
<b>L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.</b>	
Cover of herbaceous plants is >90% of the vegetated area	points = 6
Cover of herbaceous plants is > <sup>2</sup> / <sub>3</sub> of the vegetated area	points = 4
Cover of herbaceous plants is > <sup>1</sup> / <sub>3</sub> of the vegetated area	points = 3
Other plants that are not aquatic bed > <sup>2</sup> / <sub>3</sub> unit	points = 3
Other plants that are not aquatic bed in > <sup>1</sup> / <sub>3</sub> vegetated area	points = 1
Aquatic bed plants and open water cover > <sup>2</sup> / <sub>3</sub> of the unit	points = 0
<b>Total for L 1</b>	<b>Add the points in the boxes above</b>

**Rating of Site Potential** If score is:  8-12 = H  4-7 = M  0-3 = L Record the rating on the first page

<b>L 2.0. Does the landscape have the potential to support the water quality function of the site?</b>	
<b>L 2.1. Is the lake used by power boats?</b>	Yes = 1 No = 0
<b>L 2.2. Is &gt; 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?</b>	Yes = 1 No = 0
<b>L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil?</b>	Yes = 1 No = 0
<b>Total for L 2</b>	<b>Add the points in the boxes above</b>

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

<b>L 3.0. Is the water quality improvement provided by the site valuable to society?</b>	
<b>L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?</b>	Yes = 1 No = 0
<b>L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)?</b>	Yes = 1 No = 0
<b>L 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 lake or basin in which the unit is found.</b>	Yes = 2 No = 0
<b>Total for L 3</b>	<b>Add the points in the boxes above</b>

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



Wetland name or number   B  

**LAKE FRINGE WETLANDS**

**Hydrologic Functions** - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?		
L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore ( <b>do not</b> include Aquatic bed): <i>Choose the highest scoring description that matches conditions in the wetland.</i>		
> ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 6	
> ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide	points = 4	
> ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 4	
Plants are at least 6 ft (2 m) wide (any type except Aquatic bed)	points = 2	
Plants are less than 6 ft (2 m) wide (any type except Aquatic bed)	points = 0	

**Rating of Site Potential:** If score is:  6 = M    0-5 = L

*Record the rating on the first page*

L 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
L 5.1. Is the lake used by power boats with more than 10 hp?	Yes = 1   No = 0	
L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance?	Yes = 1   No = 0	
Total for L 5	Add the points in the boxes above	

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

*Record the rating on the first page*

L 6.0. Are the hydrologic functions provided by the site valuable to society?		
L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.		
There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit	points = 2	
There are nature trails or other paths and recreational activities within 25 ft of OHWM	points = 1	
Other resources that could be impacted by erosion	points = 1	
There are no resources that can be impacted by erosion along the shores of the unit	points = 0	

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

*Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

**SLOPE WETLANDS**

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

S 1.0. Does the site have the potential to improve water quality?		
S 1.1. Characteristics of the average slope of the wetland: <i>(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)</i>		
Slope is 1% or less		points = 3
Slope is > 1%-2%		points = 2
Slope is > 2%-5%		points = 1
Slope is greater than 5%		points = 0
S 1.2. <u>The soil 2 in below the surface (or duff layer)</u> is true clay or true organic <i>(use NRCS definitions)</i> : Yes = 3 No = 0		
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. <i>Dense means you have trouble seeing the soil surface (&gt;75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.</i>		
Dense, uncut, herbaceous plants > 90% of the wetland area		points = 6
Dense, uncut, herbaceous plants > ½ of area		points = 3
Dense, woody, plants > ½ of area		points = 2
Dense, uncut, herbaceous plants > ¼ of area		points = 1
Does not meet any of the criteria above for plants		points = 0
Total for S 1	Add the points in the boxes above	

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

S 2.0. Does the landscape have the potential to support the water quality function of the site?		
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?		Yes = 1 No = 0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____		Yes = 1 No = 0
Total for S 2	Add the points in the boxes above	

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

S 3.0. Is the water quality improvement provided by the site valuable to society?		
S 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
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? <i>At least one aquatic resource in the basin is on the 303(d) list.</i>		Yes = 1 No = 0
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? <i>Answer YES if there is a TMDL for the basin in which unit is found.</i>		Yes = 2 No = 0
Total for S 3	Add the points in the boxes above	

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

Wetland name or number   B  

**SLOPE WETLANDS**

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

S 4.0. Does the site have the potential to reduce flooding and stream erosion?

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. <i>Stems of plants should be thick enough (usually &gt; 1/8 in), or dense enough, to remain erect during surface flows.</i>	
Dense, uncut, <b>rigid</b> plants cover > 90% of the area of the wetland	points = 1
All other conditions	points = 0

**Rating of Site Potential** If score is:  1 = M  0 = L

*Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff?	Yes = 1 No = 0
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**Rating of Landscape Potential** If score is:  1 = M  0 = L

*Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?

S 6.1. Distance to the nearest areas downstream that have flooding problems:	
The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2
Surface flooding problems are in a sub-basin farther down-gradient	points = 1
No flooding problems anywhere downstream	points = 0

S 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
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Total for S 6	Add the points in the boxes above
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**Rating of Value** If score is:  2-4 = H  1 = M  0 = L

*Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

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

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

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

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

- |                                                                                                                                                                               |                                  |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed                                                                                                                                          | 4 structures or more: points = 4 | 1 |
| <input type="checkbox"/> Emergent                                                                                                                                             | 3 structures: points = 2         |   |
| <input checked="" type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover)                                                                                         | 2 structures: points = 1         |   |
| <input checked="" type="checkbox"/> Forested (areas where trees have > 30% cover)                                                                                             | 1 structure: points = 0          |   |
| <i>If the unit has a Forested class, check if:</i>                                                                                                                            |                                  |   |
| <input type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon |                                  |   |

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

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

H 1.3. Richness of plant species

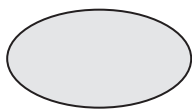
Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>.

*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*

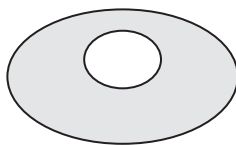
- |                              |            |   |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species               | points = 1 |   |
| < 5 species                  | points = 0 |   |

H 1.4. Interspersion of habitats

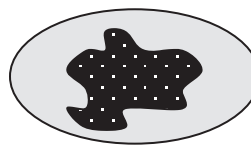
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



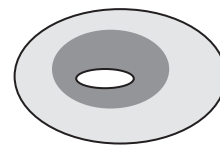
None = 0 points



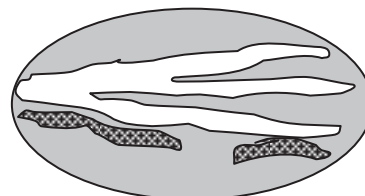
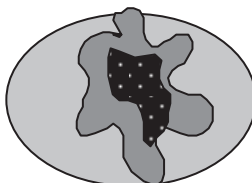
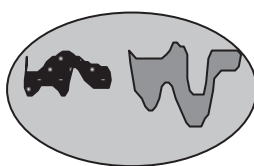
Low = 1 point



Moderate = 2 points



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



2

Wetland name or number     B    

<p>H 1.5. Special habitat features:          Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>  <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt; 4 in diameter and 6 ft long).  <input checked="" type="checkbox"/> Standing snags (dbh &gt; 4 in) within the wetland  <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)  <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt; 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)  <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)  <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>		3
Total for H 1	Add the points in the boxes above	<b>8</b>

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

<p>H 2.0. Does the landscape have the potential to support the habitat functions of the site?</p>		
<p>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>).  <i>Calculate:</i> 2 % undisturbed habitat <u>  2  </u> + [(% moderate and low intensity land uses)/2] <u>  1  </u> = <u>  3  </u> %          If total accessible habitat is:          &gt; 1/3 (33.3%) of 1 km Polygon <span style="float: right;">points = 3</span>          20-33% of 1 km Polygon <span style="float: right;">points = 2</span>          10-19% of 1 km Polygon <span style="float: right;">points = 1</span>          &lt; 10% of 1 km Polygon <span style="float: right;">points = 0</span></p>		0
<p>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.  <i>Calculate:</i> 48 % undisturbed habitat <u>  2  </u> + [(% moderate and low intensity land uses)/2] <u>  1  </u> = <u>  49  </u> %          Undisturbed habitat &gt; 50% of Polygon <span style="float: right;">points = 3</span>          Undisturbed habitat 10-50% and in 1-3 patches <span style="float: right;">points = 2</span>          Undisturbed habitat 10-50% and &gt; 3 patches <span style="float: right;">points = 1</span>          Undisturbed habitat &lt; 10% of 1 km Polygon <span style="float: right;">points = 0</span></p>		1
<p>H 2.3. Land use intensity in 1 km Polygon: If          &gt; 50% of 1 km Polygon is high intensity land use <span style="float: right;">points = (- 2)</span>          ≤ 50% of 1 km Polygon is high intensity <span style="float: right;">points = 0</span></p>		-2
Total for H 2	Add the points in the boxes above	<b>-1</b>

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

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

**Rating of Value** If score is:  2 = H  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.



<p><b>SC 4.0. Forested Wetlands</b></p> <p>Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate the wetland based on its functions.</i></p> <ul style="list-style-type: none"> <li>— <b>Old-growth forests</b> (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.</li> <li>— <b>Mature forests</b> (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).</li> </ul> <p style="text-align: right;"> <input type="radio"/> Yes = <b>Category I</b>    <input checked="" type="radio"/> No = <b>Not a forested wetland for this section</b> </p>	<input type="radio"/> <b>Cat. I</b>
<p><b>SC 5.0. Wetlands in Coastal Lagoons</b></p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <ul style="list-style-type: none"> <li>— The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</li> <li>— The lagoon in which the wetland is located contains ponded water that is saline or brackish (&gt; 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</li> </ul> <p style="text-align: right;"> <input type="radio"/> Yes – Go to <b>SC 5.1</b>    <input checked="" type="radio"/> No = <b>Not a wetland in a coastal lagoon</b> </p> <p><b>SC 5.1.</b> Does the wetland meet all of the following three conditions?</p> <ul style="list-style-type: none"> <li>— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).</li> <li>— At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or unmowed grassland.</li> <li>— The wetland is larger than 1/10 ac (4350 ft<sup>2</sup>)</li> </ul> <p style="text-align: right;"> <input type="radio"/> Yes = <b>Category I</b>    <input checked="" type="radio"/> No = <b>Category II</b> </p>	<p style="text-align: center; vertical-align: middle;"> <input type="radio"/> <b>Cat. I</b>   <input type="radio"/> <b>Cat. II</b> </p>
<p><b>SC 6.0. Interdunal Wetlands</b></p> <p>Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? <i>If you answer yes you will still need to rate the wetland based on its habitat functions.</i></p> <p>In practical terms that means the following geographic areas:</p> <ul style="list-style-type: none"> <li>— Long Beach Peninsula: Lands west of SR 103</li> <li>— Grayland-Westport: Lands west of SR 105</li> <li>— Ocean Shores-Copalis: Lands west of SR 115 and SR 109</li> </ul> <p style="text-align: right;"> <input type="radio"/> Yes – Go to <b>SC 6.1</b>    <input checked="" type="radio"/> No = <b>not an interdunal wetland for rating</b> </p> <p><b>SC 6.1.</b> 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)?</p> <p style="text-align: right;"> <input type="radio"/> Yes = <b>Category I</b>    <input checked="" type="radio"/> No – Go to <b>SC 6.2</b> </p> <p><b>SC 6.2.</b> Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?</p> <p style="text-align: right;"> <input type="radio"/> Yes = <b>Category II</b>    <input checked="" type="radio"/> No – Go to <b>SC 6.3</b> </p> <p><b>SC 6.3.</b> 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?</p> <p style="text-align: right;"> <input type="radio"/> Yes = <b>Category III</b>    <input checked="" type="radio"/> No = <b>Category IV</b> </p>	<p style="text-align: center; vertical-align: middle;"> <input type="radio"/> <b>Cat I</b>   <input type="radio"/> <b>Cat. II</b>   <input type="radio"/> <b>Cat. III</b>   <input type="radio"/> <b>Cat. IV</b> </p>
<p><b>Category of wetland based on Special Characteristics</b></p> <p>If you answered No for all types, enter "Not Applicable" on Summary Form</p>	

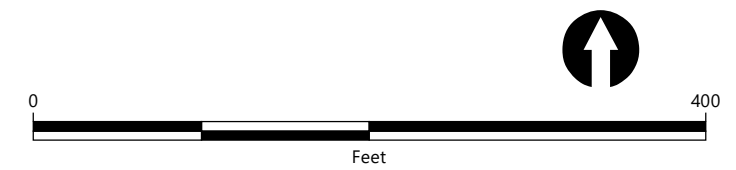


Wetland name or number   B  

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- LEGEND:**
- Study Area
  - Extent of Observed Fill
  - Delineated Wetland
  - PFO/PSS
  - PSS



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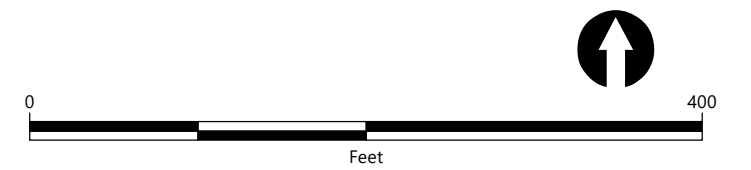


**Figure 1**  
**Wetland B Cowardin Classification Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



**LEGEND:**

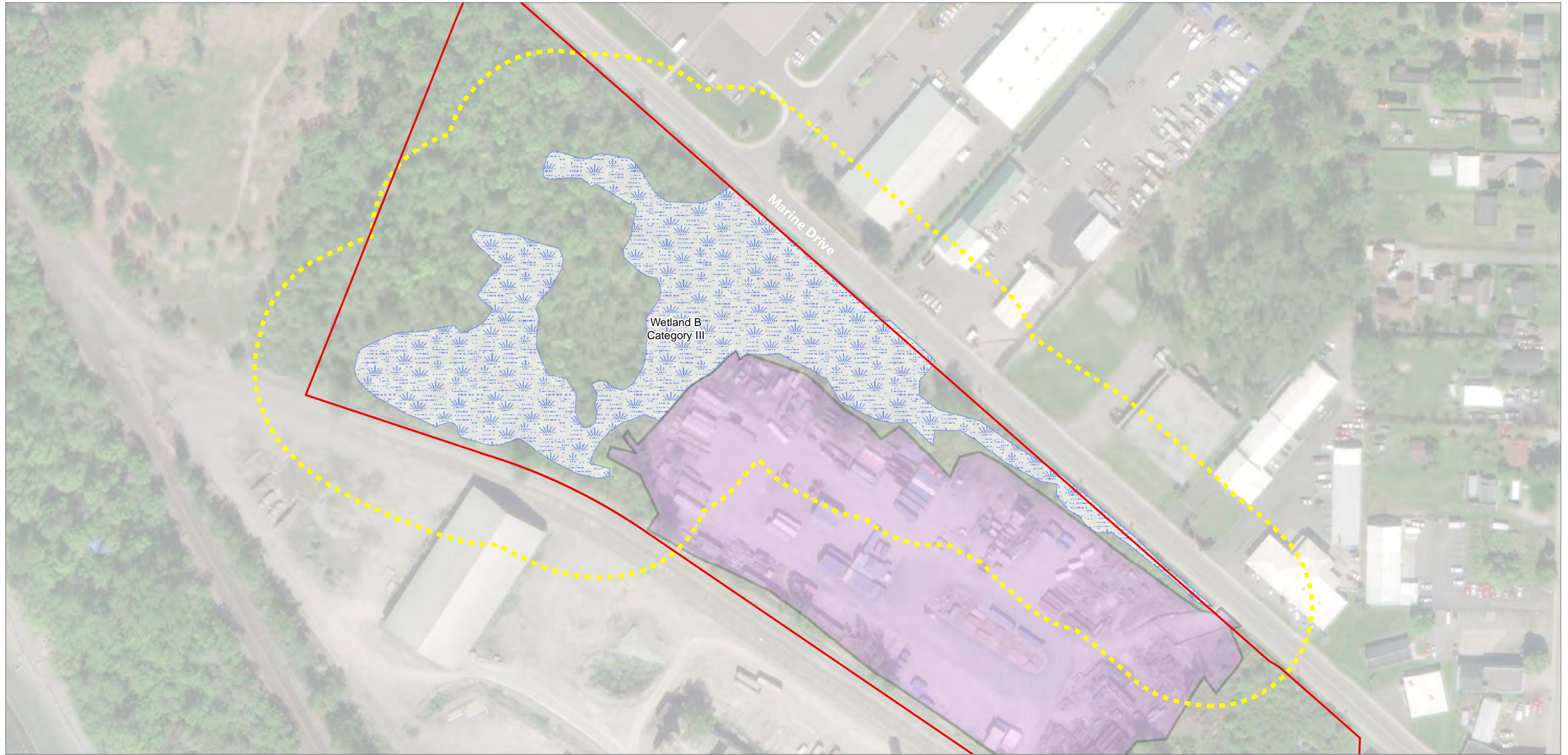
- Study Area
- Extent of Observed Fill
- Delineated Wetland
- Saturated Only
- Seasonally Flooded/Inundated



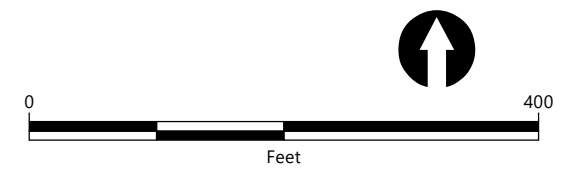
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**Figure 2**  
**Wetland B Hydroperiods Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



