WHATCOM COUNTY Planning & Development Services 5280 Northwest Drive Bellingham, WA 98226-9097 360-778-5900, TTY 800-833-6384 360-778-5901 Fax



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

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 <u>MUST BE FLAGGED</u> 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 <u>https://wa-whatcomcounty.civicplus.com/FormCenter/Planning-Development-Services-9/PDS-Customer-Survey-107</u> to complete a Customer Survey.

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Site Plan Review Application

PRE2023-00097 ABC Recycling

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For Administration Use					
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Reviews: CA Wetland/HCA	CA Geo Hazards	Flood	Watershed	Fire	Zoning
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Assessor's Parcel Number					
Property Access Info (if need	led):				
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Parcel size: (If less than an acre please provid	in acre de square footage)	es/squar	e footage		
Zoning:					
- Matarahad Dictrict					
Lake Whatcom	amish 🗌 Lake Pac	lden] Birch Bay	Drayto	on Harbor

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

If yes, please provide parcel numbers

Proposed	water source for devel	opment: 🗌 No Wa	ter So	ource Required/E	xisting Service
U Well	□ Water Association	U Water District		Surface Water	Rain Water
Name of V	Water Purveyor (if applic	able):			

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
Landscaping
Darking
Single Family Residence

Property Physical Site Characteristics (Included on the Site Plan)

Check all characteristics that apply on and within <u>300 feet</u> of the entire parcel.

□ Streams	Ponds and lakes	Forested areas
Drainage ditches	Steep slopes	🛛 Brush / scrub
Frequently flooded areas	Landslide areas	Pasture, lawn, landscaping
Wetlands/seasonally wet/	Existing developed areas	Wildlife features
soggy areas		

<u>Disclaimer</u>

The permitee 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;
- The property owner is the owner of this Whatcom County Permit;
- The signatory is the property owner or someone who has permission to represent the property owner in this transaction;
- All construction is to be done in accordance with Whatcom County codes or ordinancesreferenced codes and ordinances are available for review from Whatcom County Planning and Development Services;
- 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.

tarttonh Print Name

Owner or Agent Signature

Date

Site Plan Review Submittal Checklist PL4-88-001-A







October 2023 Marine Drive Proposed Development Project



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

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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)

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- 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.

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.

Table 1Wetland Plant Indicator Definitions

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 depressional 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.

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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).

11

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

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

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 ¹		
Wetland A						
Site Potential	Moderate	Low	Low	-		
Landscape Potential	High	High	Low	-		
Value	Low	Low	Moderate	-		
Score Based on Rating ¹	6	5	4	15		
Wetland B						
Site Potential	Moderate	Moderate	Moderate	-		
Landscape Potential	High	High	Low	-		
Value	Low	Low	Moderate	-		
Score Based on Rating ¹	6	6	5	17		
Wetland C						

Wetland and Function	Water Quality Improvement	Hydrologic	Habitat	Total Functions Score ¹
Site Potential	Moderate	High	Low	-
Landscape Potential	High	Moderate	Low	-
Value	Low	Low	Moderate	-
Score Based on Rating ¹	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.

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

Table 5 Wetland Rating and Standard Buffer Widths

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

- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe, 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. Washington, D.C.: U.S. Fish and Wildlife Service.
- Ecology (Washington State Department of Ecology), 1997. *Washington State Wetland Identification and Delineation Manual*. Publication No. 96-94. Olympia, Washington.
- Ecology, 2019. Ecology Find Your WRIA. Accessed November 2, 2020. Available at: https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-lookup.
- Environmental Laboratory, 1987. U.S. Army Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Corps of Engineers Waterways Experiment Station.
- Hruby, T., 2014. Washington State Wetlands Rating System Western Washington: 2014 Update. Washington State Department of Ecology Publication No. 14-06-029.
- Munsell, 1994. Munsell Soil Color Charts. Kollmorgen Corporation, Baltimore, Maryland.
- Reed, P.B., Jr., 1988. *National List of Plant Species that Occur in Wetlands: 1988 National Summary*. U.S. Fish and Wildlife Service. Biological Report 88 (26.9).
- Reed, P., Jr., 1993. Supplement to List of Plant Species that Occur in Wetlands: Northwest (Region 9). U.S. Fish and Wildlife Service. Supplement to Biological Report 88 (26.9).
- USACE (U.S. Army Corps of Engineers), 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0).* J.S. Wakeley, R.W. Lichvar, and C.V. Noble (eds.). ERDC/EL TR-10-3. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.
- USDA (U.S. Department of Agriculture), 2020. Natural Resource Conservation Service (NRCS) Web Soil Survey. Accessed November 2, 2020. Available at: http://websoilsurvey.nrcs.usda.gov/app.
- USFWS (U.S. Fish and Wildlife Service), 2020. U.S. Fish and Wildlife Service Wetlands Mapper for National Wetlands Inventory Map Information. Accessed Nov. 2, 2020. Available at: https://www.fws.gov/wetlands.
- WDFW (Washington Department of Fish and Wildlife), 2020a. Priority Habitats and Species Maps. Accessed Nov. 2, 2020. Available at: http://wdfw.wa.gov/mapping/phs/.

WDFW, 2020b. SalmonScape. Accessed: Nov. 2, 2020. Available at: http://apps.wdfw.wa.gov/salmonscape/.

Whatcom County, 2020. Whatcom County Code. Accessed November 2, 2020. Available at: https://www.codepublishing.com/WA/WhatcomCounty/.

Figures



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Figure 1 Vicinity Map Wetland Delineation and Critical Areas Report

Marine Drive Proposed Development Project



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Figure 2 Aerial Overview Map



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Figure 3 USDA NRCS Soils Map



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Figure 4 **USFWS National Wetlands Inventory Map**



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Figure 5 Wetland and Wetland Buffer Delineation Map
Appendix A Field Data Forms

Project/Site:	Marine Drive Propo	osed Development F	Project	City/County:	Whatcom C	County			Sar	mpling Date:	Oct,	26 2020
Applicant/Owner:	ABC Recycling				State:	WA	Sar	mpling Point:	D	P-01		
Investigator(s):	Joseph R. Pursley	(Anchor QEA, LLC)		Section	n, Township,	Range:	S44, T3	38, R2E				
Landform (hillslop	e, terrace, etc.):	Hillslope/Depress	ion Mosaic	Local re	lief (concave	e, convex	, none):	Concave			Slope:	0-8%
Subregion (LRR):	Northwest Forests	and Coast (LRR A)	Lat:				Long:				Datum:	
Soil Map Unit Nan	ne: Urban land	 Whatcom - Labou 	nty complex	<			NWI Cla	ssification	: PSSC			
Are climatic / hydr	ologic conditions on	the site typical for the	nis time of y	ear?	Yes	Х	No		_(If no,	explain in Re	marks)	
Are Vegetation	, Soil	_, or Hydrology		significantly	disturbed?	Are "N	Iormal C	ircumstan	ces" Pre	esent? Yes	<u> </u>	No
Are Vegetation	, Soil	_, or Hydrology		naturally pro	oblematic?	(If nee	ded, exp	olain any a	answers	in Remarks.)		
SUMMARY OF	FINDINGS - A	ttach site map s	howing s	ampling p	point locat	tions, ti	ransec	ts, impo	ortant f	eatures, et	C.	
Hydrophytic Veget	tation Present?	Yes X No										
Hydric Soil Preser	nt?	Yes X No		IS the Sa within a	ampied Area Wetland?	a	Yes	Х	No		_	
Wetland Hydrolog	y Present?	Yes X No		within t	i Wettund :							
Remarks: For lab	eled Data Plot location	ons and site map ple	ease see Fi	gure 5 in the	"Wetland De	elineatior	Report,	Anchor C	EA, Nov	/. 2020".		
VEGETATION												
						Demine			4.			
			Absolute	Dominant	Indicator	Domina	nce res	t worksn	eet:			
Tree Stratum	(Plot size	ə:)	% Cover	Species?	Status?	Number	of Domi	nant Spec	cies			
1						That Are	e OBL, F	ACW, or	FAC:	3	((A)
2						Total Nu	imber of	Dominan	t			
3						Species	Across	All Strata:	_	3	((B)
4						Percent	of Domi	nant Spec	ies			
5						That Are	9 OBL, F	ACW, or	FAC:	100%	((A/B)
50%=	= <u>0</u> 20%= <u>0</u>	Total Cover:	0		-							
Sapling/Shrub Stra	atum (Plot size)		.,		Prevale	nce Inde	ex Works	heet:			
1. <u>Cornus sericea</u>			60	Yes	FACW		al % Co	ver of:		Multiply b	<u>y:</u>	
2. Crataegus moi	nogyna		20	 	FAC			60		120		
	1136			163	140	FAC she		45	_^2	120		
5.						FACUS	necies			0		
50%=	50 20%= 20	Total Cover:	100			UPL spe	ecies	0		0		
Herb Stratum	(Plot size)				Column	Totals:	105	(A)	255	((B)
1. Equisetum arv	ense	,	5	Yes	FAC	Preval	ence Ind	dex = B/A	=`	2.4	`	. ,
2.												
3.						Hydrop	hytic Ve	getation	Indicato	rs:		
4.							1 - Rap	oid Test fo	r Hydrop	hytic Vegetat	ion	
5						Х	2 - Don	ninance T	est is >5	0%		
6						Х	3 - Prev	valence Ir	idex is ≤	\$3.0 ¹		
7							4 - Mor	phologica	I Adapta	tion ¹ (Provide	suppor	ting
8							data	a in Rema	rks or or	a separate s	heet)	
9							5 - Wet	tland Non-	Vascula	r Plants'		
50%=	2.5 20%= 1	Total Cover:	5			<u> </u>	Probler	matic Hyd	rophytic	Vegetation ¹ (I	Explain)	
Woody Vine Strate	um (Plot size)				¹ Indicato	ors of hy	dric soil a	nd wetla	nd hydrology	must	
1		<u> </u>				be prese	ent, unle	ss disturb	ed or pro	oblematic.		
2						Hydrop	hytic					
0/ Do	re Creved in Llark C	Total Cover:		tie Cruch		Vegetat	ion		Vaa	V No		
% Ba	re Ground in Herb S	tratum 95 % C	Jover of Bio	tic Crust		Present			res_	<u> </u>		
Remarks: The dog	wood and privet scr	ub-shrub layer was	so dense th	ere was almo	ost no herb l	ayer. The	e privet h	las becom	ie vine-li	ke and is clim	bing the	;
acgircea												

Sampling	Point:	DP-01	

	Profile Des	scription: (Describ	e to the de	oth needed to do	cument t	he indicate	or or co	nfirm the abs	ence of indicators.)	
	Depth	Matrix		Re	dox Feat	ures				
	(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
	0-10	10YR 3/1	100	<u>.</u>				SiL		
	10-12	10YR 3/1	95	10YR 4/6	5	С	М	SiL	Bright redox concentrations	s, saturation
	12-18	10YR 5/1	85	10YR 4/6	5	С	М	SiL	Redox in the depleted layer	r.
		10YR 6/3	10							
	¹ Type: C=0	Concentration, D=De	epletion, RM	I=Reduced Matrix,	CS=Cov	ered or Co	ated Sa	nd Grains. ² L	ocation: PL=Pore Lining, M=Matrix	κ.
	Hydric Soi	I Indicators: (Appl	icable to al	I LRRs, unless ot	herwise	noted.)		Indicators	for Problematic Hydric Soils ³ :	
	Histos	sol (A1)		Sandy	Redox (S	5)		-	2 cm Muck (A10) (LRR B)	
	Histic	Epipedon (A2)		Strippe	d Matrix ((S6)			Red Parent Material (TF2)	
	Black	Histic (A3)		Loamy	Mucky M	ineral (F1)	(except	MLRA 1)	Very Shallow Dark Surface (T	F12)
	Hydro	igen Sulfide (A4)	(A11)	Loamy		(F2)		-	Other (Explain in Remarks)	
	X Deple	Dark Surface (A12)	face (ATT)		o Matrix	(F3) face (E6)		³ India	ators of hydrophytic vogstation and	
	Inick	Dark Surface (A12)			Dark Sun			Indica	ators of hydrophytic vegetation and	
	Sandy	/ Muck Mineral (S1)			Dark S			wet	and hydrology must be present,	
	Sandy	y gleyed Matrix (S4)		Redox	Depressi	ons (F8)		u	nless disturbed or problematic.	
-	Restrictive	l aver (if present)								
	Type [.]	zujer (il present).								
	Depth (inch	nes):					н	vdric Soil Pre	sent? Yes X	No
								,	·····	
Rem	arks: Trans	ition from dark soil a	above 12 ind	ches to depleted la	ayer belov	w 12 inches	was ab	rupt.		
HY	DROLOG	Y								
	Wetland H	ydrology Indicator	S:							
	Primary Ind	dicators (minimum o	ne required;	check all that app	oly)				Secondary Indicators (2 or mor	e required)
	Surfac	ce Water (A1)		X Water-	Stained L	eaves (B9)	(excep	t MLRA	Water-Stained Leaves (B9) (/ILRA 1, 2,
	X High \	Water Table (A2)		1, 2,	, 4A and	4B)		-	4A and 4B)	
	X Satura	ation (A3)		Salt Cru	ust (B11)			-	Drainage Patterns (B10)	
	Water	r Marks (B1)		Aquatic	Inverteb	rates (B13)		_	Dry-Season Water Table (C2)	1
	Sedim	nent Deposits (B2)		Hydrog	en Sulfid	e Odor (C1)	_	Saturation Visible on Aerial Im	nagery (C9)
	Drift D	Deposits (B3)		Oxidize	d Rhizos	pheres alor	ng Living	g Roots (C3)	Geomorphic Position (D2)	
	Algal	Mat or Crust (B4)		Presen	ce of Red	duced Iron ((C4)	_	Shallow Aquitard (D3)	
	Iron D	eposits (B5)		Recent	Iron Red	uction in Pl	owed So	oils (C6)	FAC-Neutral Test (D5)	
	Surfac	ce Soil Cracks (B6)		Stunted	or Stres	sed Plants	(D1) (LF	RR A)	Raised Ant Mounds (D6) (LRI	R A)
	Inund	ation Visible on Aeri	al Imagery (B7) Other (Explain ir	n Remarks)		_	Frost-Heave Hummocks (D7)	
	X Spars	ely Vegetated Conc	ave Surface	e (B8)						
								1		
	Field Obse	ervations:								
	Surface Wa	ater Present? Y	es	No X Depth	n (inches)):				
	Water table	e Present? Y	es X	No Depth	n (inches)): 16				
	Saturation	Present? Y	es X	No Depth	n (inches)): 10		Wetland Hy	drology Present? Yes X	_No
	(includes ca	apillary fringe)								
Des	cribe Record	ded Data (Unnamed	l Tributary g	auge, monitoring v	vell, aeria	al photos, p	revious	inspections), if	available:	
Rem	arks: Evide	ence (water stained I	eaves) of po	onded water in dep	pression v	was observ	ed. The	dogwood roots	s seem elevated due to saturation of	or seasonal
	datie -									
inun	dation.									
Inun	dation.									
inun	dation.									

Project/Site:	Marine Drive Propos	ed Development P	roject	City/County:	: Whatcom C	County			Sam	pling Date:	Oct, 26 2020
Applicant/Owner:	ABC Recycling						State: V	VA	Sam	pling Point:	DP-02
Investigator(s):	Joseph R. Pursley (A	nchor QEA, LLC)		Section	n, Township,	, Range:	S44, T38	8, R2E			
Landform (hillslope	e, terrace, etc.):	Hillslope		Local re	elief (concave	e, convex	, none): <u>C</u>	Convex			lope: 0-8%
Subregion (LRR):	Northwest Forests an	nd Coast (LRR A)	Lat:				Long:			Da	atum:
Soil Map Unit Nam	ne: Urban land –	Whatcom - Labour	nty complex	x			NWI Clas	sification	PSSC		
Are climatic / hydro	ologic conditions on th	e site typical for th	is time of y	ear?	Yes	Х	No		_(lf no, e	explain in Rer	narks)
Are Vegetation	, Soil	, or Hydrology		significantly	/ disturbed?	Are "N	lormal Cir	cumstand	ces" Pres	ent? Yes	XNo
Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	ded, expl	ain any a	nswers ir	n Remarks.)	
SUMMARY OF	FINDINGS – Att	ach site map s	howing s	ampling	point loca	tions, t	ransect	s, impo	rtant fe	atures, etc	
Hudrophytic Vogot	ation Dragant?										
Hydrophytic Veget	ation Present?	Yes X No		Is the Sa	ampled Area	а	Vac		No	v	
Mational Hudrology	(Propert?)	Yes No	X	within a	a Wetland?		165		_ 110	^	
	y Present?		<u> </u>								
VEGETATION											
						Domina	nce Test	workshe	of.		
			Absolute	Dominant	Indicator	2011114		Worklone			
Tree Stratum	(Plot size:)	% Cover	Species?	Status?	Number	of Domin	ant Spec	ies		
1. Populus balsar	nifera		15	Yes	FAC	That Are	OBL, FA	CVV, OF F	-AC:	3	(A)
2. <u>Alnus rubra</u>			10	Yes	FAC	Total Nu	Imber of D	Dominant			
3						Species	Across A	Il Strata:		4	(B)
4		<u> </u>				Percent	of Domina	ant Speci	ies		
5		·				That Are	e OBL, FA	CW, or F	AC:	75%	(A/B)
50%=	12.5 20%= 5	Total Cover:	25								
Sapling/Shrub Stra	atum (Plot size:)			540	Prevale	nce Index	(Worksh	neet:		
1. <u>Rubus armenia</u>	acus	<u> </u>		<u>No</u>	FAC	Tot	al % Cove	er of:	- , —	Multiply by	<u> </u>
2. Rubus ursinus		·	5	<u>N0</u>	FACU	OBL Spe	ecies	0	X1 =	0	
3. Ligustrum sinei	nse	·	15			FACW S	pecies _	0	_x2 =	0	
4. Symphonicarpo			50	 	FACO EAC	FAC Spe		105	X3 =	160	
5. <u>Crataegus III0</u>	50 20%- 20	Total Cover:	100	165	170			40	 	0	
Herb Stratum	(Plot size:		100			Column	Totals:	145	_^	475	(B)
1 Pteridium aquil	linum	/	20	Yes	FACU	Preval	ence Inde	A = B/A =	_(^)	33	(D)
2.	mann		20	105		Tieva		// = D//(-		0.0	
3.		· ·				Hydrop	hytic Veq	etation I	ndicator	s:	
4.		· ·					1 - Rapio	d Test for	Hydroph	vtic Vegetatio	งท
5.		·				Х	2 - Domi	nance Te	est is >50	%	
6.							3 - Preva	alence Ind	dex is ≤3	3.0 ¹	
7.							4 - Morp	hological	Adaptati	on ¹ (Provide :	supporting
8.							data i	in Remar	ks or on a	a separate sh	ieet)
9.							5 - Wetla	and Non-	Vascular	Plants ¹	
50%=	10 20%= 4	Total Cover:	20				Problem	atic Hydr	ophytic V	egetation ¹ (E	xplain)
Woody Vine Stratu	IM (Plot size:)				¹ Indicate be prese	ors of hydr ont, unless	ric soil an s disturbe	id wetland ed or prob	d hydrology m elematic.	iust
2						Hydrop	hytic				
		Total Cover:	0			Vegetat	ion				
% Bar	re Ground in Herb Stra	atum <u>80</u> % C	over of Bio	tic Crust		Present	?		Yes	X No	
Remarks: The upla	and data plot was loca	ted on a steep hills	side of folde	ed soils and	fill that did n	ot have n	ormal soil	structure	e and dra	inage of a ste	wep slope.

Profile Des	cription: (Describe	to the dep	th needed to doc	ument t	he indicate	or or c	onfirm the abser	nce of indicators.)		
Depth	Matrix		Re	dox Feat	ures					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture		Remarks	
0-6	10YR 3/2	100					SiL	wet at surface	e with gravel	
6-18	10YR 4/2	50					SiL	Folded soil w	th sand and g	ravel
	10YR 3/2	50					SiL	gravel in soil		
¹ Type: C=C	concentration, D=Dep	oletion, RM=	Reduced Matrix,	CS=Cov	ered or Co	ated S	and Grains. ² Loo	cation: PL=Pore Lir	ing, M=Matrix	
Hydric Soil	Indicators: (Applic	cable to all	LRRs, unless ot	herwise	noted.)		Indicators for	or Problematic Hyd	ric Soils ³ :	
Histos	ol (A1)		Sandy F	Redox (S	5)			2 cm Muck (A10) (LRR B)	
Histic	Epipedon (A2)		Stripped	i Matrix (S6)		<u> </u>	Red Parent Mat	erial (TF2)	-10)
Black I	HISTIC (A3)		Loamy I	VIUCKY IVI	Ineral (F1)	(excep		Very Shallow Da	Irk Surface (1)	-12)
	ed Below Dark Surfa	000 (111)	Loaniy (d Matrix	(E3)				r Remarks)	
Depiet	Dark Surface (A12)		Depiete Redox [Dark Sur	(F6)		³ Indicat	ors of hydrophytic y	edetation and	
Sandy	Muck Mineral (S1)		Neolete	d Dark S	urface (F7)	`	wetla	nd hydrology must	ne nresent	
Sandy	aleved Matrix (S4)		Bedox [) Denressi	randoc (17)	,	unle	ess disturbed or pro	blematic	
	gleyed Matrix (04)			Depressi	5113 (1 0)		din		biematic.	
Restrictive	Laver (if present):									
Type:	<i>, , ,</i>									
Depth (inche	es):					H	Hydric Soil Prese	ent? Y	es	No X
HYDROLOGY	ſ									
Wetland Hy	drology Indicators									
Primary Indi	icators (minimum on	e required; o	check all that app	ly)				Secondary Indica	tors (2 or more	e required)
Surfac	e Water (A1)		Water-S	Stained L	eaves (B9)	(exce	pt MLRA	Water-Stained L	.eaves (B9) (M	LRA 1, 2,
High V	Vater Table (A2)		1, 2,	4A and	4B)			4A and 4B)		
Satura	tion (A3)		Salt Cru	ist (B11)				Drainage Patter	ns (B10)	
Water	Marks (B1)		Aquatic	Inverteb	rates (B13))		Dry-Season Wa	ter Table (C2)	
Sedim	ent Deposits (B2)		Hydroge	en Sulfide	e Odor (C1)		Saturation Visib	e on Aerial Im	agery (C9)
Drift D	eposits (B3)		Oxidized	d Rhizos	pheres alor	ng Livir	ng Roots (C3)	Geomorphic Po	sition (D2)	
Algal M	Mat or Crust (B4)		Presence	e of Rec	luced Iron	(C4)		Shallow Aquitar	d (D3)	
Iron De	eposits (B5)		Recent	Iron Red	uction in P	lowed \$	Soils (C6)	FAC-Neutral Te	st (D5)	
Surfac	e Soil Cracks (B6)		Stunted	or Stres	sed Plants	(D1) (I	_RR A)	Raised Ant Mou	nds (D6) (LRR	A)
Inunda	ation Visible on Aeria	I Imagery (E	57) Other (E	Explain ir	n Remarks)		. <u> </u>	Frost-Heave Hu	mmocks (D7)	
Sparse	ely Vegetated Conca	ve Surface	(B8)							
Field Ohee	n etione.									
Field Obsei	rvations:	-		(inches)						
Sufface wa	Dropont? Ye	s	No X Depth	(inches)). 					
	Present? Ye	s	No X Depth	(inches)). 		Wetland Uvd	rology Brocont?	Vac	No Y
(includes ca	noillary fringe)	s I		(incries)				rology Present?	165	
Describe Record	led Data (Unnamed -	Tributary ga	uge, monitoring v	ell, aeria	l photos, p	revious	s inspections), if a	available:		
Remarks: The so	oil surface was satura	ated due to	recent rain event:	s. No hvo	Irology obs	erved	below 2 inches			

Project/Site:	Marine Drive Propos	ed Development P	roject	City/County:	Whatcom (County			Sam	pling Date:	Oct, 26 2020
Applicant/Owner:	ABC Recycling						State:	WA	Sam	pling Point:	DP-03
Investigator(s):	Joseph R. Pursley (A	Anchor QEA, LLC)		Section	n, Township,	, Range:	S44, T	38, R2E			
Landform (hillslope	e, terrace, etc.):	Road side depres	sion/ditch	Local re	lief (concave	e, convex	, none):	Concave			Slope: 0-8%
Subregion (LRR):	Northwest Forests a	nd Coast (LRR A)	Lat:				Long:			C	atum:
Soil Map Unit Nam	e: Urban land –	Whatcom - Labou	nty complex	K			NWI Cla	ssificatior	: PSSC		
Are climatic / hydro	ologic conditions on th	ne site typical for th	nis time of y	ear?	Yes	Х	No		(If no, e	explain in Re	marks)
Are Vegetation	, Soil	, or Hydrology		significantly	disturbed?	Are "N	lormal C	ircumstan	ces" Pres	sent? Yes	X No
Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	ded, exp	olain any a	answers ir	n Remarks.)	
SUMMARY OF	FINDINGS - Att	ach site map s	howing s	ampling p	point loca	tions, ti	ansec	ts, impo	ortant fe	atures, et	с.
Hydrophytic Veget	ation Present?	Yes X No		Is the Sa	ampled Area	а					
Hydric Soil Presen	t?	Yes X No		within a	a Wetland?		Yes	X	No		
Wetland Hydrology	Present?	Yes X No									
VEGETATION											
						Domina	nce Tes	t worksh	eet:		
			Absolute % Cover	Dominant Species?	Indicator Status?						
Tree Stratum	(Plot size:)		Species	Status	Number		inant Spec			
1. Pinus resinosa			5	Yes	NI	That Alt	; OBL, F	ACVV, UI	-AC.	4	(A)
2		<u> </u>				Total Nu	imber of	Dominan	t		
3						Species	Across	All Strata:		4	(B)
4						Percent	of Domi	nant Spec	cies		
5						That Are	OBL, F	ACW, or	FAC:	100%	(A/B)
50%=	2.5 20%= 1	Total Cover:	5								
Sapling/Shrub Stra	tum (Plot size:)				Prevale	nce Ind	ex Works	heet:		
1. Cornus sericea			50	Yes	FACW	Tot	al % Co	ver of:		Multiply by	y:
2. Crataegus mor	nogyna		20	Yes	FAC	OBL spe	ecies	0	x1 =	0	
3. Ligustrum sine	nse		15	No	FAC	FACW s	pecies	50	x2 =	100	
4. Rubus armenia	cus		15	No	FAC	FAC spe	ecies	90	x3 =	270	
5						FACU s	pecies	0	x4 =	0	
50%=	50 20%= 20	Total Cover:	100			UPL spe	ecies	0	x5 =	0	
Herb Stratum	(Plot size:)				Column	Totals:	140	(A)	370	(B)
1. Equisetum arve	ense		15	Yes	FAC	Preva	ence Ind	dex = B/A	=	2.6	
2. Agrostis stolon	ifera		25	Yes	FAC						
3.						Hydrop	hytic Ve	getation	Indicator	s:	
4.							1 - Rap	oid Test fo	r Hydroph	nytic Vegetati	on
5.						Х	2 - Dor	ninance T	est is >50	1%	
6.						Х	3 - Pre	valence In	idex is ≤3	3.0 ¹	
7.							4 - Mor	phologica	I Adaptati	on ¹ (Provide	supporting
8.							data	a in Rema	rks or on	a separate s	heet)
9.							5 - We	tland Non-	Vascular	Plants ¹	
50%=	20 20%= 8	Total Cover:	40				Probler	matic Hyd	rophytic V	egetation ¹ (E	Explain)
Woody Vine Stratu	IM (Plot size:)				¹ Indicato	ors of hy	dric soil a	nd wetlan	d hydrology i	nust
1						ne hiese	an, unie	ออ นเธเนเ ป		nomalit.	
<u>∠</u>		Tatal O				Hydrop	hytic				
		i otal Cover:	U	tie Ormet		Vegetat	ion		V	v	
% Bai	e Ground in Herb Stra	atum <u>60</u> %C	over of Bio	tic Crust		Present	1		res	<u>X</u> NO	
Remarks: The scru	io-shrud layer was so	dense that there v	vas iimited	nero layer.							

