BergerABAM

WETLAND AND STREAM DELINEATION AND ASSESSMENT

Discovery Clean Water Alliance

Columbia River Outfall and Effluent Pipeline Project

Prepared for

Discovery Clean Water Alliance
8000 NE 52nd Court
Vancouver, Washington 98665

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1.0 INTRODUCTION

The Discovery Clean Water Alliance (Alliance) seeks to construct and operate a capital improvement project, the Columbia River outfall and effluent pipeline project (project). In anticipation of future project planning and development, this assessment determined the existence and extent of jurisdictional wetlands and waterbodies within the project study area as they are defined and regulated by the U.S. Army Corps of Engineers (USACE), the Washington State Department of Ecology (Ecology), and Clark County (County). Our services were completed in general accordance with our subcontract agreement with the lead consultant, CH2M on 20 July 2015, as amended.

The project involves constructing approximately 7,200 linear feet of a 48-inch-diameter pipeline that will transport and discharge treated effluent from the Salmon Creek Wastewater Treatment Plant (treatment plant) located at 15100 NW McCann Road in Clark County (parcel number 183508-000) across agricultural and floodplain areas adjacent to the Columbia River and discharge the effluent to the Columbia River (see Figure 1; all figures are included in Appendix A).

The linear study area includes lands either side of the existing outfall pipe and either side of a network of existing agricultural access roads within the eastern portion of the study area, known as the Curtis Lake Ranch (parcel numbers 191176-000, 191067-000, 183058-000, and 183494-000), and 200 feet on either side of the existing outfall pipe on the Fazio property (parcel number 191177-000) in the western portion of the study area (see Figure 2 for tax lot information). The linear study area is located in rural Clark County in the northern half of Section 24, Township 03 North, Range 01 West and the northern half of Section 19, Township 03 North, Range 01 East of the Willamette Meridian.

The portion of the study area that includes the Fazio property is being considered for restoration as a habitat conservation mitigation bank known as the Round Lake Conservation Bank. As part of the permitting process for the mitigation bank, a wetland delineation was conducted then submitted to and approved by the USACE and County in summer/fall 2015. This delineation report uses the same approved wetland boundaries for the Fazio property and includes four palustrine emergent wetlands within the study area. Appendix E contains the previously prepared wetland delineation report, wetland delineation addendum, and jurisdictional determination letter for this portion of the study area.

The remaining portions of the study area were delineated by two BergerABAM wetland scientists, and included two palustrine wetlands, one palustrine emergent/scrub-

shrub/forested wetland, and one palustrine forested wetland, as well as the ordinary high water mark (OHWM) of portions of the Columbia River, Lake River, and Salmon Creek within the study area. Additionally, the scientists documented any priority habitats or species observed within the study area. The following sections describe the delineation methods and results.

2.0 METHODS

2.1 Wetland Delineation Methods

The BergerABAM wetland scientists visited the project study area on 27 August 2015 and 7 September 2017 to determine the existence and extent of jurisdictional wetlands and waterbodies within the study area. Guidance for the wetland delineation came from the USACE 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2* (the regional supplement) (USACE 2010). The regional supplement defines wetlands as

> *… areas that are inundated or saturated by surface or ground water 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 regional supplement uses three parameters in making wetland determinations: hydrophytic vegetation, hydric soils, and wetland hydrology.

- Hydrophytic vegetation consists of plants that, because of morphological, physiological, and/or reproductive adaptations, have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions.
- Hydric soils are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions.
- Wetland hydrology is present when an area is inundated, or the water table is within 12 inches of the surface, for at least 14 or more consecutive days of the growing season at a minimum frequency of 5 years in 10. The growing season is defined as the portion of the year when soil temperature at 19.7 inches below the soil surface is greater than biological zero (5 degrees C).

Except in atypical situations as defined in the regional supplement, evidence of a minimum of one positive wetland indicator from each of the three parameters (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination.

The BergerABAM scientists used the routine on-site wetland delineation method and the following additional information to develop a preliminary indication of where potential wetlands might exist, and to aid on-site data collection.

- Clark County GIS mapper MapsOnline
- Updated National Wetland Plant List (Lichvar et al. 2014)
- National Wetlands Inventory (NWI) Online Mapper (U.S. Fish and Wildlife Service [USFWS] 2017a); accessed at http://www.fws.gov/wetlands/Wetlands-Mapper.html
- Soil Survey of Clark County, Washington (McGee 1972) (U.S. Department of Agriculture Natural Resources Conservation Service [USDA-NRCS])
- Washington State Wetland Rating System for Western Washington—Revised (Hruby 2014)
- Preliminary Monthly Climate Data: Vancouver, Washington (National Weather Service, National Oceanic and Atmospheric Administration [NOAA]), accessed at http://w2.weather.gov/climate/index.php?wfo=PQR
- Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1 (Environmental Laboratory 1987)

During the site visit, the scientists used the methodology discussed in the regional supplement and technical guidance and documentation issued by the USACE and Ecology.

The scientists walked the study area to observe any visible wetland conditions. Once the scientists had identified the general location of a wetland area, they took paired data plots in areas that represented the upland and wetland conditions. They chose plots in uniform topographic positions that represented a single plant community and inspected soils at each sample plot to determine the presence or absence of hydric soil characteristics and wetland hydrologic indicators.

The wetland boundaries were determined based on the presence of hydric soils and wetland hydrology (e.g., oxidized rhizospheres along living roots, etc.) and a dominance of hydrophytic vegetation. It should be noted that, while only paired plots were recorded in the field, additional unrecorded plots were dug to confirm wetland boundaries. The on-site wetlands were classified according to the USFWS classification system (Cowardin et al. 1979) and the hydrogeomorphic (HGM) classification system (Brinson 1993).

During the site visit, the scientists recorded vegetation, soil, and hydrologic conditions at twelve sample plots. The wetland boundaries and sample plots were marked in the field with pink pin flags. Otak Inc. provided a professional land survey of the wetland flags and sample plots in 2015, and BergerABAM scientists recorded the locations of wetland boundaries and sample plots during the 2017 delineation with a hand-held GPS unit.

2.2 Ordinary High Water Mark Delineation Methods

During site visits on 26 August 2015 and 7 and 20 September 2017, two BergerABAM scientists marked the OHWM of portions of the eastern bank of the Columbia River, the eastern and western banks of Lake River, and the northern and southern banks of Salmon Creek within the study area. The OHWM was used to determine jurisdictional limits rather than mean high water line or high tide line, which can be used to delineate tidal fresh waters.

The OHWM is defined as:

> *… that mark…found by examining the bed and banks of a body of water and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or Washington Department of Ecology (Ecology); Provided that in any area where the OHWM cannot be found, ….. the OHWM adjoining fresh water shall be the line of mean higher water.*[1]

During the assessment, the OHWMs of the streams were marked in the field with blue flagging. Guidance for the OHWM determination came from *Determining the Ordinary High Water Mark of Streams in Washington State* (Ecology 2010) during the 2015 fieldwork and *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State* (Ecology 2016) during the 2017 fieldwork. The scientists used a combination of field indicators (e.g., vegetation distribution, sediment lines on vegetation or other fixed objects, scour lines, etc.) to determine the OHWM.

2.3 Columbia River Ordinary High Water Line Determination

Hydrologic data from the USACE includes established historical ordinary high water level (OHWL) elevations for the Columbia River at each river mile from the mouth of the river to the Bonneville Dam. The OHWL elevations are used to determine the limits of USACE jurisdiction under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. The USACE provides the OHWL elevations in Columbia River Datum (CRD), National Geodetic Vertical Datum of 1929 (NGVD 29), and North American Vertical Datum of 1988 (NAVD 88). The elevations represented in Table 1 below represent the same physical vertical OHWL elevation on the riverbank, but differ based on the vertical control datum used to establish the base mean sea level. This information can also be useful as a reference when determining the OHWM.

Table 1 summarizes the USACE-established ordinary high water elevations River Mile 69, which is adjacent to the study area.

[1] Revised Code of Washington 90.58.030(2)(b) and Washington Administrative Code 173-22-030(6)

Table 1. OHWL and 100-Year Flood Elevations

River Mile	Ordinary High Water Level Elevations		
	CRD	NGVD 29	NAVD 88
RM 69	14.40	15.53	18.74

The USACE-established elevation is not used to determine the shoreline jurisdiction and is provided as a reference and for use during the USACE permitting activities. Any work below the biological OHWM and/or USACE-established OHWL elevation requires authorization from Ecology and USACE respectively.

3.0 SITE CHARACTERISTICS

The study area begins at the treatment plant at 15100 NW McCann Road in Clark County, traverses agricultural and floodplain areas adjacent to the Columbia River, and ends at the location of the existing outfall in the Columbia River. The study area is used for livestock grazing and other agricultural activities. The topography of the study area is relatively flat (Figure 3) and includes several wetlands and waterbodies such as the Columbia River, Salmon Creek, Lake River, Curtis Lake, Round Lake, Green Lake, etc.

3.1 Hydrology

The growing season for Clark County (Vancouver Station) is 331 days, starting on 11 February and ending on 1 December. This growing season is based on 28 degrees F, 5 out of 10 years, in the Soil Survey of Clark County, Washington (McGee 1972). In this area, to be classified as a wetland, soils must be continuously saturated for 17 days during the growing season.

Precipitation data from the National Weather Service station at Vancouver Pearson Airport (NOAA 2017), approximately 9 miles south of the site, shows that 0.02 inch of precipitation was recorded for the 14 days preceding the 27 August 2015 site visit, and 0.09 inch of precipitation was recorded for the 14 days preceding the 7 September 2017 site visit. Table 2 display precipitation data for these periods.

Table 2. Precipitation Data for 27 August 2015 Site Visit and Two Weeks Prior in Inches*

Date	Inches	Date	Inches
8/14	0.02	8/21	0.00
8/15	0.00	8/22	0.00
8/16	0.00	8/23	0.00
8/17	0.00	8/24	0.00
8/18	0.00	8/25	0.00
8/19	0.00	8/26	0.00
8/20	0.00	8/27	0.00
		Total	0.02

*Vancouver Pearson Airport, Vancouver, WA (NOAA 2017)

Table 3. Precipitation Data for 7 September 2017 Site Visit and Two Weeks Prior in Inches*

Date	Inches	Date	Inches
8/25	0.00	9/1	0.00
8/26	0.00	9/2	0.00
8/27	0.00	9/3	0.00
8/28	0.00	9/4	0.00
8/29	0.00	9/5	0.00
8/30	0.00	9/6	0.00
8/31	0.00	9/7	0.09
		Total	0.09

*Vancouver Pearson Airport, Vancouver, WA (NOAA 2017)

The percent normal precipitation for the water year through the dates of fieldwork was obtained by comparing the observed precipitation for the water year in inches (NOAA 2017) to the average precipitation for the water year as provided by the WETS table for the Vancouver Pearson Airport (USDA-NRCS 2017a). The water year is a period of 12 months for which precipitation totals are measured and is typically defined as the period between 1 October of one year and 30 September of the next year (U.S. Geological Survey 2011). The percent of normal precipitation for the water year through the first and second dates of fieldwork are shown in Table 4 and 5.

Table 4. Percent of Normal Precipitation for Water Year through 27 August 2015 Site Visit

Field Date	Observed Precipitation for Water Year (inches) [a]	Average Precipitation for Water Year (inches) [b]	Percent Average Precipitation
27 August 2015	30.23	39.08 (October to July) + 0.93 (August 1-27) = 40.01	75.56

[a] Water year based on October 1 start date (NOAA 2017).

[b] Average precipitation October 1, 2014 to August 27, 2015 (USDA-NRCS 2017a). Estimated August precipitation was calculated by dividing the average precipitation for August by 31 days in the month and multiplying by 27 days.

Table 5. Percent of Normal Precipitation for Water Year through 7 September 2017 Site Visit

Field Date	Observed Precipitation for Water Year (inches) [a]	Average Precipitation for Water Year (inches) [b]	Percent Average Precipitation
7 September 2017	48.98	37.58 (October to August) + 0.35 (September 1-7) = 37.93	129

[a] Water year based on October 1 start date (NOAA 2017).

[b] Average precipitation October 1, 2014 to 7 September 2017 (USDA-NRCS 2017a). Estimated August precipitation was calculated by dividing the average precipitation for September by 30 days in the month and multiplying by 7 days.

The amounts of precipitation for the 3 months prior to the 27 August 2015 and 7 September 2017 site visits were all below average (Table 6 and 7). The wetland delineation methods were not affected by these patterns because the portions of the study area identified as wetlands still displayed indicators of wetland hydrology.

Table 6. Observed versus Average Precipitation for Three Months Preceding August 2015 Field Investigations

Month	Observed Precipitation for Month (inches) [a]	Average Precipitation for Month (inches) [b]	Above or Below Average?
June 2015	0.6	1.73	Below
July 2015	0.36	0.80	Below
August 1-27, 2015	0.01	0.93[c]	Below

[a] NOAA 2015.
[b] USDA-NRCS 2017a.
[c] Estimated Average Precipitation for August 1-27 determined by dividing monthly value by 31 days in the month and multiplying by 27 days.

Table 7. Observed versus Average Precipitation for Three Months Preceding September 2017 Field Investigations

Month	Observed Precipitation for Month (inches) [a]	Average Precipitation for Month (inches) [b]	Above or Below Average?
June 2017	1.24	1.79	Below
July 2017	Trace	0.69	Below
August 2017	0.01	0.74	Below
September 1-7	0.00	0.37	Below

[a] NOAA 2015.
[b] USDA-NRCS 2017a.
[c] Estimated Average Precipitation for September 2017 determined by dividing monthly value by 30 days in the month and multiplying by 7 days.

During the site investigations, the scientists documented the presence or absence of wetland hydrology field indicators for each of the soil pits excavated in the sample plots. The data recorded all primary and secondary indicators of wetland hydrology, including oxidized rhizospheres along living roots and geomorphic position, among others. The primary sources of hydrology within the study area are likely direct precipitation, runoff from surrounding uplands, and a seasonally high water table.

3.2 Wetlands

The scientists performed an in-office review of potential wetlands at the site using the USFWS NWI Wetlands Mapper, the County's GIS online database, and the previously prepared wetland delineation report and addendum for the Round Lake Conservation Bank in the western portion of the study area (Appendix E). The USACE jurisdictional determination letter for the Round Lake report is also included as part of Appendix E.

3.2.1 National Wetlands Inventory Wetlands

The NWI was reviewed for potential wetland areas identified by the USFWS (USFWS 2017a). The NWI identified the following wetland types within the vicinity of the study area:

- ***Riverine wetlands:*** Include Salmon Creek, Lake River, and Columbia River. These are contained in natural or artificial channels that periodically or continuously contain flowing water that forms a link between two bodies of water.

- ***Freshwater emergent wetlands:*** Include Curtis Lake, Round Lake, and several unnamed wetlands throughout the site. These are non-tidal wetlands such as herbaceous marshes that are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. The vegetation is present for most of the growing season in most years, and is usually dominated by perennial plants.
- ***Freshwater forested/shrub wetlands:*** Located in the central and western portions of the site, as well as along the shore of the Columbia River. These are non-tidal wetlands such as forested swamps that are generally characterized by woody vegetation that is 20 feet (6 meters) tall or taller.
- ***Freshwater pond:*** Located west of the BNSF tracks and north of Salmon Creek. These are non-tidal wetlands that do not have an active wave-forming or bedrock shoreline feature and have a water depth of less than 6.5 feet (2 meters) in the deepest part of the basin.

  Field observations of the wetlands within the study area were generally consistent with the NWI. See Figure 4 more information.

3.2.2 Clark County Maps Online Wetland Inventory

The Clark County MapsOnline database was also reviewed for any modeled wetlands within the study area (Clark County 2017). The modeled wetlands are predicted by a GIS model that uses key data sources, including LIDAR (a remote sensing technology) elevations, infrared photography, soil characteristics, and hydrologic characteristics. The County GIS online database includes similar wetland mapping with regard to wetlands associated with Lake River and Salmon Creek; however, the database does not include Curtis Lake or Round Lake as wetland areas. Discrepancies between the two sources generally involve depressional wetlands. Field observations were generally consistent with the NWI database; however, NWI did not identify Wetland E, the northern extent of Wetland A, or the southern extent of Wetland B, which are all described in this report, nor did it identify Wetlands F, Q, or W as originally delineated in the delineation report completed for the Round Lake Conservation Bank (AECOM 2013).

3.2.3 Round Lake Conservation Bank Wetland Delineation Report and Addendum

The wetland delineation report completed for the study area of the Round Lake Conservation Bank was reviewed to examine identified wetlands at the site (AECOM 2013; see Appendix E). That report includes only the western portion of the study area between Post Office Lake and Round Lake. The Round Lake Conservation Bank delineation was based on the methodology in the regional supplement. The delineation identified four jurisdictional palustrine emergent wetlands within the study area, and received concurrence from USACE and Ecology.

An addendum to the Round Lake Conservation Bank wetland delineation report addressed USACE's comments about the delineation (Cascadia Ecological Services 2014; see Appendix E). The addendum highlighted additional wetland areas and identified some areas as uplands that previously had been delineated as wetlands.

3.3 Soils

The USDA-NRCS Web Soil Survey identified soil mapping units within the study area for Hillsboro silt loam, 3 to 8 percent slopes (HoB); Hillsboro silt loam, 20 to 30 percent slopes (HoE); Pilchuck fine sand, 0 to 8 percent slopes (PhB); rough broken land (Ro); Sauvie silt loam, 0 to 3 percent slopes (SmA); Sauvie silt loam, 3 to 8 percent slopes (SmB); and Sauvie silty clay loam, 0 to 8 percent slopes (SpB) (USDA-NRCS 2017b). The descriptions of these soils given below are excerpted from the Clark County Soil Survey (McGee 1972). Hydric soil classifications were obtained from the USDA-NRCS Soil Data Access (SDA) hydric soils list (USDA-NRCS 2017c). Observations of soil conditions during the site visit were generally consistent with the map units identified in the USDA-NRCS soil survey (Figure 5).

- **Hillsboro silt loam, 3 to 8 percent slopes (HoB):** This soil is generally found in deposits of old Columbia River alluvium. Most areas are nearly level to gently sloping, but strongly sloping to very steep areas are along drainageways and streams. In a typical profile, the surface layer is dark-brown (10YR 3/3) silt loam about 7 inches thick. The next layer is about 48 inches thick. In sequence from the top, the upper 17 inches is friable, dark-brown (10YR 3/3) heavy silt loam; the next 16 inches is friable, dark grayish-brown (10YR 4/2) heavy silt loam; and the lower 15 inches is friable, dark grayish-brown (10YR 4/2) silt loam. The next layer, to a depth of 86 inches, is dark grayish-brown (10YR 4/2) silt loam. This soil is well drained and moderately permeable. According to the SDA hydric soils list, this soil is not classified as a hydric soil within Clark County (USDA-NRCS 2017c).
- **Hillsboro silt loam, 20 to 30 percent slopes (HoE):** This soil occurs along the edges of drainageways and streams. This soil is similar to Hillsboro silt loam, 3 to 8 percent slopes, except that the surface layer is 1 to 3 inches thinner, and the texture is loam to a depth of about 36 inches, sandy loam between a depth of 36 and 48 inches, and sand between a depth of 48 and 62 inches. According to the SDA hydric soils list, this soil is not classified as a hydric soil within Clark County (USDA-NRCS 2017c).
- **Pilchuck fine sand, 0 to 8 percent slopes (PhB):** This soil is found on terraces along streams and is subject to overflow and deposition during periods when the water level is high. In a typical profile, the surface layer is a very dark gray (10YR 3/1) and gray (10YR 5/1 and 10YR 6/1) fine sand about 6 inches thick. The next layer, to a depth of 60 inches, is very dark gray (10YR 3/1) and gray (10YR 5/1 and 10YR 6/1) fine sand. This soil is somewhat excessively drained and rapidly permeable. According to the SDA hydric soils list, this soil is not classified as a hydric soil within Clark County (USDA-NRCS 2017c).
- **Rough broken land (Ro):** This soil consists of very steep terrace fronts and areas of very steep land, which are broken by intermittent drainage channels. Soil slippage is common and the very steep slopes have a succession of short vertical exposures. Surface runoff for this soil is very rapid. According to the SDA hydric soils list, this soil is not classified as a hydric soil within Clark County (USDA-NRCS 2017a).

- **Sauvie silt loam, 0 to 3 percent slopes (SmA).** This soil is found on the broad tops of old natural levees on bottom lands along the Columbia River, and in many of the depressional areas. It is similar to Sauvie silty clay loam, 0 to 8 percent slopes, except that the surface layer is silt loam and the soil is moderately well drained with fewer mottles in the profile. According to the SDA hydric soils list, this soil is not classified as a hydric soil within Clark County (USDA-NRCS 2017c).
- **Sauvie silt loam, 3 to 8 percent slopes (SmB).** This soil is found on the side slopes of the old natural levees on bottomlands along the Columbia River. It is moderately well drained and has fewer mottles in its profile than Sauvie silty clay loam, 0 to 8 percent slopes. According to the SDA hydric soils list, this soil is not classified as a hydric soil within Clark County (USDA-NRCS 2017c).
- **Sauvie silty clay loam, 0 to 8 percent slopes (SpB).** This soil is found on the broad tops of old natural levees on the bottomlands along the Columbia River. In a typical profile, the surface layer is very dark grayish-brown (10YR 3/2) silty clay loam about 15 inches thick. Below the surface layer is friable, mottled, dark grayish-brown (10YR 4/2) silty clay loam about 21 inches thick. The next layer, to a depth of 63 inches, is mottled, grayish-brown (10YR 5/2) silt loam. This soil is somewhat poorly drained and has moderately slow permeability. According to the SDA hydric soils list, this soil is not classified as a hydric soil within Clark County (USDA-NRCS 2017c).

The BergerABAM scientists examined each soil pit for hydric soil indicators and recorded their soil profiles and characteristics (e.g., matrix color, redoximorphic features, texture, and other features) using a Munsell Soil-Color Chart (Munsell Color 2009).