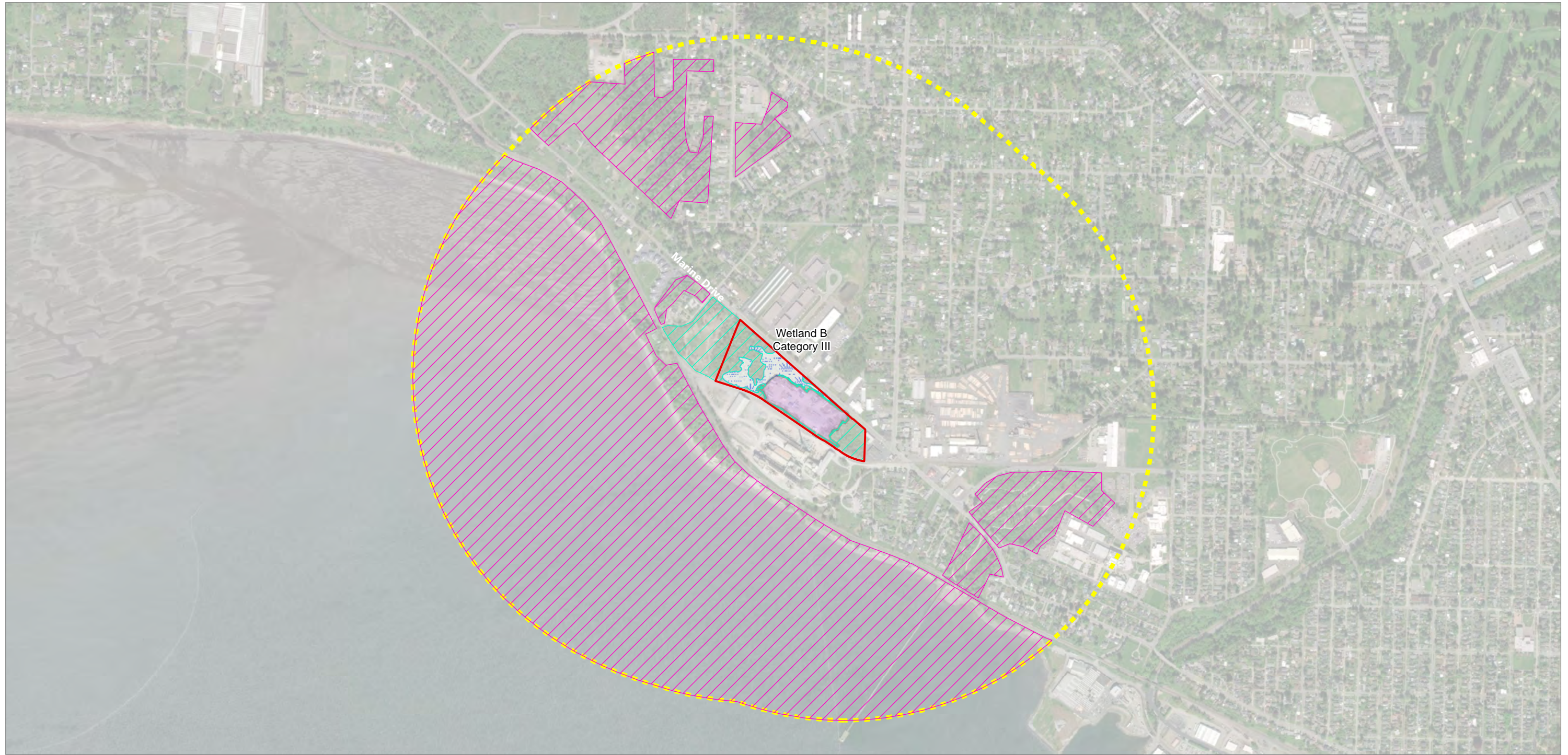
- LEGEND:**
- Study Area
  - Extent of Observed Fill
  - Delineated Wetland
  - 150-Foot Buffer



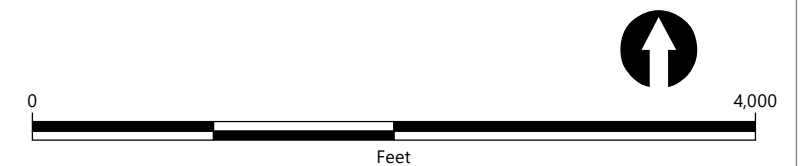
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**Figure 3**  
**Wetland B 150-Foot Buffer Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



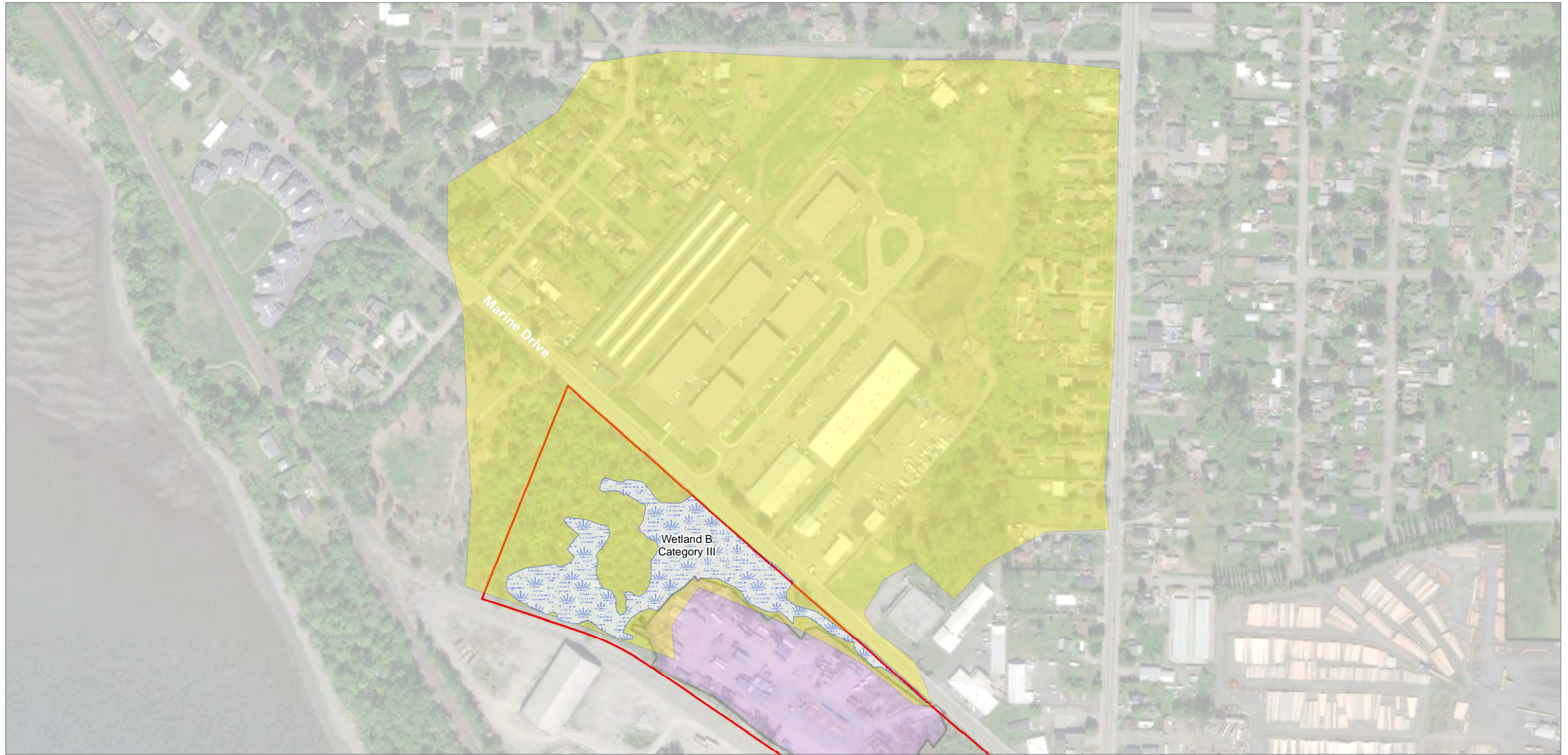
- LEGEND:**
- Study Area
  - 1-Kilometer Polygon
  - Extent of Observed Fill
  - Delineated Wetland
  - Accessible Habitat
  - Undisturbed Habitat



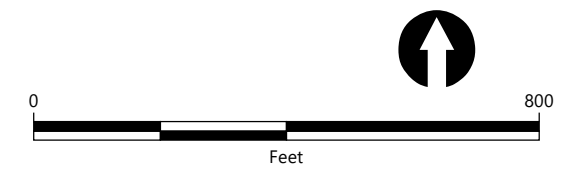
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**Figure 4**  
**Wetland B 1-Kilometer Polygon Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
  - Extent of Observed Fill
  - Contributing Basin
  - Delineated Wetland



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**Figure 5**  
**Wetland B Contributing Basin Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



**LEGEND:**

Study Area	Extent of Observed Fill
Delineated Wetland	303(d) Listed Waters

0 2,000  
Feet

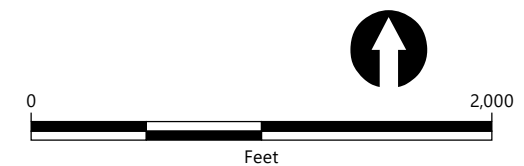
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**Figure 6**  
**Wetland B 303(d) Listed Waters Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
  - Extent of Observed Fill
  - Delineated Wetland
  - TMDLs in HUC12



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**Figure 7**  
**Wetland B TMDLs by Basin Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



## Wetland C Rating Forms

Wetland name or number C

## RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland C (Marine Drive, Lehigh Cement) Date of site visit: 10/20/2020  
 Rated by Joseph R. Pursley Trained by Ecology?  Yes  No Date of training 06/2015  
 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 Google Earth

**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  
  X   Category III – Total score = 16 - 19  
         Category IV – Total score = 9 - 15

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

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

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

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

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	

Wetland name or number     C    

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

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	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 ( <i>can be added to another figure</i> )	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream ( <i>can be added to another figure</i> )	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

### Lake Fringe Wetlands

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

### Slope Wetlands

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

## HGM Classification of Wetlands in Western Washington

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

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

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

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

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

- NO – **Saltwater Tidal Fringe (Estuarine)**                                       YES – **Freshwater Tidal Fringe**

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

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

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

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

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

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

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

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

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

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

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

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

Wetland name or number   C  

NO – go to 6

YES – The wetland class is **Riverine**

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

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

NO – go to 7

YES – The wetland class is **Depressional**

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

NO – go to 8

YES – The wetland class is **Depressional**

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

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

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

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

<b>DEPRESSIONAL AND FLATS WETLANDS</b>		
<b>Water Quality Functions - Indicators that the site functions to improve water quality</b>		
<b>D 1.0. Does the site have the potential to improve water quality?</b>		
D 1.1. <u>Characteristics of surface water outflows from the wetland:</u> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 3 points = 2 points = 1 points = 1	<b>3</b>
D 1.2. <u>The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions).</u> Yes = 4 No = 0		<b>0</b>
D 1.3. <u>Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):</u> Wetland has persistent, ungrazed, plants > 95% of area Wetland has persistent, ungrazed, plants > ½ of area Wetland has persistent, ungrazed plants > 1/10 of area Wetland has persistent, ungrazed plants < 1/10 of area	points = 5 points = 3 points = 1 points = 0	<b>5</b>
D 1.4. <u>Characteristics of seasonal ponding or inundation:</u> <i>This is the area that is ponded for at least 2 months. See description in manual.</i> Area seasonally ponded is > ½ total area of wetland Area seasonally ponded is > ¼ total area of wetland Area seasonally ponded is < ¼ total area of wetland	points = 4 points = 2 points = 0	<b>2</b>
<b>Total for D 1</b> Add the points in the boxes above		<b>10</b>

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

<b>D 2.0. Does the landscape have the potential to support the water quality function of the site?</b>		
D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 No = 0	<b>1</b>
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	<b>1</b>
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 No = 0	<b>0</b>
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 <u>Active and historic</u> homeless encampments (human waste and garbage)	Yes = 1 No = 0	<b>1</b>
<b>Total for D 2</b> Add the points in the boxes above		<b>3</b>

**Rating of Landscape Potential** If score is:  3 or 4 = H  1 or 2 = M  0 = L Record the rating on the first page

<b>D 3.0. Is the water quality improvement provided by the site valuable to society?</b>		
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?	Yes = 1 No = 0	<b>0</b>
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	<b>0</b>
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	<b>0</b>
<b>Total for D 3</b> Add the points in the boxes above		<b>0</b>

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

**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	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	
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	3
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	
D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.		
The area of the basin is less than 10 times the area of the unit	points = 5	5
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
Total for D 4	Add the points in the boxes above	<b>12</b>

**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	0
Total for D 5	Add the points in the boxes above	<b>2</b>

**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):		0
• Flooding occurs in a sub-basin that is immediately down-gradient of unit.	points = 2	
• Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
Flooding from groundwater is an issue in the sub-basin.	points = 1	
The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. Explain why <u>Wetland is a closed depression.</u>	points = 0	
There are no problems with flooding downstream of the wetland.	points = 0	
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0	0
Total for D 6	Add the points in the boxes above	<b>0</b>

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

**RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**

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

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

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

*Record the rating on the first page*

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

**Rating of Landscape Potential** If score is:  3-6 = H  1 or 2 = M  0 = L

*Record the rating on the first page*

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

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

*Record the rating on the first page*



**RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS**

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

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

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

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

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

<b>R 6.0. Are the hydrologic functions provided by the site valuable to society?</b>	
<p>R 6.1. Distance to the nearest areas downstream that have flooding problems?  <i>Choose the description that best fits the site.</i></p> <p>The sub-basin immediately down-gradient of the wetland has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds) points = 2                  Surface flooding problems are in a sub-basin farther down-gradient points = 1                  No flooding problems anywhere downstream points = 0</p>	
R 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0
<b>Total for R 6</b>	<b>Add the points in the boxes above</b>

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

Wetland name or number     C    

**LAKE FRINGE WETLANDS**

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

<b>L 1.0. Does the site have the potential to improve water quality?</b>	
<b>L 1.1. Average width of plants along the lakeshore (use polygons of Cowardin classes):</b>	
Plants are more than 33 ft (10 m) wide	points = 6
Plants are more than 16 ft (5 m) wide and <33 ft	points = 3
Plants are more than 6 ft (2 m) wide and <16 ft	points = 1
Plants are less than 6 ft wide	points = 0
<b>L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.</b>	
Cover of herbaceous plants is >90% of the vegetated area	points = 6
Cover of herbaceous plants is > <sup>2</sup> / <sub>3</sub> of the vegetated area	points = 4
Cover of herbaceous plants is > <sup>1</sup> / <sub>3</sub> of the vegetated area	points = 3
Other plants that are not aquatic bed > <sup>2</sup> / <sub>3</sub> unit	points = 3
Other plants that are not aquatic bed in > <sup>1</sup> / <sub>3</sub> vegetated area	points = 1
Aquatic bed plants and open water cover > <sup>2</sup> / <sub>3</sub> of the unit	points = 0
<b>Total for L 1</b>	<b>Add the points in the boxes above</b>

**Rating of Site Potential** If score is:  8-12 = H  4-7 = M  0-3 = L *Record the rating on the first page*

<b>L 2.0. Does the landscape have the potential to support the water quality function of the site?</b>	
<b>L 2.1. Is the lake used by power boats?</b>	Yes = 1 No = 0
<b>L 2.2. Is &gt; 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?</b>	Yes = 1 No = 0
<b>L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil?</b>	Yes = 1 No = 0
<b>Total for L 2</b>	<b>Add the points in the boxes above</b>

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

<b>L 3.0. Is the water quality improvement provided by the site valuable to society?</b>	
<b>L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?</b>	Yes = 1 No = 0
<b>L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one aquatic resource in the basin is on the 303(d) list)?</b>	Yes = 1 No = 0
<b>L 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 lake or basin in which the unit is found.</b>	Yes = 2 No = 0
<b>Total for L 3</b>	<b>Add the points in the boxes above</b>

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

Wetland name or number     C    

**LAKE FRINGE WETLANDS**

**Hydrologic Functions** - Indicators that the wetland unit functions to reduce shoreline erosion

L 4.0. Does the site have the potential to reduce shoreline erosion?		
L 4.1. Distance along shore and average width of Cowardin classes along the lakeshore ( <b>do not</b> include Aquatic bed): <i>Choose the highest scoring description that matches conditions in the wetland.</i>		
> ¾ of distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 6	
> ¾ of distance is Scrub-shrub or Forested at least 6 ft (2 m) wide	points = 4	
> ¼ distance is Scrub-shrub or Forested at least 33 ft (10 m) wide	points = 4	
Plants are at least 6 ft (2 m) wide (any type except Aquatic bed)	points = 2	
Plants are less than 6 ft (2 m) wide (any type except Aquatic bed)	points = 0	

**Rating of Site Potential:** If score is:  6 = M    0-5 = L

*Record the rating on the first page*

L 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
L 5.1. Is the lake used by power boats with more than 10 hp?	Yes = 1   No = 0	
L 5.2. Is the fetch on the lake side of the unit at least 1 mile in distance?	Yes = 1   No = 0	
Total for L 5	Add the points in the boxes above	

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

*Record the rating on the first page*

L 6.0. Are the hydrologic functions provided by the site valuable to society?		
L 6.1. Are there resources along the shore that can be impacted by erosion? If more than one resource is present, choose the one with the highest score.		
There are human structures or old growth/mature forests within 25 ft of OHWM of the shore in the unit	points = 2	
There are nature trails or other paths and recreational activities within 25 ft of OHWM	points = 1	
Other resources that could be impacted by erosion	points = 1	
There are no resources that can be impacted by erosion along the shores of the unit	points = 0	

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

*Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

**SLOPE WETLANDS**

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

S 1.0. Does the site have the potential to improve water quality?		
S 1.1. Characteristics of the average slope of the wetland: <i>(a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance)</i>		
Slope is 1% or less		points = 3
Slope is > 1%-2%		points = 2
Slope is > 2%-5%		points = 1
Slope is greater than 5%		points = 0
S 1.2. <u>The soil 2 in below the surface (or duff layer)</u> is true clay or true organic <i>(use NRCS definitions)</i> : Yes = 3 No = 0		
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. <i>Dense means you have trouble seeing the soil surface (&gt;75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.</i>		
Dense, uncut, herbaceous plants > 90% of the wetland area		points = 6
Dense, uncut, herbaceous plants > ½ of area		points = 3
Dense, woody, plants > ½ of area		points = 2
Dense, uncut, herbaceous plants > ¼ of area		points = 1
Does not meet any of the criteria above for plants		points = 0
Total for S 1	Add the points in the boxes above	

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

S 2.0. Does the landscape have the potential to support the water quality function of the site?		
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?		Yes = 1 No = 0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other sources _____		Yes = 1 No = 0
Total for S 2	Add the points in the boxes above	

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

S 3.0. Is the water quality improvement provided by the site valuable to society?		
S 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
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? <i>At least one aquatic resource in the basin is on the 303(d) list.</i>		Yes = 1 No = 0
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? <i>Answer YES if there is a TMDL for the basin in which unit is found.</i>		Yes = 2 No = 0
Total for S 3	Add the points in the boxes above	

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

Wetland name or number   C  

**SLOPE WETLANDS**

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

S 4.0. Does the site have the potential to reduce flooding and stream erosion?

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. <i>Stems of plants should be thick enough (usually &gt; 1/8 in), or dense enough, to remain erect during surface flows.</i>	
Dense, uncut, <b>rigid</b> plants cover > 90% of the area of the wetland	points = 1
All other conditions	points = 0

**Rating of Site Potential** If score is:  1 = M  0 = L

*Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?

S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff?	Yes = 1 No = 0
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**Rating of Landscape Potential** If score is:  1 = M  0 = L

*Record the rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?

S 6.1. Distance to the nearest areas downstream that have flooding problems:	
The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2
Surface flooding problems are in a sub-basin farther down-gradient	points = 1
No flooding problems anywhere downstream	points = 0

S 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
--------------------------------------------------------------------------------------------------------------------------	----------------

Total for S 6	Add the points in the boxes above
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**Rating of Value** If score is:  2-4 = H  1 = M  0 = L

*Record the rating on the first page*

NOTES and FIELD OBSERVATIONS:

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

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

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

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

- |                                                                                                                                                                               |                                  |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---|
| <input type="checkbox"/> Aquatic bed                                                                                                                                          | 4 structures or more: points = 4 | 0 |
| <input type="checkbox"/> Emergent                                                                                                                                             | 3 structures: points = 2         |   |
| <input checked="" type="checkbox"/> Scrub-shrub (areas where shrubs have > 30% cover)                                                                                         | 2 structures: points = 1         |   |
| <input type="checkbox"/> Forested (areas where trees have > 30% cover)                                                                                                        | 1 structure: points = 0          |   |
| <i>If the unit has a Forested class, check if:</i>                                                                                                                            |                                  |   |
| <input type="checkbox"/> The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon |                                  |   |

**H 1.2. Hydroperiods**

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

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

**H 1.3. Richness of plant species**

Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>.

*Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

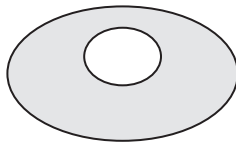
- |                              |            |   |
|------------------------------|------------|---|
| If you counted: > 19 species | points = 2 | 1 |
| 5 - 19 species               | points = 1 |   |
| < 5 species                  | points = 0 |   |

**H 1.4. Interspersion of habitats**

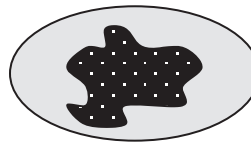
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



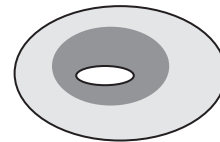
**None = 0 points**



**Low = 1 point**

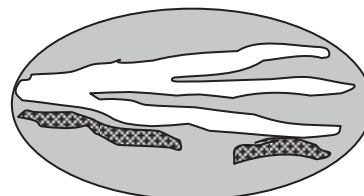
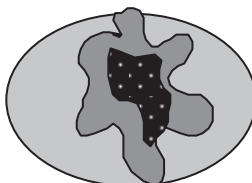
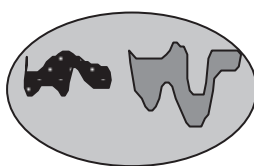


**Moderate = 2 points**



1

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



Wetland name or number  C

<p>H 1.5. Special habitat features:          Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i>  <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt; 4 in diameter and 6 ft long).  <input type="checkbox"/> Standing snags (dbh &gt; 4 in) within the wetland  <input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) <b>and/or</b> overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)  <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt; 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)  <input type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)  <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>		2
Total for H 1	Add the points in the boxes above	<b>5</b>

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?		
<p>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>).  <i>Calculate:</i> 3 % undisturbed habitat <u> 4 </u> + [(% moderate and low intensity land uses)/2] <u> 2 </u> = <u> 5 </u> %          If total accessible habitat is:          &gt; 1/3 (33.3%) of 1 km Polygon <span style="float: right;">points = 3</span>          20-33% of 1 km Polygon <span style="float: right;">points = 2</span>          10-19% of 1 km Polygon <span style="float: right;">points = 1</span>          &lt; 10% of 1 km Polygon <span style="float: right;">points = 0</span></p>		0
<p>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.  <i>Calculate:</i> 44 % undisturbed habitat <u> 4 </u> + [(% moderate and low intensity land uses)/2] <u> 2 </u> = <u> 46 </u> %          Undisturbed habitat &gt; 50% of Polygon <span style="float: right;">points = 3</span>          Undisturbed habitat 10-50% and in 1-3 patches <span style="float: right;">points = 2</span>          Undisturbed habitat 10-50% and &gt; 3 patches <span style="float: right;">points = 1</span>          Undisturbed habitat &lt; 10% of 1 km Polygon <span style="float: right;">points = 0</span></p>		1
<p>H 2.3. Land use intensity in 1 km Polygon: If          &gt; 50% of 1 km Polygon is high intensity land use <span style="float: right;">points = (- 2)</span>          ≤ 50% of 1 km Polygon is high intensity <span style="float: right;">points = 0</span></p>		-2
Total for H 2	Add the points in the boxes above	<b>-1</b>

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

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

**Rating of Value** If score is:  2 = H  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	Category
<i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i>	
<p><b>SC 1.0. Estuarine wetlands</b>            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      <input type="radio"/> Yes – Go to <b>SC 1.1</b>   <input checked="" type="radio"/> No = <b>Not an estuarine wetland</b></p>	
<p>SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?      <input type="radio"/> Yes = <b>Category I</b>   <input type="radio"/> No - Go to <b>SC 1.2</b></p>	<input type="radio"/> Cat. I
<p>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 <i>Spartina</i>, 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 unmowed grassland.            — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.      <input type="radio"/> Yes = <b>Category I</b>   <input checked="" type="radio"/> No = <b>Category II</b></p>	<input type="radio"/> Cat. I  <input type="radio"/> Cat. II
<p><b>SC 2.0. Wetlands of High Conservation Value (WHCV)</b>            SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value?      <input type="radio"/> Yes – Go to <b>SC 2.2</b>   <input checked="" type="radio"/> No – Go to <b>SC 2.3</b>            SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?      <input type="radio"/> Yes = <b>Category I</b>   <input checked="" type="radio"/> No = <b>Not a WHCV</b>            SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland?  <a href="http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwtlands.pdf">http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwtlands.pdf</a>  <input type="radio"/> Yes – <b>Contact WNHP/WDNR and go to SC 2.4</b>   <input checked="" type="radio"/> No = <b>Not a WHCV</b>            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?      <input type="radio"/> Yes = <b>Category I</b>   <input checked="" type="radio"/> No = <b>Not a WHCV</b></p>	<input type="radio"/> Cat. I
<p><b>SC 3.0. Bogs</b>            Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i>            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?      <input type="radio"/> Yes – Go to <b>SC 3.3</b>   <input checked="" type="radio"/> No – Go to <b>SC 3.2</b>            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?      <input type="radio"/> Yes – Go to <b>SC 3.3</b>   <input checked="" type="radio"/> No = <b>Is not a bog</b>            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?      <input type="radio"/> Yes = <b>Is a Category I bog</b>   <input checked="" type="radio"/> No – Go to <b>SC 3.4</b>  <b>NOTE:</b> If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog.            SC 3.4. Is an area with peats or mucks forested (&gt; 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy?      <input type="radio"/> Yes = <b>Is a Category I bog</b>   <input checked="" type="radio"/> No = <b>Is not a bog</b></p>	<input type="radio"/> Cat. I

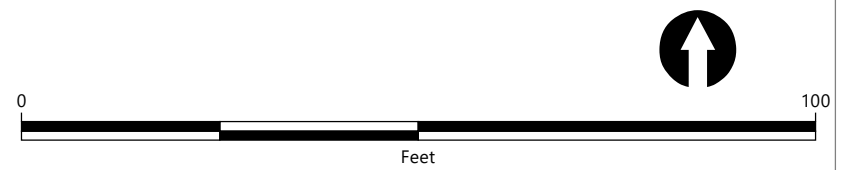


Wetland name or number   C  

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- LEGEND:**
- Study Area
  - Extent of Observed Fill
  - Delineated Wetland
  - PFO/PSS
  - PSS



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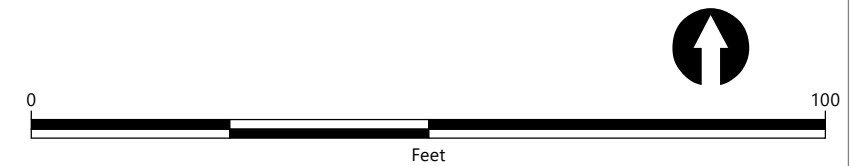


**Figure 1**  
**Wetland C Cowardin Classification Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
  - Delineated Wetland
  - Saturated Only
  - Seasonally Flooded/Inundated

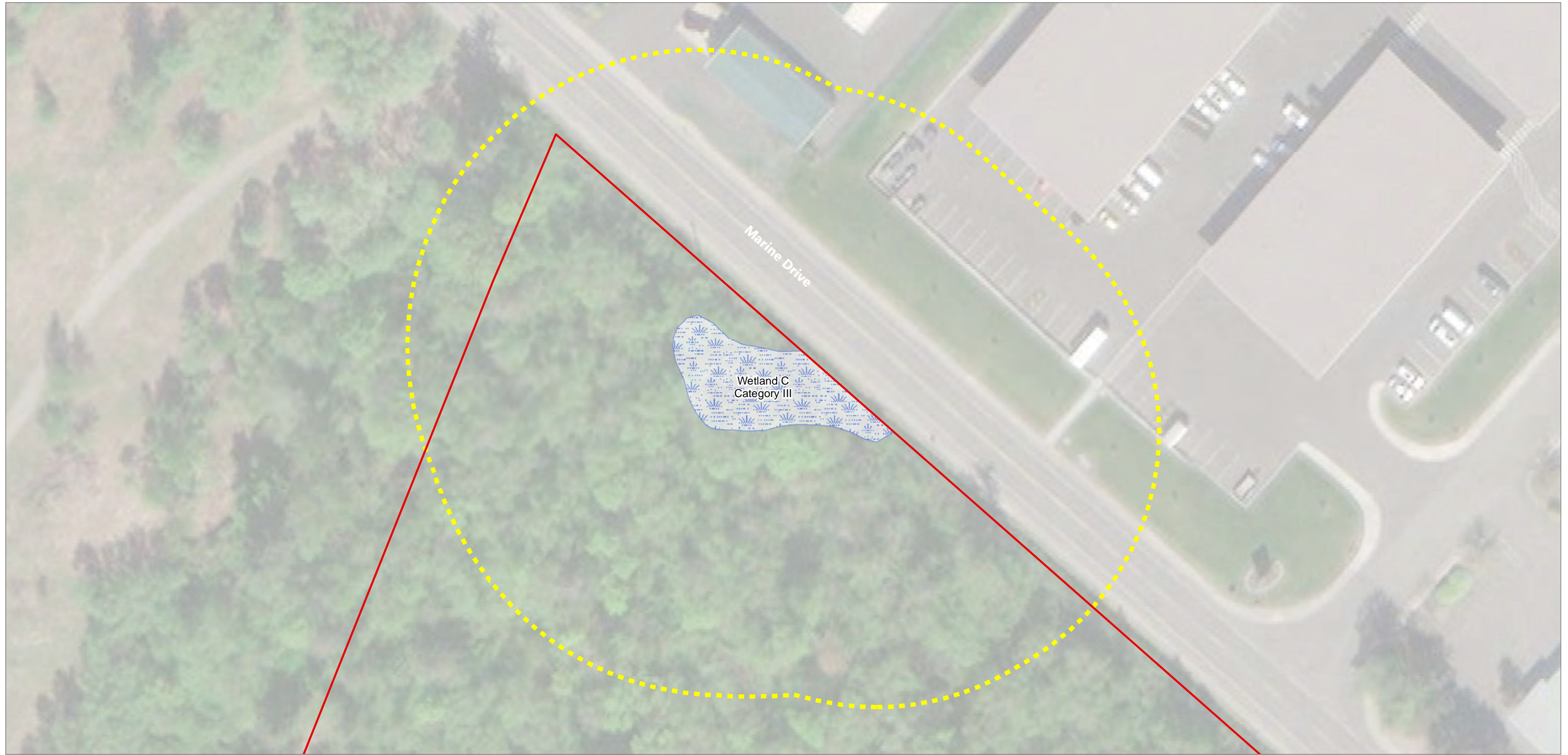
Extent of Observed Fill



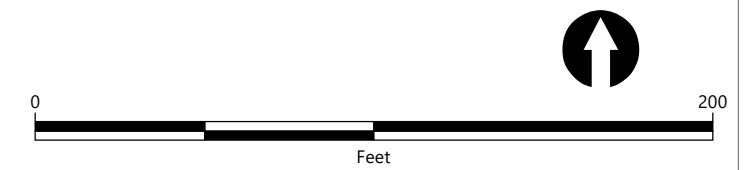
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**Figure 2**  
**Wetland C Hydroperiods Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



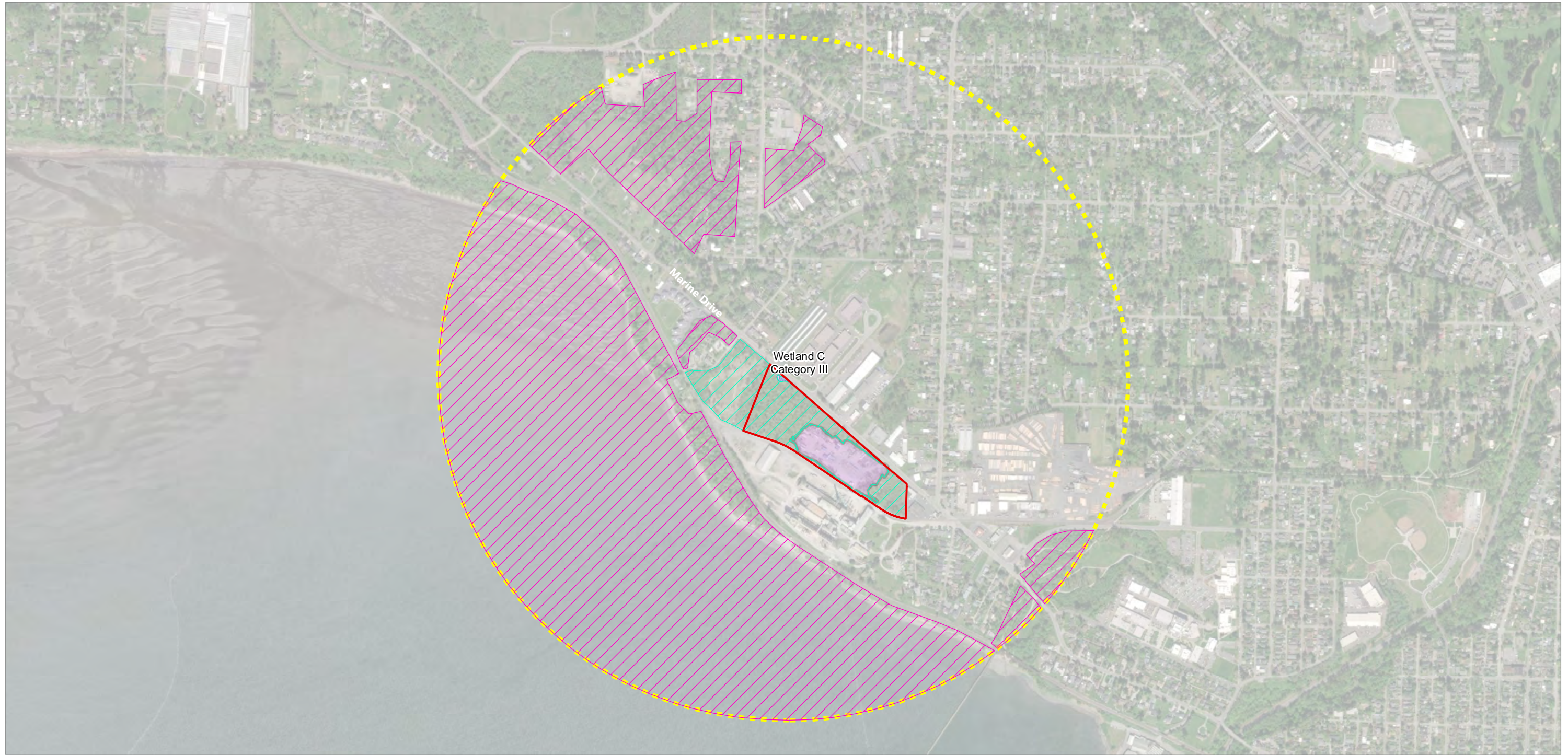
- LEGEND:**
- Study Area
  - Delineated Wetland
  - 150-Foot Buffer
  - Extent of Observed Fill



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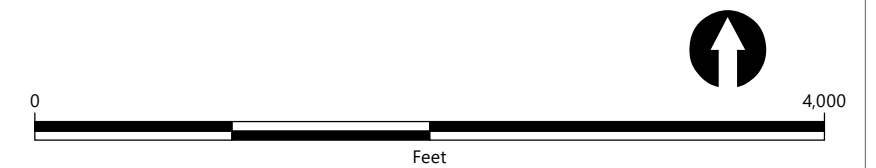


**Figure 3**  
**Wetland C 150-Foot Buffer Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



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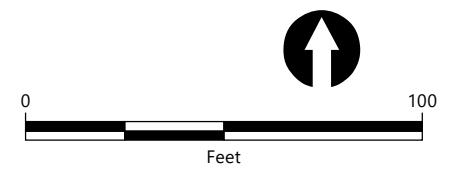
- |                     |                         |
|---------------------|-------------------------|
| Study Area          | Extent of Observed Fill |
| Delineated Wetland  | Accessible Habitat      |
| 1-Kilometer Polygon | Undisturbed Habitat     |



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- LEGEND:**
- Study Area
  - Contributing Basin
  - Delineated Wetland
  - Extent of Observed Fill

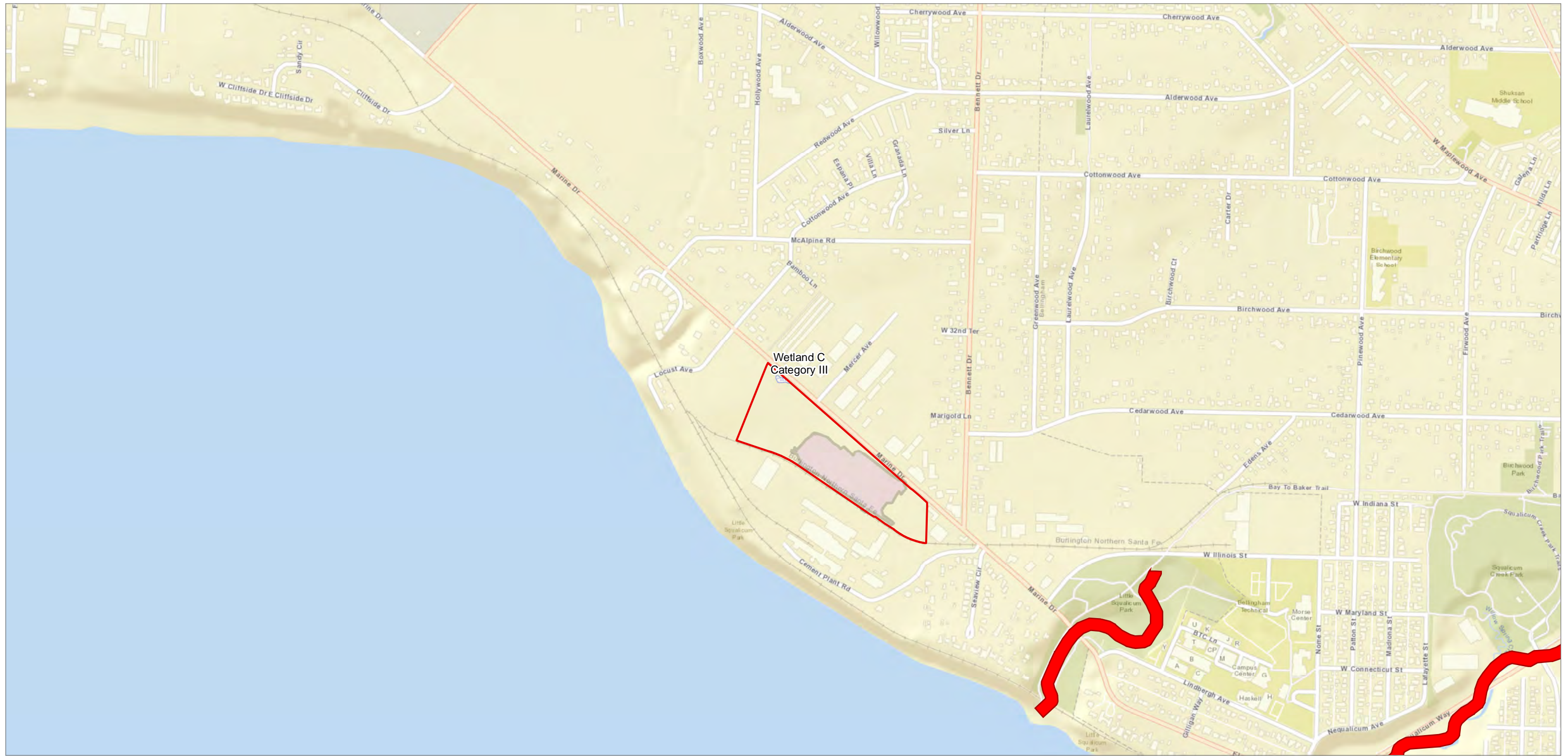


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**Figure 5**  
**Wetland C Contributing Basin Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project