Profile Des	cription: (Descrit	be to the de	pth needed t	o document	the indicat	tor or co	onfirm the abs	sence of indicators.)
Depth	Matrix			Redox Fea	tures		_	
(inches)	Color (moist)	%	Color (mo	ist) %	Type ¹	Loc ²	Texture	e Remarks
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	С	М	SiL	Redox concentrations, saturation
16-18	10YR 5/1	80	10YR 4/	6 20	С	Μ	SiL	Redox in the depleted layer.
¹ Type: C=C	oncentration, D=D	epletion, RN	/I=Reduced M	latrix, CS=Co	vered or Co	pated Sa	and Grains. ² l	Location: PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators: (App	licable to a	ll LRRs, unle	ss otherwise	noted.)		Indicators	for Problematic Hydric Soils ³ :
Histoso	ol (A1)		Sa	andy Redox (S	S5)			2 cm Muck (A10) (LRR B)
Histic E	Epipedon (A2)		St	ripped Matrix	(S6)			Red Parent Material (TF2)
Black H	Histic (A3)		Lo	amy Mucky N	/lineral (F1)	(excep	ot MLRA 1)	Very Shallow Dark Surface (TF12)
Hydrog	gen Sulfide (A4)		Lo	amy Gleyed I	Matrix (F2))		Other (Explain in Remarks)
X Deplet	ed Below Dark Sur	face (A11)	De	epleted Matrix	(F3)		3	
Thick [Jark Surface (A12)		Re	edox Dark Su	nace (F6)		SIndic	cators of hydrophytic vegetation and
Sandy	Muck Mineral (S1)		De	epleted Dark S	Surface (F7	()	we	tland hydrology must be present,
Sandy	gleyed Matrix (S4)		Re	edox Depress	ions (F8)		L	inless disturbed or problematic.
B () (
Restrictive	Layer (if present)	•						
Type:							ludaia Cail Da	Non Y No
Depth (Inche						_ [_]	iyaric Soli Pre	esent? tes <u>x</u> no
HYDROLOGY	1							
Wetland Hy	drology Indicator	s:						
Primary Indi	cators (minimum c	ne required	; check all tha	at apply)				Secondary Indicators (2 or more required)
Surfac	e Water (A1)		W	ater-Stained I	_eaves (B9) (excep	pt MLRA	Water-Stained Leaves (B9) (MLRA 1, 2,
X High W	/ater Table (A2)			1, 2, 4A and	4B)			4A and 4B)
X Satura	tion (A3)		Sa	alt Crust (B11))			Drainage Patterns (B10)
Water	Marks (B1)		Ao	quatic Invertet	orates (B13	3)		Dry-Season Water Table (C2)
Sedime	ent Deposits (B2)		Hy	/drogen Sulfic	le Odor (C1	1)		Saturation Visible on Aerial Imagery (C9)
Drift De	eposits (B3)		O	xidized Rhizos	spheres alo	ng Livin	ng Roots (C3)	Geomorphic Position (D2)
Algal N	lat or Crust (B4)		Pr	esence of Re	duced Iron	(C4)		Shallow Aquitard (D3)
Iron De	eposits (B5)		R	ecent Iron Red	duction in P	Plowed S	Soils (C6)	FAC-Neutral Test (D5)
Surfac	e Soil Cracks (B6)		St	unted or Stres	ssed Plants	s (D1) (L	RR A)	Raised Ant Mounds (D6) (LRR A)
Inunda	tion Visible on Aer	ial Imagery	(B7) Of	ther (Explain i	n Remarks)		Frost-Heave Hummocks (D7)
Sparse	ely Vegetated Conc	cave Surface	e (B8)					
Field Ob								
	vations:	(00		Donth /:				
Surface Wa	Dresent?			Depth (Inches	o)			
	Present?			Depth (Inches	5): 10 .). 10		Wetlend U	
Saturation P	resent? Y	es X		Depth (Inches	s): <u>12</u>		wetland Hy	ydrology Present? Yes X No
Describe Record	ed Data (Unnamed	d Tributary o	auge, monito	ring well, aeri	al photos, r	orevious	inspections).	if available:
Remarks: Satura	ted soils at 1 inche	with slowly	filling water t	able to 16 inc	hes in nit			
. temano. Oatara		2 010 WIY	ing watch t					

Project/Site:	Marine Drive Propos	sed Development P	roject	City/County:	Whatcom O	County			Sam	pling Date:	Oct	26 2020
Applicant/Owner:	ABC Recycling				State:	WA	Sam	pling Point:	[DP-04		
Investigator(s):	Joseph R. Pursley (Anchor QEA, LLC)		Section	n, Township,	Range:	S44, T3	38, R2E				
Landform (hillslope	e, terrace, etc.):	terrace		Local re	lief (concave	e, convex	, none):	Convex			Slope:	0-8%
Subregion (LRR):	Northwest Forests a	ind Coast (LRR A)	Lat:				Long:			[Datum:	
Soil Map Unit Nam	ne: Urban land –	- Whatcom - Labour	nty complex	(NWI Cla	ssification:	PSSC			
Are climatic / hydro	ologic conditions on t	he site typical for th	is time of y	ear?	Yes	Х	No		(If no, o	explain in Re	emarks)
Are Vegetation	, Soil	, or Hydrology		significantly	/ disturbed?	Are "N	Iormal C	ircumstand	es" Pres	sent? Yes	Х	No
Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	eded, exp	olain any a	nswers i	n Remarks.)		
SUMMARY OF	FINDINGS – Att	tach site map s	howing s	ampling p	point loca	tions, t	ransec	ts, impo	rtant fe	eatures, e	tc.	
Hydrophytic Veget	ation Present?	Yes No	x									
Hydric Soil Presen	it?	Yes No	<u> </u>	Is the Sa	ampled Area	а	Yes		No	х		
Wetland Hydrolog	v Present?	Yes No	<u>x</u>	within a	a Wetland?						-	
, in original region of the second	,											
VEGETATION												
Trop Chrotum		- · · · · ·	Absolute % Cover	Dominant Species?	Indicator Status?	Domina	nce Tes	t workshe	et:			
1	(Plot size:					That Are	e OBL, F	ACW, or F	AC:	2		(A)
2 3						Total Nu Species	Across	Dominant All Strata:		5		(B)
4.						Percent	of Domi	nant Speci	es –			
5.						That Are	OBL, F	ACW, or F	AC:	40%		(A/B)
50%=	0_20%=_0	Total Cover:	0									
Sapling/Shrub Stra	atum (Plot size:)				Prevale	nce Inde	ex Worksh	eet:			
1. Rubus armenia	acus		45	Yes	FAC	Tot	al % Co	ver of:		Multiply b	y:	
2. Rubus ursinus			10	No	FACU	OBL spe	ecies	0	_x1 =	0		
3. Crataegus mor	nogyna		20	Yes	FAC	FACW s	pecies	0	_x2 =	0		
4. Sympnoricarpo	os albus		25	Yes	FACU	FAC spe	ecies	65	X3 =	195		
5.	50 20% 20	Total Cover	100				pecies .	/5	X4 =	300		
50%=	<u> </u>				LIES	Column	Totolo	140	$x_{0} = $	405		(P)
1 Ptoridium aqui	(FIOL SIZE.)	20		FACU	Proval	ance Inc	140	_(A)	495		(D)
2 Hypericum per	foratum		20	Yes	FACU	Tieva	ence inc	iex – D/A -		5.5		
3.	loidtain	<u> </u>	20	100		Hydrop	hvtic Ve	detation l	ndicator	s:		
4.							1 - Rap	id Test for	Hydroph	vtic Vegetat	ion	
5.							2 - Dom	ninance Te	st is >50)%		
6.							3 - Prev	valence Ind	lex is ≤	3.0 ¹		
7.							4 - Mor	phological	Adaptati	ion ¹ (Provide	suppo	orting
8							data	in Remar	ks or on	a separate s	sheet)	0
9							5 - Wet	land Non-	/ascular	Plants ¹		
50%=	20 20%= 8	Total Cover:	40				Probler	natic Hydro	ophytic \	/egetation ¹ (Explain	i)
Woody Vine Stratu	um (Plot size:	:)				¹ Indicato be prese	ors of hyd ent, unles	dric soil an ss disturbe	d wetlan d or prol	d hydrology plematic.	must	
2.						Hydrop	hytic					
		Total Cover:	0			Vegetat	ion					
% Ba	re Ground in Herb Str	ratum <u>60</u> % C	over of Bio	tic Crust		Present	?		Yes	No	Х	
Remarks: The upla	and vegetation shows	s signs of frequent of	disturbance	by adjacent	land use ac	tivities.						

Profile De	scription: (Describe	e to the dept	h needed to doc	ument t	he indicato	or or c	onfirm the abs	ence of indicators.)		
Depth	Matrix		Red	dox Feat	ures					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	ł	Remarks	
0-14	10YR 4/3	100					SiL	50% rock and	d coarse sand	
14-18	10YR 4/2	30					SiL	Less rock in s	soil	
	10YR 4/3	70					SiL			
¹ Type: C=	Concentration, D=De	pletion, RM=	Reduced Matrix,	CS=Cov	ered or Coa	ated S	and Grains. ² L	ocation: PL=Pore Lir	ing, M=Matrix.	
Hydric Sc	il Indicators: (Appli	cable to all L	_RRs, unless otł	nerwise	noted.)		Indicators	for Problematic Hyd	ric Soils ³ :	
Histo	osol (A1)		Sandy F	edox (S	5)			2 cm Muck (A10) (LRR B)	
Histi	c Epipedon (A2)		Stripped	l Matrix (S6)		-	Red Parent Mate	erial (TF2)	
Blac	k Histic (A3)		Loamy M	Aucky M	ineral (F1)	(excep	ot MLRA 1)	Very Shallow Da	ark Surface (TF12)	
Hydr	ogen Sulfide (A4)		Loamy (Gleyed M	latrix (F2)		-	Other (Explain ir	ו Remarks)	
Depl	eted Below Dark Surfa	ace (A11)	Depleter	d Matrix	(F3)					
Thicl	Contraction (A12)		Redox D	oark Surf	ace (F6)		³ Indica	ators of hydrophytic v	egetation and	
Sand	ly Muck Mineral (S1)		Depleter	d Dark S	urface (F7)		wet	tland hydrology must l	be present,	
Sano	ly gleyed Matrix (S4)		Redox E	Pepressio	ons (F8)		u	nless disturbed or pro	blematic.	
Restrictiv	e Layer (if present):									
Type:	,									
Depth (inc	hes):					1	Hydric Soil Pre	sent? Y	es No	х
• •	·						-			
	NV									
Wotland I	J T Hydrology Indicators									
Primary In	dicators (minimum on	• e required: c	heck all that ann	V)				Secondary Indica	tors (2 or more real	uired)
<u>r milary fr</u> Surf:	ace Water (A1)	e required, e	Water-S	y) stained I	eaves (R9)	(exce	nt MI RA	Water-Stained I	eaves (B9) (MI RA	1 2
High	Water Table (A2)		1 2	44 and	4 B)	(CAUC		44 and 4B)		., _,
Satu	ration (A3)		Salt Cru	st (B11)	- D)		-	Drainage Patter	ns (B10)	
Uate	r Marks (B1)			Inverteb	rates (B13)		-	Dry-Season Wa	ter Table (C2)	
Sedi	ment Deposits (B2)		Hydroge	an Sulfide	Odor (C1))	-	Saturation Visibl	le on Aerial Imagery	(C9)
Drift	Deposits (B3)		Oxidized	1 Rhizosi	oheres alon	, na Livir	na Roots (C3)	Geomorphic Pos	sition (D2)	(00)
Alga	Mat or Crust (B4)		Presenc	e of Red	luced Iron (C4)	.g (00)	Shallow Aquitar	1 (D3)	
Iron	Deposits (B5)		Recent /	Iron Red	uction in Pl	owed :	Soils (C6)	EAC-Neutral Tes	st (D5)	
Surf	ace Soil Cracks (B6)		Stunted	or Stres	sed Plants	(D1) (I		Raised Ant Mou	nds (D6) (I RR A)	
	dation Visible on Aeria	al Imagery (B	7) Other (F	xolain ir	Remarks)	(= -) (-		Frost-Heave Hu	mmocks (D7)	
Spar	sely Vegetated Conca	ave Surface (B8)		i rtoinanto)		-			
Field Obs	ervations:									
Surface W	ater Present? Ye	es N	lo X Depth	(inches)	:					
Water tab	le Present? Ye	es N	lo X Depth	(inches)	:					
Saturation	Present? Ye	es N	lo X Depth	(inches)	:		Wetland Hy	drology Present?	Yes No	Х
(includes of	capillary fringe)									
Describe Reco	rded Data (Unnamed	Tributary gau	ige, monitoring w	ell, aeria	ll photos, pr	revious	s inspections), it	f available:		
Remarks: The	soil surface was mois	t due to recei	nt rain events.							

Project/Site:	Marine Drive Propo	sed Development	Project	City/County:	Whatcom	County			Sam	pling Date:	Oct, 26 2020
Applicant/Owner:	ABC Recycling						State:	WA	Sam	pling Point:	DP-05
Investigator(s):	Joseph R. Pursley	(Anchor QEA, LLC))	Section	n, Township	, Range:	S44, T	38, R2E			
Landform (hillslope	e, terrace, etc.):	Narrow depression	on	Local re	lief (concav	e, convex	, none):	Concave			Slope: 0-8%
Subregion (LRR):	Northwest Forests a	and Coast (LRR A)	Lat:				Long:			D	atum:
Soil Map Unit Nam	ne: Urban land -	- Whatcom - Labou	unty comple	x			NWI Cla	ssification	n: PSSC		
Are climatic / hydro	ologic conditions on	the site typical for t	this time of y	ear?	Yes	Х	No		(If no,	explain in Re	marks)
Are Vegetation	, Soil	, or Hydrology		significantly	disturbed?	Are "N	lormal C	ircumstar	nces" Pres	sent? Yes	XNo
Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	ded, exp	plain any a	answers i	n Remarks.)	
SUMMARY OF	FINDINGS – At	tach site map	showing s	ampling p	point loca	tions, ti	ansec	ts, impo	ortant fe	eatures, et).
Hudrophytic Veget	ation Dropont?										
Hydrophylic veget		Yes X No		Is the Sa	ampled Are	a	Vas	Y	No		
Wetland Hydrology	u Procont?	Yes X No		within a	a Wetland?		163		_ 10_		
wettand riydrolog	y Flesent:										
VEGETATION											
						Domina		tworksh	oot:		
			Absolute	Dominant	Indicator	Domina	nce res	st worksn	eet:		
Tree Stratum	(Plot size	:)	% Cover	Species?	Status?	Number	of Domi	inant Spe	cies		
1						That Are	e OBL, F	ACW, or	FAC:	6	(A)
2.						Total Nu	imber of	Dominan	t		
3						Species	Across	All Strata		6	(B)
4.						Percent	of Domi	nant Spee	cies		<i></i>
5						That Are	9 OBL, F	ACW, or	FAC:	100%	(A/B)
50%=	0 20% = 0	Iotal Cover	: 0			Duranta			h (-		
Sapling/Shrub Stra	atum (Piot size)	20	Vaa		Prevale		ex works	neet:	Multiply by	
Contactus mar		·	20	Yes							/
3 Rubus armenia			40	Yes	FAC	FACW s	necies	45	^	90	
4. Salix scouleria	na		20	Yes	FAC	FAC spe	ecies	95		285	
5.		<u> </u>				FACU s	pecies	0		0	
50%=	50 20%= 20	Total Cover	: 100			UPL spe	ecies	0		0	
Herb Stratum	(Plot size)	CHECK R	ANKED VAL	UES	Column	Totals:	140	(A)	375	(B)
1. Equisetum arve	ense	,	15	Yes	FAC	Preva	ence Ind	dex = B/A	=`´	2.7	()
2. Phalaris arund	inacea		25	Yes	FACW						
3.						Hydrop	hytic Ve	getation	Indicator	s:	
4.							1 - Rap	oid Test fo	r Hydroph	nytic Vegetati	on
5.						Х	2 - Don	ninance T	est is >50)%	
6						Х	3 - Pre	valence Ir	ndex is ≤	3.0 ¹	
7							4 - Mor	phologica	I Adaptat	ion ¹ (Provide	supporting
8							data	a in Rema	rks or on	a separate sl	neet)
9							5 - Wet	tland Non	-Vascular	Plants	
50%=	20 20%= 8	Total Cover	: 40			<u> </u>	Probler	matic Hyd	rophytic \	/egetation ¹ (E	xplain)
Woody Vine Stratu	um (Plot size	:)				¹ Indicato	ors of hy	dric soil a	nd wetlan	d hydrology r	nust
1						be prese	ent, unle	ss disturb	ed or prol	blematic.	
2						Hydrop	hytic				
% Ba	re Ground in Herb St	ratum <u>60</u> %	: 0 Cover of Bic	tic Crust		Vegetat Present	ion ?		Yes_	X No	
Remarks: Recent	hydrology increase a	ppears to have kill	ed Red alde	r (Alnus rubr	a) in the dat	t plot area	l.				

Profile Des	cription: (Describe	to the dep	th needed to doo	ument t	he indicate	or or c	onfirm the abs	sence of indicators.)
Depth	Matrix		Re	dox Feat	ures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-10	10YR 3/1						SiL	Some angular gravel in soil.
10-14	10YR 3/1	95	10YR 4/6	5	С	М	SiL	Redox concentrations and saturation
14-18	10YR 5/1	85	10YR 4/6	15	С	М	SCL	Redox bright in depleted laver
		·			·			· _ · · · · _ · _ ·
		·			·			
					·		<u> </u>	
		·			·			
		olotion PM	-Poducod Matrix	<u></u>		atod S	and Grains ²	acation: PL-Poro Lining M-Matrix
Type. 0=0				00-000				
Hydric Soil	Indicators: (Applie	cable to all	LRRs, unless ot	herwise	noted.)		Indicators	for Problematic Hydric Soils ³ :
Histos	ol (A1)		Sandy I	Redox (S	5)			2 cm Muck (A10) (LRR B)
Histic	Epipedon (A2)		Stripped	d Matrix ((S6)		•	Red Parent Material (TF2)
Black	Histic (A3)		Loamy	Mucky M	ineral (F1)	(excep	ot MLRA 1)	Very Shallow Dark Surface (TF12)
Hydrod	gen Sulfide (A4)		Loamy	Gleved N	latrix (F2)	•	,	Other (Explain in Remarks)
Deplet	ed Below Dark Surfa	ace (A11)	Deplete	d Matrix	(F3)		•	
Thick I	Dark Surface (A12)	()	X Redox I	Dark Surf	ace (F6)		³ Indic	ators of hydrophytic vegetation and
Sandv	Muck Mineral (S1)		Deplete	d Dark S	urface (F7))	wet	tland hydrology must be present.
Sandy	aleved Matrix (S4)		Redox I	Denressi	ons (F8)	/		nless disturbed or problematic
	gleyed matrix (04)			Depressio			ŭ	
Restrictive	Layer (if present):							
Type:								
Depth (inch	es):					H	Hydric Soil Pre	esent? Yes X No
HYDROLOG	(
Wetland Hy	drology Indicators	:						
Primary Ind	cators (minimum on	e required;	check all that app	ly)				Secondary Indicators (2 or more required)
Surfac	e Water (A1)		Water-S	Stained L	eaves (B9)) (exce	pt MLRA	Water-Stained Leaves (B9) (MLRA 1, 2,
X High V	Vater Table (A2)		1, 2,	4A and	4B)			4A and 4B)
X Satura	tion (A3)		Salt Cru	ıst (B11)				Drainage Patterns (B10)
Water	Marks (B1)		Aquatic	Inverteb	rates (B13))		Dry-Season Water Table (C2)
Sedim	ent Deposits (B2)		Hydroge	en Sulfide	e Odor (C1)		Saturation Visible on Aerial Imagery (C9)
Drift D	eposits (B3)		Oxidize	d Rhizos	pheres alor	ng Livir	ng Roots (C3)	Geomorphic Position (D2)
Algal M	Aat or Crust (B4)		Presen	ce of Rec	luced Iron	(C4)		Shallow Aquitard (D3)
Iron De	eposits (B5)		Recent	Iron Red	uction in P	lowed \$	Soils (C6)	FAC-Neutral Test (D5)
Surfac	e Soil Cracks (B6)		Stunted	or Stres	sed Plants	(D1) (I	LRR A)	Raised Ant Mounds (D6) (LRR A)
Inunda	tion Visible on Aeria	I Imagery (I	B7) Other (I	Explain in	n Remarks))		Frost-Heave Hummocks (D7)
Sparse	ely Vegetated Conca	ve Surface	(B8)					
Field Ober	wations							
	tor Dropont?	•		(inches)				
Sunace wa	Dresent?	s <u> </u>	No <u>A</u> Deptr	(inches)). 			
	Fresent? Ye		No Deptr	(INCHES)	14		Matlessi	(drolom) Procent? Vec. V. N.
Saturation F	resent? re	s <u>X</u>	No Deptr	(Inches)	10		Wetland Hy	/drology Present? Yes X No
	led Data (Linnamed)	Tributary as		ull apria	l nhotos n	revious	inspections) i	f available:
Pemarks: Narroy	w swale between side	awalk and a	diacent industrial	fill area	a priotos, p	/ eviou		
Nonains. Nano	v swaie Detween SIQ	owait dilu a		m area.				

Project/Site:	Marine Drive Propo	sed Development F	Project	City/County:	Whatcom C	County			San	npling Dat	e: Oct	, 26 2020
Applicant/Owner:	ABC Recycling						State:	WA	San	npling Poi	nt:	DP-06
Investigator(s):	Joseph R. Pursley	(Anchor QEA, LLC)		Sectior	n, Township,	, Range:	S44, T3	38, R2E				
Landform (hillslope	e, terrace, etc.):	Hillslope/terrace		Local re	lief (concave	e, convex	, none):	Convex			Slope:	0-8%
Subregion (LRR):	Northwest Forests a	and Coast (LRR A)	Lat:				Long:				Datum:	
Soil Map Unit Nam	ne: Urban land -	- Whatcom - Labou	nty complex	(NWI Cla	ssification	: PSSC			
Are climatic / hydr	ologic conditions on	the site typical for th	nis time of y	ear?	Yes	Х	No		(If no,	explain in	Remarks	.)
Are Vegetation	, Soil	, or Hydrology		significantly	/ disturbed?	Are "N	lormal Ci	ircumstan	ices" Pre	sent? Y	es X	No
Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	eded, exp	lain any a	answers i	n Remark	s.)	
SUMMARY OF	FINDINGS – At	tach site map s	howing s	ampling	point loca	tions, t	ransec	ts, impo	ortant f	eatures,	etc.	
Hydrophytic Veget	tation Present?	Yes No	<u> </u>	Is the Sa	ampled Area	а						
Hydric Soil Preser	nt?	Yes No	<u> </u>	within a	a Wetland?		Yes -		NO	X		
Wetland Hydrolog	y Present?	Yes No	<u> </u>									
Remarks: For lab	eled Data Plot locatio	ons and site map pl	ease see Fig	gure 2 in the	e "Wetland V	erification	n and No	n-Compe	nsatory N	litigation I	Plan".	
VEGETATION												
						Domina	ince Tes	t worksh	eet:			
			Absolute	Dominant	Indicator	Donnie		t normon				
Tree Stratum	(Plot size)	% Cover	Species?	Status?	Number	of Domi	nant Spec	cies			
1						That Are	e OBL, F.	ACW, or I	FAC:	3		(A)
2						Total Nu	umber of	Dominan	t			
3						Species	Across	All Strata:		5		(B)
4						Percent	of Domir	nant Spec	cies			
5.						That Are	e OBL, F	ACW, or I	FAC:	609	%	(A/B)
50%=	0 20%= 0	Total Cover:	0									
Sapling/Shrub Stra	atum (Plot size)				Prevale	nce Inde	ex Works	heet:			
1. Rubus armenia	acus		45	Yes	FAC	To	tal % Cov	ver of:		Multipl	y by:	_
2. Rosa nutkana			15	No	FAC	OBL sp	ecies	0	x1 =	0		_
3. Crataegus mor	nogyna		20	Yes	FAC	FACW s	species	0	x2 =	0		_
4. Symphoricarpo	os albus		15	No	FACU	FAC spe	ecies	110	x3 =	33	0	_
5						FACU s	pecies	50	x4 =	20	0	_
50%=	47.5 20%= 19	Total Cover:	95			UPL spe	ecies	0	x5 =	0		_
Herb Stratum	(Plot size)	CHECK R/	ANKED VAL	UES	Column	Totals:	160	(A)	53	0	(B)
1. Pteridium aqui	linum		5	No	FACU	Preva	lence Ind	lex = B/A	=	3.3		_
2. Hypericum per	foratum		15	Yes	FACU							
3. Festuca rubra			30	Yes	FAC	Hydrop	hytic Ve	getation	Indicato	rs:		
4. Jacobaea vulg	aris		15	Yes	FACU		1 - Rap	id Test fo	r Hydrop	hytic Vege	ation	
5.						Х	2 - Dom	ninance T	est is >5	0%		
6.							3 - Prev	alence In	ndex is ≤	3.0 ¹		
7.							4 - Mor	phologica	l Adaptat	tion ¹ (Prov	ide suppo	orting
8.							data	i in Rema	rks or on	a separat	e sheet)	0
9.							5 - Wet	land Non-	Vascula	r Plants ¹		
50%=	32.5 20%= 13	Total Cover:	65				Problem	natic Hyd	rophytic V	Vegetatior	ı ¹ (Explair	ו)
Woody Vine Stratu	um (Plot size		CHECK R/	ANKED VAL	UES	¹ Indicate	ors of hyd ent. unles	dric soil ai ss disturb	nd wetlar ed or pro	nd hydrolo blematic.	gy must	
2.						Hydrop	hytic		- F.O			
		Total Cover:	0			Vegetat	ion					
% Ba	re Ground in Herb St	tratum 35 % C	Cover of Bio	tic Crust		Present	t?		Yes	X	No	
Remarks: The upla	and vegetation show	s signs of freauent	disturbance	by adjacent	land use ac	tivities.						
	J	J		, ,								

Depth Matrix Redox Features (inches) Color (moist) % Type Loc2 Texture 50% nock and coarse sand 0-18 10YR 4/2 30 No sand or rock 50% nock and coarse sand 10YR 4/2 30 No sand or rock 50% nock and coarse sand 11Ype: Coconcentration, D=Depletion, RM=Reduced Matrix (CS=Covered or Coated Sand Grains, "Location: PL=Pore Lining, M=Matrix, Hittocial (A1) Hittocial (A1) Sandy Redox (SS) 2 on Muck (A10) (RR B) Hittocial (A1) Sandy Redox (SS) 2 on Muck (A10, RR B) Hittocial (A1) Sandy Matrix (S6) 2 on Muck (A10, RR B) Depleted Barks Surface (A1) Depleted Matrix (S6) 2 on Muck (A10, RR B) Depleted Barks Surface (A11) Depleted Matrix (F3) Other (Explain in Remarks) Depleted Barks Surface (A11) Depleted Matrix (F3) Pindicators of hydrophyticsplematic. Remarks: Soils seemed foled with layers of sand and rock. Sandy Muck Mineral (F1) Water Standa Lawas (B) (M data (B1) Medicators (Innimum one required; check all that apply) Saturation (Natrie (B1) Drainage Patient Barks (B1) Drainage Patient Barks (B1) Saturation (A3) <td< th=""><th>Medox Features 70 Color (moist) % Type¹ Loc² Texture Secure Secure<!--</th--><th>Profile Description: (Describe to the depth</th><th>needed to document th</th><th>e indicator or</th><th>confirm the abse</th><th>ence of indicators.)</th></th></td<>	Medox Features 70 Color (moist) % Type ¹ Loc ² Texture Secure Secure </th <th>Profile Description: (Describe to the depth</th> <th>needed to document th</th> <th>e indicator or</th> <th>confirm the abse</th> <th>ence of indicators.)</th>	Profile Description: (Describe to the depth	needed to document th	e indicator or	confirm the abse	ence of indicators.)
(inches) Color (moist) % Type ¹ Loc ² Texture Remarks 0-18 10YR 4/2 30 SiL 50% rock and coarse sand 10YR 4/2 30 SiL 50% rock and coarse sand 10YR 4/2 30 SiL 50% rock and coarse sand 10YR 4/2 30 SiL 50% rock and coarse sand 10YR 4/2 30 SiL 50% rock and coarse sand 10YR 4/2 30 SiL 50% rock and coarse sand 10YR 4/2 30 SiL 50% rock and coarse sand 10YR 4/2 30 SiL 50% rock and coarse sand 10YR 4/2 30 SiL SiL 50% rock and coarse sand 10YR 4/2 30 SiL SiL 50% rock and coarse sand 10YR 4/2 SiL SiL SiL 50% rock and coarse sand 10YR 4/2 SiL SiL SiL SiL SiL 10YR 4/2 SiL Sing fedox fix (6) Indicators fix (74) Sing fedox fix (73) Docite Capin in Remarks 10YR 4/2 Depleted Matrix (51) Depleted Matrix (73) <t< th=""><th>So Color (moist) % Type¹ Loc² Texture Remarks 30 </th><th>Depth Matrix</th><th>Redox Featu</th><th>res</th><th></th><th></th></t<>	So Color (moist) % Type ¹ Loc ² Texture Remarks 30	Depth Matrix	Redox Featu	res		
0-18 10YR 4/3 70	30 SiL 50% rock and coarse sand No sand or rock No sand or rock sile No sand or rock sile Sile Sol% rock and coarse sand No sand or rock No sand or rock sile Solw rock and coarse sand spletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. *Location: PL=Pore Lining, M=Matrix. icable to all LRs, unless otherwise noted.) Indicators for Problematic Hydric Solis ¹ ; Sitipped Matrix (SB) C orn Muck (A10) (LRR B) Addition of the Capital material (TF1) Consord Glowd Matrix (F2) Depleted Matrix (F3) 3 indicators of hydrophytic vegetation and Depleted Matrix (F3) 3 indicators of hydrophytic vegetation and Depleted Matrix (F3) wetand hydrology must be present, Redox Dark Surface (F7) wetand hydrology must be present, water Stained Leaves (F8) Water-Stained Leaves (F9) Saft Crust (F11) Saft Crust (F31)	(inches) Color (moist) % (Color (moist) %	Type ¹ Lo	c ² Texture	Remarks
10YR 4/2 30 No sand or rock Image: Stand or rock Image: Stand or rock Image: Stand	30	0-18 10YR 4/3 70			SiL	50% rock and coarse sand
************************************	appletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix. icable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solis?:	10YR 4/2 30			,	No sand or rock
"Type: C-Concentration, D-Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. *Location: PL=Pore Lining, M=Matrix, Hydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solle*; Histics Epideon (A2) Sandy Rodox (S5) 2 cm Muck (A10) (LRR B) Histic (A3) Loamy Gleved Matrix (S5) Red Parent Material (H22) Black Histic (A3) Loamy Gleved Matrix (S5) Charles Matrix (A11) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Indicators of hydrophytic vegetation and sandy Muck Mineral (F7) Sandy Blevel Matrix (S4) Depleted Matrix (F3) Indicators of hydrophytic vegetation and sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Blevel Matrix (S4) Redox Dark Surface (F7) wetland hydrology must be present, unless disturbed or problematic. Perture Indicators: Primary Indicators: Hydric Soil Present? Yes	apletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ⁹ Location: PL=Pore Lining, M=Matrix. icable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solis':					
"Type: C-Concentration, D-Depletion, RM-Reduced Matrix, CS-Covered or Coated Sand Grains." Location: PL-Pore Lining, M-Matrix, Hydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls': 	pletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix. icable to all LRRs, unless otherwise noted.) Sandy Redox (S5) Sandy Redox (S5) Care (Atrix, (S6) Red Parent Matrix (S1) Loamy Mukey Mineral (F1) (except MLRA 1) Perpleted Matrix (F2) Care (Atrix) Redox Depressions (F8) Hydric Soil Present? YesNoX ayers of sand and rock. Set Coust (S1) Aquatic Invertebrates (B1) Ball Magery (B7) Other (Explain in Remarks) esNoX Depth (inches): stimute Method Present? YesNoX Tributary gauge, monitoring well, aerial photos, previous Inspections), if available: at due to recent rain events					
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains: ¹ Location: PL=Pore Lining, M=Matrix, Hydric Soll Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls ² ; Histos (A1) Sandy Redox (S5) 2 cm Muck (A10) (LRR B) Black Histic (A2) Stripped Matrix (S6) Red Parent Material (TF2) Depleted Below Dark Surface (A11) Depleted Matrix (F3) Other (Explain in Remarks) Depleted Below Dark Surface (A11) Depleted Matrix (F3) and cabors of hydrophytic vegetation and sandy Muck Mineral (S1) Depleted Dark Surface (F7) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) wetland hydrology must be present, unless disturbed or problematic. Type:						
¹ Type: C-Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix. Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ¹ : Histics (A) Sandy Redox (S5) 2 cm Muck (A10) (LRR B) Black Histic (A2) Stripped Matrix (S6) 2 Red Parent Muck (A10) (LRR B) Depleted Below Dark Surface (A11) Depleted Matrix (F2) Other (Explain in Remarks) Depleted Below Dark Surface (A12) Redox Dark Surface (F6) ³ Indicators of hydrophytic vegetation and sandy Muck Mineral (F3) Sandy Muck Mineral (S1) Depleted Matrix (S4) Redox Depressions (F8) unless disturbed or problematic. Restrictive Layer (if present): Type:						
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. *Location: PL=Pore Lining, M=Matrix. Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ² : Histose (101) Sandy Redox (55) Red Parent Material (TP2) Black Histic (201) Loamy Mucky Mineral (F1) (except MLRA 1) Very Shallow Dark Surface (TF2) Hydrogen Sulfide (A4) Loamy Mucky Mineral (F1) (except MLRA 1) Other (Explain in Remarks) Sandy Redox Matrix (S4) Redox Dark Surface (F7) very Shallow Dark Surface (TF2) Sandy gleyed Matrix (S4) Redox Depressions (F8) unless disturbed or problematic. Restrictive Layer (if present): Type: Hydric Soil Present? Yes Type: Depleted Matrix (F3) Secondary Indicators (2 or more Surface Water (A1) Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9) (M A4 and 4B) Surface Water (A1) Matrix (C4 and 4B) Day Secondary Indicators (2 or more Surface Water (A1) Sat Crust (B1) Day Secondary Indicators (2 or more Surface Water (A1) Day Secondary Indicators (2 or more Surface Water (A1) Mater Stained Leaves (B9) (M A4 and 4B) Day Secondary Indicators (2 or more Surface Water (A1) Day Secondary Indicators (2 or more Surface Water (A1) Day Secondary Indicators (2	epletion, RM-Reduced Matrix, CS=Covered or Coated Sand Grains. ^a Location: PL=Pore Lining, M=Matrix. icable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ³ :					
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Iron Deposits (B5) Recent Iron Reduction in Plowed Soils (C6) FAC-Neutral Test (D5) Surface Soil Cracks (B6) Stunted or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sufface Water Present? Yes No X Depth (inches): Wetland Hydrology Present? Yes Saturation Present? Yes No X Depth (inches): Wetland Hydrology Present? Yes (includes capillary fringe) No X Depth (inches): Wetland Hydrology Present? Yes cribe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: arks: The soil surface was moist due to recent rain events	Recent Iron Reduction in Plowed Soils (C6) FAC-Neutral Test (D5) Stunted or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR A) ial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) ave Surface (B8) Vetland Hydrology Present? YesNoX wetland Hydrology Present? YesNoX No Tributary gauge, monitoring well, aerial photos, previous inspections), if available: st due to recent rain events	Algal Mat or Crust (B4)	Presence of Redu	iced Iron (C4)		Shallow Aquitard (D3)
Surface Soil Cracks (B6) Stunted or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Frost-Heave Hummocks (D7) Field Observations: Surface Water Present? Yes No X Depth (inches): Wetland Hydrology Present? Yes No X Cincludes capillary fringe) No Cincludes capillary fringe) Wetland Hydrology Present? Yes No X Depth (inches): Strike Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available:	Stunted or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR A) ial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) ave Surface (B8) Volter (Explain in Remarks) Wetland Hydrology Present? es No X Depth (inches): es No X I Tributary gauge, monitoring well, aerial photos, previous inspections), if available: St due to recent rain events	Iron Deposits (B5)	Recent Iron Redu	ction in Plowe	d Soils (C6)	FAC-Neutral Test (D5)
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Field Observations: Surface Water Present? Yes No X Depth (inches): Wetland Hydrology Present? Yes No X Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Field Observations: Surface Water Present? Yes No X Depth (inches): Wetland Hydrology Present? Yes No X Inundation Present? Yes Yes No X Depth (inches): (includes capillary fringe) Wetland Hydrology Present? Yes Yes Cincludes capillary fringe) Interview Present? Cincludes capillary fringe) Statuation Present? Statuation Present? Yes	al Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) ave Surface (B8) es No X Depth (inches): es No X St due to recent rain events	Surface Soil Cracks (B6)	Stunted or Stress	ed Plants (D1)	(LRR A)	Raised Ant Mounds (D6) (LRR A)
Field Observations: Surface Water Present? Yes No X Depth (inches): Water table Present? Yes No X Depth (inches): Saturation Present? Yes No X Depth (inches): (includes capillary fringe) Wetland Hydrology Present? Yes cribe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: arks: The soil surface was moist due to recent rain events	es No _X Depth (inches): es No _X Depth (inches): es No _X Depth (inches): Wetland Hydrology Present? Yes No _X Tributary gauge, monitoring well, aerial photos, previous inspections), if available: st due to recent rain events	Inundation Visible on Aerial Imagery (B7)) Other (Explain in	Remarks)	-	Frost-Heave Hummocks (D7)
Field Observations: Surface Water Present? Yes No X Depth (inches):	res No X Depth (inches):		0)			
Surface Water Present? Yes No X Depth (inches):	esNoX Depth (inches): esNoX Depth (inches): esNoX Depth (inches): I Tributary gauge, monitoring well, aerial photos, previous inspections), if available: st due to recent rain events	Field Observations:				
Water table Present? Yes No X Depth (inches): Wetland Hydrology Present? Yes Saturation Present? Yes No X Depth (inches): Wetland Hydrology Present? Yes (includes capillary fringe) Openation Ves Ves Ves Ves cribe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: Ves Ves narks: The soil surface was moist due to recent rain events Ves Ves Ves	esNoXDepth (inches): esNoXDepth (inches): I Tributary gauge, monitoring well, aerial photos, previous inspections), if available: st due to recent rain events	Surface Water Present? Yes No	X Depth (inches):			
Saturation Present? Yes No X Depth (inches): Wetland Hydrology Present? Yes (includes capillary fringe)	es No _X Depth (inches): Wetland Hydrology Present? Yes No _X I Tributary gauge, monitoring well, aerial photos, previous inspections), if available: st due to recent rain events	Water table Present? Yes No	X Depth (inches):			
(includes capillary fringe) cribe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: narks: The soil surface was moist due to recent rain events	I Tributary gauge, monitoring well, aerial photos, previous inspections), if available: st due to recent rain events	Saturation Present? Yes No	X Depth (inches):		Wetland Hy	drology Present? Yes No X
cribe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: narks: The soil surface was moist due to recent rain events	I I ributary gauge, monitoring well, aerial photos, previous inspections), if available:	(includes capillary fringe)				
narks: The soil surface was moist due to recent rain events	st due to recent rain events	cribe Recorded Data (Unnamed Tributary gaug	je, monitoring well, aerial	pnotos, previo	us inspections), if	available:
		narks: The soil surface was moist due to recent	rain events			