3.4 Vegetation

Hydrophytic vegetation consists of plant species that have adapted to growing in periodically inundated or saturated substrates. Five basic groups of vegetation are recognized based on how frequently they occur in wetlands (Reed 1988 and 1993 supplement).[2] From the wettest to the driest plant communities, the categories are obligate wetland (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), and obligate upland (UPL) plants. Hydrophytic vegetation is present when more than 50 percent of the dominant species have an indicator status of OBL, FACW, and/or FAC.

The wetland scientists documented the visual percent cover of the dominant plant community species for key sample sites. Using soil pit locations as centers of reference, the scientists investigated sample plots of varying proportions for dominant tree, shrub, herb, and woody vine species. The size and shape of each sample plot were determined

[1] Plant nomenclature in this report follows the Regional List of Plant Species that Occur in Wetlands: Northwest (Region 9) (Reed 1988), the 1993 Supplement to the Regional List of Plant Species that Occur in Wetlands: Northwest (Region 9) (Reed 1994), and the recent update of the National Wetland Plant List (Lichvar et al. 2016).

by the composition and orientation of the plant communities within the plot. Sample plots were set up so that their boundaries included a representative cross section of the plant community within the plot. The dominance of plant species was determined by estimating the percent aerial cover of each species within each stratum. The scientists listed species from each stratum in descending order of percent cover, and used the USACE 50-20 technique to determine the predominance of hydrophytic vegetation.

When the most abundant plant species are ranked in descending order of abundance and cumulatively totaled, any species immediately exceeding 50 percent cover, plus any species comprising more than 20 percent cover, represent the dominant species. If more than 50 percent of the dominant species included by these criteria is FAC or wetter, the vegetation community is considered hydrophytic.

When vegetative coverage meets 50 percent but is not considered hydrophytic, a prevalence index is used to examine the percent coverage of each species based on its designation. Using the prevalence index, vegetation percentages within each designation (OBL, FACW, FAC, FACU, and UPL) are added together and are given a different multiplier. Once calculated, the total in the multiplied column is divided by the original percentage total before multiplying. If the number given is less than or equal to 3.0, the vegetation community is considered hydrophytic. If the number is greater than 3.0, the vegetation community is not considered hydrophytic.

Vegetation within the study area is primarily dominated by a variety of native and non-native facultative herbaceous species, one non-native woody vine species, and a variety of native tree species. The dominant herbaceous species include sweet vernal grass (*Anthoxanthum odoratum*, FACU), colonial bentgrass (*Agrostis capillaris*, FAC), tall fescue (*Schedonorus arundinaceus,* FAC), soft rush (*Juncus effusus*, FACW), meadow foxtail (*Alopecurus pratensis*, FAC), Kentucky bluegrass (*Poa pratensis*, FAC), creeping jenny (*Lysimachia nummularia*, FACW), spearmint (*Mentha spicata,* FACW), narrowleaf plantain (*Plantago lanceolata*, FACU), redtop (*Agrostis gigantea*, FAC), red fescue (*Festuca rubra,* FAC), spotted ladysthumb (*Polygonum persicaria,* FACW), pennyroyal (*Mentha pulegium,* OBL), broad-leaf arrowhead (*Sagittaria latifolia,* OBL), touch-me-not (*Impatiens noli-tangere*, FACW), curly dock (*Rumex crispus,* FAC), nodding beggarstick (*Bidens cernua,* OBL), birds-foot trefoil (*Lotus corniculatus,* FAC) and reed canarygrass (*Phalaris arundinacea,* FACW). The dominant woody vine species is the invasive species Himalayan blackberry (*Rubus armeniacus,* FAC). Tree species within the study area include Oregon ash (*Fraxinus latifolia,* FACW), cottonwood (*Populus balsamifera,* FAC), red alder (*Alnus rubra,* FAC), Oregon white oak (*Quercus garryana, FACU*), and Pacific willow (*Salix lucida,* FACW).

4.0 WETLAND DESCRIPTIONS

During the site visits, BergerABAM's investigation of the hydrology, soils, and vegetation identified 10 wetlands (Wetlands A-D and G-L) within the eastern portion of the study area (i.e., Curtis Lake Ranch and the Salmon Creek Wastewater Treatment

Plant), and one wetland (Wetland E) within the western portion of the study area was identified outside the area of the Round Lake Conservation Bank wetland delineation (Appendix A, Figure 7). The data sheets that comprise Appendix B show the data collected at wetlands. The numbers assigned to the data sheets correspond to the 12 sample plots. The Round Lake Conservation Bank wetland delineation report indicated that there are four wetlands (Wetlands F, Q, R, and W) within the western portion of the study area. Figures 6 and 7 show the overall locations of the wetlands and Figures 9 and 9 consist of photographs of the study area. Appendix E contains copies of the Round Lake Conservation Bank wetland delineation, the addendum, and the USACE jurisdictional determination letter.

Each of the 15 wetlands identified within the study area was rated using Ecology's wetland rating form (see *Washington State Wetland Rating System for Western Washington*, 2014). The form is used to determine a wetland's category and its scores for habitat, water quality, and hydrologic functions (Hruby 2014). The wetland rating forms in Appendix C show the results for each of the wetlands.

Sections 4.1 through 4.15 describe wetlands A through L, Q, R, and W.

4.1 Wetland A

Wetland A is located in the northern portion of Curtis Lake in the middle of an agricultural field and was delineated on 27 August 2015. According to the USFWS wetland classification system (Cowardin et al. 1979), Wetland A is a palustrine wetland because it is a non-tidal wetland dominated by shrubs and persistent emergent vegetation. This wetland meets the HGM classification of a depressional wetland because it occurs in a topographic depression that allows the accumulation of surface water. Wetland A scored 21 points for a Category II rating. Additional hydrology sources may include groundwater flow and/or surface water flow from the adjacent agricultural field. Approximately 1.06 acres of Wetland A are located within the study area. The wetland extends beyond both the northern and southern boundaries of the study area.

Vegetation in Wetland A meets the hydrophytic vegetation criteria and is dominated by colonial bentgrass and soft rush. Soils within the wetland display hydric soil characteristics, which include very dark gray (10YR 3/1) and dark gray (10YR 4/1) matrix colors with dark yellowish brown (10YR 3/6) redox concentrations and pore linings within the upper 3 to 12 inches of the soil profile. This soil profile meets the description of a redox dark surface (indicator F6 in the regional supplement). The wetland has the primary hydrology indicator of oxidized rhizospheres along living roots (indicator C3) and the secondary hydrology indicator of geomorphic position (indicator D2).

4.2 Wetland B

Wetland B consists of what was previously a continuous scour channel, but has since been bermed, creating a series of individual linear depressional wetlands. Wetland B

stretches from Lake River, east of Green Lake, southeast across the eastern portion of the site to Salmon Creek. Prior to diking, Wetland B would have functioned as a side channel and created a hydrologic connection between Lake River and Salmon Creek during high water events. Because Wetland B is bisected at multiple locations by dikes, it does not appear to be hydrologically connected to the Columbia River, Lake River, or Salmon Creek, and now meets the HGM classification of a depressional wetland because it occurs in a topographic depression that allows the accumulation of surface water. Wetland B received a Category II rating with a score of 22. The portions of Wetland B that occur within the study area were delineated on 27 August 2015 and 7 September 2017. According to the USFWS wetland classification system, Wetland B is a palustrine wetland because it is a non-tidal wetland dominated by trees, shrubs, and persistent emergent vegetation. Additional hydrology sources may include overland flow and/or groundwater flow/interflow from Salmon Creek and the adjacent agricultural field. Approximately 0.4 acre of Wetland B is located within the study area. The wetland extends beyond both the northern and southern boundaries of the study area.

Vegetation in Wetland B meets the hydrophytic vegetation criteria and is dominated by soft rush and reed canarygrass. Soils within the wetland display hydric soil characteristics, which include a very dark grayish-brown (10YR 3/2) matrix color with dark yellowish brown (10YR 4/6) redox concentrations and pore linings within the upper 3 to 12 inches of the soil profile. This soil profile meets the description of a redox dark surface (indicator F6). The wetland has the primary hydrology indicator of oxidized rhizospheres along living roots (indicator C3) and the secondary hydrology indicator of geomorphic position (indicator D2).

4.3 Wetland C

Wetland C is located southeast of Salmon Creek and west of the BNSF tracks. Mapped as a palustrine forested wetland, Wetland C also contains areas of forested and scrub-shrub wetlands. Because of its proximity to and the overbank flooding of Salmon Creek and Lake River, this wetland meets the HGM classification of a riverine wetland, and received a Category II rating with a score of 21 points. The portions of Wetland C that occur within the study area were delineated on 27 August 2015. According to the USFWS wetland classification system, Wetland C is a palustrine wetland because it is a seasonal freshwater tidal wetland dominated by persistent emergent vegetation. Additional hydrologic inputs include direct precipitation, overland flow from adjacent uplands, and a seasonally high water table. Approximately 0.73 acre of Wetland C is located within the study area.

Vegetation in Wetland C consists of reed canarygrass, spirea, spotted ladysthumb, broad-leaf arrowhead, and Pacific willow, among other species, and meets the hydrophytic vegetation criteria. Indicators of wetland hydrology within Wetland C include surface water (A1), inundation visible on aerial imagery (B7), and sparsely vegetated concave surface (B8).

4.4 Wetland D

Wetland D is the only wetland located east of the BNSF tracks; it is located west of the gravel access road that leads to the pastures to the west, and south of an existing residence east of the tracks. Wetland D is a hillside seep that is characterized by cattail, reed canarygrass, Himalayan blackberry, and willow trees. Indicators of wetland hydrology within Wetland D include surface water (A1), and inundation visible on aerial imagery (B7). Wetland D was identified on 7 September 2017 and was rated using the slope HGM classification and received a Category III rating with a score of 16 points. Approximately 0.005 acre of Wetland D is within the study area.

4.5 Wetland E

Wetland E is located just west of Lake River, and can be classified as a palustrine forested wetland. This wetland receives hydrologic input from regular overbank flooding of Lake River, and meets the HGM classification of a riverine wetland. Wetland E was rated as a Category II wetland with a score of 20 points. Additional hydrologic inputs include direct precipitation, overland flow from adjacent uplands, and a seasonally high water table. Wetland E is situated between two berms to the east and west that converge north of the wetland. Along the toe and slopes of the berms, Himalayan blackberry dominates the vegetation; at lower elevations within the wetland, species include Nootka rose (*Rosa nutkana*), Oregon ash, black cottonwood, and reed canarygrass. Approximately 0.19 acre of Wetland E is located within the study area. Indicators of wetland hydrology within Wetland E include sparsely vegetated concave surface (B8) and geomorphic position (D2).

4.6 Wetland F

Wetland F is located east of Round Lake and was delineated in April/May 2012 as part of the Round Lake Conservation Bank project (AECOM 2013). The results of the wetland delineation indicated that Wetland F is a depressional seasonally inundated/saturated, palustrine emergent wetland that is hydrologically associated with Round Lake via a ditch. Scoring 21 points, this wetland received a Category II rating. Wetland F is approximately 3.53 acres, with approximately 2.55 acres located within the study area.

Vegetation in Wetland F is dominated by hydrophytic grasses and weedy herbaceous plants. The representative dominant facultative species include meadow foxtail, tall fescue, Kentucky bluegrass, bentgrass, soft rush, creeping jenny, and spearmint. Non-hydrophytic dominant species included sweet vernal grass and narrowleaf plantain. Hydric soils observed at the majority of the sampling plots met the criteria of redox dark surface (indicator F6) and depleted matrix (indicator F3). The wetland has the primary hydrology indicator of oxidized rhizospheres living along roots (indicator C3) and geomorphic position (indicator D2). See Appendix E for more information on Wetland F.

4.7 Wetland G

Wetland G is a lake fringe wetland associated with Green Lake. This wetland is dominated mostly by facultative grasses commonly found in pastureland, and other

common species noted within this area include ladysthumb, curly dock, pennyroyal, and Himalayan blackberry. Wetland G was identified by a geographic break in topography. Scientists identified the southern boundary of Wetland G, which extends from the BNSF tracks southwest to the gravel access road, and then back toward the northwest; this boundary generally follows the shape of Round Lake and local topography. Hydrologic inputs include direct precipitation, overland flow from adjacent uplands, and a seasonally high water table. Wetland is just north of the project area, but does not fall within its boundaries.

Soils in Wetland G are characterized by a 6-inch layer of very dark grey (10YR 3/1) loam with dark yellowish brown (10YR 3/6) redox concentrations in the matrix and pore linings followed by a black (2.5Y 3/1) silt loam. This soil profile is characteristic of the redox dark surface (F6) hydric soil indicator. Hydrologic indicators within this wetland include oxidized rhizospheres along living root channels, and sparsely vegetated concave surface (B8). Wetland G was rated using the lake fringe HGM classification, and received 20 points for a Category II rating.

4.8 Wetland H

Wetland H is southeast of Wetland G and was likely hydrologically connected to Wetland G prior to the construction of an access road that currently separates the two. Wetland H is a long, linear wetland that parallels the BNSF tracks, and was identified within a topographic depression. The eastern boundary of this wetland abuts the toe of the fill prism of the BNSF tracks. Just 30 square feet (0.0007 acre) of Wetland H falls within the boundaries of the project area.

Vegetation consists of slough sedge (*Carex obnupta*), reed canarygrass, impatiens, and Pacific willow. The slope of the railroad fill prism is dominated by Himalayan blackberry. At the time of the site investigation, Wetland H contained standing surface water (indicator A1), indicating that it supports wetland hydrology even during the dry summer months. Wetland H was rated using the depressional HGM classification because it occurs in a topographic depression that allows the accumulation of surface water. Wetland H received 20 points for a Category II rating.

4.9 Wetland I

Wetland I is situated in a topographic depression between two natural berms to the east and west, which separate it from Wetlands B and J, and is located south of the access road, which likely functionally isolated it from Wetland G to which it would have been hydrologically connected. Vegetation in Wetland I is characterized by curly dock, reed canarygrass, ladysthumb, and pennyroyal, among other facultative grass species. This wetland meets the criteria for a depressional HGM classification because it occurs in a topographic depression that allows the accumulation of surface water. This wetland received 17 points for a Category III rating. Approximately 0.26 acre of Wetland I is located within the study area.

Soils within Wetland I consist of a 6-inch layer of very dark grey (10YR 3/1) loam with dark yellowish brown (10YR 3/6) redox concentrations along pore linings and in the matrix, followed by a 10-inch layer of very dark grey (10YR 3/1) loam with dark yellowish brown (10YR 3/4) redox concentrations along pore linings. This soil profile is characteristic of the redox dark surface (F6) hydric soil indicator. Indicators of hydrology within Wetland I include oxidized rhizospheres along living root channels (C3), and geomorphic position (D2).

4.10 Wetland J

Wetland J is located east of Wetland I and west of the BNSF tracks. Wetland J is a hook-shaped backwater wetland, hydrologically connected to Salmon Creek. Aerial imagery indicates that the southern and western portions of this wetland are permanently inundated, and maintain a hydrologic connection to Salmon Creek year-round. Wetland J was rated under the riverine HGM classification and received a Category II rating with a score of 21. Approximately 0.06 acre of Wetland J is located within the study area.

Vegetation in Wetland J consists of pennyroyal, curly dock, nodding beggarstick, reed canarygrass, and common facultative grasses. Along the roadway fill prism, there are patchy clusters of Himalayan blackberry. Hydrology in Wetland J is supported by overbank flooding of Salmon Creek, overland flow from adjacent uplands, and direct precipitation. Indicators of wetland hydrology within Wetland J include surface water (A1), inundation visible on aerial imagery (B7), and sparsely vegetated concave surface (B8).

4.11 Wetland K

Wetland K consists of a series of hydrologically connected depressions north and south of the access road, and between Lake River and Green Lake. Hydrology in Wetland K is likely supported by direct precipitation, a seasonally high water table, and overbank flooding of Lake River. Approximately 0.01 acre of Wetland K is located within the study area.

Vegetation in Wetland K is dominated by facultative grasses commonly associated with pastureland, but also includes pennyroyal, curly dock, and birds-foot trefoil. Wetland K was rated using the depressional HGM classification because it occurs in a topographic depression that allows the accumulation of surface water, and received 17 points for a Category III rating.

Soils within Wetland K consist of a 4-inch layer of very dark grey (10YR 3/1) loam with dark yellowish brown (10YR 3/4) redox concentrations along pore linings, followed by a 12-inch layer of very dark grey (10YR 3/1) loam with dark yellowish brown (10YR 3/6) redox concentrations in the matrix and along pore linings. This soil profile is characteristic of the redox dark surface (F6) hydric soil indicator. Indicators of hydrology within Wetland K include oxidized rhizospheres along living root channels (C3), and geomorphic position (D2).

4.12 Wetland L

Wetland L is a small wetland located north of the gravel access road and south of Wetland K. This wetland is hydrologically connected to Wetland A via a culvert beneath the access road, and to Wetland K via an artificial ditch. Wetland L meets the HGM classification of a depressional wetland and received a Category III with a score of 17. . Approximately 0.004 acres of Wetland L falls within the boundaries of the study area.

Similar to Wetland K, vegetation in Wetland L is characterized by common facultative grasses, pennyroyal, curly dock, birds-foot trefoil, and ladysthumb. Hydrology in Wetland L is likely supported by direct precipitation, overland flow from adjacent uplands, a seasonally high water table, and overbank flooding of Lake River. Indicators of hydrology within Wetland L include inundation visible on aerial imagery (B7), and geomorphic position (D2).

4.13 Wetland Q

Wetland Q is located within a shallow linear swale to the north of Round Lake and was delineated in April/ May 2012 as part of the Round Lake Conservation Bank project (AECOM 2013). A low upland pasture ridge separates Wetland Q from Wetland W. The results of the wetland delineation indicated that Wetland Q is a closed depressional, seasonally saturated/inundated, palustrine emergent wetland. Wetland Q is approximately 1.4 acres, with approximately 0.26 acre located within the study area. Rated under the depressional HGM classification, Wetland Q received 21 points for a Category II rating.

Vegetation in Wetland Q is dominated by facultative species including redtop, tall fescue, colonial bentgrass, and spearmint. The soils included a mottled very dark grayish brown (10YR 3/2) and a depleted mottled dark gray (10YR 4/1), which meet the hydric soil criteria for redox dark surface (indicator F6). The wetland exhibited primary hydrology indicators, including surface water (indicator A1), high water table (indicator A2), and saturation (indicator A3). See Appendix E for more information on Wetland Q.

4.14 Wetland R

Wetland R (Round Lake) is located in the western portion of the study area and was delineated in April/May 2012 as part of the Round Lake Conservation Bank project (AECOM 2013). The results of the wetland delineation indicated that the wetland is an approximately 52-acre depressional, palustrine emergent wetland with an open-water component that represents approximately 12 acres of the total wetland area. A small palustrine scrub-shrub wetland component is present near the south terminus of Round Lake's western ditch system. Approximately 2.11 acres of Wetland R are located within the study area. Rated under the depressional HGM classification, Wetland R received 22 points for a Category II rating.

Reed canarygrass and meadow foxtail are the dominant vegetation in Wetland R. The soils within the wetland typically met the hydric soil criteria for depleted matrix

(indicator F3) and redox dark surface (indicator F6). The wetland exhibited primary hydrology indicators including surface water (indicator A1), high water table (indicator A2), and saturation (indicator A3), as well as the secondary hydrology indicators of geomorphic position (indicator D2), FAC-neutral test (indicator D5), and saturation visible on aerial imagery (indicator C9). See Appendix E for more information on Wetland R.

4.15 Wetland W

Wetland W is situated within a shallow linear swale to the north of Round Lake and was delineated in April/May 2012 as part of the Round Lake Conservation Bank project (AECOM 2013). The results of the wetland delineation indicated that Wetland W is a seasonally inundated/saturated, palustrine emergent wetland situated within a shallow linear swale. Wetland W is approximately 2.75 acres, with approximately 2.1 acres located within the study area. Rated under the depressional HGM classification, Wetland W received 21 points for a Category II rating.

The dominant vegetation within Wetland W is primarily hydrophytic and includes meadow foxtail, red fescue, colonial bentgrass, reed canarygrass, and non-hydrophytic sweet vernal grass. The soils observed at the wetland include a mottled very dark grayish brown (10YR 3/2) with distinct brown (7.5 YR 4/4 or dark yellowish brown (10YR 4/6) redox concentrations, as well as dark gray (10YR 4/1) depletions and depleted subsoils. These soils met the hydric criteria for redox dark surface (indicator F6). The wetland exhibited primary hydrology indicators including surface water (indicator A1), high water table (indicator A2), and saturation (indicator A3). See Appendix E for more information on Wetland W.

Table 8 is a summary of the identified wetlands.

Table 8. Summary of Identified Wetland Areas

Wetland	Wetland Classification		Wetland Rating[d]	Wetland Area Within the Study Area (Acres)
	Cowardin[a]	HGM[b]		
Wetland A	PEM	Depressional	II	1.06
Wetland B	PEM	Depressional	II	0.4
Wetland C	PEM/PFO	Riverine	II	0.73
Wetland D	PEM/PSS	Slope	III	0.005
Wetland E	PFO	Riverine	II	0.19
Wetland F	PEM	Depressional	II	2.55
Wetland G	PEM	Lake Fringe	II	0.00
Wetland H	PEM/PFO	Depressional	II	0.0007
Wetland I	PEM	Depressional	III	0.26
Wetland J	PEM/PUB	Riverine	II	0.06
Wetland K	PEM	Depressional	III	0.01

Wetland	Wetland Classification		Wetland Rating[d]	Wetland Area Within the Study Area (Acres)
	Cowardin[a]	HGM[b]		
Wetland L	PEM	Depressional	III	0.004
Wetland Q	PEM	Depressional	II	0.26
Wetland R	PEM	Depressional	II	2.11
Wetland W	PEM	Depressional	II	2.1

Notes:
a Cowardin et al. (1979) or NWI class based on vegetation: PEM = Palustrine Emergent
b HGM classification according to Hruby (2014).
c Habitat score according to Hruby (2014).
d Wetland rating according to Hruby (2014).