**LEGEND:**

- Study Area
- Extent of Observed Fill
- Delineated Wetland
- 303(d) Listed Waters

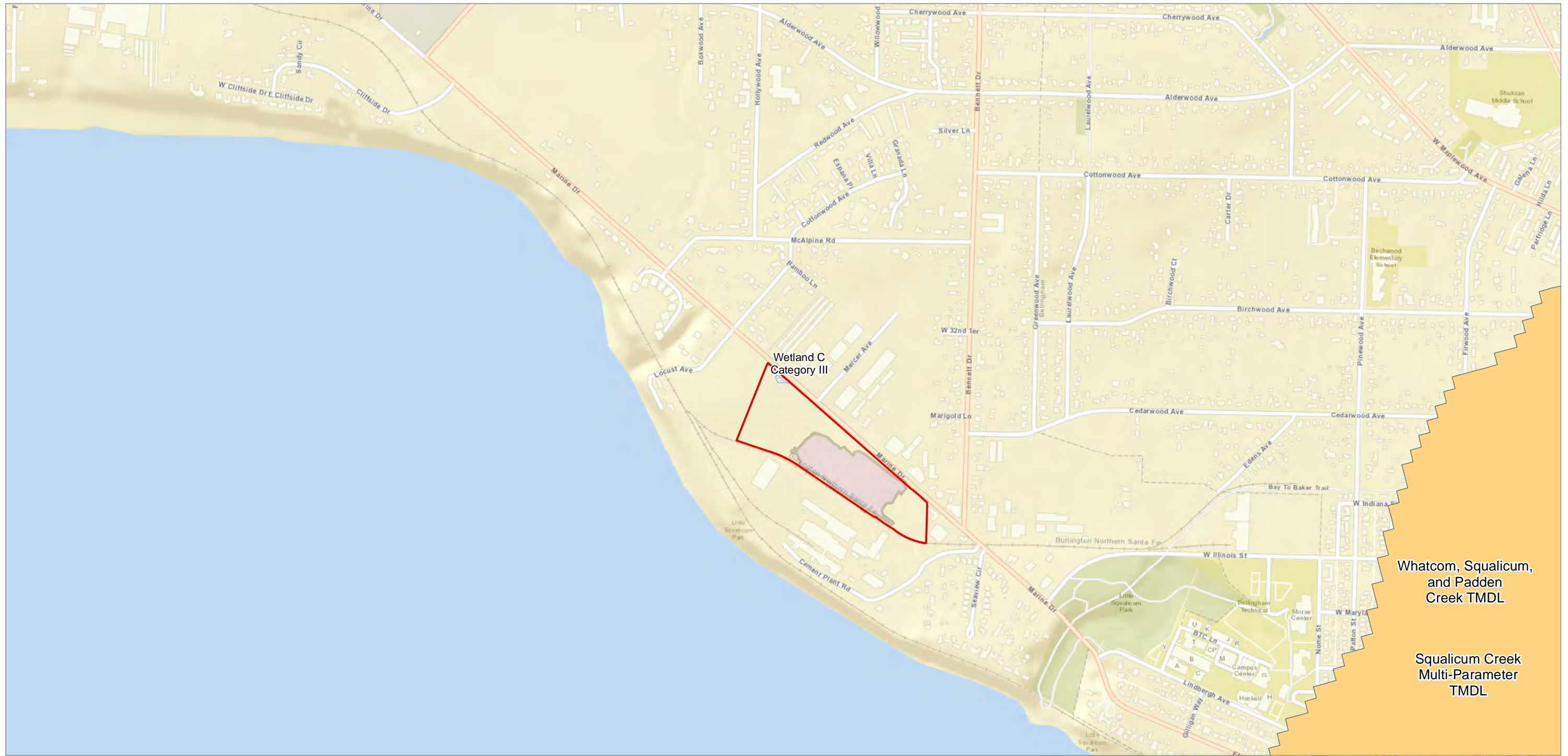

  


0 2,000  
Feet

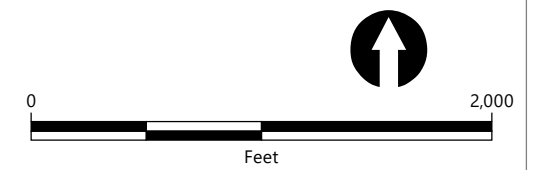
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**Figure 6**  
**Wetland C 303(d) Listed Waters Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project



- LEGEND:**
- Study Area
  - Extent of Observed Fill
  - Delineated Wetland
  - TMDLs in HUC12



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**Figure 7**  
**Wetland C TMDLs by Basin Map**  
 Wetland Delineation and Critical Areas Report  
 Marine Drive Proposed Development Project

Appendix D  
Photographs

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**Photograph 1**

**Wetland A: The northeastern edge of the wetland along Marine Drive**



**Photograph 2**

**Wetland A: The northwestern edge of the wetland along Marine Drive**



**Photograph 3**

**Wetland A: Dense interior of the scrub-shrub habitat near DP-01**



**Photograph 4**

**Wetland A: Thick canopy of Red-twigged dogwood (*Cornus sericea*) within the wetland boundary**



**Photograph 5**  
**Wetland B: Canopy of the mixed PFO and PSS habitats**



**Photograph 6**  
**Wetland B: Wetland to upland transition zone near DP-07**



**Photograph 7**

**Wetland B: Thick dogwood understory with limited herbaceous species**



**Photograph 8**

**Wetland B: Paper birch within the PFO reaches of the wetland**



**Photograph 9**

**Wetland B: The northern extent of the central scrub-shrub habitat along Marine Drive**



**Photograph 10**

**Wetland C: Closed depression surrounded by dogwood and willows**





DRAFT

October 2023  
Marine Drive Facility Development Project



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# Mitigation Plan

Prepared for ABC Recycling

DRAFT

October 2023  
Marine Drive Facility Development Project

# Mitigation Plan

**Prepared for**  
ABC Recycling  
8081 Meadow Avenue  
Burnaby, British Columbia, V3N 2V9  
Canada

**Prepared by**  
Anchor QEA, LLC  
1201 3rd Avenue  
Suite 2600  
Seattle, Washington 98101

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Figure 2 Site Aerial Photograph/Existing Conditions

Figure 3 Proposed Project

Figure 4 Existing Topography

Figure 5 Mapped Soils

Figure 6 Hydrologic Setting

Figure 7 Existing Vegetation Communities

Figure 8 Delineated Wetlands and Wetland Buffers

Figure 9 Proposed Project Impacts and Proposed Wetland Buffer Mitigation

**APPENDICES**

Appendix A Avoidance Scenarios

Appendix B-1 Planting Plan, Schedule, and Details

Appendix B-2 Planting Guidelines

Appendix B-3 Bond Quantity Worksheet

## ABBREVIATIONS

BMP	best management practice
Ecology	Washington State Department of Ecology
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
FEMA	Federal Emergency Management Agency
HGM	hydrogeomorphic
NRCS	Natural Resources Conservation Service
OBL	obligate wetland
PFO	palustrine forested wetland
Project	Marine Drive Facility Development Project
PSS	palustrine scrub-shrub wetland
Site	Marine Drive proposed development site
USFWS	U.S. Fish and Wildlife Service
WCC	Whatcom County Code

# 1 Introduction

This mitigation plan describes the proposed wetland buffer impacts and associated compensatory mitigation measures for ABC Recycling's proposed development of a metal recycling facility in Bellingham, Whatcom County, Washington (Figure 1). The Marine Drive Facility Development Project (referred to as the Project in this mitigation plan) would include the construction of a scrap metal shredding and separation facility and a maintenance shop, office building, truck scales, rail spur, and associated appurtenances. The proposed development site (Site) for the Project consists of a 19.69-acre property located at 741 Marine Drive Road in Township 38 North, Range 2 East, Section 44. A vicinity map showing the location of the Project Site is provided in Figure 1, and an aerial photograph showing the existing conditions of the Project Site is provided in Figure 2.

## 1.1 Project Description

ABC Recycling currently operates nine metal recycling facilities in western Canada and one transload operating facility in Bellingham, Washington. This Project will construct a scrap metal processing facility. The facility will accept imported scrap metal, primarily post-consumer depolluted automobiles and kitchen appliances, and process the scrap metal through the proposed indoor metal shredder. Clean ferrous metal shreds produced from this process will then be delivered to the Port of Bellingham by truck or railcar and loaded onto ocean-going vessels for transport to their ultimate destination. Construction of the majority of the proposed development will occur on an existing gravel-filled, historically developed area, with relatively small portions requiring fill placement into existing wetland buffers. This document describes the required mitigation to compensate for unavoidable impacts in these buffer areas.

The proposed design of the Project (Figure 3) includes the following elements:

- Four pre-manufactured steel buildings
- One office building
- New rail spur on the southern portion of the Site running east-west
- Concrete storage yard within the western portion of the Site
- Concrete pad between three buildings
- Asphalt parking lot next to the proposed office building
- Stormwater detention pond located in the southeast corner of the Site
- Connection to City of Bellingham watermain
- Connection to City of Bellingham sanitary sewer system
- Connection to Whatcom County storm drain

The four pre-manufactured steel buildings include one scrap metal shredding building, two metal reclamation buildings, and one metal processing building. The buildings are located in the central portion of the Site in the historically developed area with a truck access/fire lane road proposed

around the perimeter. A new stormwater detention pond will be installed to provide flow control for the Site and treat water per requirements for industrial sites under Whatcom County Code (WCC) Title 20.80.630 and the enhanced treatment requirements of the Washington State Department of Ecology's (Ecology) *Stormwater Management Manual for Western Washington* (Ecology 2019). The Project will outfall to the existing Whatcom County storm drain system in Marine Drive. The discharge rate from the Site will be substantially reduced from the current condition to help alleviate downstream conveyance stresses on the existing system.

## 1.2 Construction Methods

Each Project element will be constructed using common construction equipment such as excavators, backhoes, dump trucks, scrapers, graders, and compactors. Best management practices (BMPs) will be in place during all phases of construction to control and mitigate potential erosion, dust, noise, and traffic impacts to the environment, neighbors, and local transportation system.

Proposed mitigation activities will consist of restoration of wetland buffers disturbed by past activities on the Site as described in Section 4.1. Equipment to be used for mitigation construction will include backhoes, excavators, and hand tools. Timing of construction is currently uncertain, based on Project approvals. Additional information regarding BMPs can be found in Section 3.2.

## 2 Project Site Description

The Project Site is a rectangular-shaped parcel encompassing 19.69 acres (Figure 2). The western third and a small portion of the eastern edge of the Project Site are undeveloped. The rest of the Site is a gravel lot that was previously used for a mix of staging area, storage, and maintenance activities to support shipping and receiving for the previous property owner. Vegetation within the undeveloped portions of the Project Site includes a variety of native and non-native tree, shrub, grass, and herbaceous species associated with upland and wetland habitats. The western third of the Project Site is forested and dominated by deciduous trees with a few conifers and a dense understory of native shrubs. The eastern end of the parcel is a dense scrub-shrub habitat dominated by primarily invasive species. The developed central core of the parcel has little to no vegetation and is primarily compacted gravel, rock, and recycled crushed concrete.

Land use surrounding the Project Site is dominated by active railroad tracks to the south, a paved two-lane road (Marine Drive) with sidewalks to the north, an undeveloped forested/scrub-shrub area to the west, and commercial property with a parking lot and mowed and maintained grass to the east. A property (Lehigh Northwest Cement Company) with industrial land use is located south of the Project Site across the railroad tracks.

### 2.1 Topography

The topography of the Site is relatively level (Figure 4), with the higher elevation at 101 feet in the northwest sloping gradually to the low elevation at 71 feet in the southeast extent of the parcel. There are gentle slopes and naturally occurring depressions in the western forested area and the eastern end but relatively no slope in the developed interior. The forested area includes a mosaic of upland hummocks and wetland depressions.

### 2.2 Soils

The National Resources Conservation Service (NRCS) Web Soil Survey (USDA 2023) identifies one soil series within the Site: Urban land–Whatcom–Labounty complex, 0% to 8% slopes as shown in Figure 5. The NRCS identifies portions of the Whatcom–Labounty complex as containing both hydric and non-hydric inclusions. Approximately half of the Site also has modified soils that support historical and current industrial uses of storage/staging activities. The soils are modified with crushed concrete, angular rock, and mixed grades of sand and fines.

### 2.3 Hydrology

As shown in Figure 6, the Project is located in the Fort Bellingham watershed of the Nooksack Basin Water Resource Inventory Area 1 (Ecology 2023). The Project is outside of the 100-year Federal Emergency Management Agency (FEMA) floodplain. Hydrologic characteristics in the Site are



influenced by regional groundwater, direct precipitation, and surface water runoff. No defined stream channels were identified within the Site during the wetland delineation investigation conducted in October 2020 (Anchor QEA 2023). There is an unnamed SalmonScape-mapped intermittent/ephemeral stream located about 750 feet west of the Site (WDFW 2023). Another SalmonScape-mapped perennial stream (Little Squalicum Creek) is approximately 1,400 feet east of the Site (WDFW 2023). At the time of the delineation in October 2020, water was present within Wetland A in small depressions and a linear ditch-like feature.

## 2.4 Vegetation Communities and Habitats

Vegetation within the Site includes a variety of native and non-native tree, shrub, grass, and herbaceous species associated with upland and wetland habitat (Figure 7). The western third of the Site is dominated by a forested habitat with a dense understory of native shrubs and ferns. The eastern quarter of the Site is a mix of mostly native and non-native shrubs and some scattered trees. Specific vegetative communities found within the wetland and buffer areas are described in the following sections.

## 2.5 Wetlands

This section describes the three wetlands that were identified on the Project Site during the October 2020 wetland delineation performed by Anchor QEA, LLC (Anchor QEA 2023). The wetlands are classified according to the U.S. Fish and Wildlife Service’s (USFWS’s) *Classification of Wetlands and Deepwater Habitats of the United States* report (Cowardin et al. 1979) and by using the most current version of Ecology guidance in the *Washington State Wetland Rating System – Western Washington: 2014 Update* (Hruby 2014) for hydrogeomorphic (HGM) systems. The latter was also used to rate the identified wetlands and assign categories based on their functions and values as required by WCC 16.16.610(C).

Anchor QEA wetland scientists delineated three wetlands (Wetlands A, B, and C) within the Project Site. These wetlands are summarized in Table 1 and described in more detail in the *ABC Recycling Marine Drive Proposed Development Project Wetland Delineation and Critical Areas Report* (Anchor QEA 2023).

**Table 1**  
**Wetlands Delineated Within the Wetland Delineation Study Area**

Wetlands	Classification		Wetland Rating <sup>1</sup>	Total Wetland Area	
	USFWS	HGM		Square Feet	Acres
Wetland A	Palustrine scrub-shrub (PSS)	Slope and Depressional	IV	25,293	0.58
Wetland B	Palustrine forested (PFO), PSS	Slope and Depressional	III	174,985	4.02
Wetland C	PSS	Depressional	III	4,577	0.11
<b>Total Area of Wetlands</b>				<b>204,855</b>	<b>4.71</b>

Note:

1. Hruby 2014.

### 2.5.1 Wetland A

Wetland A is an approximately 0.58-acre (25,293-square-foot) wetland with mostly PSS vegetation classes and a small area of PFO with depressional and slope HGM classes (Figures 7 and 8).

Wetland A is a long, narrow wetland that flanks the northeast and eastern boundary of the Site. Due to the narrow wetland shape, habitat features associated with Wetland A are limited.

Wetland A includes two distinct vegetation communities: the northern 95% of the wetland is scrub-shrub dominated and there is a small patch of forested habitat in the southeast corner. Dominant vegetation in the scrub-shrub habitat includes Himalayan blackberry (*Rubus armeniacus*: facultative [FAC]), English hawthorn (*Crataegus monogyna*: FAC), red-twigged dogwood (*Cornus sericea*: facultative wetland [FACW]), and Chinese privet (*Ligustrum sinense*: FAC). The privet was so dense in areas that no other vegetation was observed due to limited sunlight. Some emergent species observed in the wetland include reed canarygrass (*Phalaris arundinacea*: FACW) and field horsetail (*Equisetum arvense*: FAC).

The small, forested habitat of Wetland A contained scrub-shrub species but also paper birch (*Betula papyrifera*: FAC) and Scouler's willow (*Salix scouleriana*: FAC). The small forest had a very dense shrub understory of non-native species listed previously. The small, forested habitat also included a mosaic of hummocks and wetland depressions within the wetland boundary.

### 2.5.2 Wetland B

Wetland B is an approximately 4.02-acre (174,985-square-foot) wetland with a PSS and PFO vegetation class and depressional and slope HGM classes (Figures 7 and 8). Wetland vegetation is dominated by paper birch, Scouler's willow, Pacific willow (*Salix lasiandra*: FACW), red-twigged dogwood, twinberry (*Lonicera involucrate*: FAC), and Himalayan blackberry with some understory of piggyback plant (*Tolmiea menziesii*: FAC), field horsetail, and slough sedge (*Carex obnupta*: obligate wetland [OBL]).

### 2.5.3 Wetland C

Wetland C is an approximately 0.11-acre (4,577-square-foot) wetland with a PSS vegetation class and depressional HGM class (Figures 7 and 8). The entire boundary of Wetland C was delineated within the Site. Wetland vegetation is dominated by Scouler's willow and red-twigged dogwood. The dogwood and willow were so thick that no herbaceous or emergent vegetation was observed.

## 2.6 Whatcom County Wetland Buffer Guidance

Required wetland buffers have been identified according to the current WCC Chapter 16.16.630. The WCC identifies minimum protective buffer widths based on the wetland category, land use intensity, and the Ecology habitat rating score, per the 2014 Ecology rating system (Hruby 2014). Table 2 summarizes WCC ratings and buffer widths. Figure 9 presents the impervious surface footprint established as part of

previous development activities, for consideration in establishing protective buffer widths and impacts associated with this development proposal.