Application/Dense ABC Respecting	Project/Site:	Marine Drive Propos	sed Development P	roject	City/County:	Whatcom C	County			Sampling	Date:	Oct, 2	26 2020
Investigation: Joseph R. Pureley (Anchor CEA, LLC) Section. Township. Range: S44. T38. R2E	Applicant/Owner:	ABC Recycling						State:	WA	Sampling	Point:	DI	P-07
Landorm (Ihildsp), terrace, etc): Narrow degression Local relief (conclave, convex, none); Concav Stops: 0.09%; Soli Map Loh Name: Urban land - Whatcon - Lubourby complex NVIN (Cassification: PSSC) NVIN Are climatic / hydrologic conditions on the site spicel to rifks time of year? Yes; No (If no, explain in Remarks) Are vidgetation Solior Hydrology is ginificantly disturbed? Nun Normal Consumators Present? Yes	Investigator(s):	Joseph R. Pursley (Anchor QEA, LLC)		Section	n, Township,	Range:	S44, T	38, R2E	_			
Subregion (LRR): Nutrives Horests and Cass (LRR A) Let:Lorg	Landform (hillslope	e, terrace, etc.):	Narrow depression	n	Local re	lief (concave	e, convex	, none):	Concave		S	lope:	0-8%
Sold Map Unit Name Understandam PSRC Ac dimatic / Myddolgic conditions on the site pyclual for this time of year? Yes No ((In o, oxplain in Remarks) Are Vogetation Sold or (In o, oxplain in Remarks) Are Vogetation Sold or (In o, oxplain in Remarks) Are Vogetation Sold or (In o, oxplain in Remarks) Are Vogetation Sold or (In o, oxplain in Remarks) SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vogetation Present? Yes X Wedaand Hydrology Present? Yes X Wedaand Hydrology Present? Yes X Wedaand Hydrology Present? Yes X Yes Yes Yes No It have SUBL FACKV, or FAC No. Indicator Remarks: For labeled Data Plot locations and etile map please see Figure 5 in the "Wetland Deleneation Report, Anchor GEA Nov. 2020". VEETATION	Subregion (LRR):	Northwest Forests a	nd Coast (LRR A)	Lat:	-			Long:			Da	atum:	
Are climate: /bydrologic conductions on the site bypear for this time of year? Yes_XNo(no	Soil Map Unit Nam	ne: Urban land -	Whatcom - Labour	nty complex	(NWI Cla	assification:	PSSC		_	
Are Vegetation	Are climatic / hydr	ologic conditions on t	he site typical for th	is time of y	ear?	Yes	Х	No		(If no, explai	n in Ren	narks)	
Are Vegetation	Are Vegetation	, Soil	, or Hydrology		significantly	disturbed?	Are "N	lormal C	Circumstand	ces" Present?	Yes	XN	٩v
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc. Hydrophytic Vogelation Present? Yes No Wetland Hydrology Present? Yes No Remarks: For labeled Data Plot locations and site map please see Figure 5 in the 'Wetland Delineation Report, Anchor QEA, Nov. 2020'. VEETATION The Stratum (Plot size:	Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	ded, ex	plain any a	nswers in Ren	narks.)		
Hydrophytic Vegetation Present? Yes No	SUMMARY OF	FINDINGS - Att	ach site man s	howing s	ampling r	point locat	tions, tr	ansec	ts. impo	rtant featur	es, etc		
Hydrophylic Vegetation Present? Yes X No Is the Sampled Area within a Wetland? Yes X No Remarks: For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020'. Remarks: For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020'. VEGETATION Trate Stratum (Plot size:) Absolute Dominant Indicator Status Mumber of Dominant Sector 3 (A) 1. Salue Scolutinina 30 70 Yes FAC Total Number of Dominant Species Arcs 3 (A) 2. Solution 10 No FAC Total Number of Dominant Species Arcs 100% (A)B) 2. Catalegus monogyma 10 No FAC Total Northerot Total Scover of: Multiply by: Cols as an of the size:				<u> </u>			,		<u></u>		,		
typidic Soil Present? Yes X No Is the Sampled Area Yes X No Remarks: For labeled Data Plot locations and site map please see Figure 5 in the "Wetland Delineation Report, Anchor QEA, Nov. 2020". Image: Constraint of the set	Hydrophytic Veget	tation Present?	Yes X No										
Weilland Hydrology Present? Yes X No Weilland Y Remarks: For labeled Data Plot locations and site map please see Figure 5 in the 'Wetland Delineation Report, Anchor QEA, Nov. 2020'. VECETATION The Stratum (Plot size:) Absolute 30 Dominant Yes FAC 1. Safe secondariana 25 Yes FAC Total Number of Dominant Species Access Al Strata: 3 (h) 2. Betulg papyrifera 25 Yes FAC Total Number of Dominant Species Access Al Strata: 3 (h) 5	Hydric Soil Presen	nt?	Yes X No		Is the Sa	ampled Area	a	Yes	х	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:	Wetland Hydrolog	y Present?	Yes X No		within a	a wetland?							
Remarks: For labeled Data Plot locations and site map please see Figure 6 in the 'Wetland Delineation Report, Anchor GEA, Nov. 2020'. VECETATION Dominant Indicator 3. Saltic scoulerana Dominant Indicator 3. Saltic scoulerana 2. Betula papyrifera 3. (b) 3	, , ,												
VEGETATION Tree Stratum (Plot size:) Absolute Dominant Indicator Stature Text worksheet: Number of Dominant Species That Are OBL, FACW, or FAC:	Remarks: For lab	eled Data Plot locatio	ns and site map ple	ease see Fig	gure 5 in the	"Wetland De	elineation	Report	, Anchor Q	EA, Nov. 2020)".		
VEGETATION Tree Stratum (Plot size:) Absolute Dominant Indicator Species? Status? 1. Saki scouleriana 30 Yes FAC 3.0 Yes FAC 3.0 Yes FAC 5. Botula papyrifera 30 Yes 3.0 Yes FAC 5. 50%= 27.5 20%= 11 Total Over: 55 Saping/Shrub_Stratum (Plot size:) Yes 1. Corrus sericea 40 Yes FAC 2. Crategus monegyria 10 No FAC 3. Rubus ammeniacus 5 No FAC 5. Salix scouleriana 15 No FAC 5. Salix scouleriana 15 No FAC 5. Salix scouleriana 15 No FAC 6.													
VEGETATION The Stratum (Plot size:) Absolute Dominant Species? Indicator 1. Safe scouleriana 30 Yes FAC 2. Betula papyrifera 25 Yes FAC 3. 25 Yes FAC 5. 50%= 27.5 20%= 11 Total Cover. 5 5. 50%= 27.5 20%= 11 Total Cover. 5 7. Carategus monogyna 10 No FAC FAC 9. Cortaces anongyna 10 No FAC FAC Multiply by: 1. Corrus sericea 15 No FAC FAC Species 0 x1 = 0 3. Rubus ammeniacus 15 No FAC FAC U species 0 x2 = 80 5. Salin Socialeriana 15 No FAC FAC U species 0 x4 = 0 1. Corlus area 0 X2 = 80 FAC Species 0 x2 = 80 5. No FAC FAC Species 0													
VEGETATION Tree Stratum (Piot size:) Absolute Dominant Indicator Dominant Species 1. Salix socoleriana 30 Yes FAC Total Number of Dominant Species 3 (A) 2. Betula papyrifera 30 Yes FAC Total Number of Dominant Species 3 (A) 3													
Absolute Dominant Indicator 1. Salix seculeriana 30 Yes FAC 3. 25 Yes FAC 3. 25 Yes FAC 5. 25 Yes FAC 5. 50%= 27.5 20%= 100% 5. 50%= 27.5 20%= 100% (AB) 7. 50%= 27.5 20%= 11 Total Cover: 55 Saping/Shub Stratum (Pot size:) 10 No FAC Percent of Dominant Species 100% (AB) 1. Corus sericea 40 Yes FACW OBL species 0 x1 = 0 2. Carlaegus monogyna 10 No FAC FACW OBL species 0 x3 = 300 (BL species) 0 x4 = 0 UPL species) 0 x5 = 0 COurus sories 0 <t< td=""><td>VEGETATION</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	VEGETATION												
Absolute Dominant Indicator Tree Stratum (Plot size:) % Cover Secies? Status? 1. Salux seculeriana 25 Yes FAC 2. Betula papyrifera 25 Yes FAC 3.							Domina	nce Tes	st workshe	et:			
Tree Stratum (Plot size:) % Cover Species Number of Dominant Species 1. Safux soculeriana 30 Yes FAC That Are OBL, FACW, or FAC: 3 (A) 2. Detula papyrifera 25 Yes FAC Total Number of Dominant Species 3 (A) 3. 25 Yes FAC That Are OBL, FACW, or FAC: 100% (A/B) 4.				Absolute	Dominant Species 2	Indicator							
1. Salix scoulariana 30 Yes FAC Trial Number of Dominant 3 (A) 2. Betula papyrifera 25 Yes FAC Total Number of Dominant 3 (B) 3. 4. 5 5 5 7 FAC Total Number of Dominant 5 (A/B) 5. 50%= 27.5 20%= 1 Total Cover: 55 Total Your of Cover	Tree Stratum	(Plot size)	% Cover	Species?	Status?	Number	of Dom	inant Spec	ies			
2. Betala papyrifera 25 Yes FAC Total Number of Dominant Species Across Al Strata: 3 (B) 3.	1. Salix scouleria	na		30	Yes	FAC	That Are	OBL, F	-ACVV, OF F	AC:	3	(A)
3.	2. Betula papyrife	era		25	Yes	FAC	Total Nu	imber of	f Dominant				
4.	3						Species	Across	All Strata:		3	(B)
5.	4						Percent	of Dom	inant Speci	es			
Some 27.5 20%= 11 Total Cover: 55 Prevalence Index Worksheet: OBL species Multiply by: 1. Corrus sericea 40 Yes FACW 3. Rubus armeniacus 5 No FAC FACW species 0 x1 = 0 5. Salix scouleriana 15 No FAC FAC species 10 x3 = 300 5. Salix scouleriana 15 No FAC FAC species 0 x4 = 0 10 Vers FAC FAC species 0 x4 = 0 0 5. Salix scouleriana 15 No FAC Species 0 x4 = 0 10 Vers FAC Species 0 x5 = 0 Cours Species 0 x4 = 0 0 Species 0 x4 = 0 Cours Species 0 x5 = 0 Cours Species 0 x5 = 0 Cours Species 0 x4 = 0 Cours Species 0 X5 =	5						That Are	e OBL, F	FACW, or F	AC:	100%	(A/B)
Saplin/Shrub Stratum (Plot size:) Prevalence Index Worksheet: 1. Cornus sericea 40 Yes FACW 2. Crataegus monogyna 10 No FAC 3. Rubus ameniacus 5 No FAC 5. Salix scouleriana 15 No FAC 5. Solix scouleriana 15 No FAC 5. Solix scouleriana 15 No FAC 5. Solix scouleriana 16 No FAC 7. Solie= 2.20%= 17 Total Cover: 85 UPL species 0 x4 = 0 1. Check RANKED VALUES Column Totals: 140 (A) 380 (B) 1. Prevalence Index is 5.3.0 ¹ Total Cover: 85 UPL species 0 x4 = 0 2.	50%=	27.5 20%= 11	Total Cover:	55									
1. Cornus sericea 40 Yes FACW Total % Cover of: Multiply by: 2. Crataegus monogyna 10 No FAC OBL species 0 x1 = 0 3. Rubus armeniacus 5 No FAC FAC species 10 x3 = 300 5. Salix scouleriana 15 No FAC FAC species 0 x4 = 0 5. Salix scouleriana 15 No FAC FAC species 0 x4 = 0 5. Salix scouleriana 15 No FAC FAC species 0 x4 = 0 10 Total Cover: 85 UPL species 0 x5 = 0 Column Totals: 140 (A) 380 (B) 1.	Sapling/Shrub Stra	atum (Plot size)				Prevale	nce Ind	ex Worksh	neet:			
2. Cratategus monogyna 10 No FAC OBL species 0 x1 = 0 3. Rubus armeniacus 5 No FAC FAC Species 100 x2 = 80 4. Lonicera involucrata 15 No FAC FAC Species 100 x3 = 300 5. Salix scouleriana 15 No FAC FAC Secondariana 0 x4 = 0 11 15 No FAC FAC Secondariana 0 x5 = 0 0 x4 = 0 <t< td=""><td>1. Cornus sericea</td><td>3</td><td></td><td>40</td><td>Yes</td><td>FACW</td><td>Tot</td><td>al % Co</td><td>over of:</td><td>Mu</td><td>ultiply by</td><td>:</td><td></td></t<>	1. Cornus sericea	3		40	Yes	FACW	Tot	al % Co	over of:	Mu	ultiply by	:	
3. Rubus armeniacus 5 No FAC FACW species 40 x2 = 80 4. Lonicera involucrata 15 No FAC FACW species 100 x3 = 300 5. Salix scouleriana 15 No FAC FACU species 0 x4 = 0 5. Salix scouleriana (Plot size:) CHECK RANKED VALUES Column Totals: 140 (A) 380 (B) 1. CHECK RANKED VALUES Column Totals: 140 (A) 380 (B) 1. CHECK RANKED VALUES Column Totals: 140 (A) 380 (B) 1. CHECK RANKED VALUES Column Totals: 140 (A) 380 (B) 1. Check RANKED VALUES Column Totals: 140 (A) 380 (B) 1. Check RANKED VALUES Column Totals: 140 (A) 380 (B) 1. Magina Test for Hydrophytic Vegetation Indicators: 1 1 Repaid Test for Hydrophytic Vegetation 5. Weither Magina Test for Hydrophytic Vegetation X 2 Domina	2. Crataegus mor	nogyna		10	No	FAC	OBL spe	ecies	0	_x1 =	0		
4. Lonicera involucrata 15 No FAC FAC species 100 x3 = 300 5. Salix scouleriana 15 No FAC FAC species 0 x4 = 0 50%= 42.5 20%= 17 Total Cover: 85 UPL species 0 x5 = 0 1.	3. Rubus armenia	acus		5	No	FAC	FACW s	pecies	40	_x2 =	80		
5. Salix scouleriana 15 No FAC FACU species 0 x4 = 0 50%= 42.5 20%= 17 Total Cover: 85 0 x5 = 0 Herb Stratum (Plot size:) CHECK RANKED VALUES Column Totals: 140 (A) 380 (B) 2.	4. Lonicera involu	ıcrata		15	No	FAC	FAC spe	ecies	100	x3 =	300		
50%= 42.5 20%= 17 Total Cover: 85 UPL species 0 x5 = 0 1. Prevalence Index = B/A = 2.7 2. Hydrophytic Vegetation Indicators: 1 3. 1 Report to the stratum 1 5. 1 Report to the stratum 1 6. X 2 2.0 7. X 3 Prevalence Index is <3.0 ¹ 7. X 3 Prevalence Index is <3.0 ¹ 7. X 3 Prevalence Index is <3.0 ¹ 8. Y 4 Morphological Adaptation ¹ (Provide supporting data in Remarks or on a separate sheet) 5 Settation Non-Vascular Plants ¹ 9. Y Y Y Y	5. Salix scouleria	na		15	No	FAC	FACU s	pecies	0	x4 =	0		
Herb Stratum (Plot size:) CHECK RANKED VALUES Column Totals:140 (A)380 (B) 1. 2. 3. 4.	50%=	42.5 20%= 17	Total Cover:	85			UPL spe	ecies	0	x5 =	0		
1. Prevalence Index = B/A = 2.	Herb Stratum	(Plot size)	CHECK R/	ANKED VAL	UES	Column	Totals:	140	(A)	380	(B)
2.	1						Preva	ence In	dex = B/A =	=2	.7		
3.	2.						L b columnation	hudia Va	and at land	- dia atawa .			
4.	3. 						пушор		gelation in		/		
5.	4.							1 - Rap	DID TEST FOR	Hydrophytic V	egetatio	'n	
6. X 3 - Prevalence index is \$3.0° 7.	5.						<u>×</u>	2 - Dor	minance i e	st is >50%			
7.	6.						<u> </u>	3 - Pre	valence Ind	dex is ≤3.0°			
8.	/							4 - Mo	rphological	Adaptation ¹ (F	Provide s	support	ing
9.	8							data	a in Remar	ks or on a sep	arate sh	eet)	
50%= 0 20%= 0 Total Cover: 0 Problematic Hydrophytic Vegetation' (Explain) 1.	9							5 - We	tland Non-	vascular Plant	S'		
Woody Vine Stratum (Plot size:) 1 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. 2.	50%=	0 20%= 0	Total Cover:	0				Proble	matic Hydro	ophytic Vegeta	ation' (E	xplain)	
Image: Sepresent, unless distributed of presentatio. 2.	Woody Vine Stratu	um (Plot size)				¹ Indicato	ors of hy	dric soil an	d wetland hyd	rology m	iust	
Total Cover: 0 Hydrophytic % Bare Ground in Herb Stratum 100 Cover of Biotic Crust Vegetation Remarks: Dense shrubs prevent the herb layer from developing. Remarks: Dense shrubs prevent the herb layer from developing. Yes X	1						be prese	int, unic					
Wegetation % Bare Ground in Herb Stratum 100 % Cover of Biotic Crust Present? Yes X No	Z		Total Cover:				Hydrop	hytic					
Remarks: Dense shrubs prevent the herb layer from developing.	0/ Pa	re Ground in Hark St			tic Cruct		Vegetat	ion 2		Voc V	No		
Remarks: Dense shrubs prevent the herb layer from developing.	70 Da		atum 100 % C		lic Crust		Fresen	1					
	Remarks: Dense s	shrubs prevent the he	rb layer from devel	oping.									

Profile Desc	ription: (Describe	to the depth	needed to do	cument th	ne indicat	or or co	onfirm the absend	ce of indicators.)
Depth	Matrix		Re	dox Featu	ures		_	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-12	10YR 3/1	90	10YR 4/6	10	С	М	SiL	Some angular gravel in soil.
12-18	10YR 5/1	85	10YR 4/6	15	С	М	SCL	Redox in depleted soil, saturation
		·						· · · · · · · · · · · · · · · · · · ·
		·						
		·						
		·						<u> </u>
		·						
					. <u> </u>			
1 <u>т 0</u> 0							10 2	
Type: C=Co	ncentration, D=Dep	letion, RM=H	Reduced Matrix,	CS=Cove	ered or Co	ated Sa	nd GrainsLoca	ation: PL=Pore Lining, M=Matrix.
Undria Sail I	ndiaatara, (Annlia	abla ta all l	BBa unlass of	horwing	acted)		Indiactoro for	Problematic Hydric Scilo ³
Hydric Soli I		able to all L	RRS, unless of	nerwise r	notea.)		indicators for	2 om Muck (A10) (LBB B)
	(AI) ninadan (A2)		Sandy i	Redux (St	D) RC)			2 cill Muck (ATO) (LKK B) Bod Parant Material (TE2)
	pipedon (A2)			u Muelev Mi	50) norol (E1)	(0)000	MI DA 4)	Very Shellow Derk Surface (TE12)
	ISUC (A3)		Loamy		neral (F1)	(except		Other (Evolution in Remarks)
	d Bolow Dork Surfo	DO (A11)	Loaniy	Gleyeu M	auix (FZ)			Other (Explain in Remarks)
	u Delow Dark Sulta			o iviailix ((13) 200 (E6)		³ Indianta	rs of hydrophytic vegetation and
						`		
Sandy N	/luck Mineral (S1)			a Dark Su)	wetian	a hydrology must be present,
Sandy g	leyed Matrix (S4)		Redox I	Depressio	ons (F8)		unles	ss disturbed or problematic.
Bestriative I	over (if present).							
Tupo:	ayer (il present):							
Type.			<u> </u>				uduio Coil Duocou	
Depth (Inches	5):		_			п	yaric Soli Preser	
Pomarka: Doplata	d soils at 12 inchas	with water of	16 inchos					
Remarks. Depiete		with water a	To menes.					
HYDROLOGY								
Wetland Hyd	Irology Indicators:							-
Primary Indic	ators (minimum one	e required; ch	eck all that app	ly)				Secondary Indicators (2 or more required)
Surface	Water (A1)		X Water-S	Stained Le	eaves (B9)) (excep	t MLRA	Water-Stained Leaves (B9) (MLRA 1, 2,
X High Wa	ater Table (A2)		1, 2,	4A and 4	4B)			4A and 4B)
X Saturati	on (A3)		Salt Cru	ust (B11)				Drainage Patterns (B10)
Water M	larks (B1)		Aquatic	Invertebr	ates (B13))		Dry-Season Water Table (C2)
Sedime	nt Deposits (B2)		Hydroge	en Sulfide	odor (C1)		Saturation Visible on Aerial Imagery (C9)
Drift De	posits (B3)		Oxidize	d Rhizosp	heres alo	ng Living	g Roots (C3)	Geomorphic Position (D2)
Algal Ma	at or Crust (B4)		Presend	ce of Red	uced Iron	(C4)		Shallow Aquitard (D3)
Iron Dep	posits (B5)		Recent	Iron Redu	uction in P	lowed S	oils (C6)	FAC-Neutral Test (D5)
Surface	Soil Cracks (B6)		Stunted	l or Stress	sed Plants	(D1) (L	RR A)	Raised Ant Mounds (D6) (LRR A)
Inundati	on Visible on Aerial	Imagery (B7) Other (I	Explain in	Remarks)		· · · ·	Frost-Heave Hummocks (D7)
Sparsel	v Vegetated Concav	e Surface (E	, <u> </u>	•	,			
	,		-)					
Field Observ	vations:							
Surface Wate	er Present? Yes	s No	Depth	n (inches):				
Water table F	Present? Yes	S X No	Depth	n (inches):	16			
Saturation Pr	esent? Yes	S X No	Depth	n (inches):	12		Wetland Hydro	ology Present? Yes X No
(includes cap	illary fringe)						_	
Describe Recorde	d Data (Unnamed T	ributary gau	ge, monitoring v	vell, aerial	l photos, p	revious	inspections), if av	ailable:
Remarks: Deplete	d layer was dense a	and took seve	eral hours to fill	with wate	r to 16 inc	hes BGS	S. Hydrology was	flowing in at 12 inches.

Project/Site:	Marine Drive Propo	osed Development	t Project	City/County:	Whatcom	County			Sam	pling Da	ate: (Oct, 26 2020
Applicant/Owner:	ABC Recycling						State:	WA	Sam	pling Po	oint:	DP-08
Investigator(s):	Joseph R. Pursley	(Anchor QEA, LLC	C)	Section	n, Township	, Range:	S44, T3	38, R2E				
Landform (hillslope	e, terrace, etc.):	Hillslope/terrace	е	Local re	lief (concave	e, convex	, none):	Convex			Slo	pe: 0-8%
Subregion (LRR):	Northwest Forests	and Coast (LRR A	A) Lat:				Long:				Datu	ım:
Soil Map Unit Nam	ne: Urban land	- Whatcom - Labo	ounty complex	х			NWI Cla	ssificatior	: PSSC			
Are climatic / hydr	ologic conditions on	the site typical for	r this time of y	vear?	Yes	Х	No		(If no, e	explain i	n Rema	rks)
Are Vegetation	, Soil	, or Hydrology		significantly	/ disturbed?	Are "N	lormal C	ircumstar	ces" Pres	sent?	Yes 📝	<u>×</u> No
Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	eded, exp	olain any a	answers ir	n Remai	rks.)	
SUMMARY OF	FINDINGS - A	ttach site map	showings	sampling I	point loca	tions, t	ransec	ts, impo	ortant fe	eatures	s, etc.	
Hydrophytic Veget	tation Present?											
Hydric Soil Preser	nt?	Yes N		Is the Sa	ampled Are	а	Yes		No	х		
Wetland Hydrolog	v Present?	Yes N		within a	a Wetland?							
Wolland Hydrolog	y r rooont:	1001	<u> </u>									
VEGETATION												
						Domina	nce Tes	t worksh	eet:			
			Absolute	Dominant	Indicator							
Tree Stratum	(Plot size	e:)	% Cover	Species?	Status?	Number	of Domi	nant Spec	cies			
1						That Are	UDL, F		-AC.		2	(A)
2						Total Nu Species	Imber of	Dominan	t			(5)
3.						opecies	ACI0557	All Otrata.			4	(B)
4						Percent	of Domi	nant Spec	cies	5	n 0/	(A/P)
5. 50%-	0 20%- 0	Total Cove	or: 0	·		That Are	OBL, F	ACVV, or	-AC:	5	U ^{-/} 0	(A/B)
Sapling/Shrub Str	20%=)	u. <u>v</u>			Prevale	nce Inde	ex Works	heet:			
1. Rubus armenia		/	25	Yes	FAC	Tot	al % Cov	ver of		Multi	ply by:	
2. Rosa nutkana			25	Yes	FAC	OBL spe	ecies	0	x1 =	man	0	
3. Rubus ursinus			10	No	FAC	FACW s	pecies	0	x2 =		0	
4. Symphoricarpo	os albus		10	No	FACU	FAC spe	ecies	60	x3 =	1	80	
5.						FACU s	pecies	40	x4 =	1	60	
50%=	<u> 35 </u> 20%= <u> 14</u>	Total Cove	er: 70			UPL spe	ecies	0	x5 =		0	
Herb Stratum	(Plot size	e:)	CHECK R.	ANKED VAL	UES	Column	Totals:	100	_(A)	3	40	(B)
1. Jacobaea vulg	aris		15	Yes	FACU	Preva	ence Ind	dex = B/A	=	3.4		
2. Hypericum per	foratum		15	Yes	FACU							
3.						Hydrop	hytic Ve	getation	Indicator	S:		
4				·			1 - Rap		r Hydropr	iytic veç	getation	
o							2 - Don 2 - Don		est is >50	ν 2 ο ¹		
0 7				·			3 - FIE			1.0		
8				· <u> </u>			4 - Mor data	phologica in Rema	l Adaptati rks or on	on' (Pro	ovide su ate shee	pporting
9.							5 - Wet	land Non-	·Vascular	Plants ¹		,,,,
50%=	= 15 20%= 6	Total Cove	er: 30				Problen	natic Hyd	rophytic V	/egetatio	on ¹ (Exp	lain)
Woody Vine Strate	um (Plot size	e:)				¹ Indicate be prese	ors of hyd ent, unles	dric soil a ss disturb	nd wetlan ed or prol	d hydrol plematic	logy mus	st
2.						Hydron	hvtic	-	-	-	-	
		Total Cove	er: O			Vegetat	ion					
% Ba	re Ground in Herb S	tratum 70 %	6 Cover of Bio	otic Crust		Present	?		Yes		No	x
Remarks: The upla	and vegetation show	s signs of frequer	nt disturbance	and is withir	n 15 feet of s	stored and	d staged	shipping	container	s.		