5.0 ORDINARY HIGH WATER MARK DESCRIPTION

The BergerABAM scientists used a combination of field indicators to determine the OHWMs of the eastern shore of the Columbia River, the eastern and western sides of Lake River, and the north shore of Salmon Creek and its south shore from the railroad tracks to the treatment plant.

5.1 Columbia River OHWM

The OHWM of the eastern bank of the Columbia River within the study area was determined on 26 August 2015 by observing sediment bars, scour line, bank erosion/channel scour, top of bank, relic floodplain surface, overbank deposits, and drainage patterns as shown by flattened vegetation. Below the OHWM, the vegetation included willows and false indigo bush (*Amorpha fruticosa*). Straddling the OHWM were black cottonwood (*Populus balsamifera trichocarpa*), willows, moss species, and an unidentifiable species of dead grass. Above the OHWM were willows, black cottonwood, moss species, and an unidentifiable dead grass species. Table 9 lists the dominant species of vegetation identified and their distribution across the OHWM gradient. The list identifies the dominant species, but is not exhaustive. Figure 6 in Appendix A shows the locations of the GPS-recorded OHWM. Appendix D contains the OHWM field forms.

Table 9. Plant Distribution across Columbia River OHWM Gradient

Below OHWM	At/Straddling OHWM	Above OHWM
Willow sp., FACW	Willow sp., FACW	Willow sp., FACW
False indigo bush, FACW	Black cottonwood, FAC	Black cottonwood, FAC
	Moss sp., UPL	Moss sp., UPL
	Unknown grass sp.	Unknown grass sp.

5.2 Lake River OHWM

The OHWMs of the eastern and western banks of Lake River within the study area were determined on 26 and 27 August 2015, and the OHWM of the western bank was extended further south on 7 September 2017. The determination was made by observing scour line, top of bank, relic floodplain surface, exposed roots/root scour, aquatic plants,

and drainage patterns as shown by flattened vegetation. Below the OHWM, the vegetation included red-osier dogwood (*Cornus sericea*), false indigo bush, and reed canarygrass. Straddling the OHWM were Nootka rose, Himalayan blackberry, reed canarygrass, black cottonwood, and red-osier dogwood. Above the OHWM were Oregon grape (*Mahonia aquifolium*), Himalayan blackberry, reed canarygrass, Nootka rose, black cottonwood, and red-osier dogwood. Table 10 lists the dominant species of vegetation identified and their distribution across the OHWM gradient. The list identifies the dominant species, but is not exhaustive. Figures 6 and 7 show the locations of the GPS-recorded OHWM. Appendix D contains the OHWM field forms.

Table 10. Plant Distribution across Lake River OHWM Gradient

Below OHWM	At/Straddling OHWM	Above OHWM
False indigo bush, FACW	Himalayan blackberry, FAC	Himalayan blackberry, FAC
Red-osier dogwood, FAC	Reed canarygrass, FACW	Reed canarygrass, FACW
Reed canarygrass, FACW	Nootka rose, FAC	Nootka rose, FAC
	Black cottonwood, FAC	Black cottonwood, FAC
	Red-osier dogwood, FAC	Red-osier dogwood, FAC
		Oregon grape, FACU

5.3 Salmon Creek OHWM

5.3.1 Salmon Creek OHWM – Northern

The OHWM of the northern side of Salmon Creek within the study area near the existing utility crossing was determined on 27 September 2015 and extended downstream on 20 September 2017 by observing scour line, clean cobbles/boulders, bank erosions/channel scour, relic floodplain surface, exposed roots/root scour, sediment lines on vegetation or other fixed objects, and lighter or no staining on fixed objects. Below the OHWM, the vegetation included spike rush (*Carex nardina*), spotted ladysthumb, reed canarygrass, and broad-leaf arrowhead. Himalayan blackberry straddled the OHWM. Above the OHWM were Canada thistle (*Cirsium arvense*), tall fescue, Himalayan blackberry, and colonial bentgrass. Table 11 lists the dominant species of vegetation identified and their distribution across the OHWM gradient. The list identifies the dominant species, but is not exhaustive. Figure 7 shows the locations of the GPS-recorded OHWM. Appendix D contains the OHWM field forms.

Table 11. Plant Distribution across Salmon Creek (Northern) OHWM Gradient

Below OHWM	At/Straddling OHWM	Above OHWM
Spike rush, OBL	Himalayan blackberry, FAC	Himalayan blackberry, FAC
Reed canarygrass, FACW		Tall fescue, FAC
Willow weed, FACW		Colonial bentgrass, FAC
Broad-leaf arrowhead, OBL		Canada thistle, FAC

5.3.2 Salmon Creek OHWM – Southern

The OHWM of the southern side of Salmon Creek within the study area from the railroad tracks to the treatment plant was determined on 8 September 2015 by observing

the scour line, clean cobbles/boulders, bank erosion/channel scour, relic floodplain surface, exposed roots/root scour, drainage patterns (as shown by flattened vegetation), little to no soil profile development, sediment lines on vegetation or other fixed objects, darker stain lines on fixed objects, and lighter or no staining on fixed objects above the OHWM. Below the OHWM, the vegetation included skunk cabbage (*Lysichiton americanus*), broad-leaf arrowhead , slough sedge (*Carex obnupta*), reed canarygrass, and spike rush. Red alder, reed canarygrass, Oregon ash, Nootka rose, red-osier dogwood, willow, Himalayan blackberry, and black cottonwood straddled the OHWM. Above the OHWM were bigleaf maple (*Acer macrophyllum*), Canada thistle, Himalayan blackberry, red alder, and black cottonwood. Table 12 below lists the dominant species of vegetation identified and their distribution across the OHWM gradient. The list identifies the dominant species, but is not exhaustive. Figure 7 shows the location of the GPS-recorded OHWM. Appendix D contains the OHWM field forms.

Table 12. Plant Distribution across Salmon Creek (Southern) OHWM Gradient

Below the OHWM	At/Straddling the OHWM	Above OHWM
Skunk cabbage, OBL	Reed canarygrass, FACW	Canada thistle, FAC
Broad-leaf arrowhead, OBL	Oregon ash, FACW	Himalayan blackberry, FAC
Reed canarygrass, FACW	Red alder, FAC	Bigleaf maple, FACU
Slough sedge, FACW	Nootka rose, FAC	Red alder, FAC
Spike rush, OBL	Red-osier dogwood, FAC	Black cottonwood, FAC
Spotted ladysthumb, FACW	Willow sp., FACW	
	Himalayan blackberry, FAC	
	Black cottonwood, FAC	

6.0 REGULATORY REVIEW

This section is an overview of regulatory requirements as they pertain to wetlands, streams, riparian areas, aquatic habitats, and priority habitats and species (PHS) within the study area.

6.1 Wetlands

The study area is located within the County's jurisdiction, and the delineated wetlands therefore will be subject to the County's wetland protection ordinance, Clark County Code (CCC) 40.450. This ordinance designates, classifies, and provides measures to protect the functions and values of wetlands. The ordinance establishes protective buffers associated with wetlands and specifies that certain permits or approvals must be obtained for projects containing wetlands and/or their buffers. The County requires the use of Ecology's *Washington State Wetland Rating System for Western Washington* to determine a wetland's category, which is based on its score for habitat, water quality, and hydrologic functions. Using the wetland rating system (Hruby 2014) each of the wetlands was rated based on their functions; Wetlands A, B, C, E, F, G, H, J, Q, R, and W all received Category II rating having scored within the range of 20-22 points. Wetlands D, I, K, and L all received scores within the range of 16-19 points and are Category III wetlands.. See Appendix C for the rating forms for each of the wetlands within the study

area. Section 6.3.1 below provides a summary of the buffer requirements and includes Table 13 which summarizes wetlands characteristics and buffer widths for each wetland.

In addition to the County ordinance, jurisdictional wetlands are regulated at the federal and state levels by the USACE and Ecology under sections 404 and 401 of the Clean Water Act, respectively. Based on the recently published Clean Water Rule, 40 Code of Federal Regulations 230.3 (40 CFR 230.3), the wetlands within the study area are considered to be jurisdictional because they are all located within the 100-year floodplain of waters of the United States, as defined by 40 CFR 230.3. Any impacts to the regulated wetlands within the study area will require notification of, and approval by, USACE and Ecology.

6.2 Habitat Conservation Areas

The study area is located within the County's jurisdiction, and is therefore subject to the County's habitat conservation ordinance (CCC 40.440), which provides protective measures with the goal of no net loss of habitat functions and values within designated habitat areas. These habitat areas include the following:

- ***Riparian Priority Habitat:*** Areas extending outward on each side of the stream from the OHWM to the edge of the 100-year floodplain, or the following distances, if greater, according to the typing of the stream by the Washington State Department of Natural Resources (WDNR): Type S water, 250 feet; Type F water, 200 feet; Type Np water, 100 feet; and Type Ns water, 75 feet.
- ***Other Priority Habitats and Species:*** Areas identified by and consistent with Washington Department of Fish and Wildlife (WDFW) PHS criteria, including areas within 1,000 feet of point sites for individual species.
- ***Locally Important Habitats and Species:*** Areas legislatively designated and mapped by the County because of their unusual or unique habitat warranting protection because of qualitative species diversity or habitat system health indicators.

Priority riparian habitat, aquatic habitat, and Oregon white oak woodland habitat were observed within the study area and are discussed below.

6.2.1 Priority Riparian Habitat

WDNR indicates that there are four Type S (shoreline of the state, as defined in WAC 90.58.030 RCW) waterbodies within the study area. These are the Columbia River, Lake River, Green Lake, and Salmon Creek (WDNR 2017). The study area also includes Round Lake, which is designated as a Type F (fish-bearing) waterbody (WDNR 2017).

Riparian habitat is defined by WDFW as the area adjacent to flowing or standing freshwater aquatic ecosystems. It encompasses the area beginning at the OHWM and extends to that position on the terrestrial landscape that is influenced by, or that directly influences, the aquatic ecosystem. Most of the site is located within the 100-year floodplain of the Columbia River (Federal Emergency Management Agency 2012), and

so is considered riparian habitat. The treatment plant is located outside the 100-year floodplain, but is adjacent to Salmon Creek, which is defined by WDNR as a Type S water (i.e., shorelines of the state) (WDNR 2017). According to CCC 40.440.440.010.C.1(a), riparian habitat extends outward on each side of a Type S stream from the OHWM to the edge of the 100-year floodplain, or a distance of 250 feet, if greater. Therefore, all of the area within the 100-year floodplain, and the 250-foot riparian habitat buffer from the Salmon Creek OWHM east of the railroad are considered priority riparian habitat.

6.2.2 Priority Habitat and Species

The presence of PHS at the study site was evaluated using the WDFW 2008 Priority Habitat and Species List (WDFW 2008), PHS online database (WDFW 2017), and CCC 40.440, the habitat conservation section of the County code. Priority habitats are habitat types with unique or significant value to many species and may be described by a unique vegetation type or by a dominant plant species that is of primary importance to fish and wildlife (WDFW 2008). WDFW recommends that priority wildlife habitat information be used to inform conservation planning activities. Priority species are fish and wildlife species whose survival requires protective measures and/or management actions (WDFW 2008). It should be noted that PHS maps are created by interpreting aerial photographs and topographic maps coupled with limited field verifications, and are not meant to represent the extent of all PHS.

The priority habitats mapped at the site include aquatic habitat (e.g., palustrine wetland habitat and riverine tidal habitat), a biodiversity corridor, and Oregon white oak woodland habitat. Priority species mapped within the study area include threatened and endangered salmon and steelhead, waterfowl concentrations, great blue herons (*Ardea herodias*) breeding areas, dusky Canada goose (*Branta canadensis occidentalis*), and wood duck (*Aix sponsa*). These priority habitats and species are discussed briefly below.

- ***Aquatic Habitat:*** Freshwater wetland habitat includes land that is transitional between terrestrial and aquatic systems where the water table is typically at or near the surface or the land is covered by shallow water. Wetlands must have all of the following attributes: the land supports, at least periodically, predominantly hydrophytic plants; the substrate is predominantly undrained hydric soils; and/or the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year. Palustrine wetland habitat and riverine tidal habitat are documented throughout the site.

  Deepwater habitats are permanently flooded lands lying below the deepwater boundary of wetlands. Deepwater habitats include environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. The dominant plants are hydrophytes; however, the substrates are considered nonsoil because the water is too deep to support emergent vegetation. The study area includes Round Lake,

which is a Type F (fish-bearing) waterbody and requires a buffer of 200 feet and Green Lake, a Type S waterbody, which requires a buffer of 250 feet.

Instream habitats are those with a combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. PHS on the Web does not map the location of instream habitats; however, the DNR forest practices application tool indicates that the Columbia River, Lake River, and Salmon Creek are all Type S shorelines of the state, and each would require a 250-foot buffer.

- ***Oregon White Oak Woodland Habitat:*** According to the PHS online database (WDFW 2017), this priority habitat is found north and south-southwest of the treatment plant, and in areas surrounding the southern half of Curtis Lake. These habitats include stands of oak or conifer/oak associations where the canopy cover of the oak component of the stand is 25 percent or, where the total canopy cover is less than 25 percent, oaks account for at least 50 percent of the canopy present. In non-urbanized areas west of the Cascades, priority oak habitat consists of stands greater than or equal to 1 acre. In urban or urbanizing areas, single oaks or stands of less than 1 acre may also be considered a priority habitat when found to be particularly valuable to fish and wildlife.

  During the site visits, a number of oak trees were noted across the study area, particularly in the areas south of Curtis Lake (Wetland A) and around wetlands B and I along the western side of Salmon Creek. The Oregon white oaks that were noted within the study area are not sufficient to meet priority habitat requirements because they are located in a non-urbanized area west of the Cascades and do not constitute a stand greater than or equal to 1 acre.

- ***Biodiversity Corridor:*** These areas have been identified as biologically diverse through a scientifically-based assessment conducted over a landscape or as an area within a city or urban growth area that contains habitat that is valuable to fish or wildlife and mostly comprises native vegetation. Biodiversity corridors are defined as areas of relatively undisturbed tracts of vegetation that connect fish and wildlife habitat conservation areas, priority habitats, areas identified as biologically diverse or valuable habitat within a city or urban growth boundary. PHS data maps the Salmon Creek riparian corridor as a biodiversity area/corridor. This area extends throughout the Salmon Creek riparian corridor east of the BNSF tracks, and north of the treatment plant.

- ***Priority Species:*** According to PHS data, there are five types of priority species present throughout the study area: threatened and endangered salmon and steelhead, waterfowl concentrations, great blue heron, dusky Canada goose, and wood duck. The PHS list indicates that a species mapped as a priority will fit one or more of the following criteria: (1) status as a state-listed or candidate species; (2) vulnerable aggregations including species or groups of animals susceptible to

significant declines by virtue of the inclination to aggregate; and/or (3) species of recreational, commercial, and/or tribal importance.

The Columbia River, Lake River, and Salmon Creek are all known to support threatened and endangered salmon and steelhead, including resident coastal cutthroat (*Oncorhynchus clarki*), steelhead (*Oncorhynchus mykiss*), and Chinook (*Oncorhynchus tshawytscha*), coho (*Oncorhynchus kisutch*), and chum (*Oncorhynchus keta*) salmon. These species are considered priority because they meet all three of the criteria for listing.

According to PHS data, all of the land within the study area west of the BNSF tracks is mapped as having regular concentrations of waterfowl. The WDFW PHS list indicates that waterfowl concentrations are listed because of their susceptibility to significant population declines by virtue of their inclination to aggregate, and because they are of recreational, commercial and/or tribal importance. Dusky Canada goose, a priority waterfowl species, is also mapped for regular concentrations and wintering habitat throughout this portion of the study area.

Near the center of the site, just west of Lake River, PHS has mapped a point location of the priority species great blue heron; they are considered a priority only at this point because it is limiting habitat for the species. PHS indicates that this point is a breeding area, which is defined as the area necessary to support reproduction and rearing of young and includes breeding sites and adjacent foraging habitat. Blue heron meet the vulnerable aggregations criterion for listing as a priority species.

PHS indicates that the Salmon Creek corridor, east of the BNSF tracks, is breeding area for wood ducks; they are cavity-nesting ducks that are considered priority species because of their recreational, commercial, and/or tribal importance.

6.3 Buffer Widths

The County specifies the widths of protective buffers for wetlands (CCC 40.450) and habitat conservation areas (CCC 40.44). Under the code, whichever ordinance is more protective is the one that will be used to address the protection and mitigation of the resource. The buffers of wetlands and habitat conservation areas are discussed below.

6.3.1 Wetland Buffers

CCC 40.450 specifies wetland buffer widths based on wetland category and habitat score (Hruby 2014) and intensity of land uses. All wetland buffers are to be measured horizontally outward from the delineated wetland boundary, or in the case of a stream with no adjacent wetlands, the OHWM as surveyed in the field. Based on Table 40.450.030-5: Land Use Intensity Matrix in CCC 40.450, the land use within the study area is considered to be low intensity because the proposed development is an underground utility line. Wetlands A, B, C, E, F, G, H, J, Q, R, and W all received Category II ratings, and 7 points for habitat functions; since the land use is considered low intensity, each of these wetlands require a 110-foot buffer. Wetland D received a Category III rating, with a habitat score of 5, and requires a 60-foot buffer. Wetlands I,

K, and L all received a Category III with a habitat score of 6, and require 65-foot buffers.

Table 13. Summary of Identified Wetland Buffer Requirements

Wetland	Wetland Classification			Buffer Width
	HGM[a]	Wetland Rating[b]	Habitat Score[c]	
Wetland A	Depressional	II	7	110 ft
Wetland B	Depressional	II	7	110 ft
Wetland C	Riverine	II	7	110 ft
Wetland D	Slope	III	5	60 ft
Wetland E	Riverine	II	7	110 ft
Wetland F	Depressional	II	7	110 ft
Wetland G	Lake Fringe	II	7	110 ft
Wetland H	Depressional	II	7	110 ft
Wetland I	Depressional	III	6	65 ft
Wetland J	Riverine	II	7	110 ft
Wetland K	Depressional	III	6	65 ft
Wetland L	Depressional	III	6	65 ft
Wetland Q	Depressional	II	7	110 ft
Wetland R	Depressional	II	7	110 ft
Wetland W	Depressional	II	7	110 ft

Notes:
a HGM classification according to Hruby (2014).
b Wetland rating according to Hruby (2014).
c Habitat score according to Hruby (2014).

6.3.2 Habitat Conservation Area Buffer

CCC 40.440 specifies buffer widths for habitat conservation areas, riparian areas, PHS, and locally important habitats and species. According to CCC 40.440, the habitat conservation area buffer extends outward on each side of the stream from the OHWM to the edge of the 100-year floodplain, or designated distances based on the stream's WDNR stream type, priority habitats and species, etc., whichever distance is greater. Based on CCC 40.440, a 250-foot priority riparian buffer is designated from Salmon Creek near the treatment plant, and the remainder of the site west of the railroad tracks would be considered a habitat conservation area buffer because it is located within the 100-year floodplain.

7.0 CONCLUSIONS

BergerABAM's assessment determined the existence and extent of jurisdictional wetlands and waterbodies within the study area as they are defined and regulated by the USACE, Ecology, and the County. Fifteen wetlands (Wetlands A through L, and Q, R, and W) and the OHWMs of the Columbia River, Lake River, and Salmon Creek were

delineated within the study area. Wetlands A through E, G through L, and the Columbia River, Lake River, and Salmon Creek were delineated in August–September 2015 and September 2017. The remaining four wetlands (Wetlands F, Q, R, and W) were delineated in April and May 2012 as part of the Round Lake Conservation Bank project (AECOM 2013). Review of the 2012 delineation report, and on site investigation indicated that the boundaries of the existing wetlands are consistent with those delineated in 2012.

Each of the identified wetlands and waterbodies within the study area is subject to regulation by the USACE, Ecology, and the County. Any fill placed within jurisdictional wetlands or disturbance of the streambeds would require a Section 404 permit through USACE, a Section 401 permit through Ecology, and a critical areas permit from the County before project activities could commence. Additionally, the County will require the submittal and approval of an application for a critical areas permit for any impacts to the associated wetland or habitat conservation area buffers within the study area (CCC 40.440 and CCC 40.450). Any required mitigation will be based on impact quantities and will be determined during the permitting processes.

This report of the wetland delineation and assessment gives an overview of regulatory requirements as they pertain to wetlands, streams, riparian and aquatic habitats, Oregon white oak woodland habitat, and priority species identified within the study area. Further evaluation may be needed during permit review procedures to determine the regulatory requirements of any additional potential PHS, locally important habitats and species, etc., that may occur within the study area but not identified during this delineation.

Finally, it should be noted that the wetland boundaries and classifications in this report were determined using the most appropriate field techniques and best professional judgment of the wetland scientists. The County, Ecology, and USACE have the final authority in the determination of the boundaries, categories, and jurisdictional status of wetlands under their respective jurisdictions. Therefore, BergerABAM recommends submitting this delineation and assessment report to these agencies for their concurrence before beginning any development activities that would affect the wetland, fish and habitat conservation areas, and/or buffers on this site.