**Table 2**  
**Wetland Rating and Standard Buffer Widths**

Wetland	2014 <sup>1</sup> State Rating (Ecology)	Local Rating <sup>2</sup> (Whatcom County)	Ecology Habitat Rating Score	Low-Intensity Land Use Buffer Width (feet) <sup>2</sup>	High-Intensity Land Use Buffer Width (feet) <sup>2</sup>
Wetland A	IV	IV	4	-	50
Wetland B	III	III	5	-	150
Wetland C	III	III	4	50	-

Note:

1. Hruby 2014.
2. WCC 16.16.630.

### 2.6.1 Wetland A Buffer

Dominant buffer vegetation of Wetland A included a maintained mowed lawn to the east and outside of the Site. Buffer to the north and south was limited due to paved roads and gravel railroad right-of-way but mostly was dominated by Himalayan blackberry and common snowberry (*Symphoricarpos albus*: facultative upland [FACU]). The buffer to the west was more diverse and contained black cottonwood (*Populus trichocarpa*: FAC), red alder (*Alnus rubra*: FAC), Indian plum (*Oemleria cerasiformis*: FACU), and Himalayan blackberry.

### 2.6.2 Wetland B Buffer

Dominant buffer vegetation of Wetland B includes red alder, big-leaf maple (*Acer macrophyllum*: FACU) western red cedar (*Thuja plicata*: FAC), English hawthorn, Nootka rose (*Rosa nutkana*: FAC), Indian plum, snowberry, and Himalayan blackberry. In several areas along the southern boundary of Wetland B, the buffer extent is limited by gravel fill material associated with the developed portion of the Site.

### 2.6.3 Wetland C Buffer

Dominant buffer vegetation of Wetland C was very similar to the buffer of Wetland B and included red alder, big-leaf maple, paper birch, western red cedar, Nootka rose, Indian plum, snowberry, and bracken fern (*Pteridium aquilinum*: FACU). The buffer along the eastern side of Wetland C is limited by Marine Drive.

## 2.7 Wetland Delineation and Rating Limitations

Wetland identification is an inexact science, and differences of professional opinion often occur between trained individuals. Final determinations for wetland boundaries and rating concurrence or adjustments to these are the responsibility of the regulating resource agency. Wetlands are, by definition, transitional areas; their boundaries can be altered by changes in hydrology or land use. In addition, the definition of jurisdictional wetlands may change. The results and conclusions expressed herein represent Anchor QEA's professional judgment based on the information available. No other warranty, expressed or implied, is made.

## 3 Mitigation Approach

### 3.1 Impact Summary

The proposed development footprint of the Project consists of five operational buildings, a paved concrete storage area, asphalt parking area and perimeter truck access and fire lane road, and a stormwater detention pond (Figure 3). The footprint of the development is located within the southeastern half of the Site and avoids impacts to the existing wetlands. Impacts to wetland buffers are limited to two main areas: a portion of the perimeter access road and the proposed facility entrance from Marine Drive (Figure 9).

The proposed Project design will result in the following impacts on existing wetland buffers as discussed in the following sections.

#### 3.1.1 *Wetland Impacts*

No wetland impacts are proposed.

#### 3.1.2 *Wetland Buffer Impacts*

The proposed Project is anticipated to result in approximately 0.05 acre (2,088 square feet) of existing upland scrub-shrub wetland buffer impacts from vegetation clearing and fill placement to construct the perimeter access road and the widened facility entrance from Marine Drive (Figure 9).

### 3.2 Avoidance and Minimization Measures

The Project has been designed to minimize, and ultimately compensate for, unavoidable wetland buffer impacts. The development footprint of the proposed Project was configured to avoid wetland impacts on the Project Site by locating the facility within the extent of the historically developed footprint to the extent possible and within the minimum needed footprint required for operations as much as practicable. As a result of Site planning efforts, impacts to wetland buffers have been minimized to the maximum extent practicable while still achieving the Project purpose.

Numerous alternative designs since the original layout have been considered for the proposed Project to avoid and minimize impacts to the wetlands and their buffers. Appendix A provides a representative comparison of these scenarios. Through the advancement of the alternative design scenarios, the extent of the development footprint has been reduced in size from its original footprint to reduce associated wetland and buffer impacts.

At the conclusion of the alternative design scenarios, the Project includes three areas of unavoidable impacts to a portion of the wetland buffers for Wetlands A and B (Figure 9). WCC Section 15.04.010 and the 2015 International Fire Code require a 25-foot fire lane with appropriate turning radii to provide life safety access to all buildings and work areas on the Site, which results in impacts to the

buffer for Wetland B. In addition, the entrance footprint of the Site must be expanded to accommodate the turning radius of vehicles required under the High Intensity Industrial land zoning of the Site. The vehicles utilized in this type of land use require a 50-foot turning radius. This footprint expansion results in impacts to the buffer for Wetlands A and B.

The Project has been designed to avoid impacts to Wetlands A, B, and C and minimize impacts to the wetland buffers to the maximum extent possible while meeting design criteria for the development and Whatcom County requirements for safe egress/ingress to and from the property. General Site design measures have been incorporated that are intended to reduce the development footprint. This includes expanding buffers where feasible. Buffer restoration activities are described in Section 4.

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

- All work will be performed according to the requirements and conditions of the Project permits.
- Impacts to the wetlands and remaining buffers on the Site will be minimized during construction through the use of temporary erosion and sediment control BMPs.
- The contractor will prepare and implement a Temporary Erosion and Sediment Control Plan and a Spill Prevention, Control, and Countermeasures Plan prior to the commencement of any Project activities.
- All concrete will be poured in dry conditions, or within confined areas not connected to surface waters, and shall be sufficiently cured prior to contact with surface waters.
- All wash water and concrete-laden water associated with construction will be treated to meet State of Washington surface water quality standards (Chapter 173-201A Washington Administrative Code) prior to discharge into surface waterbodies. Concrete-laden water may also be removed from the Project Site.
- Excess or waste materials will not be disposed of or abandoned within the wetlands, wetland buffers, or allowed to enter waters of the state.
- No petroleum products, chemicals, or other toxic or deleterious materials will be allowed to enter wetlands, wetland buffers, or other waters of the state.
- The contractor will be required to properly maintain construction equipment and vehicles to prevent them from leaking fuel or lubricants. If there is evidence of leakage, further use of such equipment will be suspended until the deficiency has been corrected.
- The Project will be constructed consistent with the stormwater management design criteria outlined in the *Stormwater Management Manual for Western Washington* (Ecology 2019) and the *Whatcom County 2018 Stormwater Management Program* manual (Whatcom County 2018) to reduce and control surface runoff.

### 3.3 General Objectives of Mitigation

The general objectives of the wetland buffer mitigation include the following:

- Ensure no loss of wetlands as a result of the Project
- Provide for a “no net loss” of wetland buffer area for the Project as a whole
- Restore native upland habitat between the proposed development and existing on-site wetlands

### 3.4 Compensatory Mitigation and No Net Loss Policy

The proposed Project would directly impact 0.05 acre (2,088 square feet) of existing wetland buffer area. WCC requires that compensatory mitigation wetland buffer impacts be performed at a 1:1 mitigation-to-impact ratio (WCC 16.16.680(C)). Using Whatcom County’s base ratios, the proposed wetland buffer mitigation plan will provide 0.05 acre (2,088 square feet) of compensatory wetland buffer mitigation through the restoration of previously filled buffers.

## 4 Proposed Mitigation Site Design

This section describes the proposed mitigation plan for the Project.

### 4.1 General Description of Mitigation

The mitigation plan addresses the specific loss of wetland buffer functions at the impact site and replaces these functions on the Project Site. The general mitigation plan is to create additional wetland buffer in two adjacent areas through the removal of invasive Himalayan blackberry and the planting of native woody and herbaceous vegetation (Figure 9). Wetland mitigation activities would consist of the following specific activities as shown in Appendix B-1 and B-2:

- Clearing and grubbing to prepare the mitigation sites
- Removing existing fill materials
- Placing 80 cubic yards of topsoil in the restored buffer
- Planting approximately 12 container trees, 52 shrubs, and 60 groundcover plants
- Installing a temporary irrigation system to provide water for new plantings

Native plant species to be installed within the wetland buffer are listed in the planting schedule in Section 4.4. Once completed, a temporary irrigation system will be installed within the wetland buffer.

### 4.2 Functional Benefits of Mitigation Plan

No wetlands would be impacted by the proposed Project. The mitigation plan is anticipated to retain functional benefits of wetland buffers by creating the same amount of wetland buffer compared to the current environmental baseline that will be impacted. The Project will also remove invasive species from the existing wetland buffer (primarily Himalayan blackberry), which will be a benefit to habitat functions.

### 4.3 Soil Preparation

The contractor will remove historical fill from the mitigation area and dispose of it off site at an appropriate upland location. Following fill removal, the contractor will import topsoil to establish suitable soil conditions for plant installation on site. See Planting Guidelines in Appendix B-2 for details on soil preparation.

### 4.4 Vegetation

Plantings in the wetland buffer mitigation areas will be installed to establish a mix of forested, scrub-shrub, and emergent upland and transitional plant communities. The goal of the planting plan is to mimic natural conditions. Plantings will be installed in clusters and grouped and spaced to replicate a natural pattern of plant dispersal and enhance habitat for a variety of wildlife. Invasive species, such



as Himalayan blackberry, will be removed from the mitigation area prior to the installation of the plants.

Following construction, invasive species will be controlled in accordance with the monitoring program. Volunteer species of native woody plants, such as red alder and black cottonwood, will be encouraged. Mitigation site management activities are described in Section 5.5.

## 4.5 Construction and Planting Schedule

Construction plans for the mitigation are included in Appendix B as follows:

- Appendix B-1: Planting Plan, Schedule, and Details
- Appendix B-2: Planting Guidelines
- Appendix B-3: Bond Quantity Worksheet

## 5 Regulatory Compliance

Whatcom County's guidance for the content of compensatory mitigation plans requires that the general goals of the plan be identified (WCC 16.16.690(A)(3)(b)). Goals describe the overall intent of mitigation efforts, and objectives describe individual components of the mitigation site in detail. Performance measures and success standards describe specific on-site characteristics that indicate a function is being provided. Performance measures are used to guide management of the mitigation site. Success standards are thresholds to be measured during the final year of the monitoring period that demonstrate the mitigation site has complied with regulatory requirements and is providing intended functions. The mitigation site will be monitored to demonstrate that intended wetland functions have been achieved. Monitoring will take place for 5 years following mitigation implementation with the option to reduce to 3 years if performance monitoring shows that plants are well established. Contingency plans describe what actions can be taken to correct site deficiencies.

The following sections present the proposed goals and objectives of the mitigation plan.

### 5.1 General Mitigation Goals

The goal for the wetland buffer mitigation site will be to establish native tree, shrub, and/or groundcover vegetation communities in the wetland buffer areas.

### 5.2 Objective and Standards of Success for Wetland and Buffer Mitigation

**Objective:** Wetland buffer plant communities will be restored by installing native trees, shrubs, and groundcover species.

- **Performance Measure 1:** Average survival of planted container trees and container shrubs will be at least 90% at the end of Year 1 and at least 70% at the end of Year 3.
- **Performance Measure 2:** Within planted areas, native tree and shrub vegetation cover will be at least 15% at the end of Year 3 and at least 30% at the end of Year 5.
- **Performance Measure 3:** Invasive, non-native trees, shrubs, and herbaceous species are maintained at levels below 15% total cover within planted buffer areas at all times.

### 5.3 Monitoring Plan

To ensure success of the mitigation plan, monitoring will be completed to determine the success of the wetland buffer mitigation. An as-built report will be completed after plant installation and submitted to Whatcom County for use as a reference document during the monitoring period.

Monitoring of the planted buffer areas will occur near the end of the peak growing season in summer or early fall in each monitoring year after installation. Annual monitoring reports will be

submitted to Whatcom County for each monitoring year. Monitoring reports will be prepared in accordance with WCC 16.16.260(C). Data on the number and species of plants (as a measure of diversity), survival rates, canopy (aerial percentage) cover, stem density, and plant heights will be measured and recorded during each monitoring period. Permanent sample plots and photography stations will also be established at control points to document existing conditions during each monitoring period.

Plant community success within the planting area will be evaluated during the monitoring periods. To evaluate plant diversity, the assessment will include installed plant survival and vegetation percent cover. Invasive trees and shrubs will be removed where present in the wetland buffer. Following planting, all created buffer areas will have less than 15% cover of invasive trees and shrubs each monitoring year.

## 5.4 Contingency Plan

All contingencies cannot be anticipated. Any proposed contingencies would remain flexible so that modifications can be made to subsequent years' construction if portions of the previous year's construction do not produce the desired results. Problems or potential problems would be evaluated by a qualified biologist and coordinated with the regulatory agencies. Specific contingency actions would be developed, agreed to by consensus, and implemented based on all scientifically and economically feasible recommendations. Contingencies may include the following:

- Evaluating invasive shrub species removal/maintenance techniques
- Considering species suitability for site conditions and providing replanting recommendations with same or alternate plants, and potentially adjusting planting locations
- Additional monitoring or unscheduled monitoring

If, during the monitoring program, other maintenance needs are identified as necessary to ensure the success of the mitigation project, they will be implemented, unless impacts are generated by third parties or acts of nature.

## 5.5 Mitigation Site Management

Following construction, the mitigation area will be actively managed in perpetuity as required by WCC 16.16.260(E). This will likely include at least one management or maintenance visit per year for the duration of the 5-year monitoring period plus additional visits on an as-needed basis to maintain the planted vegetation and control invasive species. Site management visits will occur during the growing season in May through July. The following tasks will be completed during the first 2 monitoring years:

- During Years 1 and 2, the planting area will be weeded by hand to remove any new shoots of non-native and invasive vegetation within a 2-foot radius of each installed plant.

- During Year 1, installed plantings in the wetland buffer area must receive a minimum of 1 inch of water each week from June to September from the temporary irrigation system or natural rainfall.
- During the Year 2 management visit, tree stakes will be removed.
- During subsequent years, additional management actions may also be required to respond to other monitoring recommendations.

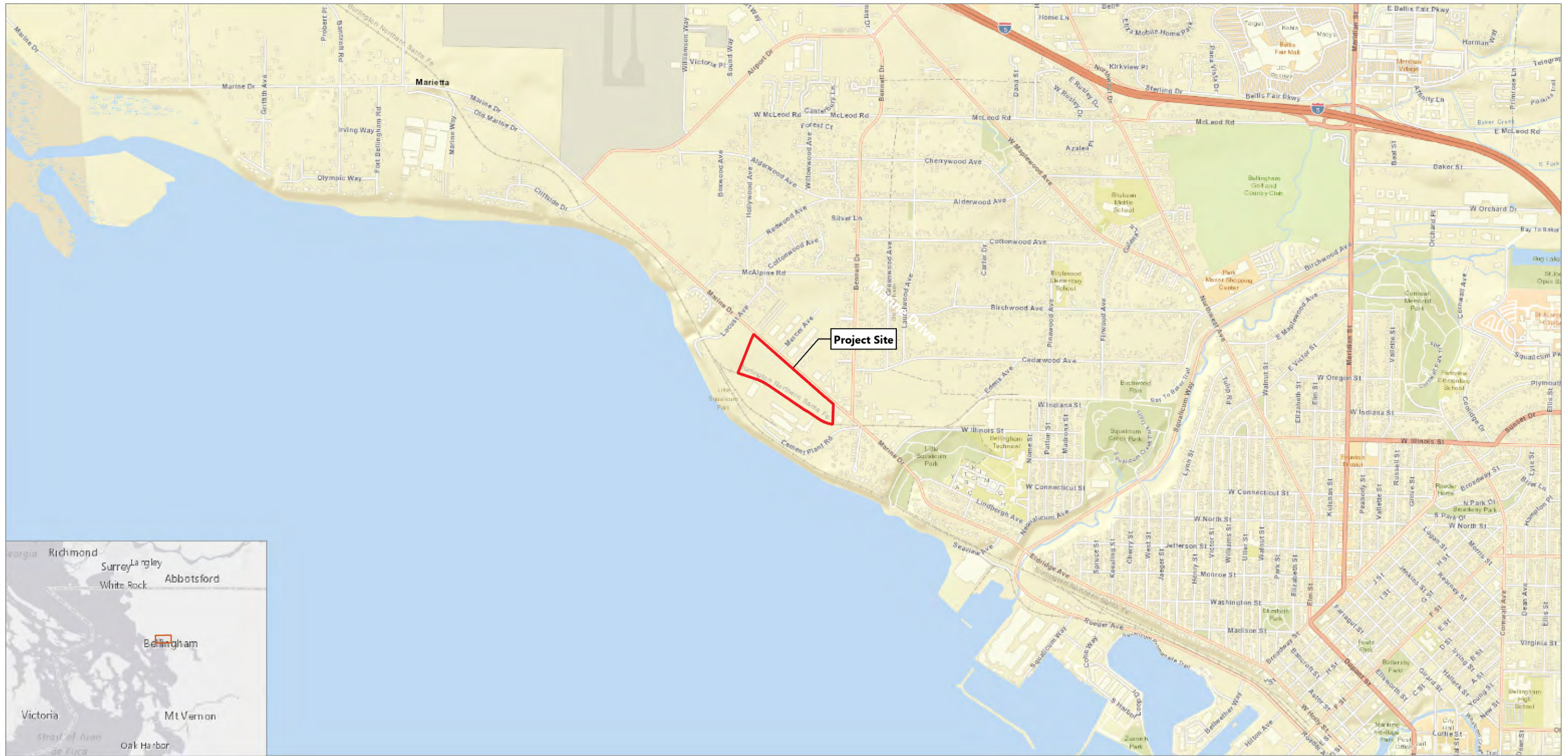
Following completion of construction, the mitigation sites will be protected from development or other alteration in perpetuity through a deed restriction, conservation easement, or other appropriate protection measure.

## 6 References

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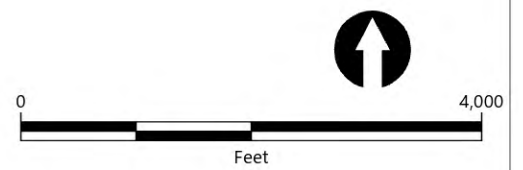
# Figures

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**LEGEND:**

 Project Site



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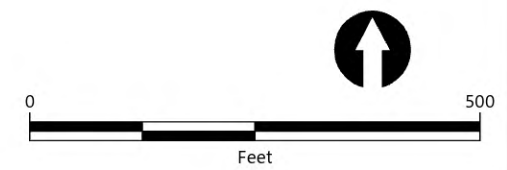


**Figure 1**  
**Vicinity Map**  
Mitigation Plan  
Marine Drive Facility Development Project



**LEGEND:**  
■ Project Site  
□ Tax Parcel Boundary

**SOURCE:**  
Aerial Imagery: Esri (2023)



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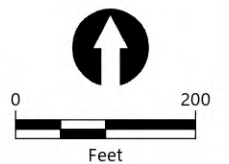






**LEGEND:**  
Project Site  
Extent of Historically Developed Area  
1-Foot Contour

**SOURCE:**  
Aerial Imagery: Esri (2023)  
**NOTES:**  
1. Contours are from topographic survey conducted by Wilson Engineering. May 2021.  
2. Horizontal datum is NAD83 Washington State Plane North Zone, U.S. Feet.  
3. Vertical datum is North American Vertical Datum of 1988, Feet.