Depth	Matrix		R	edox real	ules						
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture)		Remarks	
0-18	10YR 6/3	100	i				LS	R	ock, and de	bris in soil	
				<u> </u>							
				<u> </u>							
Type: C=Cc	ncentration, D=Dep	oletion, RM	=Reduced Matrix	k, CS=Cov	ered or Co	ated San	d Grains. ² l	Location: F	PL=Pore Lin	iing, M=Mati	rix.
Hydric Soil I	ndicators: (Appli	cable to al	I LRRs, unless c	therwise	noted.)		Indicators	for Proble	ematic Hyd	ric Soils ³ :	
Histoso	l (A1)		Sandy	Redox (S	5)			2 cm	Muck (A10) (LRR B)	
Histic E	pipedon (A2)		Stripp	ed Matrix ((S6)			Red	Parent Mate	erial (TF2)	
Black H	istic (A3)		Loamy	/ Mucky M	lineral (F1)	(except l	VILRA 1)	Very	Shallow Da	rk Surface (TF12)
Hydroge	en Sulfide (A4)	000 (111)	Loamy	Gleyed N	latrix (F2)			Othe	r (Explain ir	n Remarks)	
Depiete	u below Dark Sulla	ice (ATT)	Depier	Dark Sur	(FS) face (F6)		³ Indic	ators of hy	dronhytic y	anatation an	d
Sandy M	Muck Mineral (S1)		Neuer	ed Dark S	urface (F7)	we	tland hydro	loav must k	ne present	
Sandy (aleved Matrix (S4)		Bedox	Denressi	ons $(F8)$	/	we	inless distu	irbed or pro	blematic	
				Depressi	0113 (1 0)		ŭ		ibed of pro	biematio.	
lestrictive L	ayer (if present):										
ype:	<u> </u>										
N = .= 4 = / ! .= = = .									v /	es	
Depth (inche:	s): I was very light in c	olor and ap	peared to be imp	ported as p	part of the a	adjacent f	ill. The profil	esent? e was 50-7	5% gravel,	rock, and de	NO <u>X</u> ebris.
Depth (inches arks: The soi	s): I was very light in c	olor and ap	opeared to be imp	ported as p	part of the a	adjacent f	ill. The profile	e was 50-7	5% gravel,	rock, and de	NO <u>X</u>
Depth (inches Inks: The soi ROLOGY Vetland Hyc Drimony India	s): I was very light in c	olor and ap	opeared to be imp	ported as p	part of the a	adjacent f	ill. The profil	e was 50-7	5% gravel,	rock, and de	ebris.
Depth (inches Irks: The soi ROLOGY Vetland Hyc Surface	s): I was very light in c Irology Indicators ators (minimum on Water (A1)	olor and ap	ppeared to be imp	ply)	eaves (B9	adjacent f	III. The profil	e was 50-7	5% gravel,	rock, and de	NO
Pepth (inches Irks: The soi ROLOGY Vetland Hyc Primary Indic Surface High W	s): I was very light in c Irology Indicators ators (minimum on Water (A1) ater Table (A2)	olor and ar	ppeared to be imp 	ported as p ply) -Stained L	eaves (B9)	adjacent f	III. The profil	e was 50-7	5% gravel, 5% dary Indica er-Stained L	tors (2 or mo eaves (B9)	bre required)
Pepth (inche: Irks: The soi ROLOGY Vetland Hyc Primary Indic Surface High W. Saturati	s): I was very light in c Irology Indicators ators (minimum on Water (A1) ater Table (A2) on (A3)	olor and ap	 opeared to be imp <u>check all that ap</u> Water 1, 2 Salt C	ply) -Stained L 2, 4A and rust (B11)	eaves (B9)	adjacent f	III. The profil	e was 50-7 e was 50-7 <u>Secon</u> Wate 4 Drain	5% gravel, 5% gravel, dary Indica er-Stained L A and 4B) nage Patteri	tors (2 or me eaves (B9)	bre required)
Pepth (inche: rks: The soi ROLOGY Vetland Hyc Primary Indic Surface High W: Saturati Water M	s): il was very light in c trology Indicators ators (minimum on Water (A1) ater Table (A2) on (A3) Marks (B1)	olor and ap		ply) -Stained L 2, 4A and rust (B11) c Inverteb	eaves (B9) 4B)) (except	III. The profil	e was 50-7 e was 50-7 Secon Wate 4, Drair Dry-5	5% gravel, 5% gravel, dary Indica er-Stained L A and 4B) nage Pattern Season Wa	tors (2 or me eaves (B9) ns (B10) ter Table (C:	bris.
Pepth (inches Irks: The soi ROLOGY Vetland Hyc Primary Indic Primary Indic Surface High W: Saturati Water M Sedime	s): il was very light in c irology Indicators ators (minimum on Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2)	olor and ar	check all that ap	ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide	eaves (B9) 4B) rates (B13 e Odor (C1) (except	III. The profil	e was 50-7 e was 50-7 <u>Secon</u> Wate Urair Drair Satu	5% gravel, 5% gravel, dary Indica er-Stained L A and 4B) hage Pattern Season War ration Visibl	tors (2 or mo eaves (B9) ns (B10) ter Table (C: e on Aerial	bris.
Pepth (inches rks: The soi ROLOGY Vetland Hyc Primary Indic Surface High Wa Saturati Water M Sedime Drift De	s): il was very light in c irology Indicators ators (minimum on Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3)	olor and ar	check all that ap	ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos	eaves (B9 4B) rates (B13 e Odor (C1 pheres alo)) (except	III. The profile	<u>Secon</u> Wate Drair Dry-S Satur Geor	5% gravel, 5% gravel, dary Indica er-Stained L A and 4B) hage Pattern Season Wai ration Visibl norphic Pos	tors (2 or me eaves (B9) ns (B10) ter Table (C; e on Aerial I sition (D2)	bre required) (MLRA 1, 2, 2)
Pepth (inches Irks: The soi ROLOGY Vetland Hyc Primary Indic Surface Migh W. Saturati Water M Sedime Drift De Algal M	s): il was very light in c il was very light in c in constant in constant water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)	olor and ar	check all that ap	ported as p ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec	eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron) (except) (except) ng Living (C4)	MLRA	e was 50-7 e was 50-7 E Wate Unair Unair Uny-S E Satur Geor Shall	5% gravel, 5% gravel, dary Indica er-Stained L A and 4B) hage Pattern Season War ration Visibl norphic Pos ow Aquitard	tors (2 or me eaves (B9) ns (B10) ter Table (C: e on Aerial I sition (D2) d (D3)	bre required) (MLRA 1, 2, (magery (C9)
ROLOGY ROLOGY Vetland Hyc Primary Indic Surface High W. Saturati Water N Sedime Drift De Algal M Iron De	s): il was very light in c il was very light in c in closed by the closed by the closed in closed by the closed by the closed by the closed in closed by the closed	olor and ar	check all that ap Check all th	ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec t Iron Red	eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron luction in P) (except) (except) ng Living (C4) lowed So	MLRA Roots (C3)	e was 50-7 e was 50-7 E was 50-7 Wate United Secon United Secon Shall FAC-	5% gravel, 5% gravel, dary Indica er-Stained L A and 4B) hage Pattern Season Wat ration Visibl norphic Pos ow Aquitaro Neutral Tes	tors (2 or mo eaves (B9) hs (B10) ter Table (C: e on Aerial I sition (D2) d (D3) st (D5)	bre required) (MLRA 1, 2, (magery (C9)
Primary Indic Primary Indic Surface High W. Saturati Water M Sedime Drift De Algal M Iron De Surface	s): I was very light in c Irology Indicators ators (minimum on Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6)	olor and ar	check all that ap check all that ap Water 1, 3 Salt C Aquati Hydrog Oxidiz Preser Recen Stunte	ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec t Iron Red ed or Stres	eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron luction in P sed Plants) (except) (except) ng Living (C4) lowed So (D1) (LR	III. The profil III. The profil MLRA Roots (C3) Is (C6) R A)	e was 50-7 e was 50-7 E Wate United Secon United Secon E Shall E FAC- Raise	5% gravel, 5% gravel, 25% grav	tors (2 or me eaves (B9) ter Table (C: e on Aerial I sition (D2) d (D3) st (D5) nds (D6) (LF	NO <u>A</u> ebris. <u>Dre required)</u> (MLRA 1, 2, (MLRA 1, 2, 2) Imagery (C9)
Primary Indic Primary Indic Saturati Water M Sedime Drift De Algal M Iron De Surface Inundat	s): I was very light in c trology Indicators ators (minimum on Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria	olor and ar	check all that ap 	ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec t Iron Red d or Stres (Explain ir	eaves (B9) eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron luction in P sed Plants n Remarks)) (except) (except) ng Living (C4) lowed So (D1) (LR	MLRA Roots (C3) Is (C6) R A)	e was 50-7 e was 50-7 E Wate United Statum Geor Satum Geor Shall FAC- Raise Frost	dary Indica dary Indica r-Stained L A and 4B) hage Pattern Season War ration Visibl norphic Pos ow Aquitarc Neutral Tes ed Ant Mou -Heave Hu	tors (2 or mo eaves (B9) hs (B10) ter Table (C: e on Aerial I sition (D2) d (D3) st (D5) nds (D6) (LF mmocks (D7	NO <u>A</u> ebris. <u>ore required)</u> (MLRA 1, 2, 2) magery (C9) RR A) 7)
Pepth (inches arks: The soi Primary Indic Primary Indic Surface High W. Saturati Water M Sedime Drift De Algal M Iron De Surface Inundat Sparsel	s): I was very light in c Irology Indicators ators (minimum on Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca	olor and ar e required; l Imagery (ve Surface	check all that ap check all that ap Water 1, 3 Salt C Aquati Hydrog Oxidiz Preser Recen Stunte B7) Other (B8)	ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec t Iron Red of or Stres (Explain ir	eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron luction in P sed Plants n Remarks)) (except) (except) ng Living (C4) lowed So (D1) (LR	III. The profil III. The profil MLRA Roots (C3) Is (C6) R A)	e was 50-7 e was 50-7 E Secon Wate United Secon Shall FAC- Raise Frost	5% gravel, 5% gravel, dary Indica er-Stained L A and 4B) nage Pattern Season War ration Visibl morphic Pos ow Aquitarc Neutral Tes ed Ant Mou t-Heave Hur	tors (2 or me eaves (B9) hs (B10) ter Table (C: e on Aerial I sition (D2) d (D3) st (D5) nds (D6) (LF mmocks (D7	NO <u>X</u> ebris. <u>Dre required)</u> (MLRA 1, 2, (MLRA 1, 2, 2) Imagery (C9) RR A) 7)
Pepth (inche: arks: The soi PROLOGY Netland Hyo Primary Indic Surface High W. Saturati Water N Sedime Drift De Algal M Iron De Surface Inundat Sparsel	s): il was very light in c il was very light in c in closed second water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca vations:	olor and ar clor and ar e required; l Imagery (ve Surface	check all that ap check all that ap Water 1, : Salt C Aquati Hydrov Oxidiz Presei Recen Stunte B7) Other	ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec t Iron Red ed or Stres (Explain ir	eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron luction in P sed Plants n Remarks)) (except) (except) ng Living (C4) lowed So (D1) (LR	MLRA Roots (C3) Is (C6) R A)	e was 50-7	5% gravel, 5% gravel, dary Indica er-Stained L A and 4B) nage Pattern Season Wai ration Visibl norphic Pos ow Aquitard Neutral Tes ed Ant Mou -Heave Hun	tors (2 or me eaves (B9) hs (B10) ter Table (C: e on Aerial I sition (D2) d (D3) st (D5) nds (D6) (LF mmocks (D7	NO ebris. Dre required) (MLRA 1, 2, (MLRA 1, 2, 2) (magery (C9) RR A) 7)
Depth (inche: arks: The soi DROLOGY Wetland Hyc Primary Indic Surface High W. Saturati Water M Sedime Drift De Algal M Iron De Surface Inundat Sparsel Field Observ Surface Wate	s): I was very light in c Irology Indicators ators (minimum on Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca rations: Present? Ye	olor and ar olor and ar e required; l Imagery (ve Surface s	check all that ap check all that ap Check all that ap Water 1, : Salt C Aquati Hydrog Oxidiz Preser Recen Stunte B7) Other (B8)	ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec t Iron Red d or Stres (Explain ir (Explain ir	eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron luction in P sed Plants n Remarks)) (except) (except) ng Living (C4) lowed So (D1) (LR	MLRA Roots (C3) Is (C6) R A)	e was 50-7 e was 50-7 E Secon Wate 4, Drain Dry-S C Arite Ar	5% gravel, 5% gravel, 25% gravel, 25% gravel, 25% gravel, 25% gravel, 25% gravel, 25% gravel, 26% grav	tors (2 or me eaves (B9) hs (B10) ter Table (C: e on Aerial I sition (D2) d (D3) st (D5) nds (D6) (LF mmocks (D7	NO <u>A</u> ebris. Dre required) (MLRA 1, 2, 2) Imagery (C9) RR A) 7)
Depth (inche: DROLOGY Wetland Hyc Primary Indic Surface High W. Saturati Water M Sedime Drift De Algal M Iron De Surface Inundat Sparsel Field Observ Surface Water	s): I was very light in c trology Indicators ators (minimum on Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca vations: er Present? Ye	olor and ap olor and ap e required; e required; ss	check all that ap check all that ap Water 1, 3 Salt C Aquati Hydrov Oxidiz Preser Recen Stunte B7) Other (B8) No X Dep No X Dep	ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec t Iron Red d or Stres (Explain ir (Explain ir th (inches)	eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron luction in P sed Plants n Remarks)):):) (except) (except) ng Living (C4) lowed So (D1) (LR	III. The profil III. The profil MLRA Roots (C3) Is (C6) R A)	e was 50-7 e was 50-7 E Secon Wate U Drair U Dry-S E Satu Geor Shall FAC Raise Frost	5% gravel, 5% gravel, dary Indica er-Stained L A and 4B) hage Pattern Season War ration Visibl norphic Pos ow Aquitarc Neutral Tes ed Ant Mou -Heave Hur	tors (2 or mo eaves (B9) hs (B10) ter Table (C: e on Aerial I sition (D2) d (D3) st (D5) nds (D6) (LF mmocks (D7	NO <u>X</u> ebris. <u>ore required)</u> (MLRA 1, 2, 2) magery (C9) RR A) 7)
Depth (inches arks: The soi DROLOGY Wetland Hyc Primary Indic Surface High W. Saturati Water N Sedime Drift De Algal M Iron De Surface Inundat Sparsel Field Observ Surface Wate Nater table F Saturation Pr	s): I was very light in c trology Indicators ators (minimum on Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca vations: Present? Ye esent? Ye	olor and ap olor and ap e required; e required; ss		ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec t Iron Red d or Stres (Explain ir th (inches) th (inches)	eaves (B9) eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron luction in P sed Plants n Remarks)):):) (except) (except) ng Living (C4) lowed So (D1) (LR	MLRA Roots (C3) Is (C6) R A)	e was 50-7	5% gravel, 5% gravel, dary Indica r-Stained L A and 4B) hage Pattern Season Wai ration Visibl norphic Pos ow Aquitarc ed Ant Mou -Heave Hun -Heave Hun Present?	tors (2 or me eaves (B9) hs (B10) ter Table (C; e on Aerial I sition (D2) d (D3) st (D5) nds (D6) (LF mmocks (D7	NO <u>A</u> ebris. Dre required) (MLRA 1, 2, (MLRA 1, 2, 2) magery (C9) RR A) 7) No <u>X</u>
Pepth (inche: PROLOGY Netland Hyco Primary Indic Surface High W. Saturati Water N Sedime Drift De Algal M Iron De Surface Inundat Sparsel Field Observ Surface Water Nater table F Saturation Princludes cap	s): il was very light in c il was very light in c il vas very light in c il vas very light in c istors (minimum on Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca vations: Present? Ye esent? Ye esent? Ye illary fringe) id Data (Unpaged	olor and ar olor and ar e required; e required; ss ss		ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec t Iron Red d or Stres (Explain ir th (inches) th (inches)	eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron luction in P sed Plants n Remarks)):):) (except) (except) ng Living (C4) lowed So (D1) (LR	MLRA Roots (C3) Is (C6) R A) Wetland Hy	e was 50-7	5% gravel, 5% gravel, dary Indica er-Stained L A and 4B) nage Pattern Season Wai ration Visibl norphic Pos ow Aquitarc Neutral Tes ed Ant Mou Heave Hun Present?	tors (2 or me eaves (B9) hs (B10) ter Table (C: e on Aerial I sition (D2) d (D3) st (D5) nds (D6) (LF mmocks (D7 Yes	NO X ebris.
Depth (inche: arks: The soi DROLOGY Netland Hyc Primary Indic Surface High W. Saturati Water M Sedime Drift De Algal M Iron De Surface Inundat Sparsel Field Observ Surface Water Nater table F Saturation Pr includes cap ribe Recorde	s): I was very light in c trology Indicators ators (minimum on Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca vegetated Conca veg	olor and ar olor and ar e required; e required; ss ss Tributary gr		ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec t Iron Red ad or Stres (Explain ir th (inches) th (inches) th (inches) well, aeria	eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron luction in P sed Plants n Remarks)):) (except) (except) ng Living (C4) lowed So (D1) (LR) orevious ir	MLRA Roots (C3) Is (C6) R A) Wetland Hy ispections), i	e was 50-7 e was 50-7 E Secon Wate 4 Drain Dry-S C A C A C A C A C A C A C A C A C A C A	5% gravel, 5% gravel, dary Indica r-Stained L A and 4B) hage Pattern Season War ration Visibl norphic Pos ow Aquitarc Neutral Tes ed Ant Mou -Heave Hun -Heave Hun Present?	tors (2 or mo eaves (B9) hs (B10) ter Table (C: e on Aerial I sition (D2) d (D3) st (D5) nds (D6) (LF mmocks (D7 Yes	NO X sbris.
PROLOGY PROLOGY Vetland Hyc Primary Indic Surface High W. Saturati Water M. Sedime Drift De Algal M. Iron De Surface Inundat Sparsel Field Observ Saturation Pr includes cap ribe Recorde arks: The soi	s): I was very light in c trology Indicators ators (minimum on Water (A1) ater Table (A2) ion (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) Soil Cracks (B6) ion Visible on Aeria y Vegetated Conca vations: er Present? Ye esent? Ye esent? Ye esent? Ye illary fringe) id Data (Unnamed Termination)	olor and ar olor and ar e required; e required; s	check all that ap <u>check all that ap</u> Water 1, 3 Salt C Aquati Hydro Oxidiz Preser Recension Stunte B7) Other (B8) No X Dep No X Dep No X Dep auge, monitoring ent rain events b	ply) -Stained L 2, 4A and rust (B11) c Inverteb gen Sulfide ed Rhizos nce of Rec t Iron Red d or Stres (Explain ir th (inches) th (inches) th (inches) well, aeria ut no othe	eaves (B9) 4B) rates (B13 e Odor (C1 pheres alo duced Iron luction in P sed Plants n Remarks)):) (except) (except) ng Living (C4) lowed So (D1) (LR) orevious ir	MLRA Roots (C3) Is (C6) R A) Wetland Hy ispections), i d.	e was 50-7 e was 50-7 E Secon Wate United Statum Comparison Shall Shall FAC Shall FAC Raise Frost Vdrology P f available:	5% gravel, 5% gravel, dary Indica r-Stained L A and 4B) hage Pattern Season War ration Visibl morphic Pos ow Aquitarc Neutral Tes ed Ant Mou -Heave Hun Present?	tors (2 or mo eaves (B9) hs (B10) ter Table (C: e on Aerial I sition (D2) d (D3) st (D5) nds (D6) (LF mmocks (D7 Yes	NO X sbris.

Project/Site:	Marine Drive Propose	ed Development P	roject	City/County:	Whatcom C	County			Sampling	Date:	Oct, 26 2	2020
Applicant/Owner:	ABC Recycling						State:	WA	Sampling	Point:	DP-09	Э
Investigator(s):	Joseph R. Pursley (A	nchor QEA, LLC)		Section	n, Township,	Range:	S44, T	38, R2E				
Landform (hillslope	e, terrace, etc.):	slop/depression m	iosaic	Local re	lief (concave	e, convex	, none):	Concave		SI	ope: 0-	-8%
Subregion (LRR):	Northwest Forests an	d Coast (LRR A)	Lat:				Long:			Da	tum:	
Soil Map Unit Nam	ne: Urban land –	Whatcom - Labour	nty complex	(NWI Cla	ssification:	PSSC			
Are climatic / hydro	ologic conditions on th	e site typical for th	is time of y	ear?	Yes	Х	No		(If no, explai	n in Rem	arks)	
Are Vegetation	, Soil	, or Hydrology		significantly	disturbed?	Are "N	Iormal C	ircumstanc	ces" Present?	Yes	X No	
Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	ded, exp	plain any ai	nswers in Ren	narks.)		
		ach site man s	howing s	ampling r	oint locat	tions ti	ansoc	ts imnoi	rtant foatur	as atc		
			nowing 3				ansee	<u>(3, 111)</u>		03, 010		
Hydrophytic Veget	ation Present?	Yes X No										
Hydric Soil Presen	it?	Yes X No		Is the Sa within a	ampled Area	3	Yes	Х	No			
Wetland Hydrolog	y Present?	Yes X No		within a	a wettanu:							
Remarks: For lab	eled Data Plot location	s and site map ple	ease see Fig	gure 5 in the	"Wetland De	elineation	Report,	, Anchor QI	EA, Nov. 2020)".		
VECETATION												
VEGETATION					I							
			Abcoluto	Dominant	Indicator	Domina	nce Tes	st workshe	et:			
T OL I		`	% Cover	Species?	Status?	Numbor	of Domi	inant Snaai	ioc			
<u>Tree Stratum</u>	(Plot size:)	45		EAC	That Are	e OBL, F	ACW, or F	AC:	2	(4)	
1. Salix scouleria	na	· ·	15	Yes	FAC	Total NI		Deminant		3	(A)	
	la		20	res	FAC	Species	Across	All Strata:		2	(P)	
3. 						-				3	(D)	
4		<u> </u>				Percent	of Domi	nant Speci	es AC:	100%	(Δ/B))
50%=	20 20%= 8	Total Cover:	40			mat Ait	, ODL, I		AU	100 /0	(/\'D))
Sapling/Shrub Stra	tum (Plot size:		-10		Ī	Prevale	nce Ind	ex Worksh	eet:			
1. Cornus sericea	<u></u> (,	55	Yes	FACW	Tot	al % Co	ver of:	Мі	ultiply by:		
2. Salix scouleria	na		10	No	FAC	OBL spe	ecies	0	x1 =	0		
3. Lonicera involu	ıcrata		15	No	FAC	FACW s	species	55	x2 =	110		
4.						FAC spe	ecies	65	x3 =	195		
5.						FACU s	pecies	0	x4 =	0		
50%=	40 20%= 16	Total Cover:	80			UPL spe	ecies	0	x5 =	0		
Herb Stratum	(Plot size:)				Column	Totals:	120	(A)	305	(B)	
1						Preva	ence Ind	dex = B/A =	=2	2.5		
2												
3						Hydrop	hytic Ve	getation Ir	ndicators:			
4							1 - Rap	oid Test for	Hydrophytic \	/egetatio	า	
5						<u> </u>	2 - Dor	ninance Te	est is >50%			
6						<u> </u>	3 - Pre	valence Ind	dex is ≤3.0'			
7							4 - Mor	phological	Adaptation ¹ (F	Provide s	upporting	
8.		· .					data	a in Remari	ks or on a sep	arate she	et)	
9	0 000/ 0	Tatal Osuan					5 - vve		vascular Plant	.s 		
50%=	0_20%=_0_	Total Cover:	U			1	Probler	matic Hydro	opnytic vegeta	ation (Ex	.piain)	
1)				be prese	ors of ny ent. unle	aric soil an ss disturbe	d wetland hyd	rology m itic.	JSt	
2							,					
<u> </u>		Total Cover	0			Hydrop	hytic					
% Ba	re Ground in Herb Stra	atum 100 % C	over of Bio	tic Crust		Present	?		Yes X	No		
Remarks: Dense s	hrubs prevent the her	b laver from develo	pina								<u> </u>	
. tomanto. Dense s			-F									