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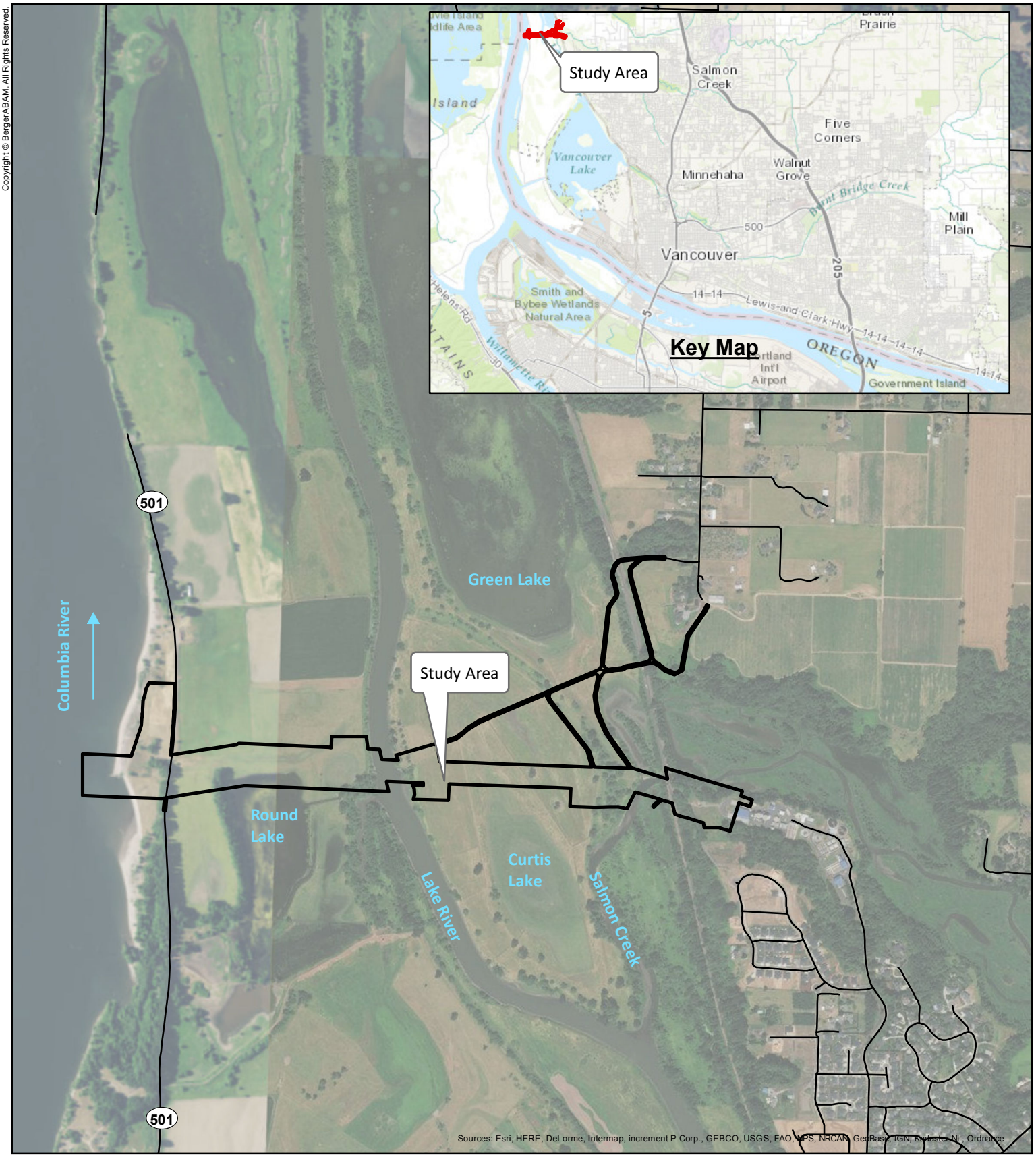
Appendix A
Figures



PURPOSE: COLUMBIA OUTFALL WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Discovery Clean Water Alliance
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

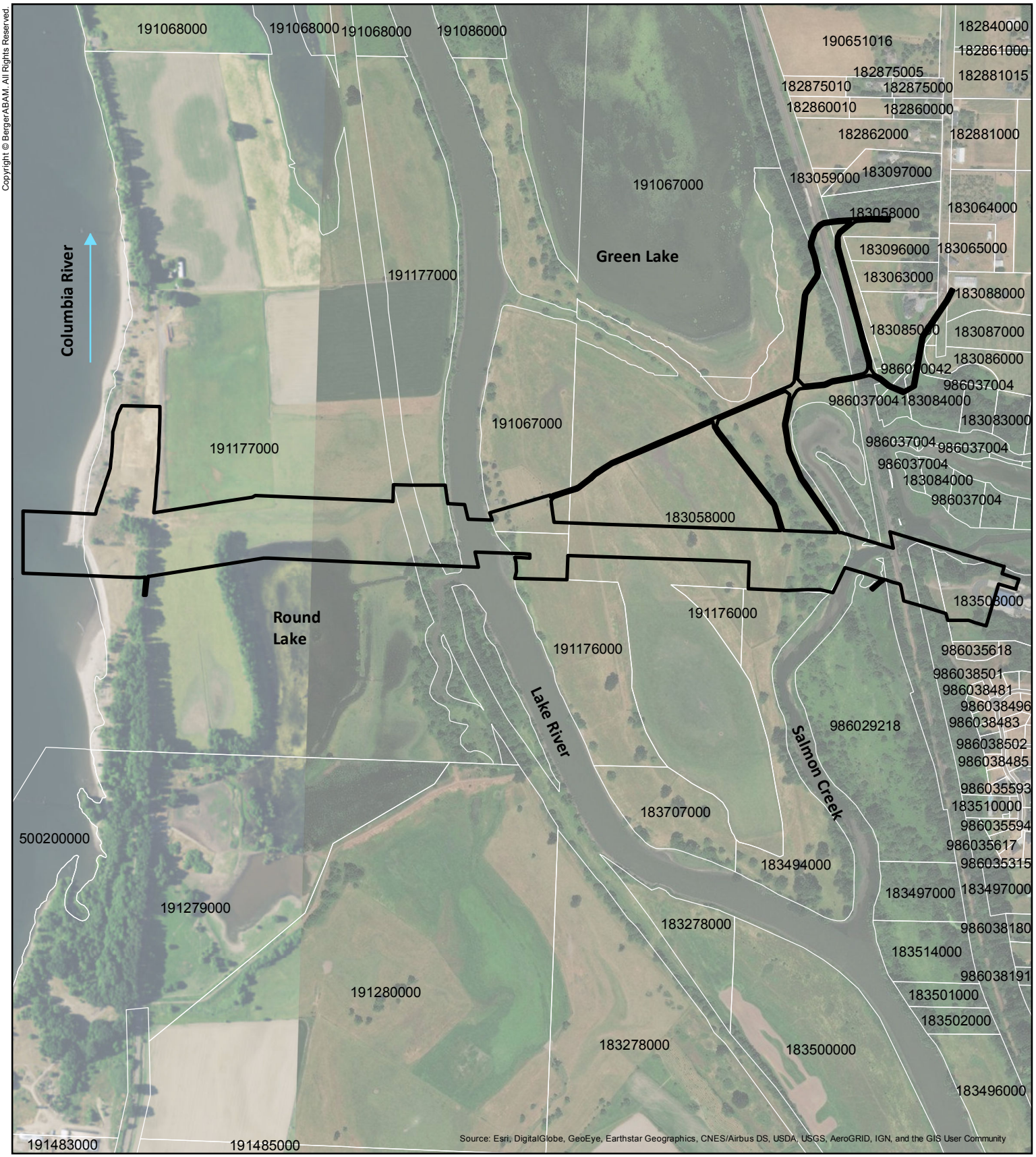
0 0.125 0.25 0.5
Kilometers

FIGURE 1: Vicinity Map

In: Columbia River Watershed
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\Fig1_Vicinity Map.mxd



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Vancouver, WA 98665

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BergerABAM

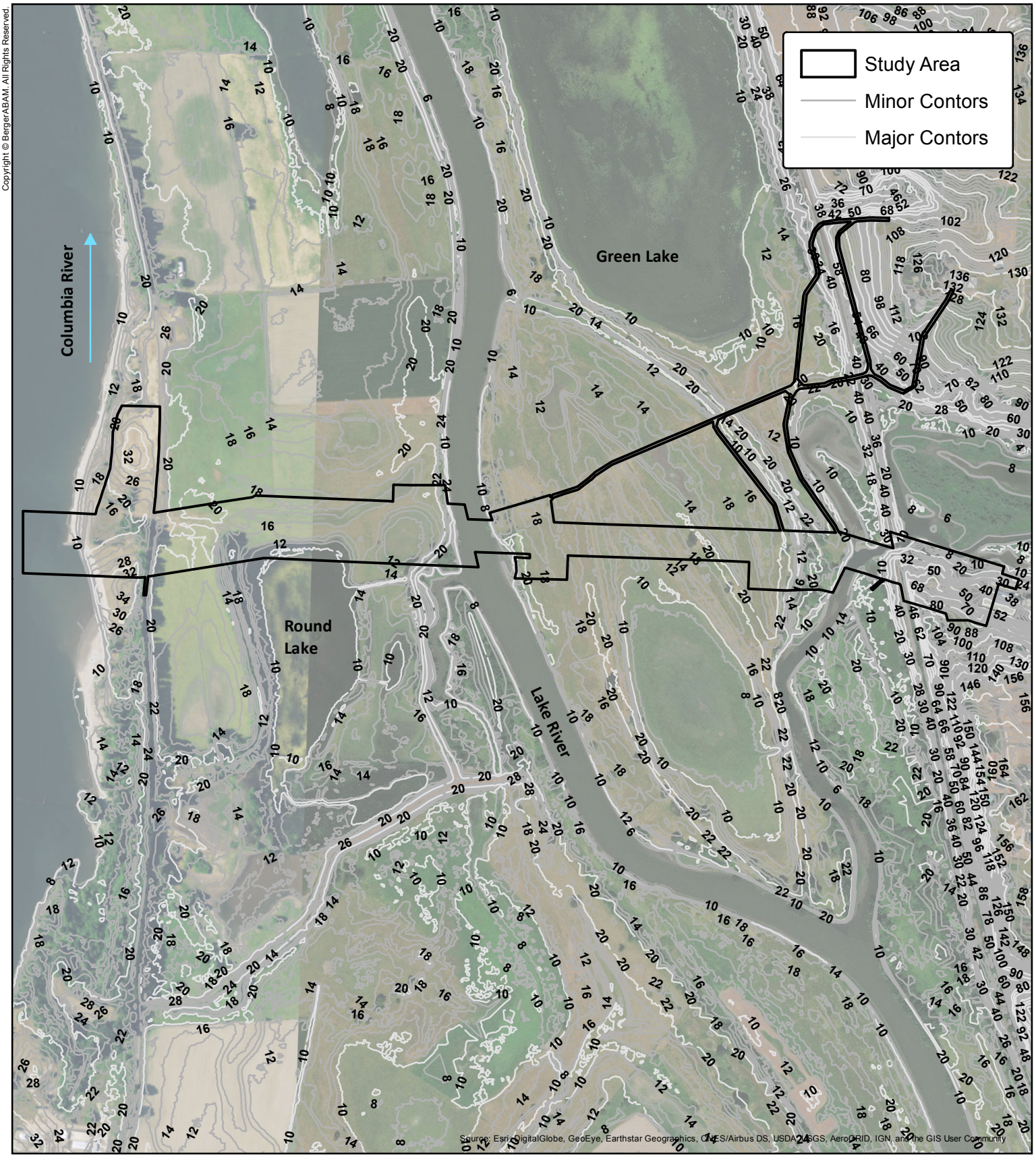
0 0.125 0.25 0.5 Kilometers

FIGURE 2: Tax Lot Map

In: Columbia River Watershed
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\Fig2_TaxParcels.mxd



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8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

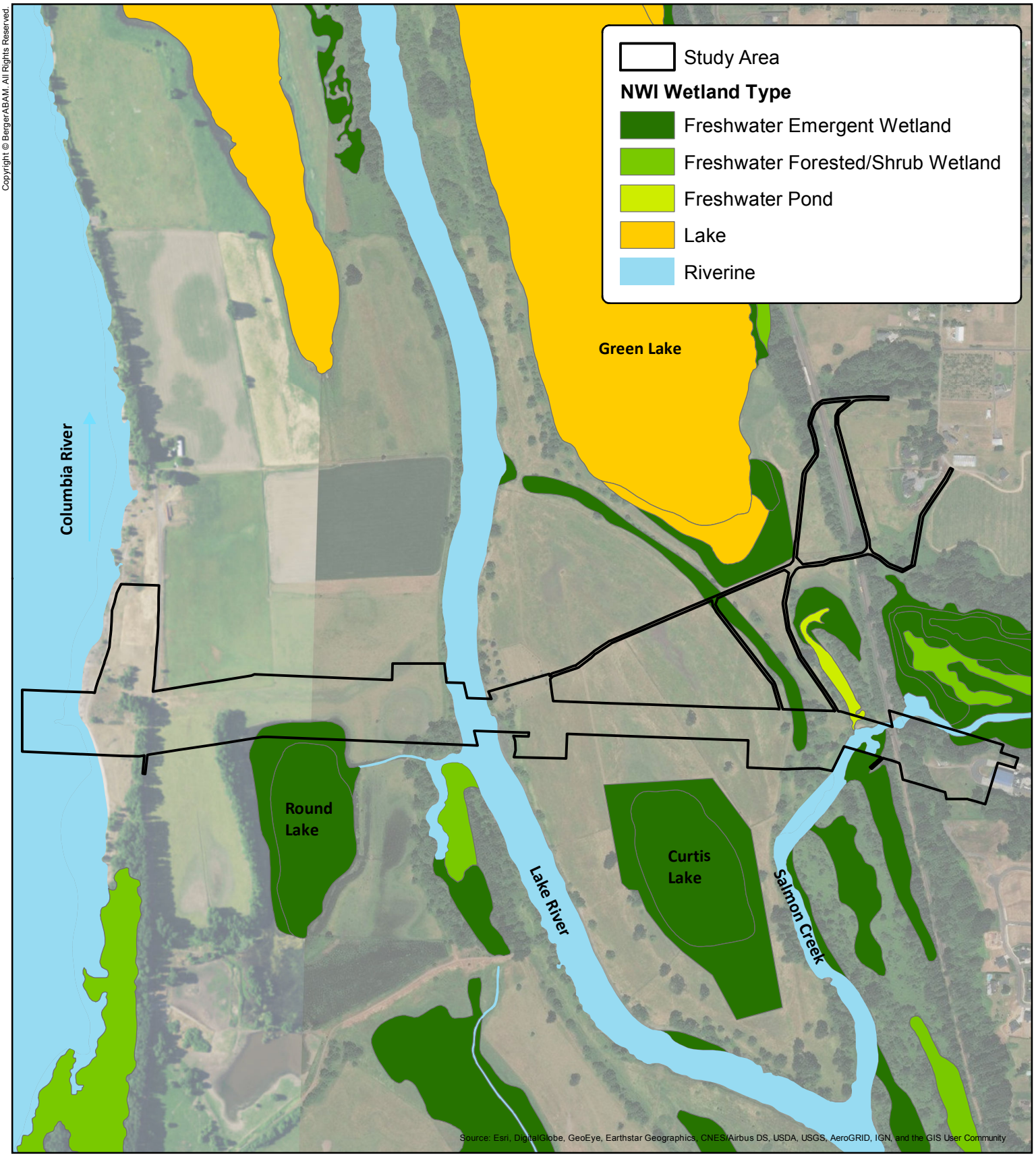
0 0.125 0.25 0.5 Kilometers

FIGURE 3: Topography Map

In: Columbia River Watershed
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\Fig3_Topography.mxd



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Longitude: 122°44'55.96"W

Discovery Clean Water Alliance
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

0 0.125 0.25 0.5 Kilometers

FIGURE 4: National Wetland Inventory Map

In: Columbia River Watershed
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

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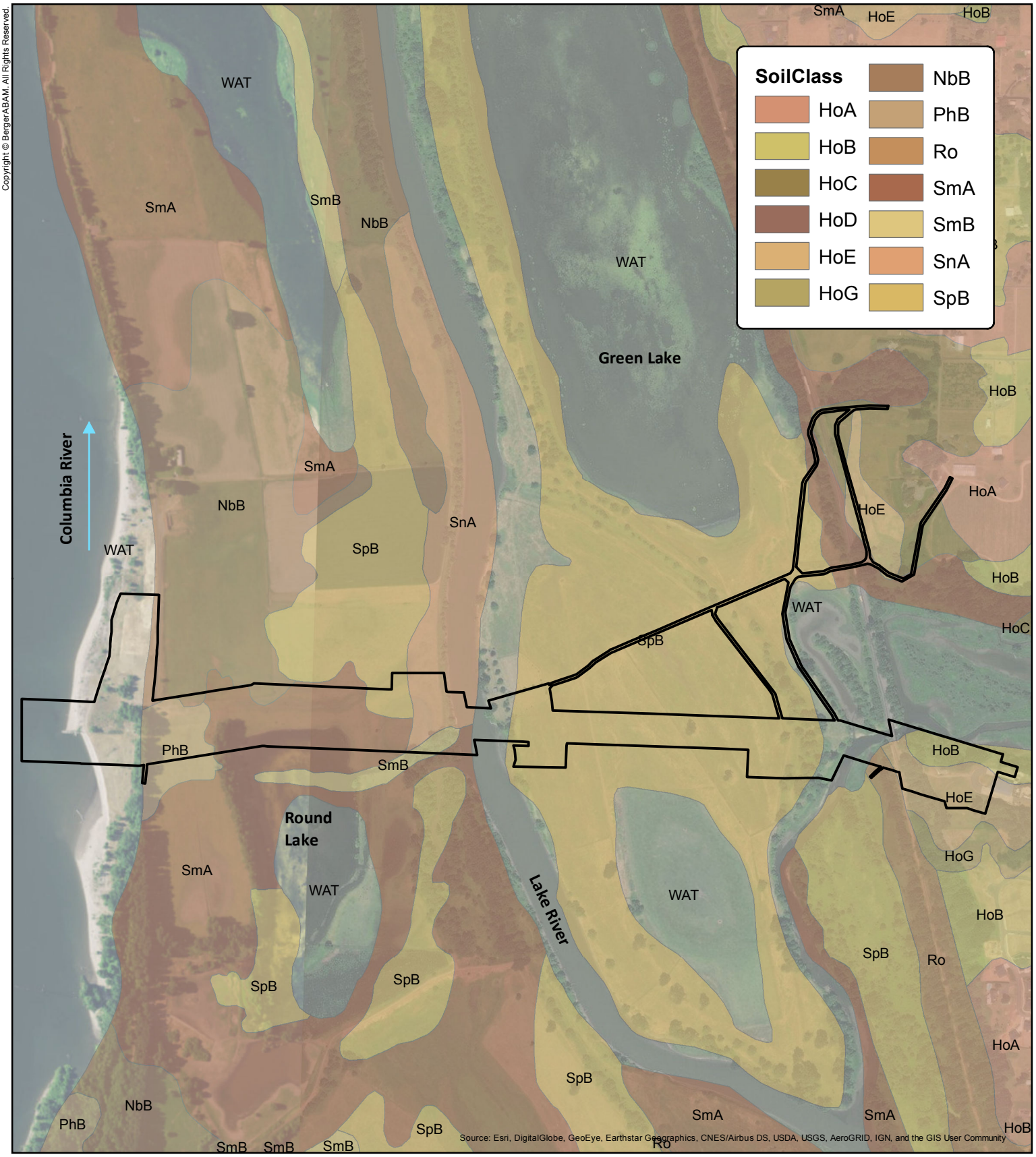

PURPOSE: COLUMBIA OUTFALL WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Discovery Clean Water Alliance
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

0 0.125 0.25 0.5 Kilometers

FIGURE 5: Soil Map

In: Columbia River Watershed
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

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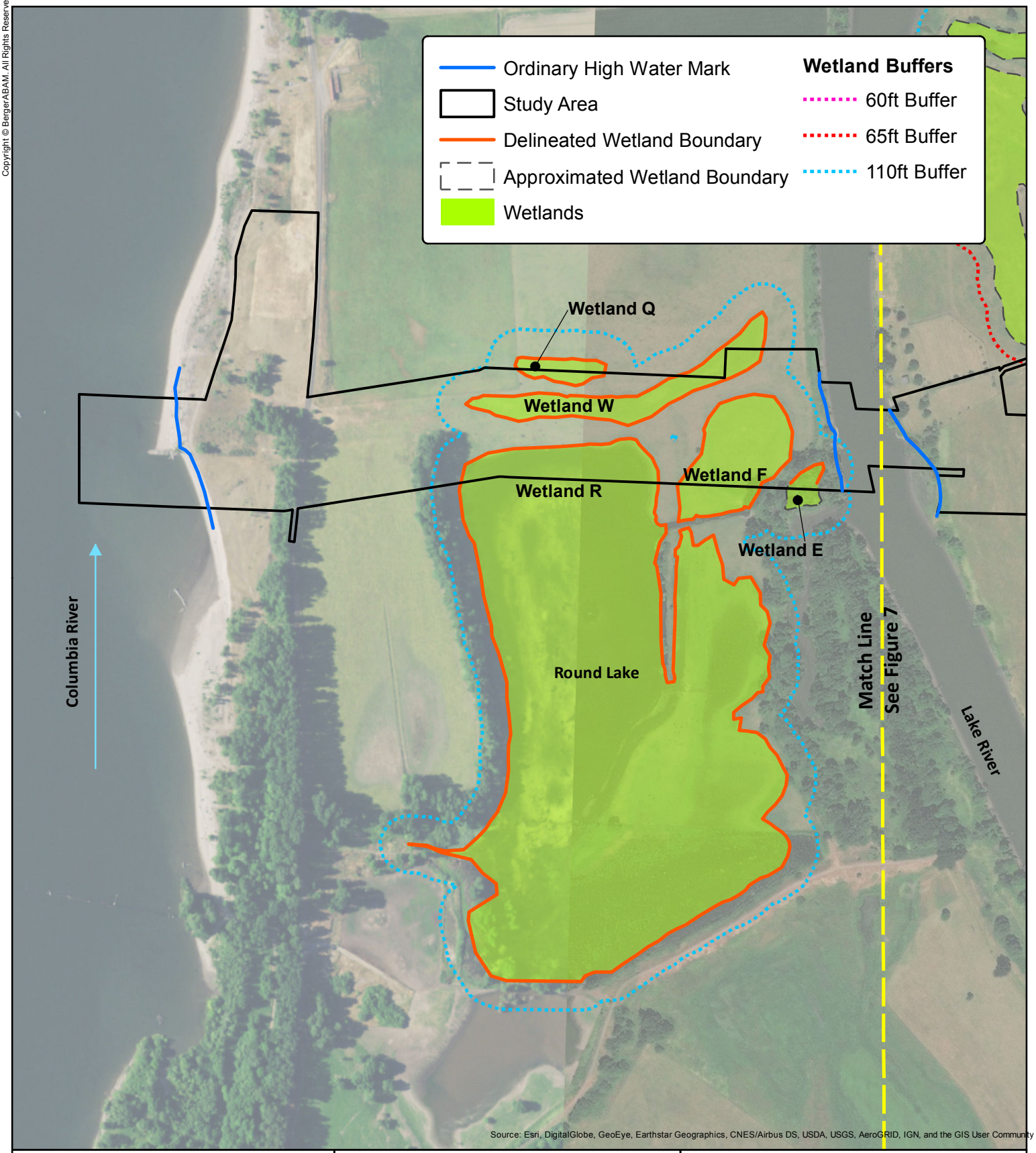