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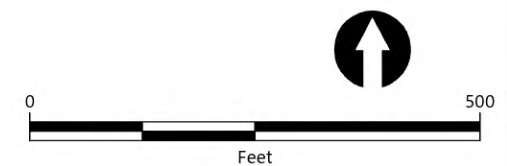


**LEGEND:**

-  Project Site
-  Urban Land - Whatcom-Labounty complex, 0 to 8 percent slopes

**SOURCES:**

1. Aerial Imagery: Esri (2023)
2. USDA Natural Resource Conservation Service Web Soil Survey (USDA 2020)



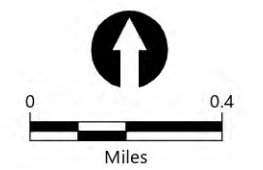
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- LEGEND:**
- Project Site
  - 100 Year FEMA Floodplain
  - Floodway
  - Water Body
  - Watercourse
  - WRIA1 Watersheds And Basins

**SOURCES:**  
1. Aerial Imagery: Esri (2023)  
2. Floodplain Data: FEMA (2023)  
3. Waterbody/Watercourse Data: Washington State DNR

**NOTES:**  
1. FEMA: Federal Emergency Management Agency  
2. DNR: Department of Natural Resources



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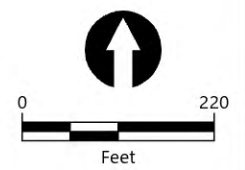


**Figure 6**  
**Hydrologic Setting**  
Mitigation Plan  
Marine Drive Facility Development Project



<b>LEGEND:</b>		<b>Existing Vegetation Communities</b>	
Project Site	Disturbed	Upland Scrub-Shrub	
Delineated Wetland	Upland Forest	Wetland Forest	
PFO/PSS	Upland Herbaceous	Wetland Scrub-Shrub	
PSS			
Extent of Historically Developed Area			

**SOURCE:**  
Aerial Imagery: Esri (2023)  
**NOTES:**  
PFO: Palustrine forested  
PSS: Palustrine scrub-shrub



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Filepath: \\orcas\GIS\Jobs\ABC\_Recycling\_2005\MarineDrive\Maps\Wetland\_Mitigation\_Plan\Wetland\_Mitigation\_Plan.aprx



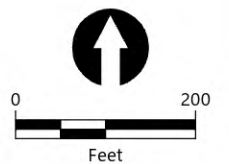
**Figure 7**  
**Existing Vegetation Communities**  
Mitigation Plan  
Marine Drive Facility Development Project



- LEGEND:**
- Project Site
  - Delineated Wetland
  - Wetland Buffer
  - Extent of Historically Developed Area
  - 1-Foot Contour

**SOURCE:**  
Aerial Imagery: Esri (2023)

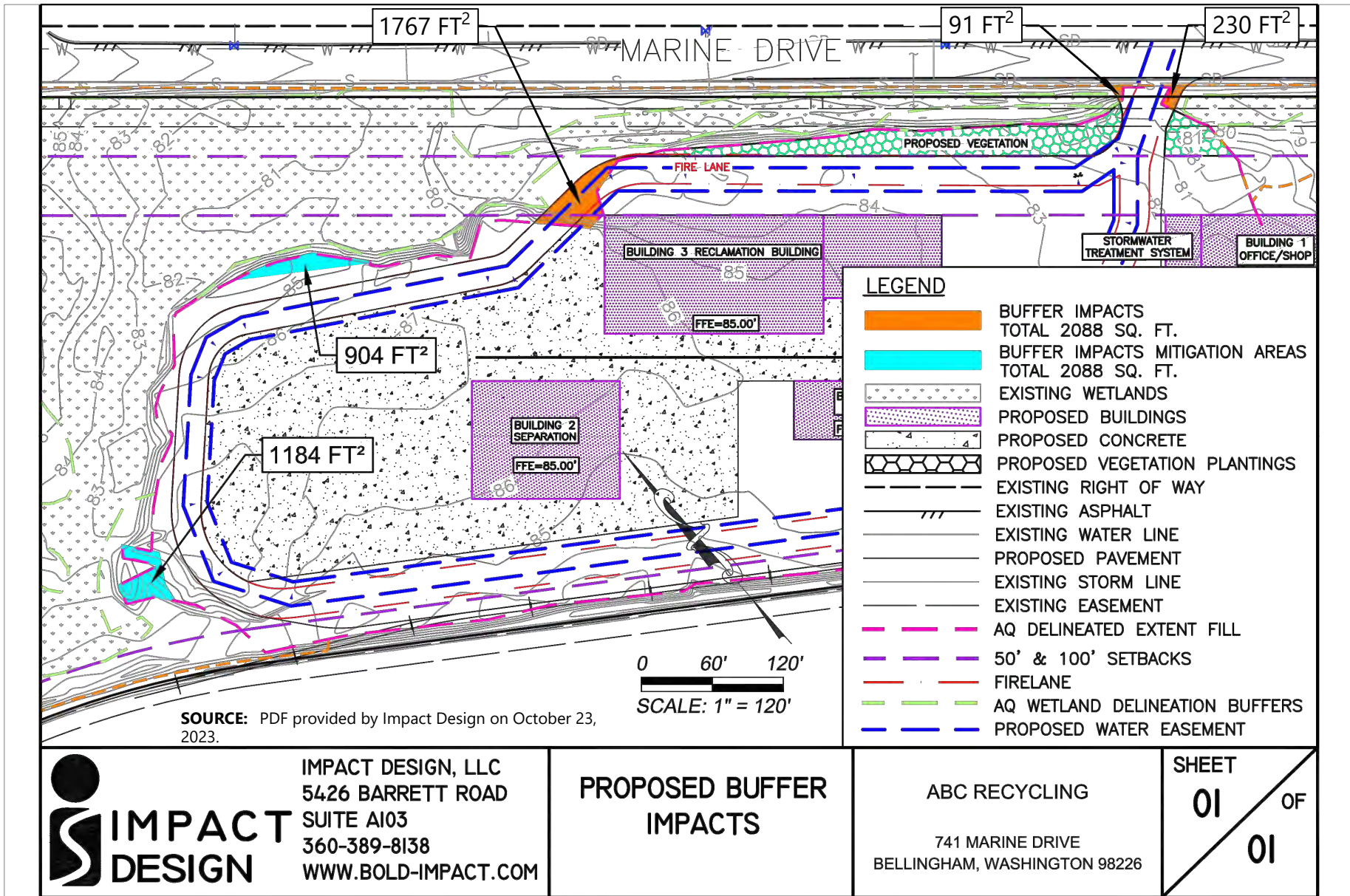
**NOTES:**  
1. Contours are from topographic survey conducted by Wilson Engineering. May 2021.  
2. Horizontal datum is NAD83 Washington State Plane North Zone, U.S. Feet.  
3. Vertical datum is North American Vertical Datum of 1988, Feet.



Publish Date: 2023/10/18, 10:15 AM | User: jlarson  
Filepath: \\orcas\GIS\Jobs\ABC\_Recycling\_2005\MarineDrive\Maps\Wetland\_Mitigation\_Plan\Wetland\_Mitigation\_Plan.aprx



**Figure 8**  
**Delineated Wetlands and Wetland Buffers**  
Mitigation Plan  
Marine Drive Facility Development Project



IMPACT DESIGN, LLC  
 5426 BARRETT ROAD  
 SUITE A103  
 360-389-8138  
 WWW.BOLD-IMPACT.COM

**PROPOSED BUFFER IMPACTS**

ABC RECYCLING  
 741 MARINE DRIVE  
 BELLINGHAM, WASHINGTON 98226

SHEET  
 01 OF  
 01



**Figure 9**  
**Proposed Project Impacts and Proposed Wetland Buffer Mitigation**

# Appendix A

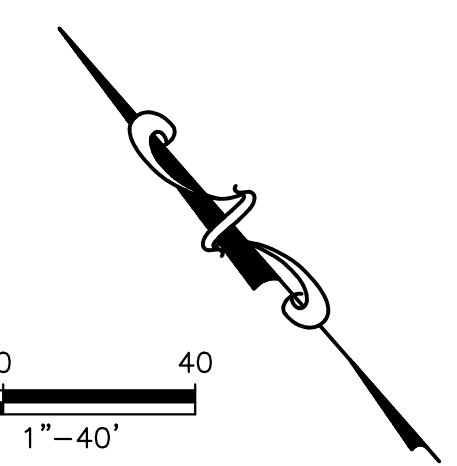
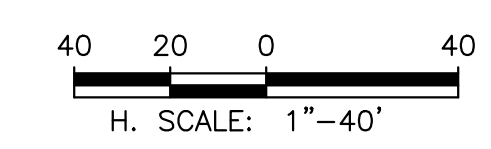
## Avoidance Scenarios

---



- Wetland Buffer Impact (Permanent)
- Wetland Impact (Permanent)

- ALTERNATIVE A - TRUCK SITE ENTRY SEQUENCE
- 1 ENTER SITE AND STOP AT THE SCALE SHACK FOR WEIGH-IN.
  - 2 LOOP CLOCKWISE TO UNLOAD.
  - 3 STOP AT THE SCALE SHACK FOR WEIGH-IN.
  - 4 EXIT SITE.



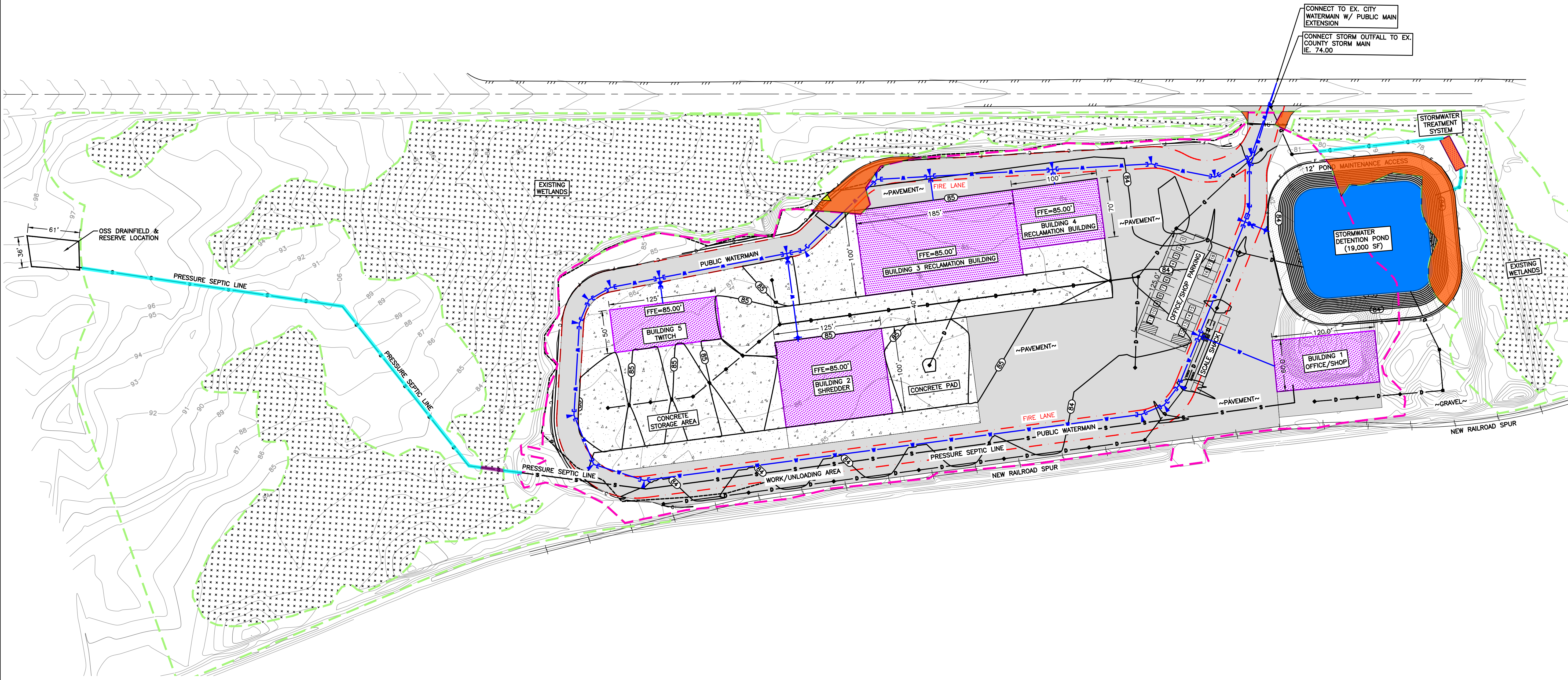
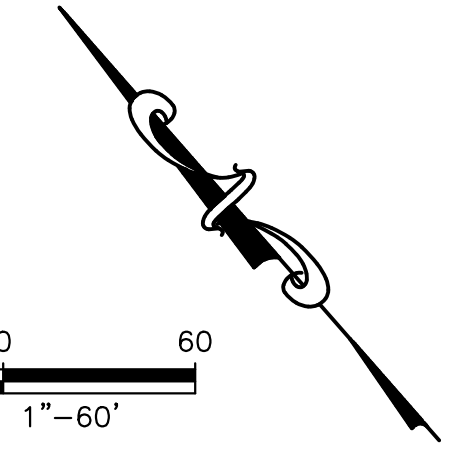
REV	DATE	BY	DESCRIPTION

PROJECT NUMBER: 21029  
 DESIGNED/DRAWN BY: BLS  
 CHECKED BY: SIG  
 ISSUE DATE: 08.19.2023

Figure A-1. 8/19/2023 Site Plan with Wetland and Wetland Buffer Impacts

- Wetland Buffer Impact (Permanent)
- Wetland Buffer Impact (Temporary)
- Wetland Impact (Permanent)
- Wetland Impact (Temporary)

60 30 0 60  
H. SCALE: 1"=60'



ABC RECYCLING  
OVERALL SITE PLAN  
PRELIMINARY  
741 MARINE DRIVE  
BELLINGHAM, WASHINGTON 98226

REV	DATE	BY	DESCRIPTION

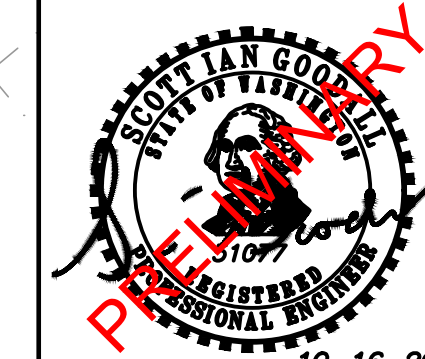
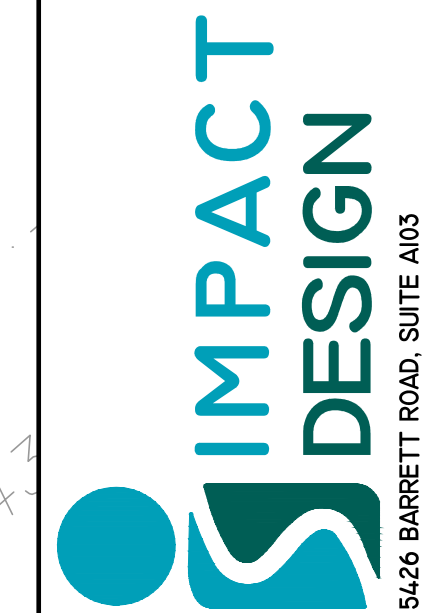
PROJECT NUMBER: 21029  
DESIGNED/DRAWN BY: BLS  
CHECKED BY: SIG  
ISSUE DATE: 09-30-2023

Figure A-2. 9/30/2023 Site Plan with Wetland and Wetland Buffer Impacts

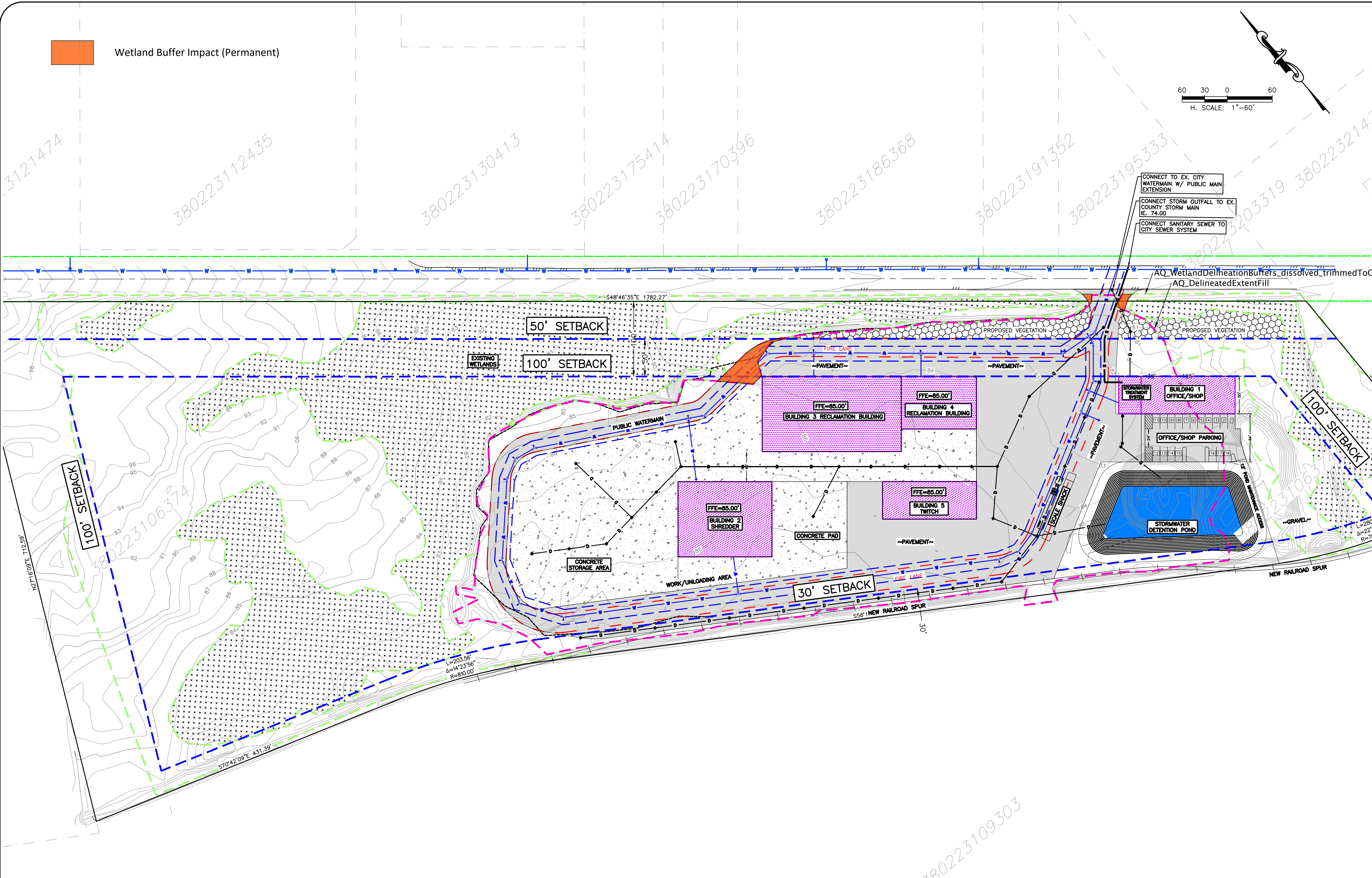
Z:\Shared\Projects\21029\_741 Marine Dr (ABC Recycling)\DWG\21029\_ABC\_Recycling\_Site\_Plan\_2.dwg Oct 03, 2023 1:09pm