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

DP-09

color (moist) % Color (moist) % Type ¹ Lee ² Texture Remarks 0-10 10YR 3/1 100 10YR 4/6 5 C M SiL Bright redox concentrations, saturatio 1-14 10YR 5/1 55 10YR 4/6 5 C M SiL Bright redox concentrations, saturatio 1-14 10YR 5/1 55 10YR 4/6 5 C M SiL Redox in the depleted layer. 1-14 10YR 5/1 55 10YR 4/6 5 C M SiL Redox in the depleted layer. 1-14 10YR 5/1 55 10YR 4/6 5 C M SiL Redox in the depleted layer. 1-14 10YR 5/1 55 0 A	Depth	Mai	rix		Re	edox Featu	ires					
0-10 10YR 31 100 SIL Bight redox concentrations, saturations, saturatin visions anany sature present, saturatin visions anany saturatin	inches)	Color (mois	st) %	Col	or (moist)	%	Type ¹	Loc ²	Texture		Remarks	
10:14 10YR 3/1 95 10YR 4/6 5 C M SiL Bright redox concentrations, saturatio 14:18 10YR 5/1 85 10YR 4/6 5 C M SiL Redox in the depleted layer. 14:18 10YR 5/1 85 10YR 4/6 5 C M SiL Redox in the depleted layer. 14:18 10YR 5/1 85 10YR 4/6 5 C M SiL Redox in the depleted layer. 14:18 10YR 5/1 85 10YR 4/6 5 C M SiL Redox in the depleted layer. 19:00 10	0-10	10YR 3/1	10	<u>) </u>					SiL			
14-18 10YR 5/1 85 10YR 4/6 5 C M SiL Pedox in the depleted layer. 14-18 10YR 5/1 85 C M SiL Pedox in the depleted layer. 14-18 10YR 5/1 85 C M SiL Pedox in the depleted layer. 14-18 10YR 5/1 Sit Mark (Si Indicators in Problematic Hydric Soile ¹ : Indicators in Problematic Hydr	10-14	10YR 3/1	95	1	0YR 4/6	5	С	М	SiL	Bright redox	concentrations	, saturatio
ype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. *Location: "PL=Pore Lining, M=Matrix. yrbit: Sandy Rodox (SS) Indicators for Problematic Hydric Solie*; Histoic Epideon (A2) Sandy Rodox (SS) 2 cm Muck (A10) (LRR B) Histoic Epideon (A2) Sandy Rodox (SS) 2 cm Muck (A10) (LRR B) Black Histic (A3) Loamy Muck Mineral (F1) (except MLRA 1) Very Shallew Dark Surface (TF12) Depleted Bolow Dark Surface (A11) Depleted Dark Surface (F6) "Indicators of hydrophytic vegetation and version of the surface (A12) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) wetland hydrology must be present, unless disturbed or problematic. setrictive Layer (If present): rep: Hydric Soil Present? YesX No Surface Vary Indicators: Hydric Soil Present? YesX No Surface Vary Indicators (B1) A and 4B) Orange Patternes (B10) Drange Patternes (B10) Surface Vary Indicators (B1) A and 4B) Orange Patternes (B10) Drange Patternes (B10) Drange Patternes (B10) Surface Vare (R1) San Crust (B1) Drange Patternes (B10) Drang	14-18	10YR 5/1	85	1	0YR 4/6	5	C	М	SiL	Redox in the	depleted layer	
ype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. *Location: PL=Pore Lining, M=Matrix. virtic Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils*: Histoc Eppedon (A2) Sandy Redox (SS) 2 orn Match (A1) (LRR B) Black Hastis (A3) Loamy Mudcy Mineral (F1) (sccept MLRA 1) Very Shallow Dark Surface (TF2) Depleted Below Dark Surface (A11) Depleted Matrix (F2) Other (Explain in Remarks) Sandry Mack Mineral (S1) Depleted Dark Surface (F6) ¹ Indicators of hydrophylic vegetation and wetland hydrology must be present, unless disturbed or problematic. strictive Layer (If present):												
ype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. *Location: PL=Pore Lining, M=Matrix. rdric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Solls': Histosol (A1) Sandy Redox, (S5) 2 cm Muck (A10) (LRR B) Histosol (A1) Sandy Redox, (S5) 2 cm Muck (A10) (LRR B) Histosol (A1) Loarny Gleyed Matrix (S6) Red Parent Material (TF2) Uppleted Bakor Dark Surface (A11) Depleted Matrix (S1) Depleted Matrix (F2) Sandy gleyed Matrix (S4) Redox Dark Surface (F1) *uetland hydrology must be present, Sandy gleyed Matrix (S4) Redox Depressions (F8) unless disturbed or problematic. estrictive Layer (if present): Hydric Soil Present? Yes_X No_ ppl (inches): Hydric Soil Present? Yes_X No_ Sufface Water (A1) Sat Crust (B11) Water-Stained Leaves (B9) (MLRA 1, 2, 4 A and 4B) Saturation (Na) Saturation (N									<u> </u>			
ype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix. ype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix. ype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ² Location: PL=Pore Lining, M=Matrix. Histic Epipedon (A2) Sandy Redox (S5) 2 or Mukr (A10) (LRR B) Histic Epipedon (A2) Learny Mukry (Mineral (F1) (except MLRA 1) Very Shallow Dark Surface (F7) Depleted Below Dark Surface (A11) Depleted Dark Surface (F6) ³ Indicators of hydrophytic vegetation and sandy Mukr (S4) Sandy Mukr (S4) Depleted Dark Surface (F6) ³ Indicators of hydrophytic vegetation and wetlend hydrology must be present, unless disturbed or problematic. Sandy Mukr (S4) Redox Depressions (F8) unless disturbed or problematic. esticitive Layer (if present): peieted Dark Surface (B1) Water-Stained Leaves (B9) (MLRA 1, 2, 4, and 4B) Surface Water (A1) X Water-Stained Leaves (B9) (MLRA 1, 2, 4, and 4B) Drainage Patterns (B10) Staturation (A3)							<u> </u>					
ype: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. *Location. PL=Pore Lining, M=Matrix. yrdic Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils*: Histosol (A1) Sandy Redox (S5) 2 cm Muck (A10) (LRR B) Histosol (A2) Sinpped Matrix (S3) Cammy Mucky Mineral (F1) (except MLRA 1) Very Shallow Dark Sutrace (TF2) Depleted Below Dark Sutrace (A11) Depleted Matrix (F3) Other (Explain in Remarks) Sandy dived Matrix (S4) Depleted Matrix (S1) Depleted Matrix (S1) Units Sinder (F7) Sandy dived Matrix (S1) Depleted Matrix (S1) unless disturbed or problematic. sandy dived Matrix (S1) Redox Depressions (F8) unless disturbed or problematic. strictive Layer (if present): ************************************									·			
ydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ¹ : Histosol (A1) Sandy Redox (S5) Red Parent Material (TF2) Black Histic Epipedon (A2) Sandy Redox (S5) Red Parent Material (TF2) Black Histic (A3) Learny Micky Mineral (F1) (except MLRA 1) Other (Explain in Remarks) Depleted Below Dark Surface (A11) Depleted Matrix (F2) ³ Indicators of hydrophytic vegatation and wetland hydrology must be present, unless disturbed or problematic. Sandy Muck Mineral (S1) Depleted Dark Surface (F7) wetland hydrology must be present, unless disturbed or problematic. estrictive Layer (if present): repe:	vpe: C=C	oncentration. D	=Depletion.	RM=Red	uced Matrix	. CS=Cove	ered or Coa	ated Sar	nd Grains. ² Loc	ation: PL=Pore Lir	ning. M=Matrix	
rdric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils*: Histosal (A1) Stripped Matrix (S6) 2 cm Muck (A10) (LRR B) Histosal (A2) Loamy Mucky Mineral (F1) (except MLRA 1) Very Shalow Dark Surface (F12) Black Histis (A3) Loamy Micky Mineral (F1) (except MLRA 1) Very Shalow Dark Surface (F12) Depleted Below Dark Surface (A11) Depleted Matrix (F2) Other (Explain In Remarks) Depleted Dark Surface (A12) R dexix Dery Starkace (F7) wetland hydrology must be present, unless disturbed or problematic. Sandy gleyed Matrix (F3) Depleted Dark Surface (F7) wetland hydrology must be present, unless disturbed or problematic. strictive Layer (if present): medicators (inininum one required; check all that apply) Secondary Indicators (2 or more required) sign y Indicators (M1) X Water-Stained Leaves (B9) (except MLRA 4A and 4B) Surface Water (A1) X Water-Stained Leaves (B3) (except MLRA 4A and 4B) Surface Water (A1) Aquatic Invernebrates (B13) Drainage Patterns (B10) Drainage Patterns (B10) Water Marks (B1) Aquatic Invernebrates (B13) Drainage Patterns (B10) Dry-Season Water Table (C2) Surface Waters (B2) Hydrogen Sulface OR (C1)<	<i>,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	· · · · · · · ,	-1 ,			,					3,	
Histic Epipedion (A2) Stripped Matrix (S6)	/dric Soil	Indicators: (A	pplicable t	o all LRR	s, unless o	therwise r	noted.)		Indicators fo	r Problematic Hyd	Iric Soils ³ :	
Instic Epipeoid (x2)	Histos	ol (A1) Taia a la a (AQ)		-	Sandy	Redox (S5	5)			_ 2 cm Muck (A10)) (LRR B)	
Deck Instance (A1) Coamy Glegeed Matrix (F3) Other (Explain in Remarks) Depleted Below Dark Surface (A1) Depleted Matrix (F3) Other (Explain in Remarks) Sandy Muck Mineral (S1) Depleted Dark Surface (F7) wetland hydrology must be present, Sandy Muck Mineral (S1) Depleted Dark Surface (F7) wetland hydrology must be present, sandy Muck Mineral (S1) Depleted Dark Surface (F7) wetland hydrology must be present, sprint (inches): Redox Dark Surface (F7) wetland hydrology must be present, print (inches): Hydric Soil Present? Yes X No ks: Depleted soils at 14 inches with water at 16 inches. Secondary Indicators (2 or more required) Secondary Indicators (2 or more required) Sufface Water (A1) X Water-Stained Leaves (B9) (except MLRA Matrix (F3) Sufface Water (A1) X Water-Stained Leaves (B9) (mLRA 1, 2, 4, 4 and 4B) Drainage Patterns (B10) Sattration (A3) Satt Crust (B11) Drainage Patterns (B10) Drainage Patterns (B10) Drainage Patterns (B10) Water Marks (B1) Aquatic Invertebrates (B13) Dry-Season Water Table (C2) Sattration Visible on Aerial Imagery (C3) Softmare Crust (B4) Presence of Reduced Inon (C4) Saturation Visi	HISTIC I	=pipedon (A2)		-	Strippe	Mucky Mi	56) noral (E1) ((ovcont	MI PA 1)	_ Red Parent Mat	erial (TFZ) ark Surface (TF	=12)
Depleted Below Dark Surface (A11) Depleted Matrix (F3) ************************************	Hvdroo	instie (A3) ien Sulfide (A4)		-	Loamy	Gleved M	atrix (F2)	except		Other (Explain i	n Remarks)	12)
Thick Dark Surface (A12) X Redox Dark Surface (F6) ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. Sandy gleyed Matrix (S4) Depleted Dark Surface (F7) wetland hydrology must be present, unless disturbed or problematic. strictive Layer (if present): ////////////////////////////////////	 Deplet	ed Below Dark	Surface (A1	1) –	Deplete	ed Matrix (F3)				· · · · ,	
Sandy Muck Mineral (S1)	Thick [Dark Surface (A	12)		X Redox	Dark Surfa	ace (F6)		³ Indicate	ors of hydrophytic v	egetation and	
	Sandy	Muck Mineral (S1)	_	Deplete	ed Dark Su	urface (F7)		wetla	nd hydrology must	be present,	
estrictive Layer (if present): ype:	Sandy	gleyed Matrix (S4)	-	Redox	Depressio	ns (F8)		unle	ess disturbed or pro	blematic.	
type:	estrictive	Laver (if prese	ent):									
Hydric Soil Present? Yes X No rks: Depleted soils at 14 inches with water at 16 inches. Image: Soil Soil Soil Soil Soil Soil Soil Soil	ype:		,.									
rks: Depleted soils at 14 inches with water at 16 inches. ROLOGY fetland Hydrology Indicators: imary Indicators (minimum one required; check all that apply) Secondary Indicators (2 or more required) Suface Water (A1) X Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B) C Saturation (A3)	epth (inche	es):						Ну	/dric Soil Prese	ent? Y	es X	No
Ks: Depleted soils at 14 inches with water at 16 inches. ROLOGY telland Hydrology Indicators: imary Indicators (minimum one required; check all that apply) Secondary Indicators (2 or more required) Surface Water (A1) X Water-Stained Leaves (B9) (except MLRA High Water Table (A2) 1, 2, 4A and 4B) Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B) Saturation (A3) Salt Crust (B11) Drainage Patterns (B10) Water Marks (B1) Aquatic Invertebrates (B13) Dry-Season Water Table (C2) Sediment Deposits (B2) Hydrogen Sulfide Odor (C1) Saturation Visible on Aerial Imagery (C9, Geomorphic Position (D2) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Shallow Aquitard (D3) Ion Deposits (B5) Recent Iron Reduction in Plowed Solis (C6) FAC-Neutral Test (D5) Surface Soil Cracks (B6) Stunted or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR A) Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Depth (inches): 16 Mettand Hydrology Present? Yes X No Mo X Depth (inches): 10 Mettand Hydrology Present? Yes X												
trimary Indicators (minimum one required; check all that apply) Secondary Indicators (2 or more required; Surface Water (A1) X Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B) X High Water Table (A2) 1, 2, 4A and 4B) Water-Stained Leaves (B1) Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B) X High Water Table (A2) 1, 2, 4A and 4B) Hand 4B Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B) Water Marks (B1) Aquatic Invertebrates (B13) Drainage Patterns (B10) Dry-Season Water Table (C2) Sediment Deposits (B2) Hydrogen Sulfide Odor (C1) Saturation Visible on Aerial Imagery (C9) Otidized Rhizospheres along Living Roots (C3) Geomorphic Position (D2) Shallow Aquitard (D3) Iron Deposits (B5) Recent Iron Reduction in Plowed Soils (C6) FAC-Neutral Test (D5) Surface Soil Cracks (B6) Stunted or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR A) Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Depth (inches): 16 Wetland Hydrology Present? Yes X No ield Observations: Mo Depth (inches): 10 Wetland Hydrology Present? Yes X No <th>ROLOG</th> <th>/ drology Indica</th> <th>tors:</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	ROLOG	/ drology Indica	tors:									
Surface Water (A1) X Water-Stained Leaves (B9) (except MLRA Water-Stained Leaves (B9) (MLRA 1, 2, 4A and 4B) K High Water Table (A2) 1, 2, 4A and 4B) High Water Table (A2) A and 4B) K Saturation (A3) Salt Crust (B11) Drainage Patterns (B10) Dry-Season Water Table (C2) Sediment Deposits (B2) Hydrogen Sulfide Odor (C1) Saturation Visible on Aerial Imagery (C9) Drift Deposits (B3) Oxidized Rhizospheres along Living Roots (C3) Geomorphic Position (D2) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Shallow Aquitard (D3) Iron Deposits (B5) Recent Iron Reduction in Plowed Soils (C6) FAC-Neutral Test (D5) Surface Soil Cracks (B6) Stunted or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR A) Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Depth (inches): 16 urface water Present? Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes_X_No_ Includes capillary fringe) Depth (inches): 10 Wetland Hydrology Present? Yes_X_No_ be Recorded Data	rimary Indi	cators (minimu	m one requi	red; checl	k all that app	oly)				Secondary Indica	tors (2 or more	e required)
K High Water Table (A2) 1, 2, 4A and 4B) 4A and 4B) K Saturation (A3) Salt Crust (B11) Drainage Patterns (B10) Water Marks (B1) Aquatic Invertebrates (B13) Dry-Season Water Table (C2) Sediment Deposits (B2) Hydrogen Sulfide Odor (C1) Saturation Visible on Aerial Imagery (C9) Drift Deposits (B3) Oxidized Rhizospheres along Living Roots (C3) Geomorphic Position (D2) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Shallow Aquitard (D3) Iron Deposits (B5) Recent Iron Reduction in Plowed Soils (C6) FAC-Neutral Test (D5) Surface Soil Cracks (B6) Stuned or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR A) Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Depth (inches): 16 wrface Water Present? Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes X No Includes capillary fringe) Depth (inches): 10 Wetland Hydrology Present? Yes X No Depth dinches): 10 Wetland Hydrology Present? <t< td=""><td>Surfac</td><td>e Water (A1)</td><td></td><td>_</td><td>X Water-</td><td>Stained Le</td><td>eaves (B9)</td><td>(except</td><td>MLRA</td><td>Water-Stained L</td><td>_eaves (B9) (M</td><td>ILRA 1, 2,</td></t<>	Surfac	e Water (A1)		_	X Water-	Stained Le	eaves (B9)	(except	MLRA	Water-Stained L	_eaves (B9) (M	ILRA 1, 2,
C Saturation (A3)	L High W	/ater Table (A2)		1, 2	, 4A and 4	IB)			4A and 4B)		
Water Marks (B1) Aquatic Invertebrates (B13) Dry-Season Water Table (C2) Sediment Deposits (B2) Hydrogen Sulfide Odor (C1) Saturation Visible on Aerial Imagery (C9) Drift Deposits (B3) Oxidized Rhizospheres along Living Roots (C3) Geomorphic Position (D2) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Shallow Aquitard (D3) Iron Deposits (B5) Recent Iron Reduction in Plowed Soils (C6) FAC-Neutral Test (D5) Surface Soil Cracks (B6) Stunted or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR A) Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Depth (inches): 16 ield Observations: Depth (inches): 10 urface Water Present? Yes X No Z Depth (inches): 10 Wetland Hydrology Present? Yes X No Iculades capillary fringe) Depth (inches): 10 Wetland Hydrology Present? Yes X No be Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: rks: Depleted layer was dense. Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 in	C Satura	tion (A3)		-	Salt Cr	ust (B11)				Drainage Patter	ns (B10)	
Sediment Deposits (B2) Hydrogen Sulfide Odor (C1) Saturation Visible on Aerial Imagery (C9) Drift Deposits (B3) Oxidized Rhizospheres along Living Roots (C3) Geomorphic Position (D2) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Shallow Aquitard (D3) Iron Deposits (B5) Recent Iron Reduction in Plowed Soils (C6) FAC-Neutral Test (D5) Surface Soil Cracks (B6) Stunted or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR A) Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Depth (inches): 16 Inded Observations: Ves X Depth (inches): 10 Vettand Hydrology Present? Yes X No Depth (inches): 10 Metland Hydrology Present? Yes X No Depth (inches): 10 Metland Hydrology Present? Yes X No Depth (inches): 10 Metland Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 inches BGS. Ks: Depleted layer was dense. Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 inches BGS.	_ Water	Marks (B1)	0)	-	Aquatio	c Invertebr	ates (B13)			_ Dry-Season Wa	ter Table (C2)	(00)
Drift Deposits (B3) Coxidized Rhizospheres along Living Roots (C3) Geomorphic Position (D2) Algal Mat or Crust (B4) Presence of Reduced Iron (C4) Shallow Aquitard (D3) Iron Deposits (B5) Recent Iron Reduction in Plowed Soils (C6) FAC-Neutral Test (D5) Surface Soil Cracks (B6) Stunted or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR A) Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Depth (inches): 16 ield Observations: Depth (inches): 16 urface Water Present? Yes X No Zepth (inches): 10 Wetland Hydrology Present? Yes X No Includes capillary fringe) Depth (inches): 10 Wetland Hydrology Present? Yes X No be Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: rks: Depleted layer was dense. Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 inches BGS.	Sedim	ent Deposits (B	2)	-	Hydrog	en Sulfide	Odor (C1)) i i i m m		_ Saturation Visib	le on Aerial Im	agery (C9)
Adda Mat Of Clust (B4)		eposits (B3)	1	-		ea Knizosp	neres alon		ROOTS (C3)	_ Geomorphic Po		
Inor Deposits (bb) Invected informed dediction in Proved doils (bb) Invected informed doils (bb) Invected informed doils (bb) Surface Soil Cracks (B6) Stunted or Stressed Plants (D1) (LRR A) Raised Ant Mounds (D6) (LRR A) Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Inundation Visible on Aerial Imagery (B7) Depth (inches): ield Observations: Inundation Visible Present? Yes X Vater table Present? Yes X No Depth (inches): /ater table Present? Yes X No Depth (inches): 16 aturation Present? Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes X No holded capillary fringe) Depth (inches): 10 Wetland Hydrology Present? Yes X No be Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: Inverse BGS. Inverse BGS.	Aigai N	hat or Crust (B2	•)	-	Presen	ICE OI REO	uced fron (action in Pl	(U4) owed Sc		_ Shallow Aquitan	u (D3) et (D5)	
Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) Sparsely Vegetated Concave Surface (B8) Inundation Visible on Aerial Imagery (B7) Other (Explain in Remarks) Frost-Heave Hummocks (D7) ield Observations: Inundation Visible Present? Yes X Depth (inches): 16 /ater table Present? Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes X No hold de coll of a data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: Invalue of a data (Unches BGS) Inches BGS)	Surfac	e Soil Cracks (I	36)	-	Keceni Stunter	d or Stress	ed Plants	(D1) (LF	RR A)	Raised Ant Mou	st (D3) inds (D6) (I RR	Α)
Sparsely Vegetated Concave Surface (B8) Ield Observations: urface Water Present? Yes Yes X No Depth (inches): 16 aturation Present? Yes Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes Yes X No Depth (inches): 10 be Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: rks: Depleted layer was dense. Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 inches BGS.	Inunda	tion Visible on	Aerial Image	erv (B7)	Other (Explain in	Remarks)	(21) (21		Frost-Heave Hu	mmocks (D7)	(()
eld Observations: urface Water Present? Yes No X Depth (inches):	Sparse	ly Vegetated C	oncave Sur	face (B8)			,					
leld Observations: urface Water Present? Yes No X Depth (inches): 16 //ater table Present? Yes X No Depth (inches): 16 //ater table Present? Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes X No //ater table present? Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes X No //actual colspan="2">includes capillary fringe) Wetland Hydrology Present? Yes X No //be Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: Image: State Present Present? Yes X No //be Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: Image: State Present Presen Present Present Present Present Present Present Pres	-								[
Vater table Present? Yes X No Depth (inches): 16 aturation Present? Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes X No ncludes capillary fringe) Depth (inches): 10 Wetland Hydrology Present? Yes X No be Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: rks: Depleted layer was dense. Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 inches BGS.	ield Obser	vations: ter Present?	Yes	No		h (inchee).						
aturation Present? Yes X No Depth (inches): 10 Wetland Hydrology Present? Yes X No includes capillary fringe) includes capillary fringe) includes capillary fringe) Wetland Hydrology Present? Yes X No ibe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: rks: Depleted layer was dense. Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 inches BGS.	/ater table	Present?	Yes X	No	Dept	h (inches):	16					
ncludes capillary fringe) ibe Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: rks: Depleted layer was dense. Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 inches BGS.	aturation F	resent?	Yes X		Dept	h (inches):	10		Wetland Hydr	ology Present?	Yes X	No
be Recorded Data (Unnamed Tributary gauge, monitoring well, aerial photos, previous inspections), if available: rks: Depleted layer was dense. Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 inches BGS.	ncludes ca	pillary fringe)							,			
rks: Depleted layer was dense. Hydrology was flowing in at 14 inches over depleted layer. Water pooled at 16 inches BGS.	ibe Record	ed Data (Unna	ned Tributa	ry gauge,	monitoring	well, aerial	photos, pr	revious i	inspections), if a	vailable:		
	rks: Deplet	ed layer was de	ense. Hydro	logy was f	lowing in at	14 inches	over deple	eted laye	er. Water pooled	at 16 inches BGS.		
		,	, ,	3,	5			, , .				

Project/Site:	Marine Drive Prop	osed Developmen	t Project	City/County:	Whatcom	County			Sam	pling Date:	Oct	, 26 2020
Applicant/Owner:	ABC Recycling						State:	WA	Sam	pling Point:	[DP-10
Investigator(s):	Joseph R. Pursley	(Anchor QEA, LL	C)	Section	n, Township	, Range:	S44, T3	8, R2E				
Landform (hillslope	e, terrace, etc.):	Hillslope/terrac	e	Local re	lief (concav	e, convex	, none):	Convex			Slope:	0-8%
Subregion (LRR):	Northwest Forests	and Coast (LRR A	A) Lat:				Long:			[Datum:	
Soil Map Unit Nam	ne: Urban land	- Whatcom - Lab	ounty complex	x			NWI Clas	ssification	: PSSC			
Are climatic / hydro	ologic conditions on	the site typical for	r this time of y	ear?	Yes	Х	No		(If no, e	explain in Re	marks)
Are Vegetation	, Soil	, or Hydrology		significantly	disturbed?	Are "N	lormal Ci	rcumstan	ces" Pres	sent? Yes	Х	No
Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	eded, exp	lain any a	inswers ir	n Remarks.)		
SUMMARY OF	FINDINGS – A	ttach site map	showing s	ampling	point loca	itions, t	ransect	ts, impo	ortant fe	eatures, e	c.	
Hydrophytic Veget	ation Present?	Yes N		Is the Sa	ampled Are	а	Vac		No	v		
Hydric Soll Presen	II /	Yes N		within a	a Wetland?		165			^	-	
wetiand Hydrology	y Present?											
VEGETATION												
						Domina	nce Test	tworksh	eet.			
			Absolute	Dominant	Indicator	Domine		Worksin				
Tree Stratum	(Plot siz	e:)	% Cover	Species?	Status?	Number	of Domi	hant Spec	ies			
1. Acer macrophy	llum		20	Yes	FACU	That Are	e OBL, F/	ACVV, of I	-AC:	3		(A)
2. <u>Thuja plicata</u>			20	Yes	FAC	Total Nu	umber of	Dominant				
3. Betula papyrife	era		15	Yes	FAC	Species	Across A	All Strata:		6		(B)
4						Percent	of Domir	nant Spec	ies			
5						That Are	e OBL, F/	ACW, or F	FAC:	50%		(A/B)
50%=	<u>27.5</u> 20%= <u>11</u>	Total Cove	er: 55									
Sapling/Shrub Stra	atum (Plot siz	ie:)	CHECK R		UES	Prevale	ence Inde	x Works	heet:			
1. <u>Sympnoricarpo</u>	os albus		45	Yes				/er of:			y:	-
2. Rosa nutkana			25	No				0		0		-
A			10		170	FAC so	ecies _	70	_^2 - 	210		-
5.						FACUs	pecies _	85		340		-
50%=	40 20%= 16	Total Cove	er: 80			UPL spe	ecies	0	x5 =	0		-
Herb Stratum	(Plot siz	.e:)				Column	Totals:	155	(A)	550		(B)
1. Pteridium aquil	linum		20	Yes	FACU	Preva	lence Ind	ex = B/A	=	3.5		_ ` `
2.												-
3.						Hydrop	hytic Ve	getation I	ndicator	s:		
4							1 - Rapi	d Test for	r Hydroph	ytic Vegetat	ion	
5							2 - Dom	inance To	est is >50	1%		
6							3 - Prev	alence In	dex is ≤3	3.0 ¹		
7							4 - Morp	phological	l Adaptati	on ¹ (Provide	suppo	orting
8							data	in Remai	rks or on	a separate s	heet)	
9							5 - Wet	and Non-	Vascular			`
50%=	<u>10</u> 20%= 4	I otal Cove	er: 20			1	Problem	hatic Hydr	ophytic V	'egetation' (Explain	1)
vvoody vine Stratu	<u>um</u> (Plot siz	e:)				'Indicate	ors of hyc	fric soil ar	nd wetlan	d hydrology	must	
1. 						be press	ent, unice			demane.		
Z		Total Cove	er: 0			Hydrop	hytic					
% Bai	re Ground in Herb S	Stratum 80 %	6 Cover of Bio	tic Crust		Present	tion		Yes	No	х	
Remarks: The unit	and vegetation scru	b-shrub laver was	verv dense w	ith only tall R	Bracken fern	in the he	rb laver					
		2 0										

I	Profile Des	cription: (Describe	e to the dep	th needed to do	cument t	he indicato	or or c	onfirm the abs	sence of indicator	s.)		
I	Depth	Matrix		Re	dox Feat	ures						
((inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture)	Remark	s	
	0-12	10YR 3/2	100					SiL	coarse ro	ots		
_	12-18	10YR 3/1	100					SiL	moist soil	, not saturated	1	
_												
_										-		
_												
-												
-												
-												
1	Type: C=0	Concentration D=De	nletion RM	-Reduced Matrix	CS=Cov	ered or Coa	ated S	and Grains ²	ocation: PI =Pore	lining M=M:	ətrix	
	.jpci o t	, 2 20	protion, i un									
I	Hydric Soi	Indicators: (Appli	cable to all	LRRs, unless of	herwise	noted.)		Indicators	for Problematic	Hydric Soils ³ :	:	
	Histos	ol (A1)		Sandy	Redox (S	5)			2 cm Muck (A10) (LRR B)		
-	Histic	Epipedon (A2)		Strippe	d Matrix (S6)		-	Red Parent I	Material (TF2)		
_	Black	Histic (A3)		Loamy	Mucky M	ineral (F1) ((excep	ot MLRA 1)	Very Shallow	/ Dark Surface	e (TF12)	
_	Hydro	gen Sulfide (A4)		Loamy	Gleyed N	latrix (F2)		-	Other (Expla	in in Remarks)	
-	Deple	ted Below Dark Surfa	ace (A11)	Deplete	ed Matrix	(F3)		-				
_	Thick	Dark Surface (A12)		Redox	Dark Surf	ace (F6)		³ Indic	ators of hydrophyt	ic vegetation a	and	
	Sandy	Muck Mineral (S1)		Deplete	ed Dark S	urface (F7)		wet	tland hydrology mu	ust be present	,	
-	Sandy	gleyed Matrix (S4)		Redox	Depressio	ons (F8)		u	nless disturbed or	problematic.		
-												
I	Restrictive	Layer (if present):										
-	Туре:											
I	Depth (inch	es):					H	Hydric Soil Pre	esent?	Yes	No	Х
		V										
		I I drology Indicators										
	Primary Ind	icators (minimum on	• • required:	check all that anr					Secondary In	dicators (2 or r	more requi	red)
-	Surfac	$\sim W_{ater} (\Delta 1)$	ie required,	Water-	Stained L	eaves (RQ)		nt MI RA	Water-Staine	d Leaves (B9) (MI RA 1	2
-	High \	Vater Table (A2)		Water (4A and	AB)	(CAUC		44 and 4	B)		, _ ,
-	Satura	ation (A3)		Salt Cr	ust (R11)	- D)		-	Drainage Pa	tterns (B10)		
-	Water	Marks (B1)			Inverteb	rates (R13)		-	Drv-Season	Water Table (C(2)	
-	Sedim	ent Denosits (B2)		Aqualic Hydrog	on Sulfida	Odor (C1)	`	-	Dry-Oeason Saturation V	isible on Aeria	l Imagery ((CQ)
-	Drift D	enosits (B3)		Nydrog	d Rhizosi	heres alon	, na Livir	na Roots (C3)	Geomorphic	Position (D2)	i inagery ((03)
-		Mat or Crust (B4)		Oxidize		luced from (ig 10003 (00)	Shallow Agu	itard (D3)		
-	Iron D	enosite (B5)		Recent	Iron Red	uction in Pl	owed 9	Soils (C6)	EAC-Neutral	Test (D5)		
-	Nurfac	eposits (BO)		Stunter	l or Stres	sed Plants	(D1) (I		Raised Ant N	Aounds (D6) (
-		ation Visible on Aeria	al Imagery (I	37) Other (Evolain in	Remarks)			Erost-Heave	Hummocks ([
-	Spare	ally Vegetated Conce	an intagery (i ave Surface	(B8)		r Kernarksj		-	11031-116476		51)	
-	Opais	ely vegetated conce		(00)								
ļ	Field Obse	rvations:										
:	Surface Wa	ter Present? Ye	es	No X Dept	n (inches)	:						
,	Water table	Present? Ye	es	No X Dept	(inches)	:						
:	Saturation I	Present? Ye	es	No X Dept	(inches)	:		Wetland Hy	/droloav Present	? Yes	No	х
((includes ca	apillary fringe)			()			,				
Desc	ribe Record	led Data (Unnamed	Tributary ga	uge, monitoring v	vell, aeria	l photos, pr	revious	s inspections), i	f available:			
Rem	arks: The s	oil surface was mois	t due to rece	ent rain events.		•						

Project/Site:	Marine Drive Propos	sed Development P	roject	City/County:	Whatcom C	County			Sam	pling Date:	Oct, 26 2020
Applicant/Owner:	ABC Recycling						State:	WA	Sam	pling Point:	DP-11
Investigator(s):	Joseph R. Pursley (Anchor QEA, LLC)		Section	n, Township,	Range:	S44, T	38, R2E			
Landform (hillslop	e, terrace, etc.):	slop/depression m	iosaic	Local re	elief (concave	e, convex	, none):	Concave		S	olope: 0-8%
Subregion (LRR):	Northwest Forests a	and Coast (LRR A)	Lat:				Long:			Da	atum:
Soil Map Unit Nam	ne: Urban land -	- Whatcom - Labour	nty complex	K			NWI Cla	ssificatior	: PSSC		
Are climatic / hydr	ologic conditions on t	he site typical for th	is time of y	ear?	Yes	Х	No		(lf no, e	explain in Ren	narks)
Are Vegetation	, Soil	, or Hydrology		significantly	disturbed?	Are "N	lormal C	ircumstan	ces" Pres	ent? Yes	X No
Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	ded, exp	plain any a	answers ir	n Remarks.)	
		_									
SUMMARY OF	FINDINGS – At	tach site map s	howing s	ampling p	point locat	tions, tr	ransec	ts, impo	ortant fe	atures, etc	;_
Hydrophytic Veget	ation Present?	Yes X No		la tha Sa	omplad Arac						
Hydric Soil Preser	nt?	Yes X No		within a	ampled Area	1	Yes	Х	No		
Wetland Hydrolog	y Present?	Yes X No									
Remarks: For lab	eled Data Plot locatio	ns and site map ple	ease see Fig	gure 5 in the	"Wetland De	elineation	Report,	Anchor C	EA, Nov.	2020".	
VEGETATION											
						Domina	nco Tos	tworksh	oot.		
			Absolute	Dominant	Indicator	Domina		St WOLKSIN			
Tree Stratum	(Plot size	:)	% Cover	Species?	Status?	Number	of Dom	inant Spec	cies		
1. Salix scouleria	na		5	No	FAC	That Are	e OBL, F	ACW, or	FAC:	3	(A)
2. Betula papyrife	era		30	Yes	FAC	Total Nu	mber of	Dominan	t –		
3.						Species	Across	All Strata:	_	3	(B)
4.						Percent	of Domi	nant Spec	ies		
5.						That Are	OBL, F	ACW, or	FAC:	100%	(A/B)
50%=	17.5 20%= 7	Total Cover:	35								
Sapling/Shrub Stra	atum (Plot size	:)				Prevale	nce Ind	ex Works	heet:		
1. Cornus sericea	3		50	Yes	FACW	Tot	tal % Co	ver of:		Multiply by	<u>: </u>
2. Lonicera involu	ıcrata		20	Yes	FAC	OBL spe	ecies	0	x1 =	0	
3						FACW s	species	50	x2 =	100	
4						FAC spe	ecies	55	x3 =	165	
5						FACU s	pecies	0	x4 =	0	
50%=	35 20%= 14	Total Cover:	70			UPL spe	ecies	0	x5 =	0	
<u>Herb Stratum</u>	(Plot size	:)				Column	Totals:	105	(A)	265	(B)
1						Preva	ence Ind	dex = B/A	=	2.5	
2											
3						Hydrop	hytic Ve	getation	Indicator	5:	
4							1 - Rap	oid Test fo	r Hydroph	ytic Vegetatio	งท
5						<u>X</u>	2 - Dor	ninance T	est is >50	%	
6.						<u>X</u>	3 - Pre	valence In	idex is ≤3	3.0 ¹	
7							4 - Mor	phologica	I Adaptati	on ¹ (Provide :	supporting
8							data	a in Rema	rks or on a	a separate sh	leet)
9							5 - We	tland Non-	Vascular	Plants'	
50%=	<u>0</u> 20%= <u>0</u>	Total Cover:	0				Probler	matic Hyd	rophytic V	egetation' (E	xplain)
Woody Vine Strate	um (Plot size	:)				¹ Indicato	ors of hy	dric soil a	nd wetlane	d hydrology m	nust
1						be prese	ent, unle	ss disturb	ed or prob	plematic.	
2						Hydrop	hytic				
		Total Cover:	0			Vegetat	ion				
% Ba	re Ground in Herb Sti	ratum <u>100</u> % C	over of Bio	tic Crust		Present	?		Yes	<u>X</u> No	<u> </u>
Remarks: Dense s	shrubs prevent the he	erb layer from develo	oping.								