PURPOSE: COLUMBIA OUTFALL WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Discovery Clean Water Alliance
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

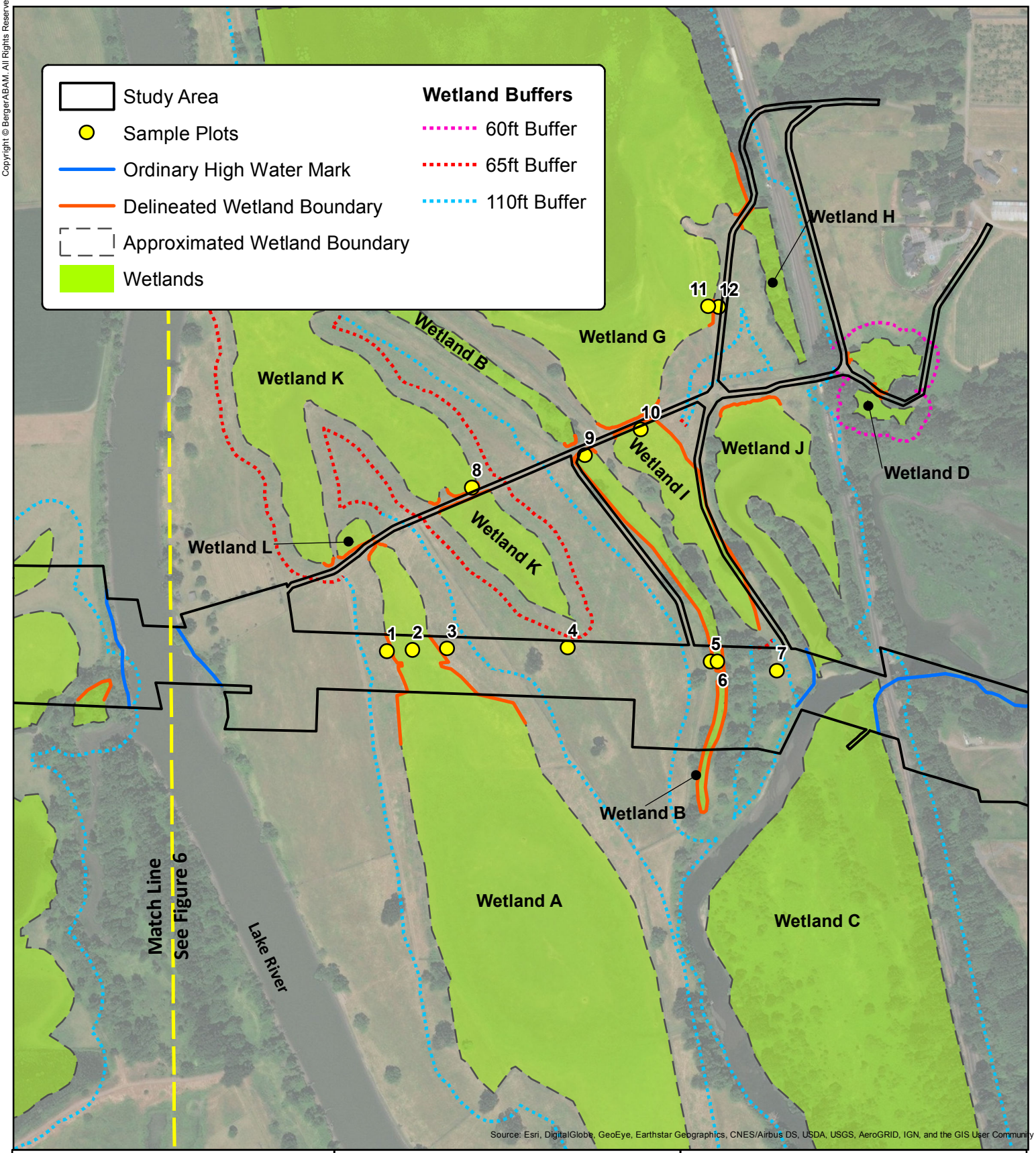
0 0.125 0.25 Kilometers

FIGURE 6: Wetland/OHWM Delineation Map

In: Columbia River Watershed
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\Fig6_Wetland_Buffers.mxd



PURPOSE: COLUMBIA OUTFALL WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Discovery Clean Water Alliance
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

0 0.125 0.25 Kilometers

FIGURE 7: Wetland/OHWM Delineation Map

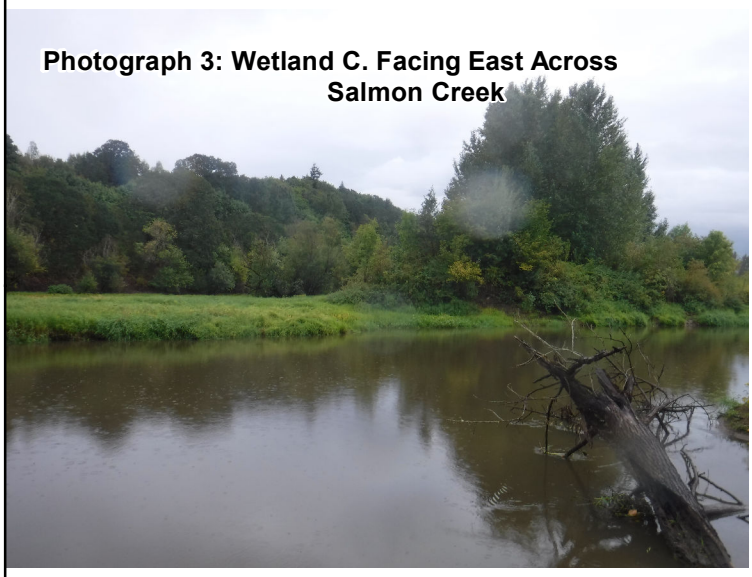
In: Columbia River Watershed
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\Fig7_Wetland_Buffers2_.mxd

Photograph 1: Wetland A. Facing South from Access Road

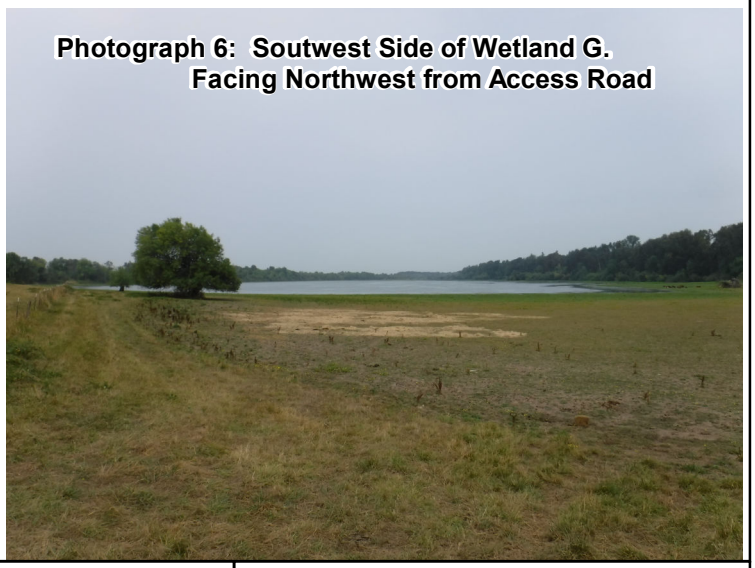
Photograph 2: Wetland B. Facing South



Photograph 3: Wetland C. Facing East Across Salmon Creek

Photograph 4: Wetland D. Facing West from Top of Slope

Photograph 5: North Side of Wetland F. Facing West



Photograph 6: Soutwest Side of Wetland G. Facing Northwest from Access Road

PURPOSE: COLUMBIA OUTFALL WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Discovery Clean Water Alliance
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

FIGURE 8: Site Photographs

In: Columbia River Watershed
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\Fig8_SitePhotos.mxd

Photograph 7: Wetland H Facing South from North End of Wetland

Photograph 8: Wetland I to Right of Access Road

Photograph 9: Wetland J Facing South from Access Road

Photograph 10: Wetland K Facing North from Access Road

Photograph 11: Salmon Creek OHWM Rightbank, Facing North

Photograph 12: Lake River OHWM Right Bank Facing North

PURPOSE: COLUMBIA OUTFALL WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Discovery Clean Water Alliance
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

FIGURE: 9 Site Photographs

In: Columbia River Watershed
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\Fig9_SitePhotos2.mxd

Wetland and Stream Delineation and Assessment
Columbia River Outfall and Effluent Pipeline Project
Ridgefield, Washington

Appendix B
Data Sheets

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

Project/Site: Salmon Creek Outfall | City/County: Clark County | Sampling Date: 27 August 2015
Applicant/Owner: Curtis Lake Ranch | State: WA | Sampling Point: P-1
Investigator(s): Dustin Day, Michelle Talal | Section, Township, Range: Section 19 T3N R1E
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 1%
Subregion (LRR): A | Lat: | Long: | Datum:
Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes | NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: The plot is not located within in a wetland and is west of Wetland A. The climatic/hydrologic conditions on the site are not typical for this time of the year since it is a drought year.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30'r)			
1. *Rubus armeniacus*	5	y	FACU
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 10'r)			
1. *Anthoxanthum odoratum*	70	y	FACU
2. *Holcus lanatus*	10	n	FAC
3. *Cirsium arvense*	10	n	FAC
4. *Schedonorus arundinaceus*	5	n	FAC
5. *Hypochaeris radicata*	5	n	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 10'r)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	80	x 4 =	320
UPL species	0	x 5 =	0
Column Totals:	105 (A)		395 (B)

Prevalence Index = B/A = 4.76

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: P-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-15	10YR 3/2	100	10YR 4/6	5	C	M	Silt loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

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

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

Remarks:

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

Project/Site: Salmon Creek Outfall | City/County: Clark County | Sampling Date: 27 August 2015
Applicant/Owner: Curtis Lake Ranch | State: WA | Sampling Point: P-2
Investigator(s): Dustin Day, Michelle Talal | Section, Township, Range: Section 19 T3N R1E
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 1%
Subregion (LRR): A | Lat: | Long: | Datum:
Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes | NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

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

Remarks: The plot is located within Wetland A. The climatic/hydrologic conditions on the site are not typical for this time of the year since it is a drought year.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 30'r)			
1. None			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: 10'r)			
1. *Agrostis capillaris*	50	y	FAC
2. *Juncus effusus*	35	y	FACW
3. *Schedonorus arundinaceus*	15	n	FAC
4. *Anthoxanthum odoratum*	10	n	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	110	= Total Cover	

Woody Vine Stratum (Plot size: 10'r)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes X No**

Remarks:

SOIL

Sampling Point: P-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-6	10YR 3/1	97	10YR 3/6	3	C	PL	Silt loam	
6-14	10YR 3/1	93	10YR 3/6	5	C	M	Silt loam	
			10YR 3/6	2	C	Pl	Silt loam	
4-16+	10YR 4/1	90	10YR 3/6	10	C	M	Silt loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

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

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

Remarks: No hydrology indicators were observed.

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

Project/Site: Salmon Creek Outfall | City/County: Clark County | Sampling Date: 27 August 2015
Applicant/Owner: Curtis Lake Ranch | State: WA | Sampling Point: P-3
Investigator(s): Dustin Day, Michelle Talal | Section, Township, Range: Section 19 T3N R1E
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 3%
Subregion (LRR): A | Lat: | Long: | Datum:
Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes | NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: The plot is not located within in a wetland and is east of Wetland A. The climatic/hydrologic conditions on the site are not typical for this time of the year since it is a drought year.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30'r)			
1. *Rubus armeniacus*	20	y	FACU
2.			
3.			
4.			
5.			
	20	= Total Cover	
Herb Stratum (Plot size: 10'r)			
1. *Anthoxanthum odoratum*	65	y	FACU
2. *Cirsium arvense*	10	n	FAC
3. *Schedonorus arundinaceus*	5	n	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: 10'r)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	35 (A)		125 (B)

Prevalence Index = B/A = 3.57

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: P-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR 3/2	95	10YR 4/4	5	C	M	Silt loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

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

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

Remarks: No hydrology indicators were observed.

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

Project/Site: Salmon Creek Outfall | City/County: Clark County | Sampling Date: 27 August 2015
Applicant/Owner: Curtis Lake Ranch | State: WA | Sampling Point: P-4
Investigator(s): Dustin Day, Michelle Talal | Section, Township, Range: Section 19 T3N R1E
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): <1%
Subregion (LRR): A | Lat: | Long: | Datum:
Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes | NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: The plot is not located within in a wetland. The climatic/hydrologic conditions on the site are not typical for this time of the year since it is a drought year.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30'r)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 10'r)			
1. *Anthoxanthum odoratum*	60	y	FACU
2. *Hypochaeris radicata*	15	n	FACU
3. *Agrostis capillaris*	15	n	FAC
4. *Juncus effusus*	5	n	FACW
5. *Leucanthemum vulgare*	5	n	FACU
6. *Holcus lanatus*	5	n	FAC
7.			
8.			
9.			
10.			
11.			
	105	= Total Cover	
Woody Vine Stratum (Plot size: 10'r)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	20	x 3 =	60
FACU species	80	x 4 =	320
UPL species	0	x 5 =	0
Column Totals:	105 (A)		380 (B)

Prevalence Index = B/A = 3.62

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks:

SOIL

Sampling Point: P-4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	95	10YR 4/4	3	C	M	Silt loam	
			10YR 4/4	2	C	PL	Silt loam	
6-10	10YR 3/1	92	10YR 3/1	8	C	M	Silt loam	
10-16+	10YR 5/2	98	10YR 4/6	2	C	M	Silt loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks:

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

Project/Site: Salmon Creek Outfall | City/County: Clark County | Sampling Date: 27 August 2015
Applicant/Owner: Curtis Lake Ranch | State: WA | Sampling Point: P-5
Investigator(s): Dustin Day, Michelle Talal | Section, Township, Range: Section 19 T3N R1E
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 1%
Subregion (LRR): A | Lat: | Long: | Datum:
Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes | NWI classification: Freshwater Emergent Wetland (PEM1R)
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

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

Remarks: The plot is not located within in a wetland and is west of Wetland B. The climatic/hydrologic conditions on the site are not typical for this time of the year since it is a drought year.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 30'r)			
1. None			
2.			
3.			
4.			
5.			
	5	= Total Cover	

Herb Stratum (Plot size: 10'r)			
1. *Schedonorus arundinaceus*	95	y	FAC
2. *Phalaris arundinacea*	5	n	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 10'r)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

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

Remarks:

SOIL

Sampling Point: P-5

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100	--	--	--	--	Silt loam	
6-12+	10YR 3/3	90	7.5YR 3/3	10	C	M	Silt loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

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

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

Remarks: No wetland hydrology indicators observed.

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

Project/Site: Salmon Creek Outfall | City/County: Clark County | Sampling Date: 27 August 2015
Applicant/Owner: Curtis Lake Ranch | State: WA | Sampling Point: P-6
Investigator(s): Dustin Day, Michelle Talal | Section, Township, Range: Section 19 T3N R1E
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 5%
Subregion (LRR): A | Lat: | Long: | Datum:
Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes | NWI classification: Freshwater Emergent Wetland (PEM1R)
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: The plot is located within Wetland B. The climatic/hydrologic conditions on the site are not typical for this time of the year since it is a drought year.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: 30'r)			
1. None			
2.			
3.			
4.			
5.			
	5	= Total Cover	

Herb Stratum (Plot size: 10'r)			
1. *Juncus effusus*	60	y	FACW
2. *Phalaris arundinacea*	40	y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100	= Total Cover	

Woody Vine Stratum (Plot size: 10'r)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

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

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? **Yes X No**

Remarks:

SOIL

Sampling Point: P-6

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/2	100	--	--	--	--	Silt loam	
4-16+	10YR 3/2	90	10YR 4/6	8	C	M	Silt loam	
			10YR 4/6	2	C	PL	Silt loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Remarks:

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

Project/Site: Salmon Creek Outfall | City/County: Clark County | Sampling Date: 27 August 2015
Applicant/Owner: Curtis Lake Ranch | State: WA | Sampling Point: P-7
Investigator(s): Dustin Day, Michelle Talal | Section, Township, Range: Section 19 T3N R1E
Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 1%
Subregion (LRR): A | Lat: | Long: | Datum:
Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes | NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)
Are Vegetation ___ , Soil ___ , or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___ , Soil ___ , or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

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

Remarks: The plot is not located within a wetland. The climatic/hydrologic conditions on the site are not typical for this time of the year since it is a drought year.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30'r)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	30	y	FACW
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30'r)			
1. None			
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 10'r)			
1. *Schedonorus arundinceus*	80	y	FAC
2. *Agrostis capillaris*	20	y	FACW
3. *Cirsium arvense*	15	n	FAC
4. *Hypochaeris radicata*	5	n	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	120	= Total Cover	
Woody Vine Stratum (Plot size: 10'r)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

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

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

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

Remarks:

SOIL

Sampling Point: P-7

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16+	10YR 3/2	99	10YR 4/6	1	C	M	Silt loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

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

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

Remarks:

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

Project/Site: Salmon Creek Outfall City/County: Clark County Sampling Date: 09/07/2017

Applicant/Owner: _____ State: WA Sampling Point: SP-8

Investigator(s): Dustin Day, Allison Kinney Section, Township, Range: S19 T03N R01E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0-2

Subregion (LRR): A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes NWI classification: N/A

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Mentha pulegium	30	yes	FACW
2. Lotus corniculatus	20	yes	FAC
3. Rumex crispus	20	yes	FAC
4. Schedonorus arundinaceus	15	no	FAC
5. Poa pratensis	10	no	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	95	10YR 3/4	5	C	PL	Loam	
4-16	10YR 3/1	90	10YR 3/6	10	C	M/PL	Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes _____ No ✓ Depth (inches): _____

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

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

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

Remarks:

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

Project/Site: Salmon Creek Outfall City/County: Clark County Sampling Date: 09/07/2017

Applicant/Owner: _____ State: WA Sampling Point: SP-9

Investigator(s): Dustin Day, Allison Kinney Section, Township, Range: S19 T03N R01E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): _____

Subregion (LRR): A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes NWI classification: PEM1R

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Phalaris Arundinacea	100	yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 1 (B)

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: SP-9

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	90	10YR 3/6	10	C	PL/M	loam	
8-16+	2.5Y 4/1	90	7.5YR 3/4	10	C	PL/M		

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Water Table Present? Yes _____ No ✓ Depth (inches): _____

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

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

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

Remarks:

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

Project/Site: Salmon Creek Outfall City/County: Clark County Sampling Date: 09/07/2017

Applicant/Owner: _____ State: WA Sampling Point: SP-10

Investigator(s): Dustin Day, Allison Kinney Section, Township, Range: S19 T03N R01E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes NWI classification: N/A

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Rumex crispus	30	yes	FAC
2. Phalaris arundinacea	20	yes	FACW
3. Polygonum persicaria	10	no	FACW
4. Mentha pulegium	10	no	FACW
5. Ranunculus sp.	5	no	
6.			
7.			
8.			
9.			
10.			
11.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: SP-10

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	90	10YR 3/6	10	C	PL/M	Loam	
6-16	10YR 3/1	90	10YR 3/4	10	C	PL/M	Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

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

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

Remarks:

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

Project/Site: Salmon Creek Outfall City/County: Clark County Sampling Date: 09/07/2017

Applicant/Owner: _____ State: WA Sampling Point: SP-11

Investigator(s): Dustin Day, Allison Kinney Section, Township, Range: S19 T03N R01E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes NWI classification: PEM1A

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Phalaris arundinacea	30	yes	FACW
2. Juncus effusus	20	yes	FACW
3. Rumex crispus	15	no	FAC
4. Mentha pulegium	10	no	FACW
5. Plantago lanceolata	5	no	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. Rubus armeniacus			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: SP-11

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	90	10YR 3/6	10	C	PL/M		
6-16	2.5Y 3/1	100						

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

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

Project/Site: Salmon Creek Outfall City/County: Clark County Sampling Date: 09/07/2017

Applicant/Owner: _____ State: WA Sampling Point: SP-12

Investigator(s): Dustin Day, Allison Kinney Section, Township, Range: S19 T03N R01E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Sauvie silty clay loam, 0 to 8 percent slopes NWI classification: N/A

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

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

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Phalaris arundinacea	40	yes	FACW
2. Schedonorus arundinaceus	15	yes	FAC
3. Poa pratensis	10	no	FAC
4. Lotus corniculatus	5	no	VAC
5. Cirsium arvense	5	no	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. Rubus armeniacus	20	yes	FAC
2.			
	20 = Total Cover		

% Bare Ground in Herb Stratum 15

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

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

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: SP-12

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100					Loam	
5-16	10YR 4/2	100					Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

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

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

Wetland Hydrology Present? Yes _____ No ✓

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

Remarks:

Appendix C
Wetland Rating Forms

Wetland name or number Wetland A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 27 August 2015

Rated by Nicholle Tabor Trained by Ecology? __ Yes X No Date of training ____

HGM Class used for rating Depressional Wetland has multiple HGM classes? ___ Y X N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map ESRI World Imagery

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

1. Category of wetland based on FUNCTIONS

___ **Category I** – Total score = 23 - 27

X **Category II** – Total score = 20 - 22

___ **Category III** – Total score = 16 - 19

___ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	H M (L)	
Landscape Potential	H (M) L	H (M) L	(H) M L	
Value	(H) M L	(H) M L	(H) M L	TOTAL
Score Based on Ratings	7	7	7	21

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number Wetland A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	See Appendix A: Figure 3 (Topo)
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	4

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number Wetland A

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

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

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

3. Does the entire wetland unit **meet all** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
___The wetland is on a slope (*slope can be very gradual*),
___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
___The water leaves the wetland **without being impounded**.