Wetland Buffer Impact (Permanent)

60 30 0 60  
H. SCALE: 1"=60'



10-16-2023



ABC RECYCLING  
OVERALL SITE PLAN  
PRELIMINARY  
741 MARINE DRIVE  
BELLINGHAM, WASHINGTON 98226

REV	DATE	BY	DESCRIPTION

PROJECT NUMBER:  
21029  
DESIGNED/DRAWN BY:  
BLS  
CHECKED BY:  
SIG  
ISSUE DATE:  
10-16-2023

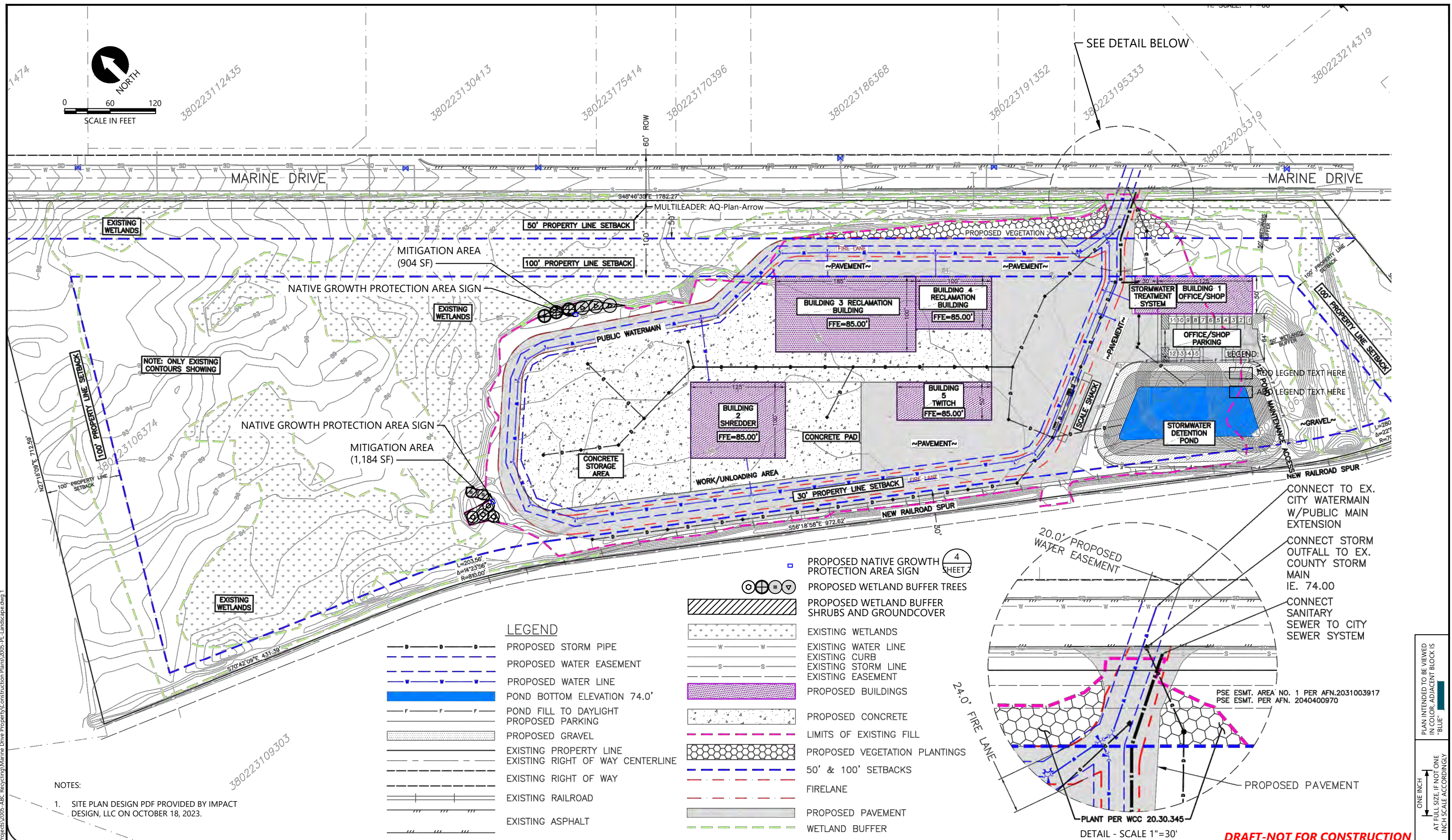
Figure A-3. 10/29/2023 Site Plan with Wetland Buffer Impacts

Z:\Shared\PROJECTS\21029\_741 Marine Dr (ABC Recycling)\DWG\21029\_ABC\_Recycling\_Site\_Plan\_2.dwg Oct 16, 2023--11:05am

## Appendix B-1

### Planting Plan, Schedule, and Details

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K:\Projects\2025-ABC\_Recycling\Marine Drive Property\Construction Plans\2025-PL-Landscape.dwg 1  
Oct 23, 2023 11:57am cwee



**ABC Recycling**  
741 Marine Drive  
Bellingham, Wa 98225

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: IMPACT DESIGN  
 DRAWN BY: IMPACT DESIGN, CW  
 CHECKED BY: CS, MK  
 APPROVED BY: CS, MK  
 SCALE: AS NOTED  
 DATE: OCTOBER 2023

**MARINE DRIVE FACILITY DEVELOPMENT PROJECT  
MITIGATION PLAN**

**PLANTING PLAN**

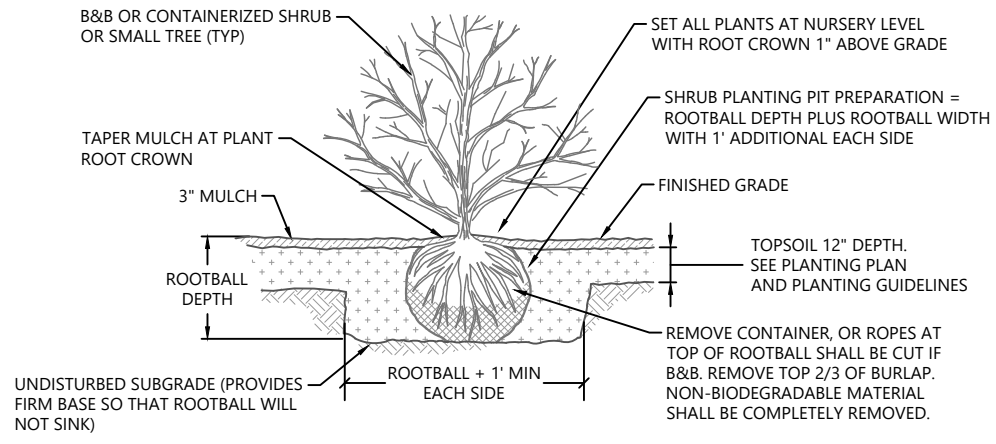
**SHEET 1**

PLAN INTENDED TO BE VIEWED  
IN COLOR. ADJACENT BLOCK IS  
"BLUE"  
ONE INCH  
AT FULL SIZE IF NOT ONE  
INCH SCALE ACCORDINGLY

K:\Projects\2025-ABC\_Recycling\Marine Drive Property\Construction Plans\2025-PL-Landscape.dwg 2  
Oct. 23, 2023 11:57am cwee

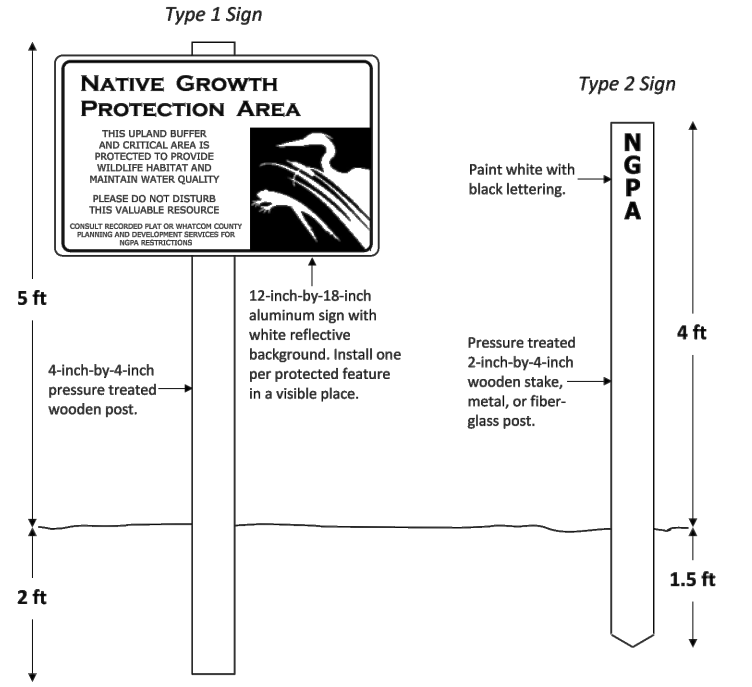
PLANTING SCHEDULE					
COMMON NAME	SPECIES NAME	SIZE	SPACING	QUANTITY	REMARKS
NATIVE TREES					
Red alder	<i>Alnus rubra</i>	2 gal.	As Shown	4	① -
Big-leaf maple	<i>Acer macrophyllum</i>	2 gal.	As Shown	3	
Shore Pine	<i>Pinus contorta var. contorta</i>	2 gal.	As Shown	2	
Western red cedar	<i>Thuja plicata</i>	2 gal.	As Shown	3	
NATIVE SHRUBS AND GROUND COVER					
Salal	<i>Gaultheria shallon</i>	1 gal.	6' O.C.	13	① ② ③ - - -
Snowberry	<i>Symphoricarpos albus</i>	1 gal.	6' O.C.	13	
Nootka rose	<i>Rosa nutkana</i>	1 gal.	6' O.C.	13	
Indian plum	<i>Oemleria cerasiformis</i>	1 gal.	6' O.C.	13	
Coastal strawberry	<i>Fragaria chiloensis</i>	4 inch pot	4' O.C.	30	
Kinnikinnick	<i>Arctostaphylos uva-ursi</i>	4 inch pot	4' O.C.	30	

**NOTES:**  
1. Refer to planting guidelines for topsoil and mulch placement within planting area.



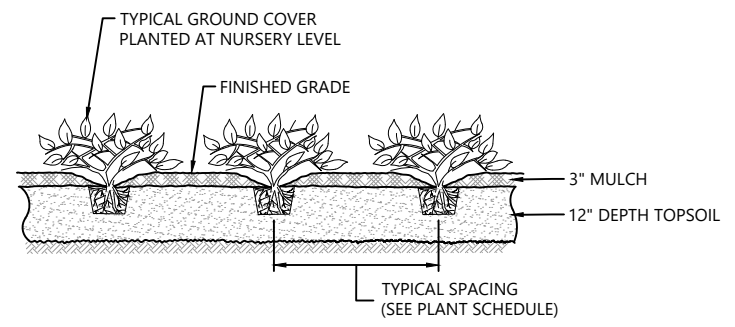
① SMALL TREE OR SHRUB PLANTING DETAIL – SECTION  
SCALE: NOT TO SCALE

**WHATCOM COUNTY PLANNING & DEVELOPMENT SERVICES  
NATIVE GROWTH PROTECTION AREA SIGN INSTALLATION GUIDELINES**

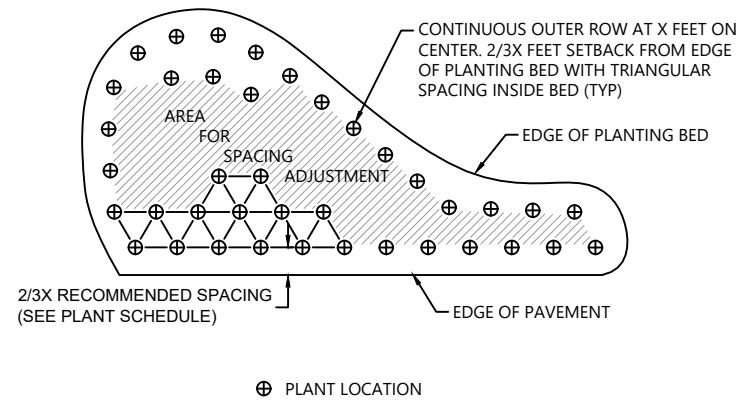


1. Place NGPA signs at least every 200 ft around the perimeter of the NGPA. Minimum placement shall include one Type 1 sign per wetland or critical area.
2. All signs must be secure and permanent. Type 2 signs may be used in conjunction with Type 1 signs at the discretion of the Whatcom County technical administrator.
3. Sign placement shall be subject to the approval of Whatcom County. Alternative designs maybe submitted to Whatcom County for approval.

④ NATIVE GROWTH PROTECTION AREA SIGN  
SCALE: NTS



② TYPICAL GROUND COVER PLANTING DETAIL  
SCALE: NOT TO SCALE



③ SHRUB AND GROUND COVER PLANTING LAYOUT DETAIL – PLAN  
SCALE: NOT TO SCALE

DRAFT-NOT FOR CONSTRUCTION



**ABC Recycling**  
741 Marine Drive  
Bellingham, Wa 98225

REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

DESIGNED BY: CW  
DRAWN BY: CW  
CHECKED BY: CS, MK  
APPROVED BY: CS, MK  
SCALE: AS NOTED  
DATE: OCTOBER 2023

**MARINE DRIVE FACILITY DEVELOPMENT PROJECT  
MITIGATION PLAN**

**PLANTING SCHEDULE AND DETAILS**

**SHEET 2**

PLAN INTENDED TO BE VIEWED IN COLOR. ADJACENT BLOCK IS "BLUE"  
ONE INCH AT FULL SIZE. IF NOT ONE INCH SCALE ACCORDINGLY

Appendix B-2  
Planting Guidelines

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## Planting Guidelines

### PART 1 – SITE CLEARING

#### 1.01 CLEARING VEGETATION

- A. Install silt fencing along the Wetland A and Wetland B boundaries within the property boundary. No work shall occur within wetlands.
- B. Mark the clearing limits for approval by the Owner prior to commencing clearing.
- C. Avoid damage to native trees and shrubs in the clearing area. Any native tree and shrub more than 6 inches diameter at breast height (DBH) that is damaged by construction and no longer viable shall be replaced in the wetland buffer at a ratio of 3:1, at no additional cost to the Owner.
- D. Preserve and provide protection for:
  - 1. Adjacent facilities: Exercise extreme care to prevent damage to adjacent facilities that are to remain.
  - 2. Flag existing vegetation to remain: The Contractor will notify the Biologist 1 week prior to beginning clearing or grading activities. The Biologist will flag existing trees/vegetation to remain within the clearing limits.
  - 3. Existing trees and vegetation to remain: Install and maintain tree protection fencing around drip-line of trees to remain. Protect trees and shrubs in accordance with Article 1.04 of this section.
  - 4. Manually Remove Invasive Species, such as Himalayan blackberry (*Rubus armeniacus*) and Protect Native Species: The Contractor will limit work to the use of hand tools, such as weed wrenches and maddux picks, to clear and grub invasive vegetation without damaging the above ground or below ground native vegetation. Use of mechanical equipment in these areas shall not occur without prior approval of the Engineer or Biologist.
  - 5. Remove vegetation only as required. Do not do an initial general clearing and grubbing of site that leaves areas exposed that will not have immediate follow-up construction.
  - 6. All temporary and erosion control measures must be in place prior to clearing and grubbing.
  - 7. Contractor shall adhere to Whatcom County seasonal restrictions for land clearing.
- E. Invasive trees and shrubs, in particular Himalayan blackberry and Scotch broom (*Cytisus scoparius*), shall be cleared and grubbed in the wetland buffer mitigation



## Planting Guidelines

area. It is the Contractor's responsibility to visit the site prior to bidding to generally ascertain vegetation to be removed for construction.

- F. Clear areas outside the wetland buffer that is required for access to the work (except as noted in Paragraph 1.01.A). However, remove vegetation only as required; do not perform an initial general clearing and grubbing of site that leaves areas exposed that will not have immediate follow-up construction.
- G. All temporary and erosion control measures shall be in place prior to clearing and grubbing. This includes silt fence placed along Wetlands A and B.
- H. Contractor shall adhere to Whatcom County seasonal restrictions for land clearing.

### 1.02 GRUBBING VEGETATION

- A. Remove stumps, roots, and vegetation deep enough to remove all roots of invasive shrubs using hand tools.
- B. Any grubbed material containing non-native and invasive seed or plant material, such as Himalayan blackberry, shall be removed immediately from the site for disposal at an approved off-site location. This material shall not be stockpiled in areas outside of the identified landscape area. Care shall be taken to prevent the spread of weed seed and other vegetative material.

### 1.03 DISPOSAL OF CLEARED VEGETATION MATERIAL

- A. Remove and legally dispose of all cleared material at an approved off-site location. The Contractor, in a manner consistent with all government regulations, shall dispose of the refuse resulting from clearing and grubbing. In no case shall refuse material be left on the Project site, or be buried in embankments or trenches on the Project site unless directed otherwise by the Owner.

### 1.04 TREE AND SHRUB PROTECTION

- A. Provide temporary flagging at the limit of clearing and grading adjacent to trees and shrubs designated to remain. Do not operate vehicles or stockpile any material within the drip-line of existing trees unless specifically directed by the Owner. Protect trees with temporary construction fencing per the following:
  - 1. Minimum 4-foot-tall orange construction fencing placed outside of the dripline of trees and shrubs to be protected.
- B. Where existing trees and shrubs to remain are within the area of work, or where existing trees and shrubs outside the area of work have drip-lines extending into the area of work, the Contractor shall employ all methods to minimize adverse impact to these existing trees and shrubs, including limbs and roots. The

## Planting Guidelines

Contractor shall notify the Owner of any construction work within the drip-line of trees and shrubs at least 1 working day before the scheduled activity. The Contractor shall manually work within tree protection fencing areas and/or use an air spade to loosen soil without damaging tree roots. Additional methods to minimize adverse impacts may include, but are not limited to, the following:

1. Temporary chain link construction fencing.
  2. Temporary tie-up of low limbs.
  3. Application of a 4- to 6-inch-thick layer of mulch within the drip-line of trees.
  4. Timber or steel planking for protection of surface roots from Equipment.
  5. Tree root pruning or other tree root treatment as directed by the Owner.
- C. No storage of equipment or materials shall be allowed within the drip-line of trees not designated for removal. Steel planking, or timber planking made of 4-inch-thick material, each plank covering a minimum of 8 square feet, shall be used to support backhoe and other Equipment stabilizers when set within the drip-line of a tree or sodded planting strip.