Profile Dese	cription: (Describ	e to the dep	oth needed to d	ocument t	the indicate	or or co	onfirm the abser	nce of indicators.)
Depth	Matrix		F	edox Feat	tures			
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-8	10YR 3/1	100		-			SiL	Coarse roots
8-13	10YR 3/1	95	10YR 4/6	5	С	М	SiL	Bright redox concentrations, saturation
13-18	10YR 5/1	85	10YR 4/6	5	C	М	SCL	Redox in the depleted laver.
								_
. <u> </u>					·			
¹ Type: $C=C$	oncentration, D=De	pletion. RM	=Reduced Matri	x CS=Cov	vered or Co	ated Sa	nd Grains. ² Loo	cation: PI =Pore Lining, M=Matrix
.)po. e e		,p.oo.,,		.,				
Hydric Soil	Indicators: (Appli	cable to all	LRRs, unless o	otherwise	noted.)		Indicators for	or Problematic Hydric Soils ³ :
Histoso	ol (A1)		Sandy	Redox (S	5)			2 cm Muck (A10) (LRR B)
Histic E	Epipedon (A2)		Stripp	ed Matrix ((S6)			Red Parent Material (TF2)
Black H	Histic (A3)		Loam	y Mucky M	lineral (F1)	(except	MLRA 1)	Very Shallow Dark Surface (TF12)
Hydrog	jen Sulfide (A4)		Loam	y Gleyed N	Aatrix (F2)			Other (Explain in Remarks)
Deplete	ed Below Dark Surf	ace (A11)	Deple	ted Matrix	(F3)			
Thick E	Dark Surface (A12)		X Redox	Dark Sur	face (F6)		³ Indicate	ors of hydrophytic vegetation and
Sandy	Muck Mineral (S1)		Deple	ted Dark S	Surface (F7))	wetla	nd hydrology must be present,
Sandy	gleyed Matrix (S4)		Redox	C Depressi	ons (F8)		unle	ess disturbed or problematic.
Restrictive	Layer (if present):							
Туре:								
Depth (inche	es):					н	ydric Soil Prese	ent? Yes <u>X</u> No
HYDROLOGY	/							
Wetland Hy	drology Indicators	5:						
Primary Indi	cators (minimum or	ne required;	check all that ap	oply)				Secondary Indicators (2 or more required)
Surface	e Water (A1)		X Water	-Stained L	eaves (B9)	(excep	t MLRA	Water-Stained Leaves (B9) (MLRA 1, 2,
X High W	/ater Table (A2)		1,	2, 4A and	4B)			4A and 4B)
X Saturat	tion (A3)		Salt C	rust (B11)				Drainage Patterns (B10)
Water	Marks (B1)		Aquat	ic Inverteb	orates (B13))		Dry-Season Water Table (C2)
Sedime	ent Deposits (B2)		Hydro	gen Sulfid	e Odor (C1)		Saturation Visible on Aerial Imagery (C9)
Drift De	eposits (B3)		Oxidiz	ed Rhizos	pheres alor	ng Living	g Roots (C3)	Geomorphic Position (D2)
Algal M	lat or Crust (B4)		Prese	nce of Rec	duced Iron	(C4)	<u> </u>	Shallow Aquitard (D3)
Iron De	eposits (B5)		Recer	nt Iron Red	luction in P	lowed S	oils (C6)	FAC-Neutral Test (D5)
Surface	e Soil Cracks (B6)		Stunte	ed or Stres	sed Plants	(D1) (L	RR A)	Raised Ant Mounds (D6) (LRR A)
Inunda	tion Visible on Aeri	al Imagery (B7) Other	(Explain ir	n Remarks)			Frost-Heave Hummocks (D7)
Sparse	ly vegetated Conc	ave Surface	(B8)					
Field Obser	vations:							
Surface Wat	ter Present? Y	es	No X Dep	th (inches)):			
Water table	Present? Y	es X	No Dep	th (inches)): 16			
Saturation P	resent? Y	es X	No Dep	th (inches)): 8		Wetland Hyd	rology Present? Yes X No
(includes ca	pillary fringe)				·		-	
Describe Record	ed Data (Unnamed	Tributary ga	auge, monitoring	well, aeria	al photos, p	revious	inspections), if a	available:
Remarks: Deplet	ed layer was dense	. Hydrology	was flowing in a	t 13 inches	s over depl	eted lay	er. Water pooled	d at 16 inches BGS.

Project/Site:	Project/Site: Marine Drive Proposed Development Project City/County: Wi								Sam	npling Date:	Oct, 2	26 2020
Applicant/Owner:	ABC Recycling						State:	WA	Sam	npling Point:	DF	°-12
Investigator(s):	Joseph R. Pursley (Anchor QEA, LLC)		Section	n, Township	, Range:	S44, T3	38, R2E				
Landform (hillslop	e, terrace, etc.):	Hillslope		Local re	lief (concave	e, convex	, none):	Convex			Slope:	0-8%
Subregion (LRR):	Northwest Forests a	nd Coast (LRR A)	Lat:				Long:			D	atum:	
Soil Map Unit Nan	ne: Urban land –	Whatcom - Labou	nty complex	K			NWI Cla	ssification	: PSSC			
Are climatic / hydr	ologic conditions on the	he site typical for th	is time of y	ear?	Yes	Х	No		(If no,	explain in Re	marks)	
Are Vegetation	, Soil	, or Hydrology		significantly	disturbed?	Are "N	Iormal C	ircumstar	ces" Pre	sent? Yes	<u>X</u> N	lo
Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	eded, exp	olain any a	answers i	n Remarks.)		
SUMMARY OF	FFINDINGS – Att	ach site map s	howing s	ampling p	point loca	itions, t	ransec	ts, impo	ortant fo	eatures, et	с.	
Hydrophytic Vege	tation Present?	Ves No	x									
Hydric Soil Preser	nt?	Yes No	<u> </u>	Is the Sa	ampled Are	a	Yes		No	х		
Wetland Hydrolog	v Present?	Yes No	<u> </u>	within a	a Wetland?							
Wolland Hydrolog		100110										
VEGETATION												
						Domina	nce Tes	t worksh	eet:			
			Absolute	Dominant	Indicator	Domina		it worksh				
Tree Stratum	(Plot size:)	% Cover	Species?	Status?	Number	of Domi	inant Spe	cies			
1. Betula papyrife	era		20	Yes	FAC	That Are	OBL, F	ACVV, or	-AC:	2	(/	4)
2						Total Nu	imber of	Dominan	t			
3						Species	Across	All Strata:	_	4	(E	3)
4						Percent	of Domi	nant Spec	ies			
5						That Are	e OBL, F	ACW, or	FAC:	50%	(/	4/B)
50%=	= <u>10</u> 20%= <u>4</u>	Iotal Cover:	20			Drevela		av Marka	h a a 4 :			
Sapling/Shrub Str	atum (Plot size:)	50	Vaa	FACU	Prevale		ex works	neet:	Multiply b		
1. <u>Symphoncarpo</u> 2. Rosa nutkana	os alibus		10	No	FAC		al % CO				/ <u>.</u>	
3 Cornus serice	9		20	Yes	FAC	FACW s	necies	0		0		
4.	~					FAC spe	ecies	50		150		
5.						FACU s	pecies	80	x4 =	320		
50%=	= 40 20%= 16	Total Cover:	80			UPL spe	ecies	0	x5 =	0		
Herb Stratum	(Plot size:)				Column	Totals:	130	(A)	470	(E	В)
1. Pteridium aqui	ilinum		30	Yes	FACU	Preva	ence Inc	dex = B/A	=	3.6		
2												
3						Hydrop	hytic Ve	getation	Indicator	'S:		
4							1 - Rap	oid Test fo	r Hydropl	nytic Vegetati	on	
5.							2 - Don	ninance T	est is >50)%		
6							3 - Prev	valence Ir	idex is ≤	3.0'		
/							4 - Mor	phologica	I Adaptat	ion ¹ (Provide	supporti	ing
8						·	data	a in Rema Hand Non	rks or on	a separate si	ieet)	
9	- 15 20%- 6	Total Cover:	20				Drobler	motio Uvd	rophytic \	/ogotation ¹ (E		
Woody Vine Strat	20%=0					¹ Indicate		dria coil o		d bydrology r		
1		/				be prese	ent. unles	ss disturb	ed or pro	blematic.	lusi	
2.												
		Total Cover:	0			Hydrop	nytic ion					
% Ba	re Ground in Herb Str	atum 70 % C	over of Bio	tic Crust		Present	?		Yes	No	Х	
Remarks: The upl	and vegetation scrub-	shrub layer was ve	ry dense wi	th only tall B	racken fern	in the he	rb layer.					
	,		-	,			,					

Pro	file Des	cription: (Desc	ribe to the de	oth needed to do	cument t	he indicate	or or co	onfirm the abse	ence of indicators.)
Dep	oth	Matri	ix	Re	dox Feat	ures			
(inc	hes)	Color (moist	t) %	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
C)-10	10YR 3/2	100					SiL	coarse roots
1	0-18	10YR 3/1	100					SiL	dense soil, very few roots.
								_	
						·		_	
	<u> </u>					·			
						·			
¹ Tyr		oncentration D-	-Depletion RM	-Reduced Matrix			ated Sa	nd Grains ² Lo	ocation: PL-Pore Lining M-Matrix
i yr	<i>.</i> 0–0				00-000				
Hvd	Iric Soil	Indicators: (Ar	policable to al	LRRs. unless ot	herwise	noted.)		Indicators f	or Problematic Hydric Soils ³ :
,.	Histos	ol (A1)		Sandy	Redox (S	5)			2 cm Muck (A10) (LRR B)
	Histic	Epipedon (A2)		Strippe	d Matrix ((S6)		—	Red Parent Material (TF2)
	Black	Histic (A3)		Loamv	Muckv M	ineral (F1)	(except	MLRA 1)	Verv Shallow Dark Surface (TF12)
	Hydro	gen Sulfide (A4)		Loamy	Gleved N	latrix (F2)	(I	, <u> </u>	Other (Explain in Remarks)
	Deplet	ed Below Dark S	Surface (A11)	Deplete	d Matrix	(F3)		_	
	Thick I	Dark Surface (A1	2)	Redox	Dark Surf	face (F6)		³ Indica	tors of hydrophytic vegetation and
	Sandy	Muck Mineral (S	51)	Deplete	d Dark S	urface (F7))	wetla	and hydrology must be present,
	Sandv	aleved Matrix (S	54)	 Redox	Depressio	ons (F8)	,	un	less disturbed or problematic.
—		9.0,000,000,000				()			
Res	trictive	Layer (if preser	nt):						
Тур	e:								
Dep	th (inch	es):					н	ydric Soil Pres	ent? Yes No X
								-	
Remarks	s: The so	oil below 10 inche	es was very de	nse but had no Ol	R's or red	lox.			
HYDRO	OLOG	1							
Wet	tland Hy	drology Indicat	ors:						
Prin	nary Ind	icators (minimum	n one required;	check all that app	ly)				Secondary Indicators (2 or more required)
	Surfac	e Water (A1)		Water-	Stained L	eaves (B9)) (excep	t MLRA	Water-Stained Leaves (B9) (MLRA 1, 2,
	High V	Vater Table (A2)		1, 2,	4A and	4B)		_	4A and 4B)
	Satura	tion (A3)		Salt Cru	ust (B11)			_	Drainage Patterns (B10)
	Water	Marks (B1)		Aquatio	Inverteb	rates (B13))		Dry-Season Water Table (C2)
	Sedim	ent Deposits (B2	2)	Hydrog	en Sulfide	e Odor (C1)		Saturation Visible on Aerial Imagery (C9)
	Drift D	eposits (B3)		Oxidize	d Rhizos	pheres alor	ng Livin	g Roots (C3)	Geomorphic Position (D2)
	Algal N	Mat or Crust (B4)		Presen	ce of Rec	luced Iron	(C4)	_	Shallow Aquitard (D3)
	Iron D	eposits (B5)		Recent	Iron Red	uction in P	lowed S	oils (C6)	FAC-Neutral Test (D5)
	Surfac	e Soil Cracks (B	6)	Stunted	l or Stres	sed Plants	(D1) (L	RR A)	Raised Ant Mounds (D6) (LRR A)
	Inunda	ation Visible on A	erial Imagery (B7) Other (Explain in	Remarks))	· -	Frost-Heave Hummocks (D7)
	Sparse	ely Vegetated Co	ncave Surface	(B8)	•	,		_	
	•	, ,							
Fiel	d Obse	rvations:							
Sur	face Wa	ter Present?	Yes	No X Depth	n (inches)):			
Wat	ter table	Present?	Yes	No X Depth	n (inches)):			
Satu	uration F	Present?	Yes	No X Depth	n (inches)):		Wetland Hyd	Irology Present? Yes No X
(inc	ludes ca	pillary fringe)							
Describe	Record	led Data (Unnam	ned Tributary g	auge, monitoring v	vell, aeria	l photos, p	revious	inspections), if	available:
Remarks	s: The so	oil surface was m	noist due to rec	ent rain events.					

Project/Site:	Marine Drive Pro	posed Deve	elopment P	roject	City/County:	Whatcom (County			Sam	pling Date:	Oct, 2	26 2020
Applicant/Owner:	ABC Recycling							State:	WA	Sam	pling Point:	D	P-13
Investigator(s):	Joseph R. Pursle	ey (Anchor G	QEA, LLC)		Section	n, Township,	, Range:	S44, T	38, R2E				
Landform (hillslop	e, terrace, etc.):	closed	depression	l	Local re	lief (concave	e, convex	, none):	Concave	1		Slope:	0-8%
Subregion (LRR):	Northwest Fores	ts and Coas	t (LRR A)	Lat:				Long:			[Datum:	
Soil Map Unit Nam	ne: Urban lar	nd – Whatco	m - Labour	nty complex	<			NWI Cla	ssificatio	n: PSSC			
Are climatic / hydr	ologic conditions	on the site ty	pical for th	is time of y	ear?	Yes	Х	No		(If no, e	explain in Re	marks)	
Are Vegetation	, Soil	, or Hyc	lrology		significantly	disturbed?	Are "N	lormal C	ircumstar	nces" Pres	ent? Yes	<u> </u>	vo
Are Vegetation	, Soil	, or Hyc	lrology		naturally pro	oblematic?	(If nee	ded, exp	plain any	answers ir	n Remarks.)		
SUMMARY OF	FINDINGS -	Attach sit	e map s	howing s	ampling p	point locat	tions, ti	ansec	ts, impo	ortant fe	atures, et	:C.	
		N/	X N										
Hydrophytic Veget	ation Present?	Yes	X NO		Is the Sa	ampled Area	a	Vaa	v	Na			
Hydric Soil Preser	it?	Yes	X NO		within a	a Wetland?		res				-	
vvetland Hydrolog	y Present?	Yes	X NO										
Remarks: For lab	eled Data Plot loc	ations and s	ite map ple	ase see Fi	qure 5 in the	"Wetland D	elineatior	Report.	Anchor (QEA, Nov.	2020".		
					guio o in the	Wolland D	onnoador	ritoport,		ac, , , , , , , , , , , , , , , , , , ,	2020 .		
VEGETATION													
				Absolute	Dominant	Indicator	Domina	nce Tes	st worksh	eet:			
Tree Chrotum	(Dist.		``	% Cover	Species?	Status?	Number	of Domi	inant Sna	cies			
Tree Stratum	(Plot s	size:)				That Are	e OBL. F	ACW. or	FAC:	•	,	
1							T ()))				2	((A)
2			<u> </u>				Total Nu Species	Across	Dominar	it	•	,	
3.							Opecies	AC1055		·	2	(В)
4							Percent	of Domi	nant Spe	cies		,	
5.							That Are	e OBL, F	ACW, or	FAC:	100%	(<u>,</u> А/В)
50%=	0 20%=	<u>0</u> Io	otal Cover:	0			- ·						
Sapling/Shrub Stra	atum (Plot s	SIZE:)			54014	Prevale	nce Ind	ex Works	sheet:			
1. Cornus sericea	1		<u> </u>	50	Yes	FACW	To	al % Co	ver of:	— <u> </u>	Multiply b	y:	
2. Lonicera involu	icrata			10	No	FAC	OBL spe	ecies	0	x1 =	0		
3. Salix scouleria	na			30	Yes	FAC	FACW	species	50	x2 =	100		
4							FAC spe	ecies	40	x3 =	120		
5.							FACU s	pecies	0		0		
50%=	45 20%=	18 To	otal Cover:	90			UPL spe	ecies	0	x5 =	0	<u> </u>	-
Herb Stratum	(Plot s	SIZE:)				Column	l otals:	90	(A)	220	(В)
1			·				Preva	ence Ind	dex = B/A	=	2.4		
2			·										
3.							Hydrop	hytic ve	getation	Indicator	S:		
4								1 - Rap	old lest fo	or Hydroph	ytic Vegetat	ion	
5							<u> </u>	2 - Dor	ninance I	est is >50	%		
6.			·				<u> </u>	3 - Pre	valence li	ndex is ≤3	3.0'		
/			<u> </u>					4 - Mor	phologica	al Adaptati	on ¹ (Provide	support	ting
8								data	a in Rema	arks or on a	a separate s	heet)	
9.								5 - We	tiand Non	-vascular			
50%=	0 20%=	0 To	otal Cover:	0				Probler	matic Hyd	Irophytic V	egetation' (Explain)	
Woody Vine Stratu	<u>um</u> (Plot s	size:)				¹ Indicate	ors of hy	dric soil a	nd wetland	d hydrology	must	
1			·				be prese	ent, unie	ss disturc	ed or proc	plematic.		
2							Hydrop	hytic					
		То	otal Cover:	0			Vegetat	ion					
% Ba	re Ground in Herb	Stratum	<u>100 </u> % C	over of Bio	tic Crust		Present	?		Yes	X No		
Remarks: Dense s	hrubs and closed	depression	prevent the	e herb laye	r from develo	oping.							
1													

Profile Des	scription: (Describ	e to the de	oth needed to do	cument t	he indicat	or or co	onfirm the abser	nce of indicators.)
Depth	Matrix		R	edox Feat	ures		_	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-6	10YR 3/1	100					SiL	Coarse roots
6-12	10YR 3/1	90	10YR 4/6	10	С	М	SiL	Bright redox concentrations, saturation
12-18	10YR 5/1	85	10YR 4/6	15	С	М	SCL	Redox in the depleted layer.
¹ Type: C=0	Concentration, D=De	epletion, RM	=Reduced Matrix	, CS=Cov	ered or Co	ated Sa	nd Grains. ² Loc	cation: PL=Pore Lining, M=Matrix.
Uhadaia Cai							la dia stana fa	- Decklowertie Underie Ocite ³
Hydric Soi	I Indicators: (Appl	icable to all	LRRS, unless o	therwise	noted.)		Indicators to	ar Problematic Hydric Solis":
HISIOS	SOI (AT) Eningdon (A2)		Sandy	Redux (S:	5) SE)			Z cill Midck (ATO) (LKK B) Bod Parent Material (TE2)
Histic	Epipedon (A2)		Suippe	Mucky Mi	50) inoral (E1)	(oxcon	MIDA 1)	
Black	$\operatorname{HISUC}(A3)$			Gloved M	latrix (F2)	(excep		Other (Explain in Remarks)
Neple	ted Below Dark Sur	ace (A11)	Deplet	ed Matrix	(F3)			
Deple	Dark Surface (A12)		X Redox	Dark Surf	ace (F6)		³ Indicate	ors of hydrophytic vegetation and
Sandy	v Muck Mineral (S1)		Neubr	ed Dark S	urface (F7)	wettew.	nd hydrology must be present
Sandy	v aleved Matrix (S4)		Depier	Doproseic	(E8))	unle	as disturbed or problematic
	y gleyed Matrix (34)			Depressio	5115 (1 0)		une	ess disturbed of problematic.
Restrictive	e Layer (if present):							
Туре:								
Depth (inch	nes):					н	ydric Soil Prese	ent? Yes <u>X</u> No
HYDROLOG	Y							
Wetland H	ydrology Indicators	6:						
Primary Inc	dicators (minimum o	ne required;	check all that ap	oly)				Secondary Indicators (2 or more required)
Surfa	ce Water (A1)		X Water-	Stained Lo	eaves (B9)) (excep	t MLRA	Water-Stained Leaves (B9) (MLRA 1, 2,
X High	Water Table (A2)		1, 2	, 4A and	4B)			4A and 4B)
X Satur	ation (A3)		Salt Cr	ust (B11)				Drainage Patterns (B10)
Wate	r Marks (B1)		Aquatio	c Inverteb	rates (B13)		Dry-Season Water Table (C2)
Sedin	nent Deposits (B2)		Hydrog	en Sulfide	e Odor (C1)		Saturation Visible on Aerial Imagery (C9)
Drift E	Deposits (B3)		Oxidize	ed Rhizosp	oheres alo	ng Livin	g Roots (C3)	Geomorphic Position (D2)
Algal	Mat or Crust (B4)		Preser	ice of Red	luced Iron	(C4)		Shallow Aquitard (D3)
Iron D	Deposits (B5)		Recent	Iron Red	uction in P	lowed S	oils (C6)	FAC-Neutral Test (D5)
Surfa	ce Soil Cracks (B6)		Stunte	d or Stres	sed Plants	(D1) (L	RR A)	Raised Ant Mounds (D6) (LRR A)
Inund	ation Visible on Aeri	al Imagery (B7) Other (Explain in	Remarks))		Frost-Heave Hummocks (D7)
Spars	ely Vegetated Conc	ave Surface	(B8)					
Field Obse	ervations:							
Surface Wa	ater Present? Y	es	No X Dept	h (inches)	:			
Water table	e Present? Y	es X	No Dept	h (inches)	: 16			
Saturation	Present? Y	es X	No Dept	h (inches)	: 8		Wetland Hydr	ology Present? Yes X No
(includes c	apillary fringe)		·	,			-	
Describe Recor	ded Data (Unnamed	Tributary g	auge, monitoring	well, aeria	l photos, p	orevious	inspections), if a	vailable:
Remarks: Deple	eted layer was dense	e. Hydrology	was flowing in at	12 inches	over depl	eted lay	er. Water pooled	at 16 inches BGS.

Project/Site:	Marine Drive Prop	City/County: Whatcom County Sampling Date:						oling Date:	Oct, 2	26 2020		
Applicant/Owner:	ABC Recycling						State:	WA	Samp	oling Point:	DF	P-14
Investigator(s):	Joseph R. Pursley	(Anchor QEA, LLC	2)	Section	n, Township	, Range:	S44, T3	38, R2E				
Landform (hillslope	e, terrace, etc.):	Hillslope/terrace)	Local re	lief (concav	e, convex	, none):	Convex		5	lope:	0-8%
Subregion (LRR):	Northwest Forests	and Coast (LRR A) Lat:				Long:			Da	atum: _	
Soil Map Unit Nam	ne: Urban land	I – Whatcom - Labo	ounty complex	x			NWI Cla	ssification	PSSC			
Are climatic / hydr	ologic conditions or	n the site typical for	this time of y	ear?	Yes	Х	No		_(If no, e	xplain in Rer	narks)	
Are Vegetation	, Soil	, or Hydrology		significantly	disturbed?	Are "N	lormal C	ircumstand	ces" Pres	ent? Yes	<u>X</u> N	10
Are Vegetation	, Soil	, or Hydrology		naturally pro	oblematic?	(If nee	eded, exp	olain any a	nswers in	Remarks.)		
SUMMARY OF	FINDINGS - A	attach site map	showing s	ampling	point loca	ations, t	ransec	ts, impo	rtant fe	atures, etc).	
Hydrophytic Veget	tation Present?	Yes No	2 <u>X</u>	Is the Sa	ampled Are	a	Vaa		Na	v		
Hydric Soil Preser	it?	Yes No		within a	a Wetland?		res -			<u> </u>		
wetiand Hydrolog	y Present?		5 <u> </u>									
Remarks: For lab	eled Data Plot locat	ions and site map p	blease see Fi	gure 2 in the	"Wetland ∖	/erificatior	n and No	n-Compen	isatory Mi	tigation Plan	'. 	
			Absolute	Dominant	Indicator	Domina	nce Tes	t workshe	et:			
Tree Stratum	(Plot siz	70 .)	% Cover	Species?	Status?	Number	of Domi	nant Spec	ies			
1 Acer macroph	(1 101 312 //lum)	10	Yes	FACU	That Are	e OBL, F	ACW, or F	AC:	3	6	۵)
2. Betula papyrife	ara		20	Yes	FAC	Total Ni	umber of	Dominant		0	(/	, i)
3.	, a					Species	Across /	All Strata:		6	(1	B)
4.						Porcont	of Domi	nant Snaai		-	(_,
5.						That Are	e OBL. F.	ACW, or F	AC:	50%	G	A/B)
50%=	= 15 20%= 6	Total Cove	r: 30			indi / it	, UDL, 11				((2)
Sapling/Shrub Stra	atum (Plot siz)				Prevale	nce Inde	ex Worksh	neet:			
1. Symphoricarpo	os albus	·/	45	Yes	FACU	To	tal % Cov	ver of:		Multiply by		
2. Cornus sericea	7		25	Yes	FACW	OBL spe	ecies	0	x1 =	0		
3. Rubus armenia	acus		20	Yes	FAC	FACW s	species	25	x2 =	50		
4.						FAC spe	ecies	40	x3 =	120		
5.						FACU s	pecies	65	x4 =	260		
50%=	45 20%= 18	3 Total Cove	r: 90			UPL spe	ecies	0	x5 =	0		
Herb Stratum	(Plot siz	:e:)				Column	Totals:	130	(A)	430])	B)
1. Pteridium aqui	linum		10	Yes	FACU	Preva	lence Ind	lex = B/A =	=	3.3		
2												
3						Hydrop	hytic Ve	getation I	ndicators	:		
4							1 - Rap	id Test for	Hydrophy	tic Vegetatio	วท	
5							2 - Dom	ninance Te	est is >50%	%		
6.							3 - Pre\	alence Ind	dex is ≤3	.0 ¹		
7		<u> </u>					4 - Mor	phological	Adaptatio	on ¹ (Provide	support	ing
8							data	in Remar	ks or on a	separate sh	eet)	
9							5 - Wet	land Non-	Vascular I	Plants'		
50%=	<u> </u>	Total Cove	r: <u>10</u>			<u> </u>	Problen	natic Hydr	ophytic Ve	egetation' (E	xplain)	
Woody Vine Stratu	um (Plot siz	:e:)				¹ Indicato	ors of hyd	dric soil an	d wetland	l hydrology n	nust	
1						be prese	ent, unles	ss disturbe	d or prob	lematic.		
2						Hydrop	hytic					
0/ D-	na Ona un dia Ulark (r: 0	1		Vegetat	ion		X	N	v	
% Ba	re Ground in Herb S	Stratum <u>90</u> %	Cover of Bio			Present	.r		res	NO	<u> </u>	
Remarks: The upla	and vegetation scru	b-shrub layer was v	very dense wi	ith only tall B	Bracken fern	in the he	rb layer.					

Pr	ofile Des	cription: (Describ	e to the dep	oth needed to do	cument t	he indicate	or or c	onfirm the abs	sence of indi	cators.)		
De	epth	Matrix		Re	dox Feat	ures						
(in	iches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture)	Rema	rks	
<u> </u>	0-8	10YR 3/3	100					SiL	coars	se roots		
	8-18	10YR 3/2	100					SiL	mois	t soil, not saturate	ed	
			<u> </u>									
			·			· ·						
			<u> </u>	<u> </u>		·						
			·			·						
			·			·						
¹ T		oncentration D-D	enletion PM	-Reduced Matrix		ored or Co	atod S	and Grains ²	ocation: PL -	-Pore Lining M-N	Actrix	
	ype. 0–0		spielion, rum		00-000					-i ore Lining, M=N	natrix.	
H	dric Soi	Indicators: (Appl	icable to all	LRRs. unless ot	herwise	noted.)		Indicators	for Problem	atic Hydric Soils	3	
	Histos	ol (A1)		Sandy I	Redox (S	5)			2 cm M	uck (A10) (LRR E	3)	
	- Histic	Epipedon (A2)		Strippe	d Matrix (S6)		-	Red Pa	rent Material (TF2	2)	
	Black	Histic (A3)		Loamv	Muckv M	ineral (F1)	excer	ot MLRA 1)	Verv Sh	allow Dark Surfac	-, ce (TF12)	
	Hydro	gen Sulfide (A4)		Loamy	Gleyed N	latrix (F2)		· ·	Other (E	Explain in Remark	(S)	
	 Deplet	ted Below Dark Sur	face (A11)	Deplete	d Matrix	(F3)					,	
	Thick	Dark Surface (A12)		Redox	Dark Surf	ace (F6)		³ Indic	ators of hydro	ophytic vegetation	and	
	 Sandy	Muck Mineral (S1)		Deplete	d Dark S	urface (F7))	wei	tland hydrolog	gy must be preser	nt,	
	Sandy	gleyed Matrix (S4)		Redox	Depressio	ons (F8)		u	nless disturbe	ed or problematic.		
Re	estrictive	Layer (if present):	:									
Ту	vpe:											
De	epth (inch	es):					ł	Hydric Soil Pre	esent?	Yes	No	Х
Remar	ks: The s	oil below 12 inches	was dark an	d moist but not sa	turated a	nd it had no	o redo	х.				
		_										
HYDF	ROLOG	Y										
W	etland Hy	/drology Indicator	s:									
Pr	imary Ind	icators (minimum o	ne required;	check all that app	ly)	(= -)			Seconda	iry Indicators (2 or	more requir	red)
	_ Surfac	e Water (A1)		Water-S	Stained L	eaves (B9)	(exce	pt MLRA	Water-S	Stained Leaves (E	39) (MLRA 1	, 2,
	High V	Vater Table (A2)		1, 2,	4A and	4B)			4A a	and 4B)		
	_ Satura	ation (A3)		Salt Cru	ust (B11)				Drainag	je Patterns (B10)		
	Water	Marks (B1)		Aquatic	Inverteb	rates (B13))		Dry-Sea	ason Water Table	(C2)	
	Sedim	ent Deposits (B2)		Hydrog	en Sulfide	e Odor (C1))		Saturati	ion Visible on Aer	ial Imagery ((C9)
	Drift D	eposits (B3)		Oxidize	d Rhizos	pheres alor	ng Livir	ng Roots (C3)	Geomo	rphic Position (D2	2)	
	Algal I	Mat or Crust (B4)		Presen	ce of Rec	luced Iron ((C4)		Shallow	/ Aquitard (D3)		
	Iron D	eposits (B5)		Recent	Iron Red	uction in Pl	lowed \$	Soils (C6)	FAC-Ne	eutral Test (D5)		
	Surfac	e Soil Cracks (B6)		Stunted	l or Stres	sed Plants	(D1) (I	LRR A)	Raised	Ant Mounds (D6)	(LRR A)	
	Inunda	ation Visible on Aeri	al Imagery (B7) Other (I	Explain in	Remarks)			Frost-H	eave Hummocks	(D7)	
	Spars	ely Vegetated Conc	ave Surface	(B8)								
Fi	eld Obse	rvations:										
Su	urface Wa	iter Present? Y	es	No X Depth	n (inches)	:						
W	ater table	Present? Y	es	No X Depth	(inches)	:						
Sa	aturation I	Present? Y	es	No X Depth	(inches)	:		Wetland Hy	drology Pre	sent? Yes	No	X
(in	icludes ca	apillary fringe)										
Descrit	be Record	ied Data (Unnamed	I Fributary ga	auge, monitoring v	vell, aeria	il photos, pi	revious	s inspections), i	t available:			
Remar	ks: The s	oil surface was mois	st due to rec	ent rain events.								