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
___The overbank flooding occurs at least once every 2 years.

Wetland name or number Wetland A

NO – go to 6 **YES** – The wetland class is **Riverine**

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

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

NO – go to 7 **YES** – The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number Wetland A

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?

D 1.1. Characteristics of surface water outflows from the wetland:		
Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet).	(points = 3)	3
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet.	points = 2	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 1	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 1	
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	0
Wetland has persistent, ungrazed, plants > ½ of area	points = 3	
Wetland has persistent, ungrazed plants > $^1/_{10}$ of area	points = 1	
Wetland has persistent, ungrazed plants < $^1/_{10}$ of area	(points = 0)	
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.		4
Area seasonally ponded is > ½ total area of wetland	(points = 4)	
Area seasonally ponded is > ¼ total area of wetland	points = 2	
Area seasonally ponded is < ¼ total area of wetland	points = 0	
Total for D 1	Add the points in the boxes above	7

Rating of Site Potential If score is: ___12-16 = H (7 6-11 = M) ___0-5 = L *Record the rating on the first page*

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

D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 (No = 0)	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	(Yes = 1) No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 (No = 0)	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____	Yes = 1 (No = 0)	0
Total for D 2	Add the points in the boxes above	1

Rating of Landscape Potential If score is: ___3 or 4 = H (1 1 or 2 = M) ___0 = L *Record the rating on the first page*

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

D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?	(Yes = 1) No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?	(Yes = 1) No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)?	(Yes = 2) No = 0	2
Total for D 3	Add the points in the boxes above	4

Rating of Value If score is: (4 2-4 = H) ___1 = M ___0 = L *Record the rating on the first page*

Wetland name or number Wetland A

DEPRESSIONAL AND FLATS WETLANDS

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

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

D 4.1. Characteristics of surface water outflows from the wetland:		4
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	(points = 4)	
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*		0
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	(points = 0)	
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*		5
The area of the basin is less than 10 times the area of the unit	(points = 5)	
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
Total for D 4	Add the points in the boxes above	9

Rating of Site Potential If score is: ___ **12-16 = H** (9 **6-11 = M**) ___ **0-5 = L** *Record the rating on the first page*

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

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

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

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

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.*		2
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		
• Flooding occurs in a sub-basin that is immediately down-gradient of unit.	(points = 2)	
• Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
Flooding from groundwater is an issue in the sub-basin.	points = 1	
The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____	points = 0	
There are no problems with flooding downstream of the wetland.	points = 0	
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	(Yes = 2) No = 0	2
Total for D 6	Add the points in the boxes above	4

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

Wetland name or number wetland A

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

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

____Aquatic bed	4 structures or more: points = 4
_X_ Emergent	3 structures: points = 2
____Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
____Forested (areas where trees have > 30% cover)	(1 structure: points = 0)

If the unit has a Forested class, check if:

____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

0

H 1.2. Hydroperiods

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

____Permanently flooded or inundated	4 or more types present: points = 3
____Seasonally flooded or inundated	3 types present: points = 2
_X_ Occasionally flooded or inundated	(2 types present: points = 1)
_X_ Saturated only	1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland	
____Seasonally flowing stream in, or adjacent to, the wetland	
____**Lake Fringe wetland**	**2 points**
____**Freshwater tidal wetland**	**2 points**

2

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

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

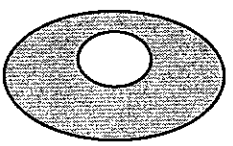
If you counted: > 19 species	points = 2
(5 - 19 species)	(points = 1)
< 5 species	points = 0

1

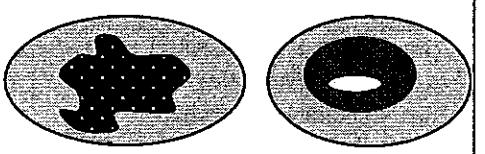
H 1.4. Interspersion of habitats

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

(**None** = 0 points)

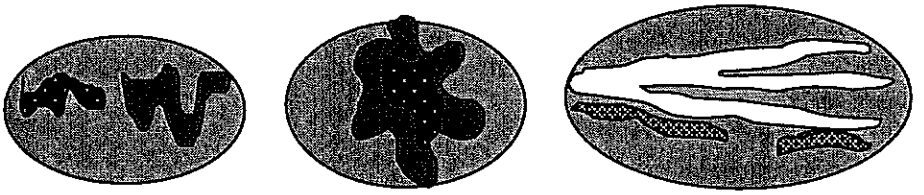


Low = 1 point



Moderate = 2 points

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



0

Wetland name or number Wetland A

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ____Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	3

Rating of Site Potential If score is: ___15-18 = H ___7-14 = M (3) 0-6 = L *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 50 = 50 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	3
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 9 + [(% moderate and low intensity land uses)/2] 42 = 51 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	3
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	6

Rating of Landscape Potential If score is: (6) 4-6 = H ___1-3 = M ___< 1 = L *Record the rating on the first page*

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

Rating of Value If score is: (2) 2 = H ___1 = M ___0 = L *Record the rating on the first page*

Wetland name or number Wetland A

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number Wetland A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No= **Not an estuarine wetland**)	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No – Go to **SC 2.3**) SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** (No = **Not a WHCV**) SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** (No = **Not a WHCV**) SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** (No = **Not a WHCV**)	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No – Go to **SC 3.2**) SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No = **Is not a bog**) SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** (No – Go to **SC 3.4**) **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** (No = **Is not a bog**)	**Cat. I**

Wetland name or number Wetland A

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	Not Applicable

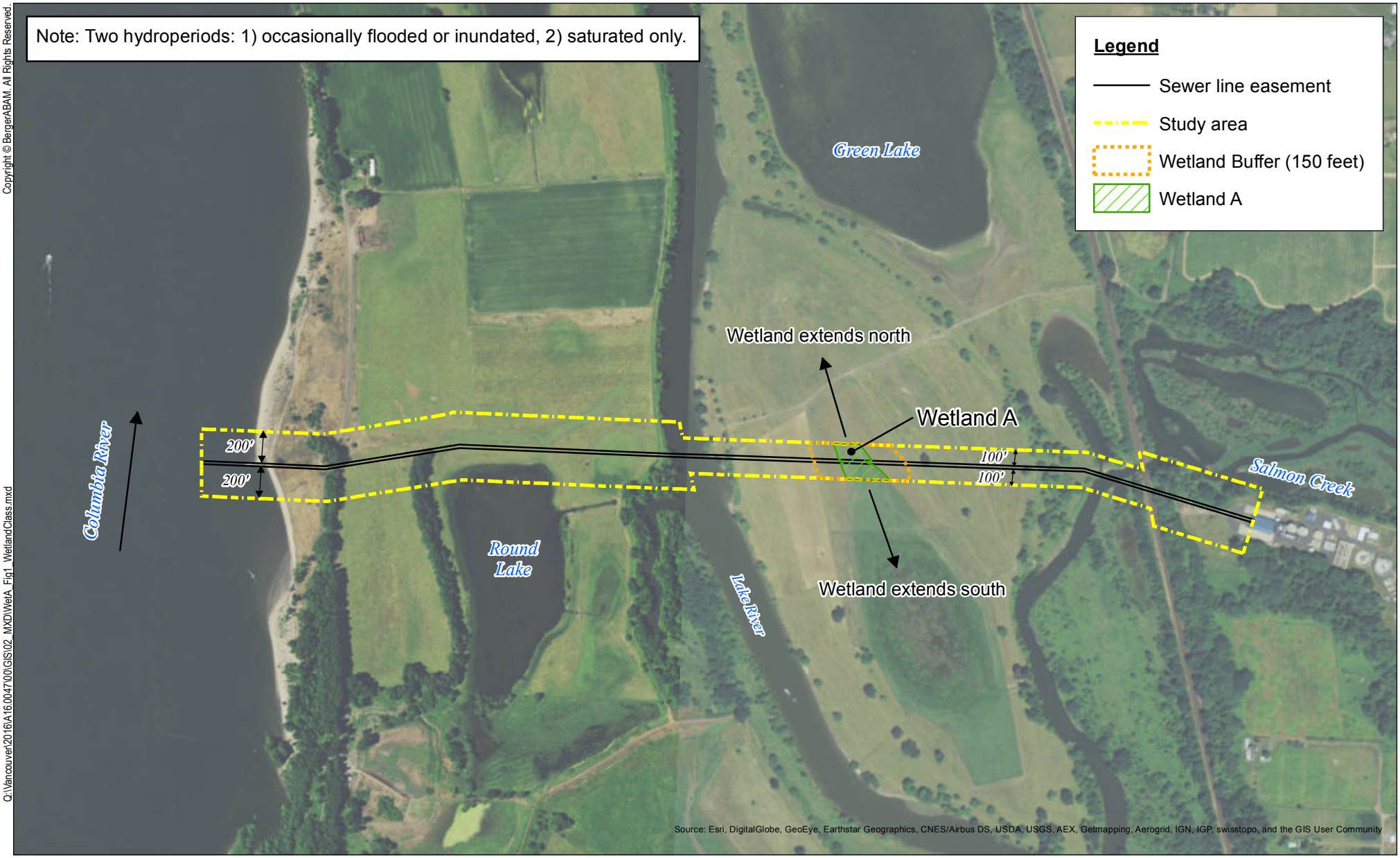


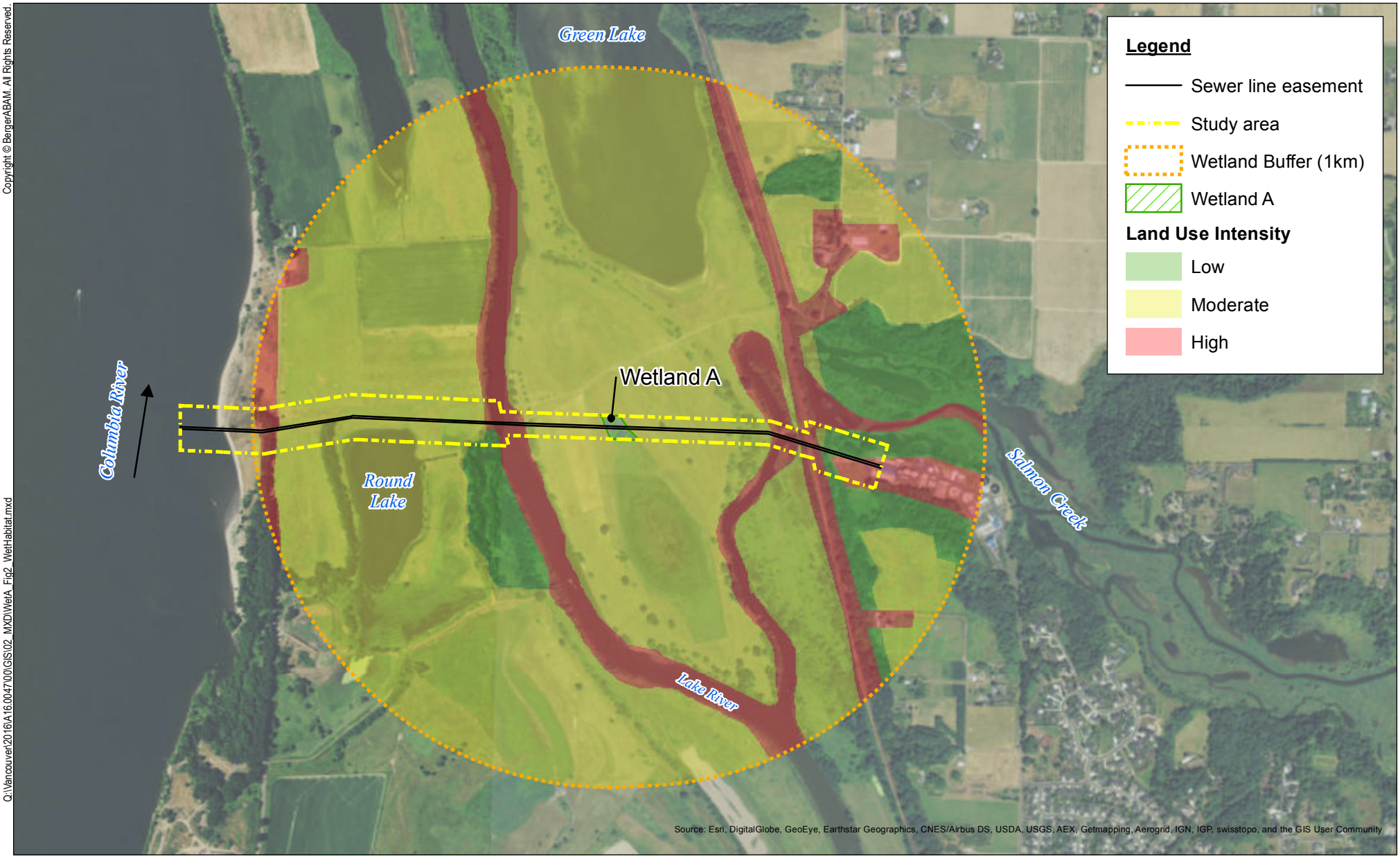
Figure1 - Wetland A Classification and Plant Cover

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

N

0 250 500 1,000 1,500 2,000 Feet



Q:\Vancouver\2016\A16.004700\GIS\02_MXD\WetA_Fig2_WetHabitat.mxd

Figure 2 - Wetland A Habitat Assessment

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

0 0.125 0.25 0.5 0.75 1 Kilometers

0 500 1,000 2,000 3,000 4,000 Feet

Wetland A

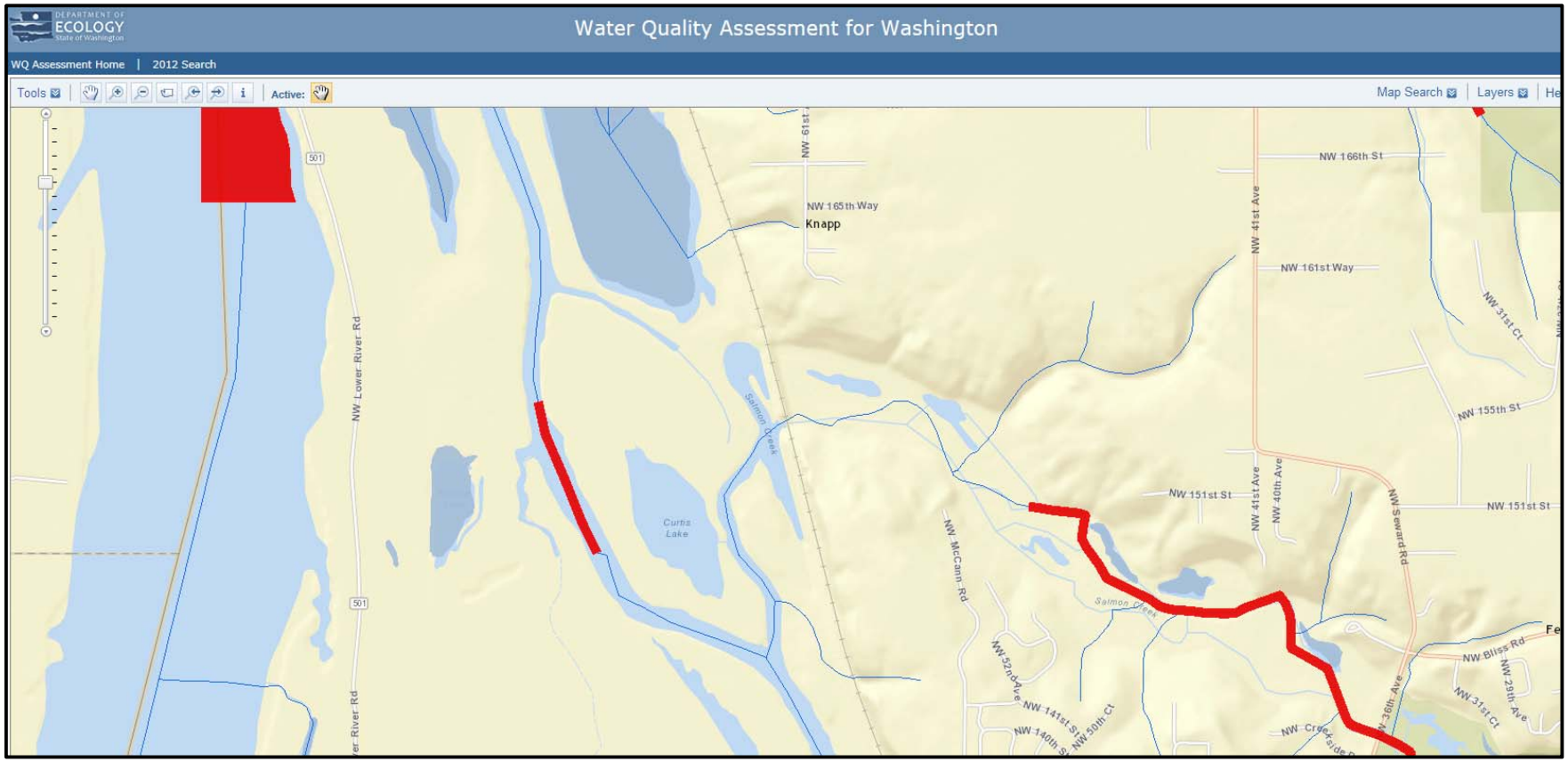


Figure 3 – 303(d) Listed Waters in Basin

Programs Services Publications & Forms Databases Laws & Rules Public Involvement Calendar Public Records

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process
Project Catalog
by WRIA
by County
Funding Opportunities
Project Development Priority Lists
Related Information
TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

** ***Status*** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

Figure 4 – List of TMDLs for WRIA 28 (Salmon-Washougal)

Wetland name or number Wetland B

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B Date of site visit: 27 August 2015

Rated by Michelle Talal Trained by Ecology? __ Yes X No Date of training _____

HGM Class used for rating Depressional Wetland has multiple HGM classes? ___Y ____N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map ESRI World Imagery

OVERALL WETLAND CATEGORY X (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

X **Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			TOTAL
	Circle the appropriate ratings									
Site Potential	H	(M)	L	(H)	M	L	H	M	(L)	
Landscape Potential	H	(M)	L	H	(M)	L	(H)	M	L	
Value	(H)	M	L	(H)	M	L	(H)	M	L	
Score Based on Ratings	7			8			7			22

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number Wetland B

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (*can be added to map of hydroperiods*)	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	See Appendix A: figure 3 (topo)
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	4

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number Wetland B

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

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

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

3. Does the entire wetland unit **meet all** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
___The wetland is on a slope (*slope can be very gradual*),
___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
___The water leaves the wetland **without being impounded**.

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
___The overbank flooding occurs at least once every 2 years.

Wetland name or number Wetland B

NO – go to 6 **YES** – The wetland class is **Riverine**

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

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

NO – go to 7 **YES** – The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number Wetland B

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?