## PART 2 – SOIL PREPARATION – PRODUCTS

### 2.01 TOPSOIL

- A. Topsoil shall conform to WSDOT specification 9-14.1(2) Topsoil Type B or meet the following specifications:
- B. Topsoil mix shall consist of 60% Sand and 40% Composted Organic Soil Amendment by volume.
  1. The Sand Component shall meet the following specifications within reasonable variations and shall be free of phyto-toxic materials and viable seeds, rhizomes, or roots of state-listed noxious weeds:

<u>Screen Size</u>	<u>Percent Passing</u>
1/4 to 3/8"	100
#46	99
#10	65
#20 to #18	35
#40 #20 + #35	<30
#40 + #60	<15
#100	2-10%
#200	1-5%

## Planting Guidelines

2. Composted Organic Soil Amendment shall meet the requirements of the WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, current edition (hereafter Standard Specifications), Section 9-14.4(8), for Medium compost gradation.
- C. Topsoil shall also have the following characteristics:
1. Mix shall contain 10% to 20% organic matter, by weight (loss on ignition).
  2. The pH range shall be from 6.0 to 7.5.
  3. Soluble salt contents shall be less than 3.0 mmhos/cm.
- D. Topsoil shall contain sufficient quantities of available nitrogen, phosphorus, potassium, calcium, magnesium, sulfate, copper, zinc, manganese, iron, and boron to support normal plant growth. In the event of nutrient inadequacies, provisions shall be made to add required materials prior to planting.

### PART 3 – SOIL PREPARATION AND PLACEMENT – EXECUTION

#### 3.01 PREPARATION OF SUBGRADE

- A. The Contractor shall excavate a minimum 6-inch depth of existing fill material within the planting area as specified on the Planting Plans.
- B. Perform excavation in the dry to the extent possible.
- C. Do not excavate in frozen material without the written approval of the Owner.
- D. Scarification in buffer area: Scarify or till subgrade to a minimum depth of 6 inches. Entire surface should be disturbed by scarification. Do not scarify within drip-line of existing trees and shrubs to be retained. Obtain Owner approval of scarified subgrade before placing topsoil.

#### 3.02 PLACING TOPSOIL

- A. Rototill 6 inches of topsoil into prepared subgrade in planting area. Install final 6-inch depth of topsoil and perform fine grading. Rake out all rocks, roots, sticks, and other debris larger than 1-inch diameter or sticks longer than 3 inches.
- B. Installation of irrigation lines and equipment shall occur after completion of compost installation. Refer to Article 6.05 of these Planting Guidelines for additional information on irrigation.

## Planting Guidelines

### PART 4 – PLANTING – GENERAL

#### 4.01 DELIVERY, STORAGE, AND HANDLING

- A. Deliver fertilizer materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. Store in such a manner as to prevent wetting and deterioration of the fertilizer.
- B. Dig, pack, transport, and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice or order to stock. On arrival, the certificate shall be filed with the Owner. Protect all plants from desiccation. Wilt-proof or another antidessicant shall be applied only with approval of the Owner. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Owner. Water heeled-in plantings daily. No plant shall be bound with rope or wire in a manner that could damage or break the branches.
- C. Cover plants transported on open vehicles with a protective covering to prevent wind-burn.
- D. Provide dry, loose soils for planting. Frozen or muddy soil is not acceptable.
- E. Stock shall be handled by root ball only, not the trunks, stems, or tops.

#### 4.02 PROJECT CONDITIONS

- A. Work notification: notify the Owner at least 5 working days prior to the installation of plant material.
- B. Protect existing utilities, paving, and other facilities from damage caused by planting operations.
- C. Do not install plant material when ambient temperatures may drop below 35°F or rise above 80°F within 24 hours of work.
- D. Do not install plants when wind velocity exceeds 30 miles per hour.
- E. Confine work to designated areas. Do not disturb existing vegetation outside Project limits and protect all trees, shrubs, and ground covers within Project limits not designated to be removed. Do not permit vehicular traffic or materials storage under or around new or existing trees.

#### 4.03 SEQUENCING AND SCHEDULING

- A. Planting vegetation shall be performed during the period between October 1 and April 30. Planting at other times shall only be done by written permission by the

## Planting Guidelines

Owner and only if an irrigation system is available at the site at the time of planting.

### 4.04 WARRANTY

- A. Warrant plant material to remain alive and be in healthy, vigorous condition for a period of 1 year after the date of Substantial Completion. Inspection of plants will be made by the Owner at the completion of planting.
- B. Replace all plants that are dead or, as determined by the Project Engineer, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches, or other causes due to the Contractor's negligence. The cost of such replacement(s) is at the Contractor's expense. Warrant all replacement plants for 1 year after Substantial Completion or installation, whichever is longer.
- C. Warranty shall not include damage or loss of trees, plants, or ground covers caused by fires, freezing rains, lightning storms, or winds over 75 miles per hour, winter kill caused by extreme cold and severe winter conditions not typical of planting area, acts of vandalism, or negligence on the part of the Owner.
- D. Remove and immediately replace all plants, as determined by the Project Engineer, to be unsatisfactory during the initial planting installation.

## PART 5 – PLANTING – PRODUCTS

### 5.01 PLANT MATERIALS

- A. Plants: Provide plants typical of their species or variety, with normal, densely developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from weeds, defects, disfiguring knots, sunscald injuries, and abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids, open spaces, broken branches, flush cuts, or stubs.
  - 1. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and absorbing root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the *American Standard for Nursery Stock*. Cracked or mushroomed balls are not acceptable.
  - 2. Container-grown stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm, and whole.
    - a) No plants shall be loose in the container.
    - b) Container stock shall not be pot bound.

## Planting Guidelines

3. No pruning wounds shall be present with a diameter of more than 1/2 inch, and such wounds must show vigorous callous on all edges. Trees shall not be pruned within 6 months prior to delivery.

### 5.02 FERTILIZERS

- A. Fertilizer shall meet the requirements of Standard Specifications Section 9-14.3.
- B. Fertilizer shall conform to reference FS O-F-24D, Commercial Fertilizers and Washington State Department of Agriculture laws.
- C. Fertilizer for all tree and shrub plantings shall be “BioPaks-16-6-8 plus minors and biostimulants,” available from Reforestation Technologies International (RTI), 1-800-784-4769.
- D. BioPak®, or approved equivalent, shall consist of: a 10-gram biodegradable planting packet containing a blend of 16.00% total nitrogen (N), 6.00% available phosphoric acid (P<sub>2</sub>O<sub>5</sub>), and 8.00% soluble potash (K<sub>2</sub>O). Also containing 6.92% combined sulfur (S), 0.52% zinc (Zn), 0.54% iron (Fe), 0.54% magnesium (Mg), 0.23% copper (Cu), 0.05% boron (B), and 0.56% manganese (Mn). The nitrogen, phosphorous, and potassium sources shall be coated with a polyurethane coating to provide 15.69% coated slow release nitrogen, 5.09% coated slow release available phosphate, and 6.80% available soluble potash. Also contains: 5.0% humic acid derived from rutile sands, 0.25% kelp extract, and 0.9% naphthalene acetic acid.
- E. Supplemental Fertilizer: Shall consist of Mycor Tree Saver mycorrhizal fungal transplant inoculant for all trees and shrubs or approved equal consisting of:

Ectomycorrhizal Fungi	95 million spores/lb
Vesicular Arbuscular Mycorrhizal (VAM) Fungi	5,300 spores /lb
Rhizosphere Bacillus	324 million cfu/lb
Potassium polyacrylamide	33%
Formononetin	0.007%
Microbial Nutrients	39.4%
Inert Ingredients	27.3%

### 5.03 BARK OR WOOD CHIP MULCH

- A. Bark or Wood Chip Mulch shall meet the requirement of Standard Specifications Section 9-14.4(3).

## PART 6 – PLANTING – EXECUTION

### 6.01 INSPECTION

- A. Finish grading shall be inspected and approved by the Owner prior to planting.

## Planting Guidelines

- B. Plant material shall be inspected and approved by the Owner at the Project site. Provide 48 hours' notice prior to delivery to the Project site. Remove unsatisfactory material from the site immediately.

### 6.02 PREPARATION AND SEQUENCING

- A. The Contractor shall locate plants by staking with stakes and flags as indicated on Planting Plan or as approved in the field. If obstructions are encountered that are not shown on Planting Plan, do not proceed until Owner has selected alternate plant locations.
- B. Plant materials shall be installed after compost and irrigation have been installed and approved by the Owner.

### 6.03 FERTILIZER INSTALLATION

- A. Fertilizer shall be placed at the time of planting. Owner or Owner's Representative shall be present during fertilizer installation.

### 6.04 PLANT INSTALLATION

- A. Plants brought to the planting site shall be balled, and burlapped, or in containers, as specified on Planting Plan for the type of planting material. Plants shall not be planted during freezing weather or when the ground is frozen. Plants shall not be planted during excessively wet conditions. Plants shall not be placed on any day in which temperatures are forecast to exceed 80°F or drop below 35°F unless the Project Engineer approves otherwise. Plants shall not be placed in areas that are below finished grade.
- B. Plants shall be removed from containers in a manner that prevents damage to the root system. Containers may require vertical cuts down the full depth of the container to accommodate removal. All circling roots shall be loosened to ensure natural directional growth after planting.
- C. Excavate circular plant pits with scarified vertical sides, except for plants specifically indicated to be planted in beds. Provide planting pits at least twice the diameter of the root system or container. Depth of pit shall accommodate the entire root system. Scarify the bottom and sides of the pit to a depth of 4 inches. If groundwater is encountered upon excavation of planting holes, the Contractor shall promptly notify the Project Engineer.
- D. Place specified planting soil for use around the balls and roots of the plants.
- E. Install fertilizer packets around plant root balls based on plant size and manufacturer recommendations.

## Planting Guidelines

- F. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure. Set crown of plant material at the finish grade. No filling will be permitted around trunks or stems or above grafts on grafted trees. Backfill the planting pit with specified soil or amendment. Do not use frozen or muddy mixtures for backfilling. Form a ring of soil around the edge of each planting pit to retain water.
- G. After balled and burlapped plants are set, water in soil mixture around bases of balls and fill all voids.
  - 1. Remove all burlap, or plastic wrapping materials, twine, and wires, and wire baskets from root balls.
  - 2. If burlap has been chemically treated (green color), remove from the planting pit.
- H. Bark or Wood Chip Mulch Installation:
  - 1. Mulch tree, shrub, and groundcover planting beds with required mulching material immediately after planting, as shown in Appendix B-1, Sheet 2. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.
- I. Pruning: Prune trees only to remove broken or damaged branches, or for aesthetic purposes as directed by the Owner. Branches will be pruned at the branch collar. Neither stubs nor flush cuts will be acceptable.

### 6.05 WATERING

- A. A temporary irrigation system must be installed prior to planting within wetland buffers.
- B. The temporary irrigation system shall be Contractor design/build, as described in Section 8.03 of the Standard Specifications. The system shall be designed to provide irrigation for installed trees and shrub area.
- C. Planted areas within wetland buffers shall receive a minimum of 1 inch of water each week from June-September for Year 1, from the temporary irrigation system or natural rainfall.

### 6.06 MAINTENANCE

- A. Maintain planting until Substantial Completion and as directed by the Project Engineer.



## Planting Guidelines

- B. Maintenance shall include cultivating, weeding, watering, pruning (prune only as directed by Owner), and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease. Insecticide and fungicides shall only be applied by a licensed pesticide applicator and as approved by the Owner.
  - 1. Reset settled plants to proper grade and position. Restore planting saucer and adjacent material and remove dead material.
  - 2. Straighten, repair, and adjust guy wires and stakes as required.
  - 3. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.
  - 4. Water trees and shrub within the first 24 hours of initial planting, and not less than twice per week (including rain) until Substantial Completion.

### 6.07 SUBSTANTIAL COMPLETION

- A. Inspection to determine Substantial Completion of planted areas will be made by the Owner, upon Contractor's request. Provide notification at least 10 working days before requested inspection date.
  - 1. Planted areas will be accepted provided all requirements, including the maintenance period, have been complied with and plant materials are alive and in a healthy, vigorous condition.
- B. Upon Substantial Completion, the Owner will assume plant maintenance.

### 6.08 CLEANING

- A. Perform cleaning during installation of the Work and upon completion of the Work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from planting operations.

## PART 7 – SIGNS – PRODUCTS AND EXECUTION

### 7.01 SIGN MATERIALS

- A. Permanent signs shall be made of durable material and vandal-resistant, and shall be attached to a metal post or other material of equal durability.

### 7.02 SIGN INSTALLATION

- A. Permanent signs must be posted at an interval of 200 feet or less as shown on the drawings.

**END OF PLANTING GUIDELINES**

Appendix B-3

Bond Quantity Worksheet

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Critical Areas Mitigation  
 Bond Quantity Worksheet

Date: 10/23/2023  
 Project Name: Marine Drive Facility Development  
 Project Number:  
 Location: 741 Marine Drive Road, Bellingham, WA  
 Project Description: Mitigation Plan

Prepared by: Cresha Wee, Anchor QEA  
 Applicant: ABC Recycling  
 Phone: 360-389-8138

PLANT MATERIALS (includes labor cost for plant installation)					
Type	Unit Cost	Unit	Quantity	Description	Cost
PLANTS: Potted, 4" diameter, medium soil	5.00	Each			\$ -
PLANTS: Container, 1 gallon, medium soil	11.50	Each	52.00		\$ 598.00
PLANTS: Container, 2 gallon, medium soil	20.00	Each	12.00		\$ 240.00
PLANTS: Container, 5 gallon, medium soil	36.00	Each			\$ -
PLANTS: Seeding, by hand	0.50	SY			\$ -
PLANTS: Flats/plugs, Stakes, Slips	2.00	Each	60.00		\$ 120.00
<b>Sub Total</b>					<b>\$ 958.00</b>
INSTALLATION COSTS (additional labor, equipment, & overhead)					
Type	Unit Cost	Unit	Quantity	Description	Cost
Compost or mulch, delivered and spread	38.00	CY	20.00		\$ 760.00
Decompacting till/hardpan, medium, to 6" depth	1.57	CY			\$ -
Decompacting till/hardpan, medium, to 12" depth	1.57	CY			\$ -
Hydroseeding	0.51	SY			\$ -
Labor, general (landscaping other than plant installation)	40.00	HR			\$ -
Labor, general (construction)	40.00	HR	16.00		\$ 640.00
Labor: Consultant, supervising	55.00	HR	16.00		\$ 880.00
Labor: Consultant, on-site re-design	95.00	HR			\$ -
Rental of decompacting machinery & operator	70.00	HR			\$ -
Sand, coarse builder's, delivered and spread	42.00	CY			\$ -
Staking material (set per tree)	7.00	Each			\$ -
Surveying, line & grade	250.00	HR	8.00		\$ 2,000.00
Surveying, topographical	250.00	HR			\$ -
Watering, 1" of water, 50' soaker hose	3.62	MSF			\$ -
Irrigation - temporary	3,000.00	Acre	0.05		\$ 150.00
Irrigation - buried	4,500.00	Acre			\$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	1.02	SY	239.00		\$ 243.78
<b>Sub Total</b>					<b>\$ 4,673.78</b>
HABITAT STRUCTURES (includes delivery & installation)					
Type	Unit Cost	Unit	Quantity	Description	Cost
Fascines (willow)	2.00	Each			\$ -
Logs, (cedar), w/ root wads, 16"-24" diam., 30' long	1,000.00	Each			\$ -
Logs (cedar) w/o root wads, 16"-24" diam., 30'	400.00	Each			\$ -
Logs, w/o root wads, 16"-24" diam., 30' long	245.00	Each			\$ -
Logs w/ root wads, 16"-24" diam., 30' long	460.00	Each			\$ -
Rocks, one-man	60.00	Each			\$ -
Rocks, two-man	120.00	Each			\$ -
Root wads	163.00	Each			\$ -
Spawning gravel, type A	22.00	CY			\$ -
Weir - log	1,500.00	Each			\$ -
Weir - adjustable	2,000.00	Each			\$ -
Woody debris, large	163.00	Each			\$ -
Snags - anchored	400.00	Each			\$ -
Snags - on site	50.00	Each			\$ -
Snags - imported	800.00	Each			\$ -
<b>Sub Total</b>					<b>\$ -</b>
EROSION CONTROL					
Type	Unit Cost	Unit	Quantity	Description	Cost
Backfill and Compaction-embankment	4.89	CY			\$ -
Crushed surfacing, 1 1/4" minus	30.00	CY			\$ -
Ditching	7.03	CY			\$ -
Excavation, bulk	4.00	CY			\$ -
Fence, silt	1.60	LF			\$ -
Jute Mesh	1.26	SY			\$ -
Mulch, by hand, straw, 2" deep	1.27	SY			\$ -
Mulch, by hand, wood chips, 2" deep	3.25	SY			\$ -
Mulch, by machine, straw, 1" deep	0.32	SY			\$ -
Piping, temporary, CPP, 6"	9.30	LF			\$ -
Piping, temporary, CPP, 8"	14.00	LF			\$ -
Piping, temporary, CPP, 12"	18.00	LF			\$ -
Plastic covering, 6mm thick, sandbagged	2.00	SY			\$ -
Rip Rap, machine placed, slopes	33.98	CY			\$ -
Rock Constr. Entrance 100'x15'x1'	3,000.00	Each			\$ -
Rock Constr. Entrance 50'x15'x1'	1,500.00	Each			\$ -
Sediment pond riser assembly	1,695.11	Each			\$ -
Sediment trap, 5' high berm	15.57	LF			\$ -
Sediment trap, 5' high berm w/spillway incl. riprap	59.60	LF			\$ -
Sodding, 1" deep, level ground	5.24	SY			\$ -
Sodding, 1" deep, sloped ground	6.48	SY			\$ -
Straw bales, place and remove	600.00	TON			\$ -
Hauling and disposal	20.00	CY	80.00		\$ 1,600.00
Topsoil, delivered and spread	35.73	CY	80.00		\$ 2,858.40
<b>Sub Total</b>					<b>\$ 4,458.40</b>
GENERAL ITEMS					
Type	Unit Cost	Unit	Quantity	Description	Cost
Fencing, split rail, 3' high (2-rail)	12.00	LF			\$ -
Fencing, temporary	1.20	LF			\$ -
Signs, critical area boundary (inc. backing, post, install)	48.50	Each	2.00		\$ 97.00
<b>Sub Total</b>					<b>\$ 97.00</b>
MAINTENANCE, ANNUAL (by owner or consultant)					
Type	Unit Cost	Unit	Quantity	Description	Cost
Less than or equal to 1,000 sq. ft.	180.00	per year		(4 hrs @ \$45/hr)	\$ -
Larger than 1,000 sq. ft. and ≤ 1 acre	360.00	per year	10.00	(8 hrs @ \$45/hr)	\$ 3,600.00
Larger than 1 acre	720.00	per year		(16 hrs @ \$45/hr)	\$ -
<b>Sub Total</b>					<b>\$ 3,600.00</b>
MONITORING, ANNUAL (by owner or consultant)					
Type	Unit Cost	Unit	Quantity	Description	Cost
Less than or equal to 1,000 sq. ft.	360.00	per year		(4 hrs @ \$90/hr)	\$ -
Larger than 1,000 sq. ft. and ≤ 1 acre	720.00	per year	5.00	(8 hrs @ \$90/hr)	\$ 3,600.00
Larger than 1 acre	1,440.00	per year		(16 hrs @ \$90/hr)	\$ -
<b>Sub Total</b>					<b>\$ 3,600.00</b>
<b>PROJECT COST</b>					<b>\$ 17,387.18</b>
<b>25% CONTINGENCY</b>					<b>\$ 4,346.80</b>
<b>TOTAL</b>					<b>\$ 21,733.98</b>