Appendix B Precipitation Data

Marine Drive Wetland Delineation - Precipitation Data

January 2020 – Oct 2020

AgACIS			Co	ору (CSV	Excel	PDF	Print
WETS Station: BELLINGHAM INTL AP, WA								
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:						-0.1		
Average	58.3	42.8	50.5	-	+		- 2	-
Total	-	-	+	1.4				-

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

Appendix C Ecology Wetland Ratings Forms and Figures

Wetland A Rating Forms

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 <u>Google Earth</u>

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

1. Category of wetland based on FUNCTIONS

Category I – Total score = 23 - 27

Category II – Total score = 20 - 22

____Category III – Total score = 16 - 19

X Category IV – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic						
	Circle the appropriate ratings									
Site Potential	Н	M	L	Н	Μ		Н	Μ		
Landscape Potential	H	Μ	L	H	Μ	L	Н	Μ		
Value	Н	Μ		Н	Μ		Н	M	L	тоти
Score Based on Ratings		6			5			4		15

Score for each function based on three ratings (order of ratings is not important) 9 = H,H,H

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

3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

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

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (can be added to another figure)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	Н 2.1, Н 2.2, Н 2.3	
polygons for accessible habitat and undisturbed habitat		
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	Н 1.1, Н 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants	S 4.1	
(can be added to figure above)		
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	
polygons for accessible habitat and undisturbed habitat		
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) 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 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).

•N0 – 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,

 \square The water leaves the wetland **without being impounded**.

○N0 – 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. <u>Does the entire wetland unit **meet all** of the following criteria?</u>

____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 <u>A</u>

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

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

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

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

D 2.0. Does the landscape have the potential to support the water quality function of the site?		
D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in question Source <u>Homeless encampment</u> (human and domestic animal waste).	ons D 2.1-D 2.3? Yes = 1 No = 0	1
Total for D 2Add the points	in the boxes above	3

Rating of Landscape Potential If score is: $\boxed{\times}$ 3 or 4 = H $\boxed{1}$ 1 or 2 = M $\boxed{0}$ = L Record the rating on the first page

D 3.0. Is the water quality improvement provided by the site valuable to	o society?		
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0		0	
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0		0	
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (<i>answer YES if there is a TMDL for the basin in which the unit is found</i>)? Yes = 2 No = 0		0	
Total for D 3	Add the points	in the boxes above	0
Rating of Value If score is: 2-4 = H 1 = M 3 0 = L	Record the rat	ing on the first page	

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DEPRESSIONAL AND FLAIS WEILANDS 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: points = 4 Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outletpoints = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	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 outletpoints = 7Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	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 unitpoints = 5The area of the basin is 10 to 100 times the area of the unitpoints = 3The area of the basin is more than 100 times the area of the unitpoints = 0Entire wetland is in the Flats classpoints = 5	3
Total for D 4Add the points in the boxes above	3
Rating of Site PotentialIf score is: \Box 12-16 = H \Box 6-11 = M \boxtimes 0-5 = LRecord the rating on the	first page
D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	-
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5Add the points in the boxes above	3
Rating of Landscape Potential If score is: \boxed{X} 3 = H $\boxed{1}$ or 2 = M $\boxed{0}$ = 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. <u>The unit is in a landscape that has flooding problems</u>. <i>Choose the description that best matches conditions around the wetland unit being rated. Do not add points</i>. <u>Choose the highest score if more than one condition is met</u>. The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): Flooding occurs in a sub-basin that is immediately down-gradient of unit. 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. <i>Explain why</i> <u>Wetland drains to gravel</u> points = 0 There are no problems with flooding downstream of the wetland. 	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	0
Rating of Value If score is: 2-4 = H 1 = M 3 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	
R 1.0. Does the site have the potential to improve water quality?	
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a flooding event:	
Depressions cover $>^{3}/_{4}$ area of wetland points = 8	
Depressions cover > 1/2 area of wetland points = 4	
Depressions present but cover < ½ 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, not Cowardin classes)	
Trees or shrubs $> ^{2}/_{3}$ area of the wetland points = 8	
Trees or shrubs $> 1/3$ area of the wetland points = 6	
Herbaceous plants (> 6 in high) > $^{2}/_{3}$ 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	
Total for R 1 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 of	n the first page
R 2.0. Does the landscape have the potential to support the water quality function of the site?	-
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	
Total for R 2 Add the points in the boxes above	
Rating of Landscape Potential If score is: $3-6 = H$ $1 \text{ or } 2 = M$ $0 = L$ Record the rating of	n the first page
R 3.0. Is the water quality improvement provided by the site valuable to society?	
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? (answer YES if there is a TMDL for the drainage in which the unit is found) Yes = 2 No = 0	
Total for R 3 Add the points in the boxes above	

Total for R 3

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		n
R 4.0. Does the site have the potential to reduce flooding and erosion?		
R 4.1. Characteristics of the overbank storage the wetland provides:		
Estimate the average width of the wetland perpendicular to the direction of	of the flow and the width of the	
stream or river channel (distance between banks). Calculate the ratio: (av	verage width of wetland)/(average	
width of stream between banks).		
If the ratio is more than 20	points = 9	
If the ratio is 10-20	points = 6	
If the ratio is 5-<10	points = 4	
If the ratio is 1-<5	points = 2	
If the ratio is < 1	points = 1	
R 4.2. Characteristics of plants that slow down water velocities during floods: Tre	eat large woody debris as forest or	
shrub. Choose the points appropriate for the best description (polygons ne	eed to have >90% cover at person	
height. These are <u>NOT Cowardin</u> classes).	· · -	
Forest or shrub for $> /_3$ area OR emergent plants $> /_3$ area	points = 7	
Forest or shrub for > $/_{10}$ area OR emergent plants > $/_3$ area	points = 4	
	points = 0	
	Add the points in the boxes above	
Rating of Site Potential If score is: $12-16 = H$ $16-11 = M$ $10-5 = L$	Record the rating on the	he first page
R 5.0. Does the landscape have the potential to support the hydrologic fu	nctions of the site?	
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	
Total for R 5	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 th	he first page
R 6.0. Are the hydrologic functions provided by the site valuable to societ	у?	
R 6.1. Distance to the nearest areas downstream that have flooding problems?		
Choose the description that best fits the site.		
The sub-basin immediately down-gradient of the wetland has flooding pro	blems 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	
R 6.2. Has the site been identified as important for flood storage or flood convey	ance in a regional flood control plan?	
	Yes = 2 No = 0	
Total for R 6	Add the points in the boxes above	
Rating of Value If score is: 2-4 = H 1 = M 1 = M	Record the rating on th	he first page

LAKE FRINGE WETLANDS		
Water Quality Functions - Indicators that the site functions to impr	ove water quality	
L 1.0. Does the site have the potential to improve water quality?		
L 1.1. Average width of plants along the lakeshore (use polygons of Cowardin classes):		
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	
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. <i>These are not Cowardin classes. Area</i> of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed. Cover of herbaceous plants is >90% of the vegetated area Cover of herbaceous plants is > ² / ₃ of the vegetated area points = 4 Cover of herbaceous plants is > ¹ / ₃ of the vegetated area points = 3 Other plants that are not aquatic bed in > ¹ / ₃ vegetated area Aquatic bed plants and open water cover > ² / ₄ of the unit		
Total for L 1 Add the points	s in the boxes above	
Rating of Site Potential If score is: 8-12 = H 4-7 = M 0-3 = L	Record the rating on th	ne first page

L 2.0. Does the landscape have the potential to support the water quality function of the site?	
L 2.1. Is the lake used by power boats?	Yes = 1 No = 0
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?	
	Yes = 1 No = 0
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as mi	ilfoil? Yes = 1 No = 0
Total for L 2 Add the	points in the boxes above
Rating of Landscape Potential: If score is: $2 \text{ or } 3 = H$ $1 = M$ $0 = L$	Record the rating on the first page

L 3.0. Is the water quality improvement provided by the site valuable t	o society?	
L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?	Yes = 1 No = 0	
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one ac 303(d) list)?	quatic resource in the basin is on the Yes = 1 No = 0	
L 3.3. Has the site been identified in a watershed or local plan as important for <i>if there is a TMDL for the lake or basin in which the unit is found.</i>	r maintaining water quality? Answer YES Yes = 2 No = 0	
Total for L 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 th	ne first page

LAKE FRINGE WETLANDS		
Hydrologic Functions - Indicators that the wetland unit functions to red	uce shoreline erosi	on
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 (do not in Choose the highest scoring description that matches conditions in the wetland.	clude Aquatic bed):	
> 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 6 = M	Record the rating on t	he 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: $\Box 2 = H$ $\Box 1 = M$ $\Box 0 = L$ 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 a	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: (a 1% slope has a 1 ft vertical of 100 ft of horizontal distance)	drop in elevation for every			
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. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS	<i>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 w have trouble seeing the soil surface (>75% cover), and uncut means not grazed or r than 6 in.	etland. Dense means you nowed and plants are higher			
Dense, uncut, herbaceous plants > 90% of the wetland area	points = 6			
Dense, uncut, herbaceous plants > ½ of area	points = 3			
Dense, woody, plants > $\frac{1}{2}$ of area	points = 2			
Dense, uncut, herbaceous plants > $\frac{1}{4}$ of area	points = 1			
Does not meet any of the criteria above for plants	points = 0			
Total for S 1 Add th	e points in the boxes above			
Rating of Site Potential If score is: \Box 12 = H \Box 6-11 = M \Box 0-5 = L Record the rating on the first pa				
S 2.0. Does the landscape have the potential to support the water quality function	on 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	t 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 th	e points in the boxes above			
Rating of Landscape Potential If score is: 1-2 = M 0 = L Record the rating on the first p				
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 ma 303(d) list?	arine water that is on the Yes = 1 No = 0			
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? At least one on the 303(d) list.	aquatic resource in the basin is Yes = 1 No = 0			
S 3.3. Has the site been identified in a watershed or local plan as important for maintaini <i>if there is a TMDL for the basin in which unit is found.</i>	ng water quality? Answer YES Yes = 2 No = 0			
Total for S 3 Add th	e 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 _____

SLOPE WETLANDS	
Hydrologic Functions - Indicators that the site functions to reduce floor	ding 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 for the description that best fits conditions in the wetland. <i>Stems of plants should be thick in), or dense enough, to remain erect during surface flows.</i>	he points appropriate k enough (usually > $^{1}/_{8}$
Dense, uncut, rigid plants cover > 90% of the area of the wetland	points = 1
All other conditions	points = 0
Rating of Site Potential If score is: $\Box 1 = M \Box 0 = L$	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 g	generate excess
surface runoff?	Yes = 1 No = 0
Rating of Landscape Potential If score is: 1 = M 1 = M 1 = 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 dar	mage 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 region	nal flood control plan?
	Yes = 2 No = 0
Total for S 6 Add the point	ts in the boxes above
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. Aquatic bed 4 structures or more: points = 4 Emergent 3 structures: points = 2 X Scrub-shrub (areas where shrubs have > 30% cover) 2 structures: points = 1 Forested (areas where trees have > 30% cover) 1 structure: points = 0 If the unit has a Forested class, check if: The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover)	0
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).	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft ² . Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle If you counted: > 19 species points = 2 5 - 19 species points = 1 < 5 species	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. <i>If you</i> <i>have four or more plant classes or three classes and open water, the rating is always high.</i> None = 0 points All three diagrams in this row are HIGH = 3points	1

H 1.5. Special habitat features:	
Check the habitat features that are present in the wetland. The number of checks is the number of points.	
X Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long).	
X Standing snags (dbh > 4 in) within the wetland	
Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)	
Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed)	2
At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are	
permanently or seasonally inundated (structures for egg-laying by amphibians)	
Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)	
Total for H 1Add the points in the boxes above	5
Rating of Site Potential If score is: 15-18 = H 7-14 = M Image: O-6 = L Record the rating on	
H 2.0. Does the landscape have the potential to support the habitat functions of the site?	

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

Rating of Landscape Potential If score is: 4-6 = H 1-3 = M $\times < 1 = L$

Record the rating on the first page

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

WDFW Priority Habitats

<u>Priority habitats listed by WDFW</u> (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. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>)

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

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

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015 Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.	
SC 1.0. Estuarine wetlands	
Does the wetland meet the following criteria for Estuarine wetlands?	
— The dominant water regime is tidal,	
— Vegetated, and — With a salinity greater than 0.5 ppt — Over – Go to SC 1.1 ONo- Not an estuarine wetland	
SC 1.1 Is the wetland within a National Wildlife Pefuge, National Park, National Estuary Reserve, Natural Area	
Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?	
OYes = Category I ONo - Go to SC 1.2	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions?	
— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less	OCat. I
- At least $\frac{3}{4}$ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-	0
mowed grassland.	
— The wetland has at least two of the following features: tidal channels, depressions with open water, or	Ocat. II
contiguous freshwater wetlands. Ves = Category I ()No = Category II	
SC 2.0. Wetlands of High Conservation Value (WHCV)	
SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High	
Conservation Value? Yes – Go to SC 2.2 • No – Go to SC 2.3 SC 2.2 Is the wetland listed on the WDNP database as a Wetland of High Conservation Value?	Ocat
Yes = Category I (•)No = Not a WHCV	
SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland?	
http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf	
Yes – Contact WNHP/WDNR and go to SC 2.4 ONO = Not a WHCV	
their website?	
SC 3.0. Bogs	
Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key	
below. If you answer YES you will still need to rate the wetland based on its functions.	
SC 3.1. Does an area within the wetland unit have organic soli norizons, either peaks or mucks, that compose 16 in or more of the first 32 in of the soil profile? \bigcirc Yes – Go to SC 3.3 \bigcirc No – Go to SC 3.2	
SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep	
over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or	
pond? (Yes – Go to SC 3.3 (No = Is not a bog	
SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30%	
NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by	
measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the	
plant species in Table 4 are present, the wetland is a bog.	OCat. I
SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar,	
species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy?	
Yes = Is a Category I bog No = Is not a bog	

SC 4.0. Forested Wetlands	
Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? If you answer YES you will still need to rate the wetland based on its functions.	
 Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. 	
— Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).	
Yes = Category I No = Not a forested wetland for this section	OCat. I
SC 5.0. Wetlands in Coastal Lagoons	
Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?	
— The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks	
— The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt)	
during most of the year in at least a portion of the lagoon (needs to be measured near the bottom)	OCat. I
\bigvee Yes – Go to SC 5.1 \bigcirc No = Not a wetland in a coastal lagoon	
— 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)	Cat. II
- At least % of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-	Ŭ
mowed grassland.	
— The wetland is larger than $1/_{10}$ ac (4350 ft ²)	
Yes = Category I No = Category I	
SC 6.0. Interdunal Wetlands	
Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? If	
you answer yes you will still need to rate the wetland based on its habitat functions.	
In practical terms that means the following geographic areas:	
 Long Beach Peninsula: Lands west of SR 103 	Ocal
 Grayland-Westport: Lands west of SR 105 	Ocati
Ocean Shores-Copalis: Lands west of SR 115 and SR 109	
\bigcirc Yes – Go to SC 6.1 \bigcirc No = not an interdunal wetland for rating	
SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M	OCat. II
SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?	
OYes = Category II ONO - Go to SC 6.3	OCat. III
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? \bigcirc Yes = Category III \bigcirc No = Category IV	
Category of wetland based on Special Characteristics	
If you answered No for all types, enter "Not Applicable" on Summary Form	



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Figure 1 Wetland A Cowardin Classification Map



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Figure 2 Wetland A Hydroperiods Map



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Figure 3 Wetland A 150-Foot Buffer Map



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Figure 4 Wetland A 1-Kilometer Polygon Map



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Figure 5 Wetland A Contributing Basin Map



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Figure 6 Wetland A 303(d) Listed Waters Map



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Figure 7 Wetland A TMDLs by Basin Map

Wetland B Rating Forms

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B (Marine Drive, Whatcom Co.) Date of site visit: 10/20/2020Rated 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 <u>Google Earth</u>

OVERALL WETLAND CATEGORY []] (based on functions or special characteristics)

1. Category of wetland based on FUNCTIONS

Category I – Total score = 23 - 27

Category II – Total score = 20 - 22

X Category III – Total score = 16 - 19

Category IV – Total score = 9 - 15

FUNCTION	Improving Water Quality		Hy	ydrolo	ogic Habitat		ət			
				Circle the appropriate ratings						
Site Potential	Н	M	L	Н	M	L	Н	M	L	
Landscape Potential	(H)	Μ	L	H	Μ	L	Н	М		
Value	Н	Μ		Н	Μ		Н	M	L	тот
Score Based on Ratings		6			6			5		17

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

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

3 = L,L,L

AL

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (can be added to map of hydroperiods)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (can be added to another figure)	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	
polygons for accessible habitat and undisturbed habitat		
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	Н 1.1, Н 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (can be added to another figure)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (can be added to another figure)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	
polygons for accessible habitat and undisturbed habitat		
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

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

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants	S 4.1	
(can be added to figure above)		
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	
polygons for accessible habitat and undisturbed habitat		
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) 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).

•N0 – 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,

 \square The water leaves the wetland **without being impounded**.

ONO – 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. <u>Does the entire wetland unit **meet all** of the following criteria?</u>

____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

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

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

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

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

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source Homeless encampment waste and debris. Yes = 1 No = 0	1
Total for D 2Add the points in the boxes above	3

Rating of Landscape Potential If score is: $\boxed{\times}$ 3 or 4 = H $\boxed{1}$ 1 or 2 = M $\boxed{0}$ = L Record the rating on the first page

D 3.0. Is the water quality improvement provided by the site valuable	to society?		
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river 303(d) list?	r, lake, or marine w	vater that is on the Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on t	he 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 (<i>answer YES if there is a TMDL for the basin in which the unit is found</i>)? Yes = 2 No = 0		0	
Total for D 3	Add the point	s in the boxes above	0
Rating of Value If score is: $2 - 4 = H$ $1 = M$ $\times 0 = L$	Record the rat	ing on the first page	

n

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 notential to reduce flooding and erosion?	
D 4.1. <u>Characteristics of surface water outflows from the wetland</u> : Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outletpoints = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted or slightly constricted surface outlet that is permanently flowing in points = 0	4
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.Marks of ponding are 3 ft or more above the surface or bottom of outletpoints = 7Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	3
D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.The area of the basin is less than 10 times the area of the unitpoints = 5The area of the basin is 10 to 100 times the area of the unitpoints = 3The area of the basin is more than 100 times the area of the unitpoints = 0Entire wetland is in the Flats classpoints = 5	3
Total for D 4Add the points in the boxes above	10
Rating of Site PotentialIf score is: \square 12-16 = H \blacksquare 6-11 = M \square 0-5 = LRecord the rating on the	first page
D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5Add the points in the boxes above	3
Rating of Landscape Potential If score is: $\boxed{\times}$ 3 = H $\boxed{1}$ 1 or 2 = M $\boxed{0}$ = 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. <u>The unit is in a landscape that has flooding problems</u>. <i>Choose the description that best matches conditions around the wetland unit being rated</i>. <i>Do not add points</i>. <u><i>Choose the highest score if more than one condition is met</i></u>. The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. <i>Explain why</i> No evidence of outflow points = 0 There are no problems with flooding downstream of the wetland. 	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	0
Rating of Value If score is: $\Box 2-4 = H \Box 1 = M \Box 0 = L$ Record the rating on the	first page

RIVERINE AND FRESHWATER TIDAL FRINGE WET	LANDS	
Water Quality Functions - Indicators that the site functions to impl	rove water quality	
R 1.0. Does the site have the potential to improve water quality?		
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during a	flooding event:	
Depressions cover $>^{3}/_{4}$ area of wetland	points = 8	
Depressions cover > $\frac{1}{2}$ area of wetland	points = 4	
Depressions present but cover < 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, not Cowardir	n classes)	
Trees or shrubs $> \frac{2}{3}$ area of the wetland	points = 8	
Trees or shrubs $> 1/3$ area of the wetland	points = 6	
Herbaceous plants (> 6 in high) > $^{2}/_{3}$ area of the wetland	points = 6	
Herbaceous plants (> 6 in high) > $^{1}/_{3}$ area of the wetland	points = 3	
Trees, shrubs, and ungrazed herbaceous $< 1/3$ area of the wetland	points = 0	
Total for R 1 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 t	he first page
R 2.0. Does the landscape have the potential to support the water quality function of t	he site?	
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 h within the last 5 years?	nave been clearcut 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 quest Other sources	ions R 2.1-R 2.4 Yes = 1 No = 0	
Total for R 2 Add the point	ts in the boxes above	
Rating of Landscape Potential If score is: 3-6 = H 1 or 2 = M 0 = L	Record the rating on t	he first page
R 3.0. Is the water quality improvement provided by the site valuable to society?		
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drain	ns 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 pathog	gens? $V_{05} = 1$ No = 0	
P 2.2 Has the site been identified in a watershed or local plan as important for maintaining wat	1 = 0	
YES if there is a TMDL for the drainage in which the unit is found)	Yes = 2 No = 0	
Total for R 3 Add the point	ts in the boxes above	

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		
R 4.0. Does the site have the potential to reduce flooding and erosion?		
R 4.1. Characteristics of the overbank storage the wetland provides:		
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).		
If the ratio is more than 20 points = 9		
If the ratio is $10-20$ points = 6		
points = 4		
points = 2		
PA 2 Characteristics of plants that slow down water velocities during fleads: Treat large woody debris as forest or		
shruh Choose the points appropriate for the best description (polyaons need to have >90% cover at person		
height. These are NOT Cowardin classes).		
Forest or shrub for $>^1/_3$ area OR emergent plants $>^2/_3$ area points = 7		
Forest or shrub for $> 1/_{10}$ area OR emergent plants $> 1/_3$ area points = 4		
Plants do not meet above criteria points = 0		
Total for R 4 Add the points in the boxes above		
Rating of Site Potential If score is: \Box 12-16 = H \Box 6-11 = M \Box 0-5 = L Record the rating on the f		
R 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	-	
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		
Total for R 5Add the points in the boxes above		
Rating of Landscape Potential If score is: $\boxed{3} = H$ $\boxed{1}$ or $2 = M$ $\boxed{0} = L$ Record the rating on a	the first page	
R 6.0. Are the hydrologic functions provided by the site valuable to society?		
R 6.1. Distance to the nearest areas downstream that have flooding problems?		
Choose the description that best fits the site.		
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		
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		
I otal for R 6 Add the points in the boxes above		
Rating of ValueIf score is: $2 - 4 = H$ $1 = M$ $0 = L$ Record the rating on a	the first page	

LAKE FRINGE WETLANDS		
Water Quality Functions - Indicators that the site functions to improve water quality		
L 1.0. Does the site have the potential to improve water quality?		
L 1.1. Average width of plants along the lakeshore (use polygons of Cowardin classes):		
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	
L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that repoints, and do not include any open water in your estimate of coverage. The herbaced the dominant form or as an understory in a shrub or forest community. These are not of cover is total cover in the unit, but it can be in patches. Herbaceous does not include	sults in the highest ous plants can be either <i>Cowardin classes. Area</i> <i>aquatic bed.</i>	
Cover of herbaceous plants is >90% of the vegetated area	points = 6	
Cover of herbaceous plants is $>^2/_3$ of the vegetated area	points = 4	
Cover of herbaceous plants is $>^{1}/_{3}$ of the vegetated area	points = 3	
Other plants that are not aquatic bed > $^{2}/_{3}$ unit	points = 3	
Other plants that are not aquatic bed in $> \frac{1}{3}$ vegetated area	points = 1	
Aquatic bed plants and open water cover > $^{2}/_{3}$ of the unit	points = 0	
Total for L 1Add the po	ints in the boxes above	
Rating of Site Potential If score is: 8-12 = H 4-7 = M 0-3 = L	Record the rating on the	first page

L 2.0. Does the landscape have the potential to support the water quality function of the site?		
L 2.1. Is the lake used by power boats?	Yes = 1 No = 0	
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?		
	Yes = 1 No = 0	
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milf	oil? Yes = 1 No = 0	
Total for L 2 Add the p	oints in the boxes above	
Rating of Landscape Potential: If score is: 2 or 3 = H 1 = M 0 = L	Record the rating on the first page	

L 3.0. Is the water quality improvement provided by the site valuable	to society?	
L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?	Yes = 1 No = 0	
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)? Yes = 1 No = 0		
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. Yes = 2 No = 0		
Total for L 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 th	ne first page

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 (do not 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 th	e 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 5Add the point	nts 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: (a 1% slope has a 1 ft vertical drop in elevation for every		
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. The soil 2 in below the surface (or duff layer) is true clay or true organic (us	se NRCS definitions): Yes = 3 No = 0	
S 1.3. Characteristics of the plants in the wetland that trap sediments and polluta	ants:	
Choose the points appropriate for the description that best fits the plants in the wetland. <i>Dense means you</i> have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.		
Dense, uncut, herbaceous plants > 90% of the wetland area	points = 6	
Dense, uncut, herbaceous plants > ½ of area	points = 3	
Dense, woody, plants > $\frac{1}{2}$ 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: \Box 12 = H \Box 6-11 = M \Box 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 \boldsymbol{u}	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: $\Box 1 - 2 = M$ $\Box 0 = L$ 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? At le on the 303(d) list.	ast one aquatic resource in the basin is Yes = 1 No = 0	
S 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 unit is found. 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 _____

SLOPE WETLANDS	
Hydrologic Functions - Indicators that the site functions to reduce floor	ding 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 t for the description that best fits conditions in the wetland. <i>Stems of plants should be thic in), or dense enough, to remain erect during surface flows.</i>	he points appropriate k enough (usually > $^{1}/_{8}$
Dense, uncut, rigid plants cover > 90% of the area of the wetland	points = 1
All other conditions	points = 0
Rating of Site Potential If score is: $\Box 1 = M \Box 0 = L$	Record the rating on the first page
S 5.0. Does the landscape have the potential to support the hydrologic functions of the	e site?
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that g surface runoff?	generate excess Yes = 1 No = 0
Rating of Landscape Potential If score is: $\Box 1 = M$ $\Box 0 = L$ Record the rating on the first p	
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 da	mage 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 region	nal flood control plan? Yes = 2 No = 0
Total for S 6 Add the point	ts in the boxes above
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. Aquatic bed 4 structures or more: points = 4 Aquatic bed 3 structures: points = 2 X Scrub-shrub (areas where shrubs have > 30% cover) 2 structures: points = 1 X Forested (areas where trees have > 30% cover) 1 structure: points = 0 If the unit has a Forested class, check if: The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) The Forested class has 3 out of 5 strata plugap	1	
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (see text for descriptions of hydroperiods). Permanently flooded or inundated 4 or more types present: points = 3		
	1	
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft ² . Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle If you counted: > 19 species 5 - 19 species c 5 species c 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. <i>If you</i> <i>have four or more plant classes or three classes and open water, the rating is always high.</i> None = 0 points All three diagrams in this row are HIGH = 3points	2	
Wetland name or number B

H 1.5. Special habitat features:	
Check the habitat features that are present in the wetland. The number of checks is the number of points.	
X Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long).	
X_Standing snags (dbh > 4 in) within the wetland	
Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)	
Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed)	3
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>	
X Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)	
Total for H 1Add the points in the boxes above	8
Rating of Site Potential If score is: \Box 15-18 = H $$ 7-14 = M \Box 0-6 = LRecord the rating on	the first page
H 2.0. Does the landscape have the potential to support the habitat functions of the site?	