D 1.1. Characteristics of surface water outflows from the wetland:		3
Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet).	(points = 3)	
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet.	points = 2	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 1	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 1	
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	
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes):		0
Wetland has persistent, ungrazed, plants > 95% of area	points = 5	
Wetland has persistent, ungrazed, plants > ½ of area	points = 3	
Wetland has persistent, ungrazed plants > $^1/_{10}$ of area	points = 1	
Wetland has persistent, ungrazed plants < $^1/_{10}$ of area	(points = 0)	
D 1.4. Characteristics of seasonal ponding or inundation:		4
This is the area that is ponded for at least 2 months. See description in manual.		
Area seasonally ponded is > ½ total area of wetland	(points = 4)	
Area seasonally ponded is > ¼ total area of wetland	points = 2	
Area seasonally ponded is < ¼ total area of wetland	points = 0	
Total for D 1	Add the points in the boxes above	6

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

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

D 2.1. Does the wetland unit receive stormwater discharges?	Yes = 1 (No = 0)	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	(Yes = 1) No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland?	Yes = 1 (No = 0)	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____	Yes = 1 (No = 0)	0
Total for D 2	Add the points in the boxes above	1

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

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

D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?	(Yes = 1) No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?	(Yes = 1) No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality *(answer YES if there is a TMDL for the basin in which the unit is found)*?	(Yes = 2) No = 0	2
Total for D 3	Add the points in the boxes above	4

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

Wetland name or number Wetland B

DEPRESSIONAL AND FLATS WETLANDS

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

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

D 4.1. Characteristics of surface water outflows from the wetland:

Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	4
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*

Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	3
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	

D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*

The area of the basin is less than 10 times the area of the unit	points = 5	5
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	

Total for D 4	Add the points in the boxes above	12

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

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

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

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

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

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.*

The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		2
• Flooding occurs in a sub-basin that is immediately down-gradient of unit.	points = 2	
• Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
Flooding from groundwater is an issue in the sub-basin.	points = 1	
The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____	points = 0	
There are no problems with flooding downstream of the wetland.	points = 0	

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0	2
Total for D 6	Add the points in the boxes above	4

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

Wetland name or number Wetland B

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

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

____Aquatic bed	4 structures or more: points = 4
_X_ Emergent	3 structures: points = 2
____Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
____Forested (areas where trees have > 30% cover)	(1 structure: points = 0)

If the unit has a Forested class, check if:

____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

H 1.1 score: 0

H 1.2. Hydroperiods

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

____Permanently flooded or inundated	4 or more types present: points = 3
_X_ Seasonally flooded or inundated	3 types present: points = 2
____Occasionally flooded or inundated	(2 types present: points = 1)
_X_ Saturated only	1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland	
____Seasonally flowing stream in, or adjacent to, the wetland	
____**Lake Fringe wetland**	**2 points**
____**Freshwater tidal wetland**	**2 points**

H 1.2 score: 1

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

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

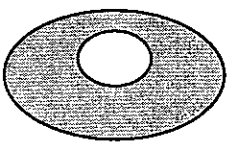
If you counted: > 19 species	points = 2
5 - 19 species	points = 1
< 5 species	(points = 0)

H 1.3 score: 0

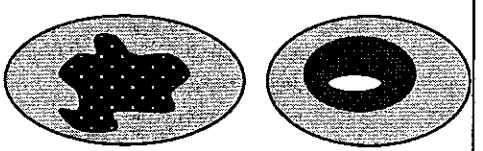
H 1.4. Interspersion of habitats

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

(**None** = 0 points)

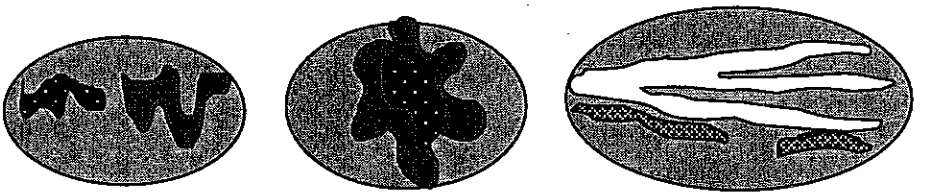


Low = 1 point



Moderate = 2 points

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



H 1.4 score: 0

Wetland name or number Wetland B

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ____Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	1

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** (1) **0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 50 = 50 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	3
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 18 + [(% moderate and low intensity land uses)/2] 42 = 60 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	3
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	

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

H 3.0. Is the habitat provided by the site valuable to society?

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

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

Wetland name or number Wetland B

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

X **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

X **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number Wetland B

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No= Not an estuarine wetland)	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** (No - Go to SC 1.2)	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No – Go to SC 2.3) SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** (No = **Not a WHCV**) SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** (No = Not a WHCV) SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** (No = Not a WHCV)	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No – Go to SC 3.2) SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No = Is not a bog) SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** (No – Go to **SC 3.4**) **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** (No = Is not a bog)	**Cat. I**

Wetland name or number Wetland B

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** (No = **Not a forested wetland for this section**)	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** (No = **Not a wetland in a coastal lagoon**) SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** (No = **not an interdunal wetland for rating**) SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	Not Applicable

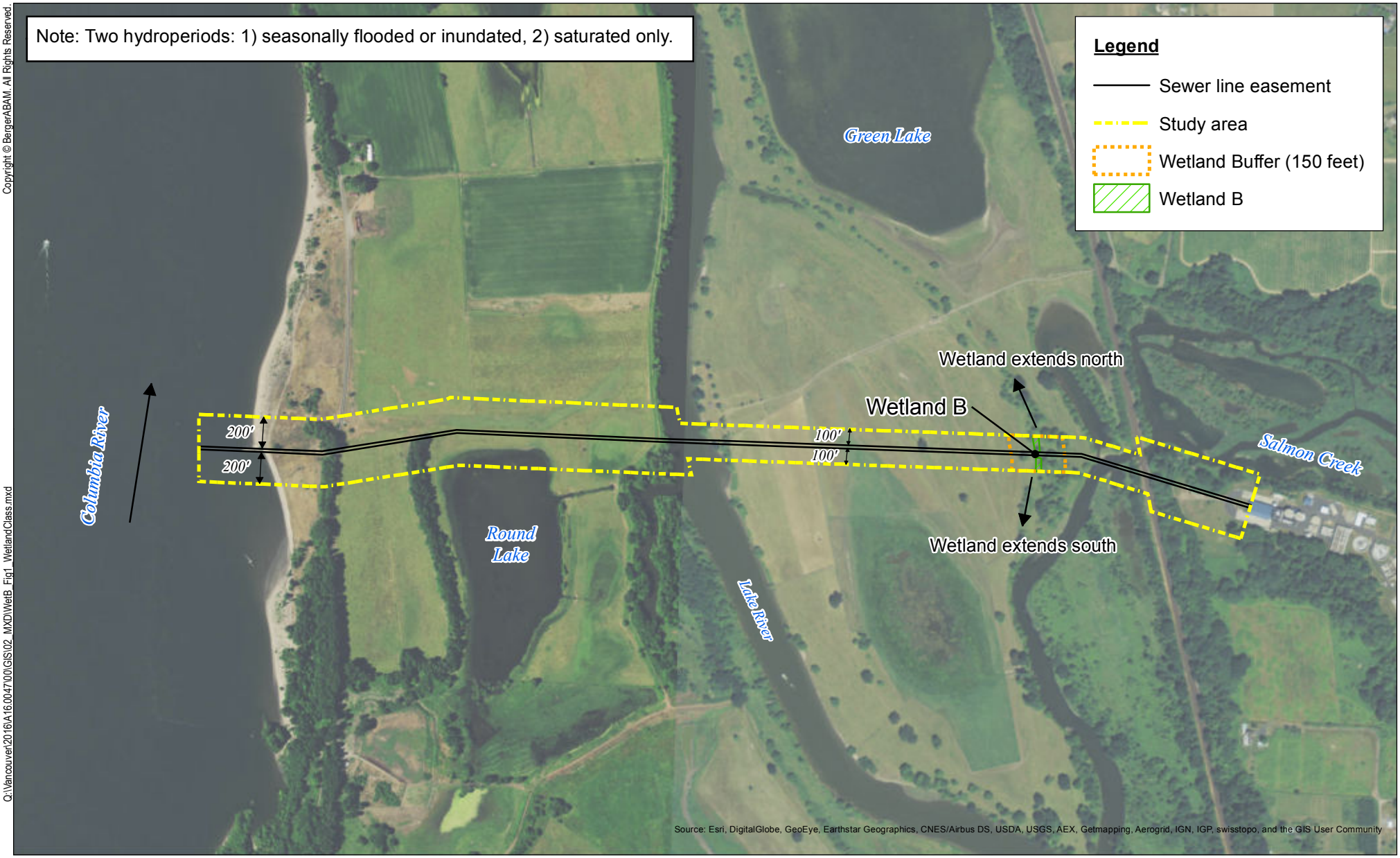


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Figure 1 - Wetland B Classification and Plant Cover

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

N

0 250 500 1,000 1,500 2,000 Feet

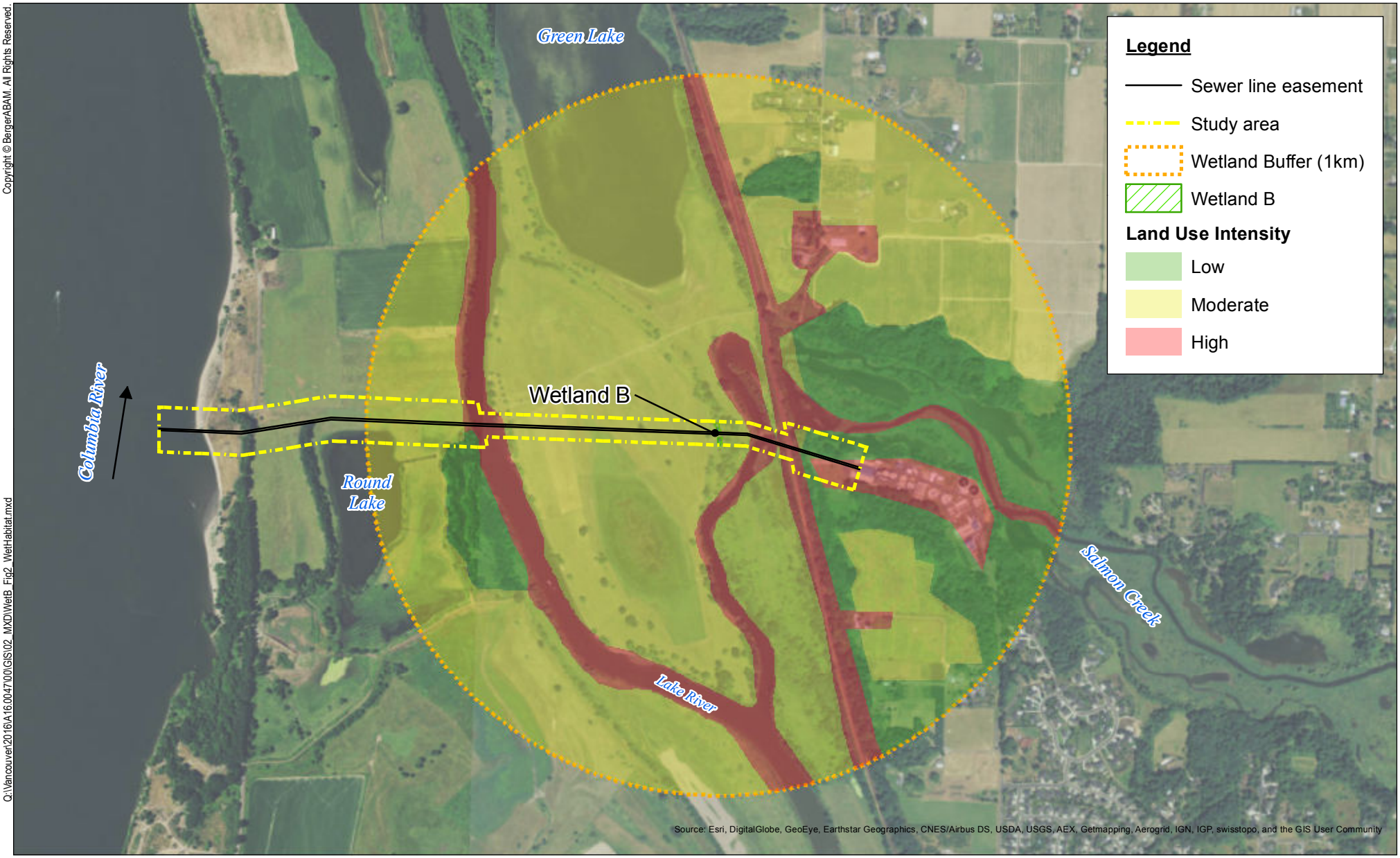

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Figure 2 - Wetland B Habitat Assessment

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

0 0.125 0.25 0.5 0.75 1 Kilometers

0 500 1,000 2,000 3,000 4,000 Feet

Wetland B

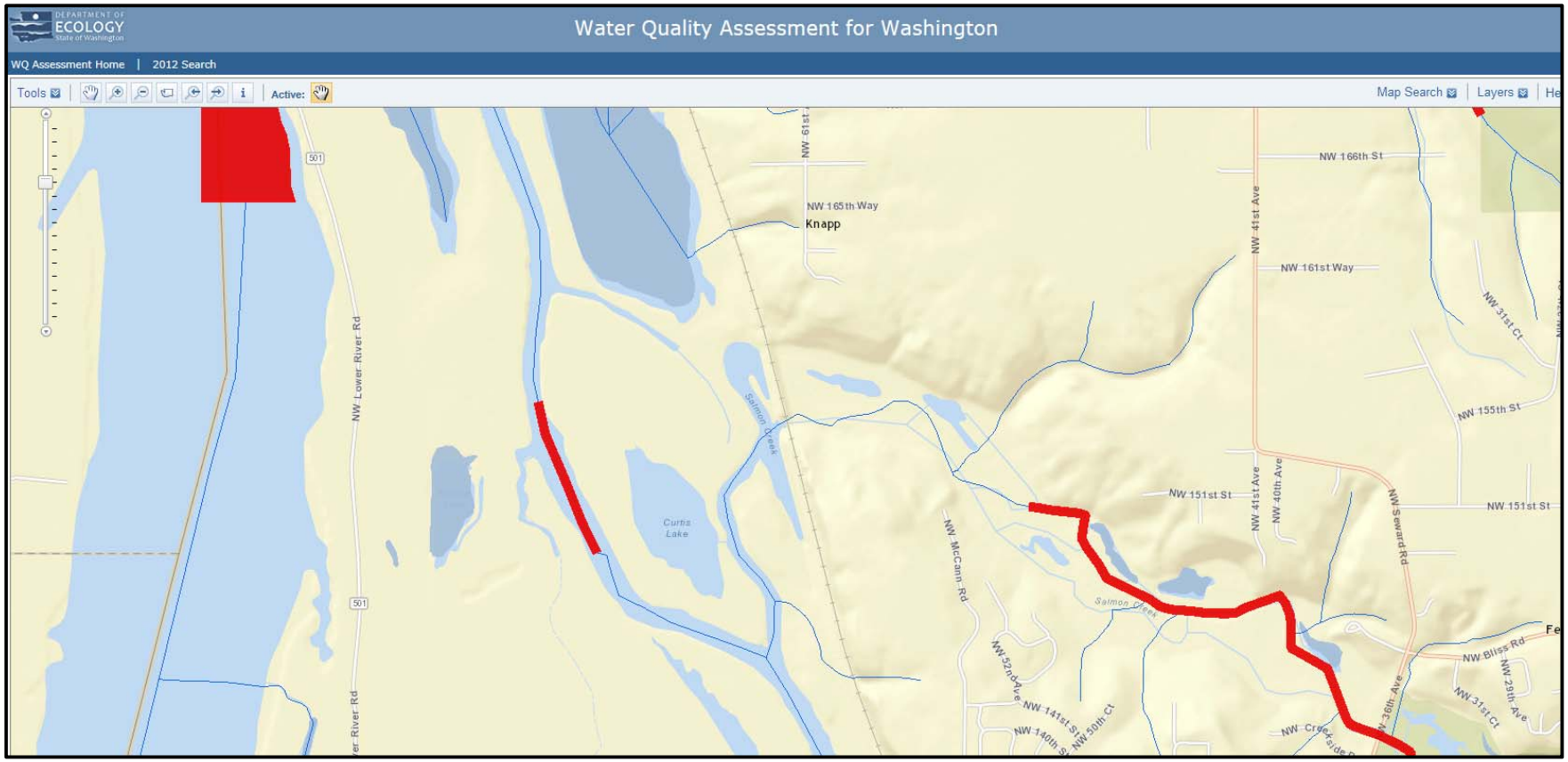


Figure 3 – 303(d) Listed Waters in Basin

Programs Services Publications & Forms Databases Laws & Rules Public Involvement Calendar Public Records

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process
Project Catalog
by WRIA
by County
Funding Opportunities
Project Development Priority Lists
Related Information
TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

** ***Status*** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

Figure 4 – List of TMDLs for WRIA 28 (Salmon-Washougal)

Wetland name or number C+J

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetlands C and J Date of site visit: 9.7.2017

Rated by Allison Kinney Trained by Ecology? X Yes ___No Date of training March 2015

HGM Class used for rating Riverine 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 Bing Maps

OVERALL WETLAND CATEGORY II (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

__X__**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	(H) M L	H (M) L	H (M) L	
Landscape Potential	(H) M L	(H) M L	H (M) L	
Value	H (M) L	H M (L)	(H) M L	TOTAL
Score Based on Ratings	8	6	7	21

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number C3J

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	2
Ponded depressions	R 1.1	2
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	2
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	2
Map of the contributing basin	R 2.2, R 2.3, R 5.2	4
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	3
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	6

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number C?J

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

   (NO) – go to 3 **YES** – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded**.

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
   ✓ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ✓ The overbank flooding occurs at least once every 2 years.

Wetland name or number C?J

NO – go to 6 YES – The wetland class is **Riverine**

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

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

NO – go to 7 **YES** – The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number C?J

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	4
Depressions cover > ½ 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)	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		12

Rating of Site Potential If score is: X **12-16 = H** ___ **6-11 = M** ___ **0-5 = L** *Record the rating on 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)	0
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area?	(Yes = 1) No = 0	1
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	1
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants?	(Yes = 1) No = 0	1
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)	0
Total for R 2 — Add the points in the boxes above		3

Rating of Landscape Potential If score is: X **3-6 = H** ___ **1 or 2 = M** ___ **0 = L** *Record the rating on 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	1
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?	Yes = 1 (No = 0)	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)	0
Total for R 3 — Add the points in the boxes above		1

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

Wetland name or number C-3

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 If the ratio is 5-<10 points = 4 If the ratio is 1-<5 points = 2 If the ratio is < 1 points = 1	4
R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons 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	7
Total for R 4 Add the points in the boxes above	11

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

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	1
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	1
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	1
Total for R 5	Add the points in the boxes above	3

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

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	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	0
Total for R 6 Add the points in the boxes above	0

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

Wetland name or number C3J

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) X Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* X At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	3
Total for H 1 Add the points in the boxes above	14

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 7 + [(% moderate and low intensity land uses)/2] 6 = 13 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 28 + [(% moderate and low intensity land uses)/2] 19 = 47 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	2
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	3

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

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

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

Wetland name or number C3

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.*

X Aquatic bed	4 structures or more: points = 4
X Emergent	3 structures: points = 2
X Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
X Forested (areas where trees have > 30% cover)	1 structure: points = 0

If the unit has a Forested class, check if:

___ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

4

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*).

X Permanently flooded or inundated	4 or more types present: points = 3
X Seasonally flooded or inundated	3 types present: points = 2
X Occasionally flooded or inundated	2 types present: points = 1
___ Saturated only	1 type present: points = 0
X Permanently flowing stream or river in, or adjacent to, the wetland	
___ Seasonally flowing stream in, or adjacent to, the wetland	
___ **Lake Fringe wetland**	**2 points**
___ **Freshwater tidal wetland**	**2 points**

3

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

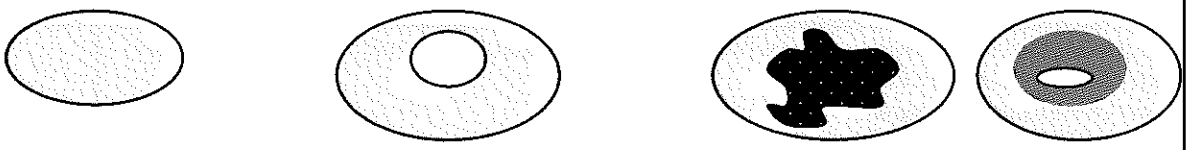
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

1

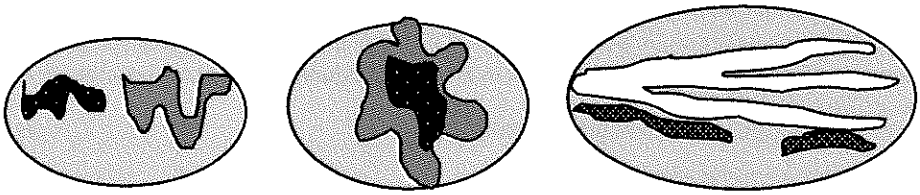
H 1.4. Interspersion of habitats

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



None = 0 points **Low** = 1 point **Moderate** = 2 points

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



3

Wetland name or number C3J

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

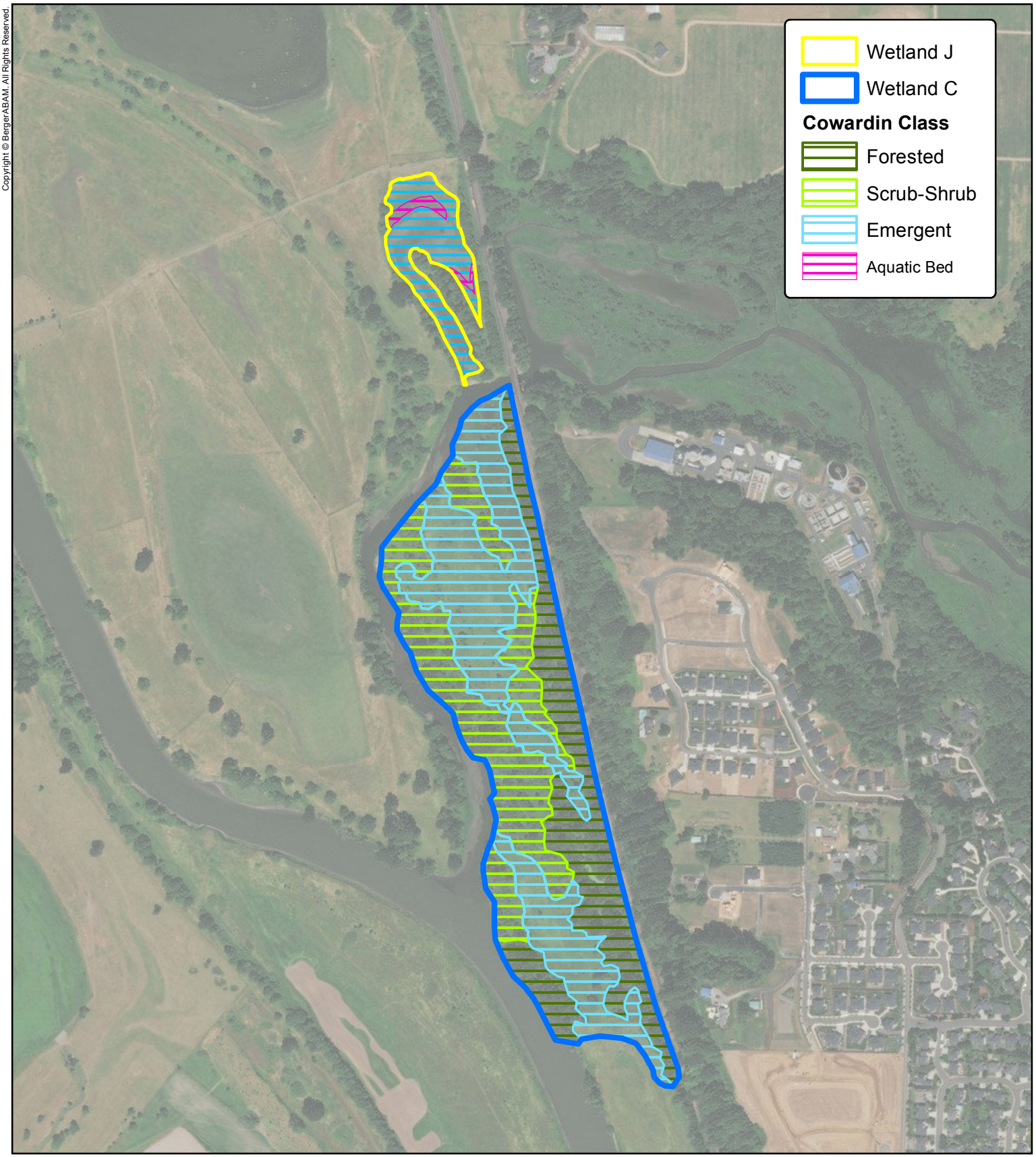
Wetland name or number C3J

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No= **Not an estuarine wetland**)	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No – Go to **SC 2.3**) SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** (No = **Not a WHCV**) SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No – Go to **SC 3.2**) SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No = **Is not a bog**) SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No = **Is not a bog**	**Cat. I**