	1		
H 2.1. Accessible habitat (include only habitat that directly abuts wetland unit).			
Calculate: 2 % undisturbed habitat $2 + [(\% \text{ moderate and low intensity land uses})/2] 1 = 3\%$			
If total accessible habitat is:			
> ¹ / ₃ (33.3%) of 1 km Polygon points = 3	0		
20-33% of 1 km Polygon points = 2			
10-19% of 1 km Polygon points = 1			
< 10% of 1 km Polygon points = 0			
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.			
<i>Calculate:</i> 48 % undisturbed habitat $2 + [(\% \text{ moderate and low intensity land uses})/2] 1 = 49\%$			
Undisturbed habitat > 50% of Polygon points = 3	1		
Undisturbed habitat 10-50% and in 1-3 patches points = 2			
Undisturbed habitat 10-50% and > 3 patches points = 1			
Undisturbed habitat < 10% of 1 km Polygon points = 0			
H 2.3. Land use intensity in 1 km Polygon: If			
> 50% of 1 km Polygon is high intensity land use points = (- 2)	-2		
≤ 50% of 1 km Polygon is high intensity points = 0			
Total for H 2 Add the points in the boxes above	-1		

Rating of Landscape Potential If score is: 4-6 = H 1-3 = M 2 < 1 = L

Record the rating on the first page

H 3.0. Is the habitat provided by the site valuable to society?		<u>-</u> <u>-</u>
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? <i>Choose on</i>	ly the highest score	
Site meets ANV of the following criteria:	noints - 2	
- It has 3 or more priority babitats within 100 m (see next nage)	points – 2	
 It provides habitat for Threatened or Endangered species (any plant or animal on the s 	tate or federal lists)	
— It is mapped as a location for an individual WDFW priority species	,	1
 It is a Wetland of High Conservation Value as determined by the Department of Natura 	al Resources	
 It has been categorized as an important habitat site in a local or regional comprehensively 	ve plan, in a	
Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority babitats (listed on next page) within 100 m	noints = 1	
Site has 1 of 2 priority habitats (listed of next page) within 100 m	points – 1	
Site does not meet any of the criteria above	points = 0	
Rating of Value If score is: 2 = H I I = M 0 = L	Record the rating on	the first page

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015

WDFW Priority Habitats

<u>Priority habitats listed by WDFW</u> (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. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>)

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

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

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015 Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met. SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal.	
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal.	
Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal.	
— The dominant water regime is tidal.	
Vegetated and	
— With a salinity greater than 0.5 ppt — With a salinity greater than 0.5 pp	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area	
Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = Category I ONO - Go to SC 1.2)Cat. I
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions?	
— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less	Cat. I
than 10% cover of non-native plant species. (If non-native species are Spartina, see page 25)	
mowed grassland.	
— The wetland has at least two of the following features: tidal channels, depressions with open water, or	Cat. II
contiguous freshwater wetlands. OYes = Category I ONO = Category II	
SC 2.0. Wetlands of High Conservation Value (WHCV)	
SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High	Cat. I
SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?	,
Yes = Category I No = Not a WHCV	
SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland?	
http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf	
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? OYes = Category I ONo = Not a WHCV	
SC 3.0. Bogs	
below. If you answer YES you will still need to rate the wetland based on its functions	
SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or	
more of the first 32 in of the soil profile?	
SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep	
pond? $($ $($ $($ $($ $($ $)$	
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? Ves = Is a Category I bog No - Go to SC 3.4	
NOTE: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seens 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.)Cat. I
SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar,	
western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 20% of the sover under the same of the	
$\bigcirc Yes = Is a Category I bog (•) No = Is not a bog$	

SC 4.0. Forested Wetlands	
Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA	
Department of Fish and Wildlife's forests as priority habitats? If you answer YES you will still need to rate the wetland based on its functions	
— Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered	
canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of	
age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.	
— Mature forests (west of the Cascade Crest): Stands where the largest trees are 80-200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).	
Yes = Category I ONO = Not a forested wetland for this section	OCat. I
SC 5.0. Wetlands in Coastal Lagoons	
Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?	
— The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from	
marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks The langon in which the wetland is located contains ponded water that is saline or brackich (> 0.5 ppt)	
during most of the year in at least a portion of the lagoon (needs to be measured near the bottom)	OCat. I
Yes – Go to SC 5.1 No = Not a wetland in a coastal lagoon	U U
SC 5.1. Does the wetland meet all of the following three conditions?	
— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less	OCat. II
- At least % of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-	0
mowed grassland.	
— The wetland is larger than $1/_{10}$ ac (4350 ft ²)	
Yes = Category I No = Category I	
SC 6.0. Interdunal Wetlands	
Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? If	
you answer yes you will still need to rate the wetland based on its habitat junctions.	
— Long Beach Peninsula: Lands west of SR 103	
— Grayland-Westport: Lands west of SR 105	OCat I
— Ocean Shores-Copalis: Lands west of SR 115 and SR 109	-
Yes – Go to SC 6.1 No = not an interdunal wetland for rating	
SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the babitat functions on the form (rates H H H or H H M	Cat. II
for the three aspects of function)? $(A = Category I)$ ($A = Category I$) ($A = Category I)$ ($A = Category$	0
SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?	
$\bigcirc Yes = Category II \bigcirc No - Go to SC 6.3$	
SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? OYes = Category III ON = Category IV	
	OCat. IV
Category of wetland based on Special Characteristics	
If you answered No for all types, enter "Not Applicable" on Summary Form	



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Figure 1 Wetland B Cowardin Classification Map



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Figure 2 Wetland B Hydroperiods Map



Publish Date: 2020/11/10, 1:07 PM | User: jfox Filepath: \\orcas\GIS\Jobs\ABC_Recycling_2005\MarineDrive\Maps\Phase_II_EnvSamp\WetlandDelineationReport\WetlandRatingFigures\AQ_ABC_Recycling_Fig3_150FootBufferMap.mxd



Figure 3 Wetland B 150-Foot Buffer Map



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Figure 4 Wetland B 1-Kilometer Polygon Map



Publish Date: 2020/11/10, 1:25 PM | User: jfox Filepath: \\orcas\GIS\Jobs\ABC_Recycling_2005\MarineDrive\Maps\Phase_II_EnvSamp\WetlandDelineationReport\WetlandRatingFigures\AQ_ABC_Recycling_Fig5_ContributingBasinMap.mxd



Figure 5 Wetland B Contributing Basin Map



Publish Date: 2020/11/10, 1:31 PM | User: jfox Filepath: \\orcas\GIS\Jobs\ABC_Recycling_2005\MarineDrive\Maps\Phase_II_EnvSamp\WetlandDelineationReport\WetlandRatingFigures\AQ_ABC_Recycling_Fig6_303dListMap.mxd



Figure 6 Wetland B 303(d) Listed Waters Map



Publish Date: 2020/11/10, 1:32 PM | User: jfox Filepath: \\orcas\GIS\Jobs\ABC_Recycling_2005\MarineDrive\Maps\Phase_II_EnvSamp\WetlandDelineationReport\WetlandRatingFigures\AQ_ABC_Recycling_Fig7_TMDLsMap.mxd



Figure 7 Wetland B TMDLs by Basin Map

Wetland C Rating Forms

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland C (Marine Drive, Lehigh Cement) Date of site visit: 10/20/2020Rated 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 X 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 []] (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		ving Hydrologic Quality		Habitat					
					Circle	the ap	prop	riate ra	tings	
Site Potential	Н	M	L	H	Μ	L	Н	М		
Landscape Potential	H	М	L	Н	M	L	Н	М	Ū	
Value	Н	Μ		Н	Μ		Н	M	L	TOTAL
Score Based on Ratings		6			6			4		16

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

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

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (can be added to another figure)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	Н 2.1, Н 2.2, Н 2.3	
polygons for accessible habitat and undisturbed habitat		
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	Н 1.1, Н 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants	S 4.1	
(can be added to figure above)		
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including	H 2.1, H 2.2, H 2.3	
polygons for accessible habitat and undisturbed habitat		
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) 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).
- •N0 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**.

•N0 – 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. <u>Does the entire wetland unit **meet all** of the following criteria?</u>

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

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

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

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

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

D 2.0. Does the landscape have the potential to support the water quality function of the site?		
D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in quest Source <u>Active and historic</u> homeless encampments (human waste and garbage)	tions D 2.1-D 2.3? Yes = 1 No = 0	1
Total for D 2 Add the point	s in the boxes above	3

Rating of Landscape Potential If score is: $\boxed{\times}$ 3 or 4 = H $\boxed{1}$ 1 or 2 = M $\boxed{0}$ = L Record the rating on the first page

D 3.0. Is the water quality improvement provided by the site valuable to	o society?		
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, 303(d) list?	lake, or marine w	ater that is on the Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the	ne 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 (<i>answer YES if there is a TMDL for the basin in which the unit is found</i>)? Yes = 2 No = 0		0	
Total for D 3	Add the points	in the boxes above	0
Rating of Value If score is: 2-4 = H 1 = M 3 0 = L	Record the rat	ing on the first page	

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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. <u>Characteristics of surface water outflows from the wetland</u> : Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outletpoints = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	4
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part. Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	3
D 4.3. <u>Contribution of the wetland to storage in the watershed</u> : <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i> The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	5
Total for D 4Add the points in the boxes above	12
Rating of Site PotentialIf score is: \square 12-16 = H \square 6-11 = M \square 0-5 = LRecord 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 5Add the points in the boxes above	2
Rating of Landscape Potential If score is: $\boxed{3} = H$ $\boxed{\times} 1$ or $2 = M$ $\boxed{0} = L$ Record the rating on the	first page
D 6.0. Are the hydrologic functions provided by the site valuable to society?	
 D 6.1. <u>The unit is in a landscape that has flooding problems</u>. <i>Choose the description that best matches conditions around the wetland unit being rated. Do not add points. <u>Choose the highest score if more than one condition is met</u>. 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):</i> 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. <i>Explain why</i> <u>Wetland is a closed</u> points = 0 	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 6Add the points in the boxes above	0
Rating of Value If score is: $\Box 2-4 = H \Box 1 = M \times 0 = L$ Record the rating on the	first page

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS		
• Water Quality Functions - Indicators that the site functions to imp	prove water quality	
R 1.0. Does the site have the potential to improve water quality?		
R 1.1. Area of surface depressions within the Riverine wetland that can trap sediments during	a flooding event:	
Depressions cover $> 1/4$ 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, not Coward	in classes)	
Trees or shrubs $> \frac{2}{3}$ area of the wetland	points = 8	
Trees or shrubs $> 1/3$ 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	
Total for R 1Add 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 t	he first page
R 2.0. Does the landscape have the potential to support the water quality function of	the site?	
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 within the last 5 years?	t have been clearcut 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 que	stions R 2.1-R 2.4	
Other sources	Yes = 1 No = 0	
Total for R 2 Add the poi	nts in the boxes above	
Rating of Landscape Potential If score is: 3-6 = H 1 or 2 = M 0 = L	Record the rating on t	he first page
R 3.0. Is the water quality improvement provided by the site valuable to society?		
R 3.1. Is the wetland along a stream or river that is on the 303(d) list or on a tributary that dra	ins 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 path	ogens? Yes = 1 No = 0	
R 3.3. Has the site been identified in a watershed or local plan as important for maintaining w	ater quality? (answer	
YES if there is a TMDL for the drainage in which the unit is found)	Yes = 2 No = 0	

Total for R 3

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

Record the rating on the first page

Add the points in the boxes above

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS		
Hydrologic Functions - Indicators that site functions to reduce flooding and stream erosion		
R 4.0. Does the site have the potential to reduce flooding and erosion?		
R 4.1. Characteristics of the overbank storage the wetland provides:		
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: (c	average width of wetland)/(average	
width of stream between banks).		
If the ratio is more than 20	points = 9	
If the ratio is 10-20	points = 6	
If the ratio is 5-<10	points = 4	
If the ratio is 1-<5	points = 2	
If the ratio is < 1	points = 1	
R 4.2. Characteristics of plants that slow down water velocities during floods: 7	reat large woody debris as forest or	
shrub. Choose the points appropriate for the best description (polygons r	need to have >90% cover at person	
height. These are <u>NOT Cowardin</u> classes).		
Forest or shrub for $>^{1}/_{3}$ area OR emergent plants $>^{2}/_{3}$ area	points = 7	
Forest or shrub for $> 1/_{10}$ area OR emergent plants $> 1/_{3}$ area	points = 4	
Plants do not meet above criteria	points = 0	
Total for R 4	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 th	e first page
R 5.0. Does the landscape have the potential to support the hydrologic f	unctions of the site?	
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	
Total for R 5	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 th	e first page
R 6.0. Are the hydrologic functions provided by the site valuable to socie	ety?	
R 6.1. Distance to the nearest areas downstream that have flooding problems?		
Choose the description that best fits the site.		
The sub-basin immediately down-gradient of the wetland has flooding or	oblems 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	
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		
Total for R 6	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

LAKE FRINGE WETLANDS		
Water Quality Functions - Indicators that the site functions to i	mprove water quality	
L 1.0. Does the site have the potential to improve water quality?		
L 1.1. Average width of plants along the lakeshore (use polygons of Cowardin classes):		
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	
L 1.2. Characteristics of the plants in the wetland: Choose the appropriate description that points, and do not include any open water in your estimate of coverage. The herbace the dominant form or as an understory in a shrub or forest community. <i>These are no</i> of cover is total cover in the unit, but it can be in patches. Herbaceous does not includ Cover of herbaceous plants is >90% of the vegetated area Cover of herbaceous plants is > $^2/_3$ of the vegetated area Cover of herbaceous plants is > $^1/_3$ of the vegetated area Other plants that are not aquatic hed > $^2/_3$ unit	results in the highest eous plants can be either t Cowardin classes. Area e aquatic bed. points = 6 points = 4 points = 3	
Other plants that are not aquatic bed $> 7_3$ unit Other plants that are not aquatic bed in $> 1/_3$ vegetated area Aquatic bed plants and open water cover $> 2/_3$ of the unit	points = 3 points = 1 points = 0	
Total for L 1 Add the p	oints in the boxes above	
Rating of Site Potential If score is: $28-12 = H$ $24-7 = M$ $20-3 = L$	Record the rating on the first page	е

L 2.0. Does the landscape have the potential to support the water quality function of the site?	
L 2.1. Is the lake used by power boats?	Yes = 1 No = 0
L 2.2. Is > 10% of the area within 150 ft of wetland unit on the upland side in land uses that generate pollutants?	
	Yes = 1 No = 0
L 2.3. Does the lake have problems with algal blooms or excessive plant growth s	such as milfoil? Yes = 1 No = 0
Total for L 2	Add the points in the boxes above
Rating of Landscape Potential: If score is: 2 or 3 = H 1 = M 0 = L	Record the rating on the first page

L 3.0. Is the water quality improvement provided by the site valuable	to society?	
L 3.1. Is the lake on the 303(d) list of degraded aquatic resources?	Yes = 1 No = 0	
L 3.2. Is the lake in a sub-basin where water quality is an issue (at least one a 303(d) list)?	quatic resource in the basin is on the Yes = 1 No = 0	
L 3.3. Has the site been identified in a watershed or local plan as important f if there is a TMDL for the lake or basin in which the unit is found.	or maintaining water quality? Answer YES Yes = 2 No = 0	
Total for L 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 th	ne first page

LAKE FRINGE WETLANDS		
Hydrologic Functions - Indicators that the wetland unit functions to rec	luce shoreline erosi	on
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 (do not in <i>Choose the highest scoring description that matches conditions in the wetland.</i>	clude Aquatic bed):	
> 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 point of th		he 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 th	he 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 res choose the one with the highest score.	ource is present,	
There are human structures or old growth/mature forests within 25 ft of OHWM of the sho	ore 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: (a 1% slope has a 1 ft vertical dr 100 ft of horizontal distance)	op in elevation for every	
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. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS d	efinitions): 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. Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.		
Dense, uncut, herbaceous plants > 90% of the wetland area	points = 6	
Dense, uncut, herbaceous plants > ½ of area	points = 3	
Dense, woody, plants > $\frac{1}{2}$ 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: \Box 12 = H \Box 6-11 = M \Box 0-5 = LRecord 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 g	generate pollutants? Yes = 1 No = 0	
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in c	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: $\Box 1-2 = M \Box 0 = L$ 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 mar 303(d) list?	ine water that is on the Yes = 1 No = 0	
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? At least one aquatic resource in the basin is on the 303(d) list. Yes = 1 No = 0		
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining <i>if there is a TMDL for the basin in which unit is found.</i>	g water quality? Answer YES 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

SLOPE WETLANDS	
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 th for the description that best fits conditions in the wetland. <i>Stems of plants should be thick</i> <i>in), or dense enough, to remain erect during surface flows.</i> Dense, uncut, rigid plants cover > 90% of the area of the wetland All other conditions	the points appropriate x enough (usually > 1/8) points = 1 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 ge surface runoff?	enerate excess Yes = 1 No = 0
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 dam	nage to human or
natural resources (e.g., houses or salmon redds) Surface flooding problems are in a sub-basin farther down-gradient No flooding problems anywhere downstream	points = 2 points = 1 points = 0
S 6.2. Has the site been identified as important for flood storage or flood conveyance in a region	al flood control plan? Yes = 2 No = 0
Total for S 6 Add the point:	s in the boxes above
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. Aquatic bed 4 structures or more: points = 4 Emergent 3 structures: points = 2 X Scrub-shrub (areas where shrubs have > 30% cover) 2 structures: points = 1 Forested (areas where trees have > 30% cover) 1 structure: points = 0 If the unit has a Forested class, check if: The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover)	0
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).	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft ² . Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle If you counted: > 19 species points = 2 5 - 19 species points = 1 < 5 species	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. <i>If you</i> <i>have four or more plant classes or three classes and open water, the rating is always high.</i> None = 0 points All three diagrams in this row are HIGH = 3points	1

H 1.5. Special habitat features:		
Check the habitat features that are present in the wetland. The number of checks is the number of points.		
X Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long).		
Standing snags (dbh > 4 in) within the wetland		
Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)		
Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed)		
At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated <i>(structures for egg-laying by amphibians)</i>		
X Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)		
Total for H 1Add the points in the boxes above	5	
Rating of Site Potential If score is: \square 15-18 = H \square 7-14 = M \boxtimes 0-6 = LRecord the rating on the first page		
H 2.0. Does the landscape have the potential to support the habitat functions of the site?		
H 2.1. Accessible babitat (include only babitat that directly abuts wetland unit)		

H 2.1. Accessible habitat (include only habitat that directly abuts wetland unit).	
Calculate: 3 % undisturbed habitat $4 + [(\% \text{ moderate and low intensity land uses})/2] 2 = 5\%$	
If total accessible habitat is:	
> ¹ / ₃ (33.3%) of 1 km Polygon points = 3	0
20-33% of 1 km Polygon points = 2	
10-19% of 1 km Polygon points = 1	
< 10% of 1 km Polygon points = 0	
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland.	
<i>Calculate:</i> 44 % undisturbed habitat $4 + [(\% \text{ moderate and low intensity land uses})/2] 2 = 46\%$	
Undisturbed habitat > 50% of Polygon points = 3	1
Undisturbed habitat 10-50% and in 1-3 patches points = 2	
Undisturbed habitat 10-50% and > 3 patches points = 1	
Undisturbed habitat < 10% of 1 km Polygon points = 0	
H 2.3. Land use intensity in 1 km Polygon: If	
> 50% of 1 km Polygon is high intensity land use points = (- 2)	-2
≤ 50% of 1 km Polygon is high intensity points = 0	
Total for H 2 Add the points in the boxes above	-1
Rating of Landscape Potential If score is: $4-6 = H$ $1-3 = M$ $\times < 1 = L$ Record the rating on the first	

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

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015

WDFW Priority Habitats

<u>Priority habitats listed by WDFW</u> (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. <u>http://wdfw.wa.gov/publications/00165/wdfw00165.pdf</u> or access the list from here: <u>http://wdfw.wa.gov/conservation/phs/list/</u>)

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

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

Wetland Rating System for Western WA: 2014 Update Rating Form – Effective January 1, 2015 Wetland name or number <u>C</u>

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.	
SC 1.0. Estuarine wetlands	
Does the wetland meet the following criteria for Estuarine wetlands?	
— The dominant water regime is tidal,	
$-$ Vegetated, and $-$ With a salinity greater than 0.5 ppt $-$ Wes -Go to SC 1.1 \bullet No= Not an estuarine wetland	
SC 1.1 Is the wetland within a National Wildlife Perfuge National Park, National Ectuary Resource, Natural Area	
Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = Category I No - Go to SC 1.2	OCat. I
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions?	
— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less	
than 10% cover of non-native plant species. (If non-native species are <i>Spartina</i> , see page 25)	Ocat. I
— At least % of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-	
— The wetland has at least two of the following features: tidal channels, depressions with open water, or	OCat. II
contiguous freshwater wetlands. OYes = Category I ONo = Category II	
SC 2.0. Wetlands of High Conservation Value (WHCV)	
SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High	
Conservation Value? OYes – Go to SC 2.2 No – Go to SC 2.3	OCat. I
SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?	
SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland?	
http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf	
Yes – Contact WNHP/WDNR and go to SC 2.4 ONO = Not a WHCV	
SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on	
SC 2 0 Bors	
Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key	
below. If you answer YES you will still need to rate the wetland based on its functions.	
SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or	
more of the first 32 in of the soil profile? Yes – Go to SC 3.3 ONo – Go to SC 3.2 SC 3.2 Does an area within the worland unit have arganic soils, either pasts or mucks, that are less than 16 in deen	
over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or	
pond? OYes – Go to SC 3.3 No = Is not a bog	
SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30%	
cover of plant species listed in Table 4? $($ $)$ Yes = Is a Category I bog $($ $)$ No – Go to SC 3.4	
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.	Cat. I
SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar,	
western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the	
species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? \bigcirc Yes = is a Category I hog \bigcirc No = is not a hog	

SC 4.0. Forested Wetlands	
Does the wetland have at least <u>1 contiguous acre</u> of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? <i>If you answer YES you will still need to rate</i> <i>the wetland based on its functions.</i>	
— Old-growth forests (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.	
— Mature forests (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).	
Yes = Category I No = Not a forested wetland for this section	OCat. I
SC 5.0. Wetlands in Coastal Lagoons	
Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks	
— The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (needs to be measured near the bottom) OYes – Go to SC 5.1 ONO = Not a wetland in a coastal lagoon	OCat. I
SC 5.1. Does the wetland meet all of the following three conditions?	
— The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less	
than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).	
— At least % of the landward edge of the wetland has a 100 ft buffer of shrub, forest, of un-grazed of un-	
— The wetland is larger than $1/_{10}$ ac (4350 ft ²)	
Yes = Category I •No = Category I	
SC 6.0. Interdunal Wetlands	
Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? If	
you answer yes you will still need to rate the wetland based on its habitat functions.	
In practical terms that means the following geographic areas:	
Long Beach Peninsula: Lands West of SR 103 Crouland Westmerty Lands west of SR 105	
Graynand-Westport: Lands west of SR 105 Grayn Shores-Conalis: Lands west of SR 115 and SR 109	Jean
$\bigcirc Yes - Go to SC 6.1 \bigcirc No = not an interdunal wetland for rating$	
SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? OYes = Category I • No – Go to SC 6.2	OCat. II
SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = Category II ONO – Go to SC 6.3	OCat. III
SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = Category III \bigcirc No = Category IV	OCat. IV
Category of wetland based on Special Characteristics	
If you answered No for all types, enter "Not Applicable" on Summary Form	



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Figure 1 Wetland C Cowardin Classification Map



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Figure 2 Wetland C Hydroperiods Map



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Figure 3 Wetland C 150-Foot Buffer Map



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Figure 4 Wetland C 1-Kilometer Polygon Map



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Figure 5 Wetland C Contributing Basin Map


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Figure 6 Wetland C 303(d) Listed Waters Map

Wetland Delineation and Critical Areas Report Marine Drive Proposed Development Project



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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





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











October 2023 Marine Drive Facility Development Project



Mitigation Plan

Prepared for ABC Recycling

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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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).

Classification			Wetland	Total Wetland Area	
Wetlands	USFWS	HGM	Rating ¹	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		4,577	0.11
Total Area of Wetlands				204,855	4.71

Table 1Wetlands Delineated Within the Wetland Delineation Study Area

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 scrubshrub 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.

Wetland	2014 ¹ State Rating (Ecology)	Local Rating ² (Whatcom County)	Ecology Habitat Rating Score	Low-Intensity Land Use Buffer Width (feet) ²	High-Intensity Land Use Buffer Width (feet) ²
Wetland A	IV	IV	4	-	50
Wetland B		111	5	-	150
Wetland C		Ш	4	50	-

Table 2Wetland Rating and Standard Buffer Widths

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, scrubshrub, 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

- Anchor QEA (Anchor QEA, LLC), 2023. ABC Recycling Marine Drive Proposed Development Project Wetland Delineation and Critical Areas Report. Prepared for ABC Recycling. October 2023.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe, 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. Washington, D.C.: U.S. Fish and Wildlife Service.
- Ecology (Washington State Department of Ecology), 2019. *Stormwater Management Manual for Western Washington*. Publication No. 19-10-021. Olympia, Washington.
- Ecology, 2023. Ecology Find Your WRIA. Accessed October 16, 2023. Available at: https://ecology.wa.gov/Water-Shorelines/Water-supply/Water-availability/Watershed-look-up.
- Hruby, T., 2014. *Washington State Wetland Rating System for Western Washington: 2014 Update.* Prepared for Washington State Department of Ecology. October 2014.
- USDA (U.S. Department of Agriculture), 2023. Natural Resource Conservation Service (NRCS) Web Soil Survey. Accessed October 19, 2023. Available at: http://websoilsurvey.nrcs.usda.gov/app.
- WDFW (Washington Department of Fish and Wildlife), 2023. SalmonScape. Accessed October 19, 2023. Available at: http://apps.wdfw.wa.gov/salmonscape/.
- Whatcom County, 2018. Whatcom County, Washington 2018 Stormwater Management Program. Available at: https://www.whatcomcounty.us/DocumentCenter/View/34217/2018_SWMP_Report.

Figures



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Figure 1 Vicinity Map Mitigation Plan Marine Drive Facility Development Project



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Figure 2 Site Aerial Photograph/Existing Conditions Mitigation Plan Marine Drive Facility Development Project



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Figure 3 Proposed Project

Mitigation Plan Marine Drive Facility Development Project



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Figure 4 **Existing Topography** Mitigation Plan Marine Drive Facility Development Project



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Figure 5 **Mapped Soils** Mitigation Plan Marine Drive Facility Development Project





Figure 6 Hydrologic Setting Mitigation Plan Marine Drive Facility Development Project
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Figure 7 **Existing Vegetation Communities** Mitigation Plan Marine Drive Facility Development Project

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



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Appendix A Avoidance Scenarios











Appendix B-1 Planting Plan, Schedule, and Details



	PLANTING SCHEDULE								
	COMMON NAME	SPECIES NAME	SIZE	SPACING	QUANTITY	REMARKS			
	NATIVE TREES								
	Red alder	Alnus rubra	2 gal.	As Shown	4				
	Big-leaf maple	Acer macrophyllum	2 gal.	As Shown	3	$\left(1 \right)$			
	Shore Pine	Pinus contorta var. contorta	2 gal.	As Shown	2				
	Western red cedar	Thuja plicata	2 gal.	As Shown	3				
•	NATIVE SHRUBS AND GROUNDCOVER								
ſ	Salal	Gaultheria shallon		6' O.C.	13	PLANT IN EQUAL MIX OF			
	Snowberry	Symphoricarpos albus	1 gal.	6' O.C.	13	3 TO 5 PLANTS PER			
<u> </u>	Nootka rose	Rosa nutkana	1 gal.	6' O.C.	13	GROUP			
	Indian plum	Oemleria cerasiformis	1 gal.	6' O.C.	13	$\left \begin{array}{c} 1 \\ 1 \\ \end{array} \right $			
	Coastal strawberry	Fragaria chiloensis	4 inch pot	4' O.C.	30	$\left(\begin{array}{c} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{array}\right)$			
L	Kinnikinnick	Arctostaphylos uva-ursi	4 inch pot	4' O.C.	30				
		•	•			•			



1. Refer to planting guidelines for topsoil and mulch placement within planting area.



1 SMALL TREE OR SHRUB PLANTING DETAIL – SECTION



2 <u>
TYPICAL GROUNDCOVER PLANTING DETAIL</u>
<u>
SCALE: NOT TO SCALE</u>



PLANT LOCATION





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



5 ft

2 ft



Appendix B-2 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

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

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:

Screen Size	Percent Passing
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%

- 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 exiting 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 6inch 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.

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 by done by written permission by the

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.

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_2O_5), and 8.00% soluble potash (K_20). 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%
Microbial Nutrients Inert Ingredients	39.4% 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.

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.

- 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.

- 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

Whatcom County Planning and Development Services 5280 Northwest Drive Bellingham, WA 98226-9097 360-778-5900 TTY 800-833-6384 360-778-5901 Fax



Critical Areas Mitigation Bond Quantity Worksheet

Date: 10/23/2023
Project Name: Marine Drive Facility Development Project Number:

 Applicant:
 ABC Recycling

 Phone:
 360-389-8138

 Image: Location:
 741 Marine Drive Road, Bellingham, WA

 Project Description:
 Mitigation Plan

PLANT MATERIALS (includes labor cost for plant installation	1)	4				
Туре	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		¢	508.00
PLANTS: Container, 1 gallon, medium soli	11.50	Each	52.00		\$	398.00
PLANTS: Container, 2 gallon, medium soli	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
		•	•	Sub Total	\$	958.00
INSTALLATION COSTS (additional labor equipment & over	head)					
The state of the second st	Ticad)			Description		
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				¢	
Labor, general (construction)	40.00		16.00		¢	6 4 0 0 0
	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	ЦВ	8.00		¢	2 000 00
	250.00		0.00		÷	2,000.00
	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
		-		Sub Total	\$	4.673.78
HARITIAT STRUCTURES (includes delivery & installation)					<u> </u>	.,
HADITIAT STRUCTURES (Includes derivery & Installation)	1	1	1			
Туре	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 20' long	245.00	Lach			φ ¢	
Logs w root wads, ro -24 diam., so 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 dobris Jargo	2,000.00	Each			¢	
	103.00	Each			\$	
Snags - anchored	400.00	Each			\$	-
Snags - on site	50.00	Each			\$	-
Snags - imported	800.00	Each			\$	-
				Sub Total	\$	-
EROSION CONTROL				<u>.</u>		
Tuno	Unit Cost	Unit	Quantity	Description	-	Cost
Type	Unit COSt	Unit	Quantity	Description	-	COSI
	4.89	CY			\$	-
crusned 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 24	<u>-</u> sv			\$	
Mulch by hand straw 2" deep	1.20	51			4	
Mulch, by hand, straw, 2 deep	1.27	SI			٦ \$	-
Muich, by hand, wood chips, 2 ^e 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	<u>ا_</u> ۷۷			\$	
Rin Ran machine placed slopes	2.00	01			¢	_
Dook Constr. Entropos 1001:451:41	33.98				Þ	
RUCK CONST. 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/spillwav incl. riprap	59.60	I F			\$	-
Sodding 1" deep level ground	E 24	ev			\$	
Sodding 1" doop, cloned ground	5.24	51			ф Ф	
	6.48	51			\$	-
Straw bales, place and remove	600.00	TON			\$	-
Hauling and disposal	20.00	CY	80.00		\$	1,600.00
Tonsoil delivered and spread	35 73	CV	80.00		\$	2 858 10

Topsoil, delivered and spread	35.73	CY	80.00		\$	2,858.40	
				Sub Total	\$	4,458.40	
GENERAL ITEMS							
Туре	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	
				Sub Total	\$	97.00	
MAINTENANCE, ANNUAL (by owner or consultant)							
Туре	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)	\$	-	
Sub Total						3,600.00	
MONITORING, ANNUAL (by owner or consultant)							
Туре	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)	\$	-	
				Sub Total	\$	3,600.00	
				PROJECT COST	\$	17,387.18	
				25% CONTINGENCY	\$	4,346.80	
				TOTAL	\$	21,733.98	