Wetland name or number ____

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** (No = **Not a forested wetland for this section**)	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** (No = **Not a wetland in a coastal lagoon**) SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** (No = **not an interdunal wetland for rating**) SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

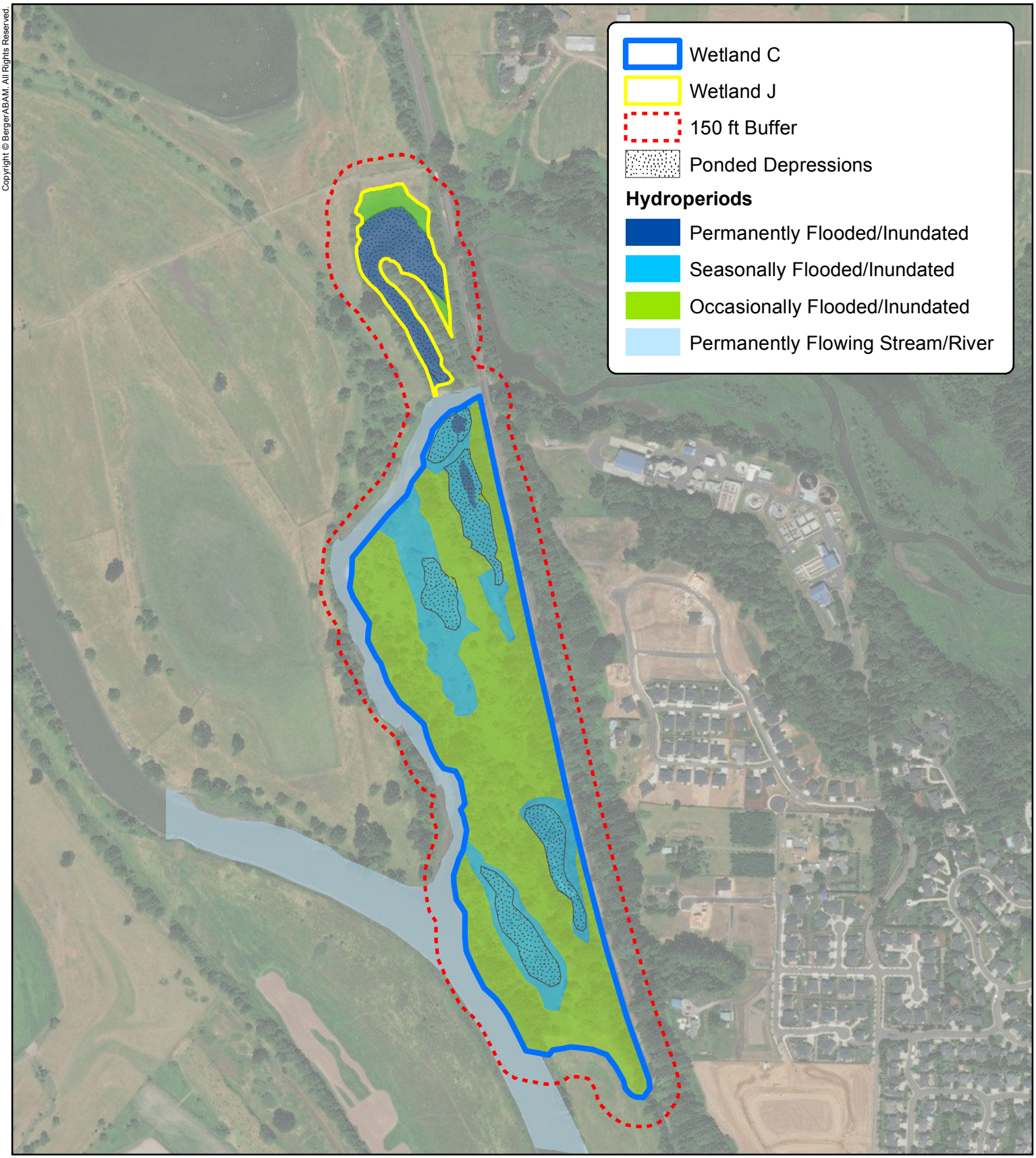
0 250 500 1,000
Feet

FIGURE 1: Cowardin Class

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland C\Fig1_Wetland C_Cowardin.mxd



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

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8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

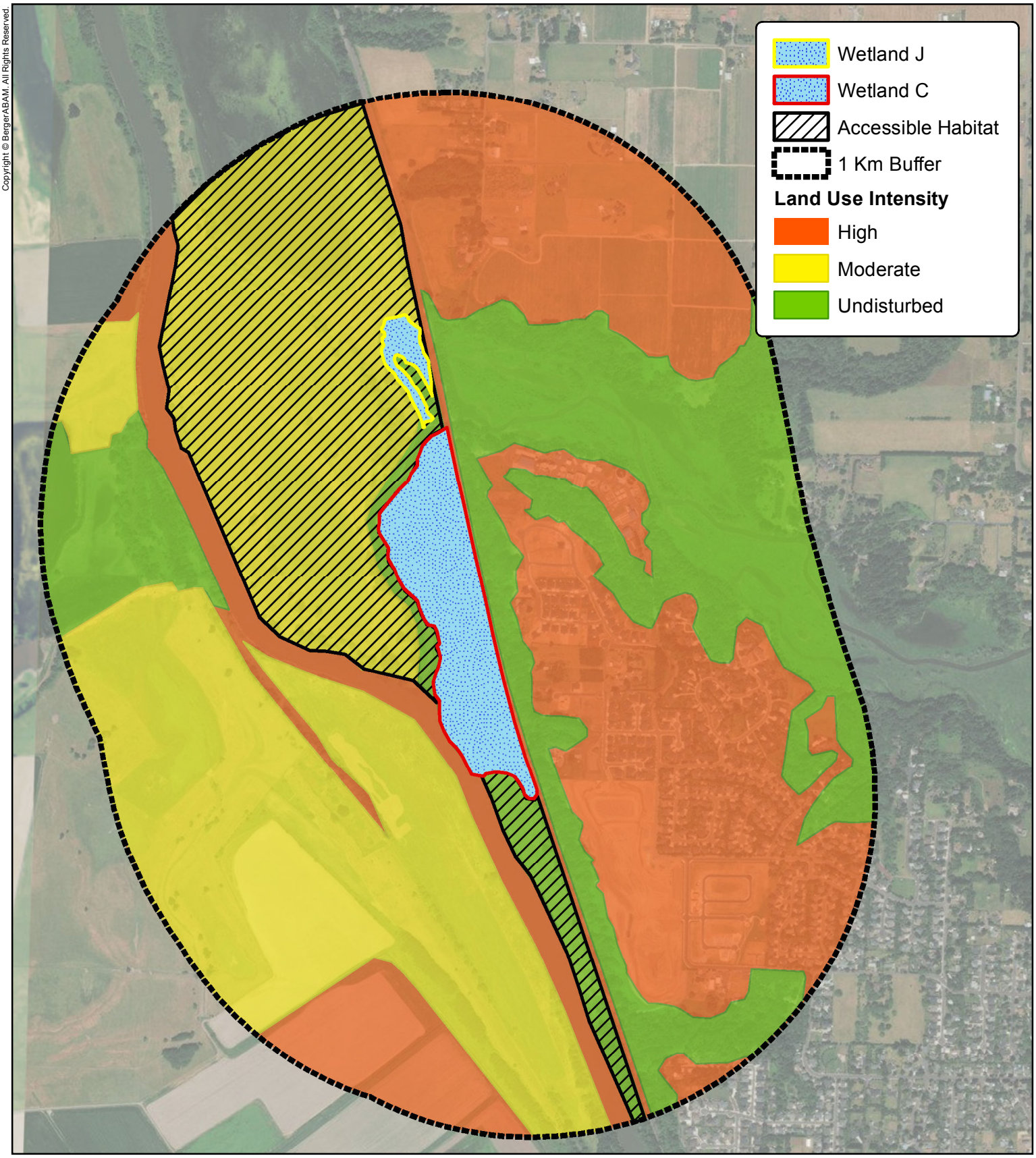
0 250 500 1,000
Feet

FIGURE 2: Ponded Depressions & Hydro Periods

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland CJ\Fig2_Wetland C_Hydro.mxd



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
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Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

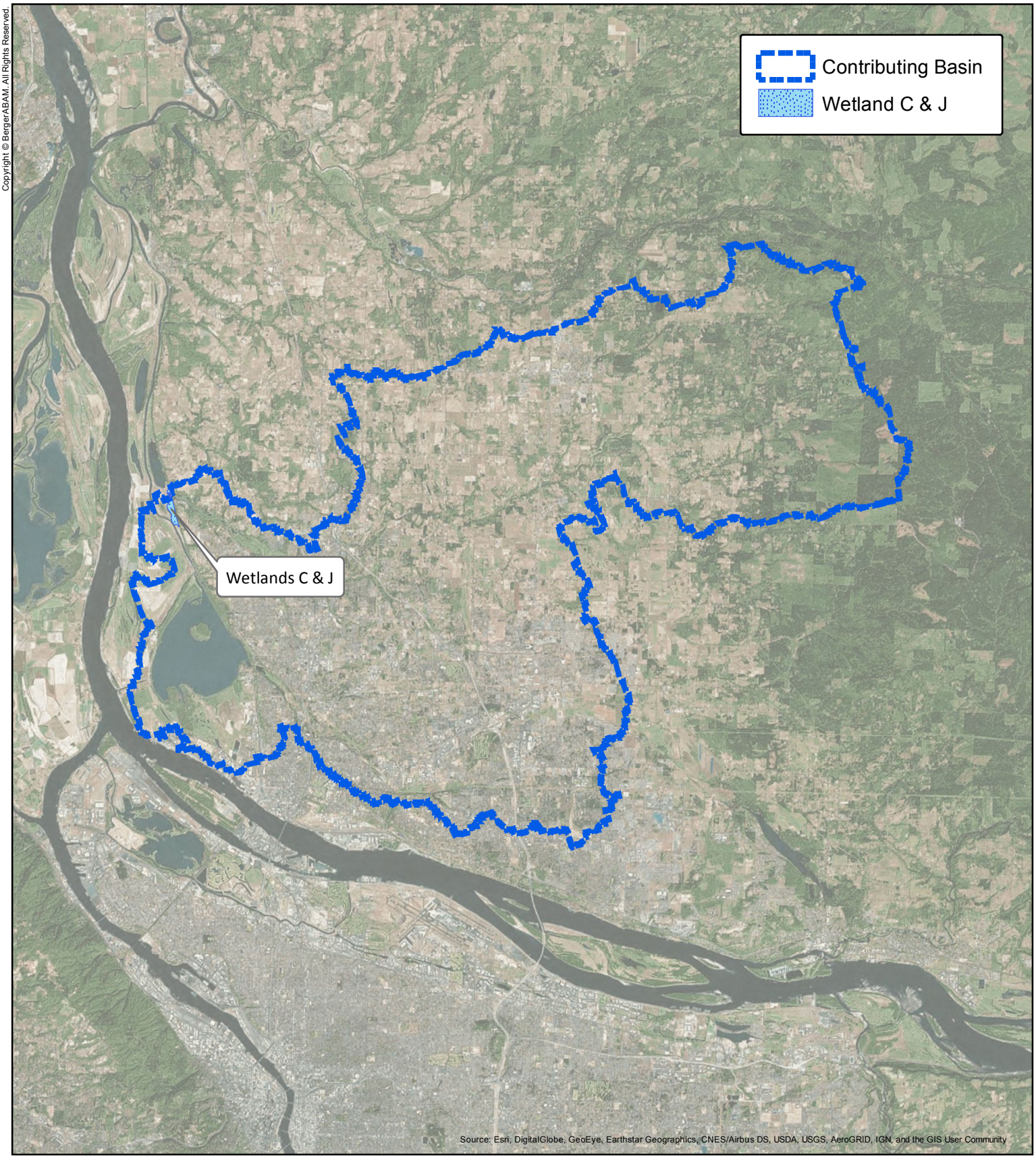
0 250 500 1,000
Feet

FIGURE 3: Land Use Intensity Map

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland CJ\Fig3_Wetland C1km.mxd



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

0 1.25 2.5 5 Miles

FIGURE 4: Contributing Basin

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland CJ\Fig4_Wetland C Contributing Basin.mxd


Knapp
Salmon Creek
Salmon Creek
Round Lake
Curtis Lake
501
NW Lower River Rd

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process

Project Catalog
- by WRIA
- by County

Funding Opportunities

Project Development Priority Lists

Related Information

TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

*** Status** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

Back to top of page

Wetland name or number D

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland D Date of site visit: 9-7-2017

Rated by Allison Kinney Trained by Ecology? X Yes ___No Date of training March 2015

HGM Class used for rating Slope 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 Bing Maps

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

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	H (M) L	H (M) L	H M (L)	
Landscape Potential	H (M) L	H M (L)	H (M) L	
Value	(H) M L	H M (L)	H (M) L	TOTAL
Score Based on Ratings	7	4	5	16

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number D

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	2
Hydroperiods	H 1.2	1
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	2
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants *(can be added to figure above)*	S 4.1	2
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	3
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	4
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	5

Wetland name or number D

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

   NO – go to 3 **YES** – The wetland class is **Flats**

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

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

   __The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;

   __At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

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

   _x_ The wetland is on a slope (*slope can be very gradual*),

   _x_ 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,

   _x_ The water leaves the wetland **without being impounded.**

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

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

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

   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,

   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number D

NO – go to 6 **YES** – The wetland class is **Riverine**

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

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

NO – go to 7 **YES** – The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number D

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 100 ft of horizontal distance)* 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	0
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*: Yes = 3 No = 0	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 > ½ of area — points = 2 Dense, uncut, herbaceous plants > ¼ of area — points = 1 Does not meet any of the criteria above for plants — points = 0	6
Total for S 1 — Add the points in the boxes above	6

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

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
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	0
Total for S 2 — Add the points in the boxes above	1

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

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
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	1
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	2
Total for S 3 — Add the points in the boxes above	4

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

Wetland name or number D

SLOPE WETLANDS

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

S 4.0. Does the site have the potential to reduce flooding and stream erosion?	
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.* Dense, uncut, **rigid** plants cover > 90% of the area of the wetland points = 1 All other conditions points = 0	1

Rating of Site Potential If score is: X **1 = M** ___ **0 = L** *Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?	
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff? Yes = 1 No = 0	0

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

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

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

NOTES and FIELD OBSERVATIONS:

Wetland name or number D

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

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

____	Aquatic bed	4 structures or more: points = 4
_X_	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) that each cover 20% within the Forested polygon

1

H 1.2. Hydroperiods

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

_X_	Permanently flooded or inundated	4 or more types present: points = 3
____	Seasonally flooded or inundated	3 types present: points = 2
____	Occasionally flooded or inundated	2 types present: points = 1
_X_	Saturated only	1 type present: points = 0
____	Permanently flowing stream or river in, or adjacent to, the wetland	
____	Seasonally flowing stream in, or adjacent to, the wetland	
____	**Lake Fringe wetland**	**2 points**
____	**Freshwater tidal wetland**	**2 points**

2

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

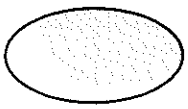
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

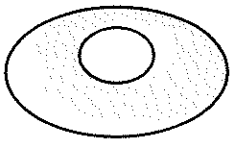
1

H 1.4. Interspersion of habitats

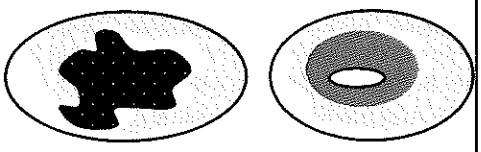
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points



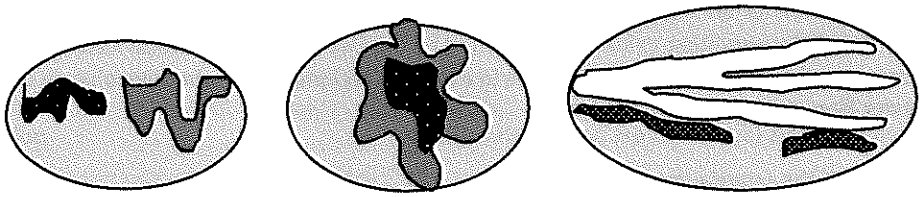
Low = 1 point



Moderate = 2 points

1

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



Wetland name or number D

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

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 17 + [(% moderate and low intensity land uses)/2] 0 = 17 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 29 + [(% moderate and low intensity land uses)/2] 45 = 43.5 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	29/2 1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	2

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

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

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

Wetland name or number D

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

X **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number D

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No = **Is not a bog**	**Cat. I**

Wetland name or number D

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	

PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

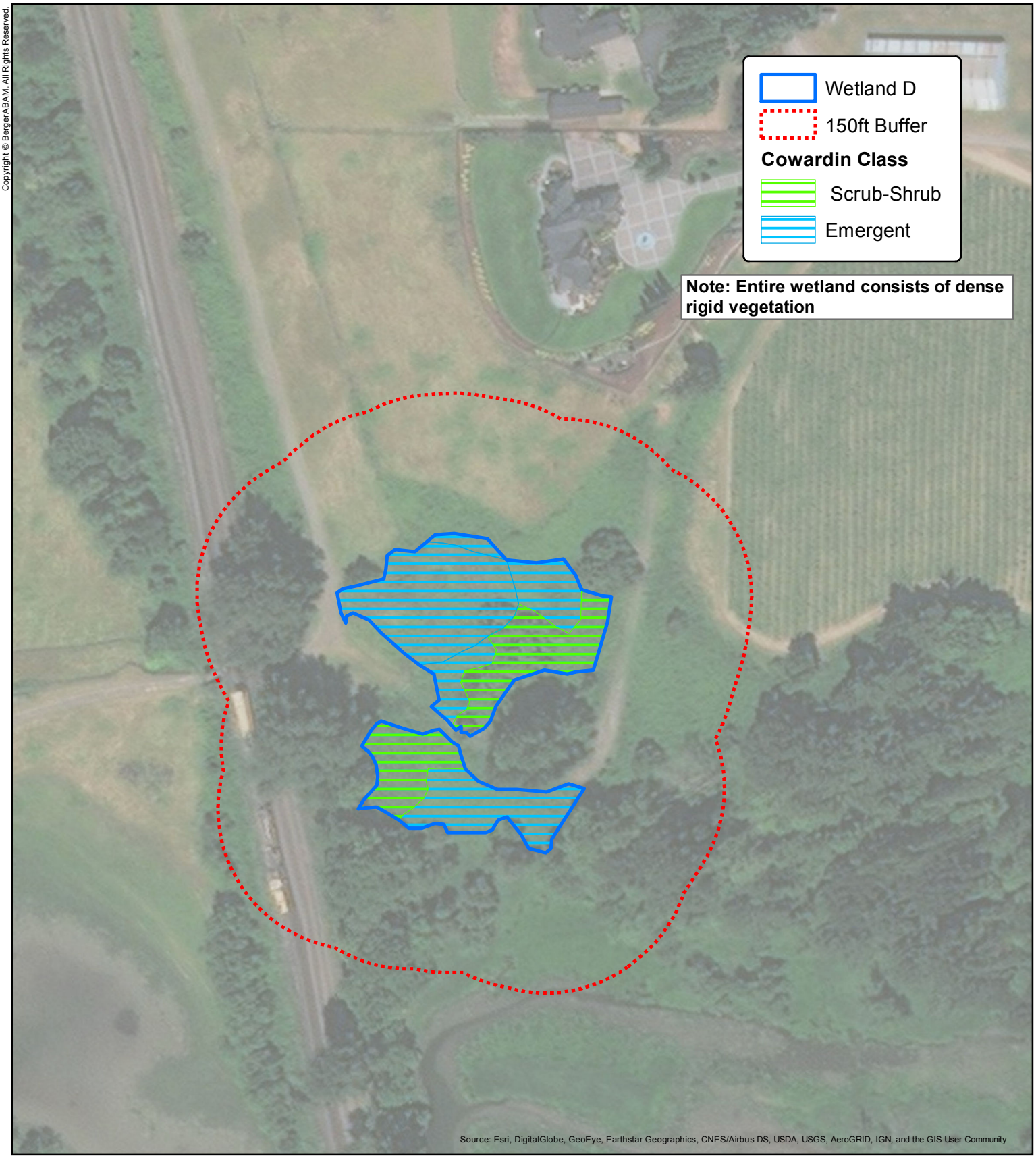
0 70 140 280 Feet

FIGURE 1: Hydroperiods

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland D\Fig1_Wetland D.mxd



PURPOSE: WETLAND DELINEATION

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Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

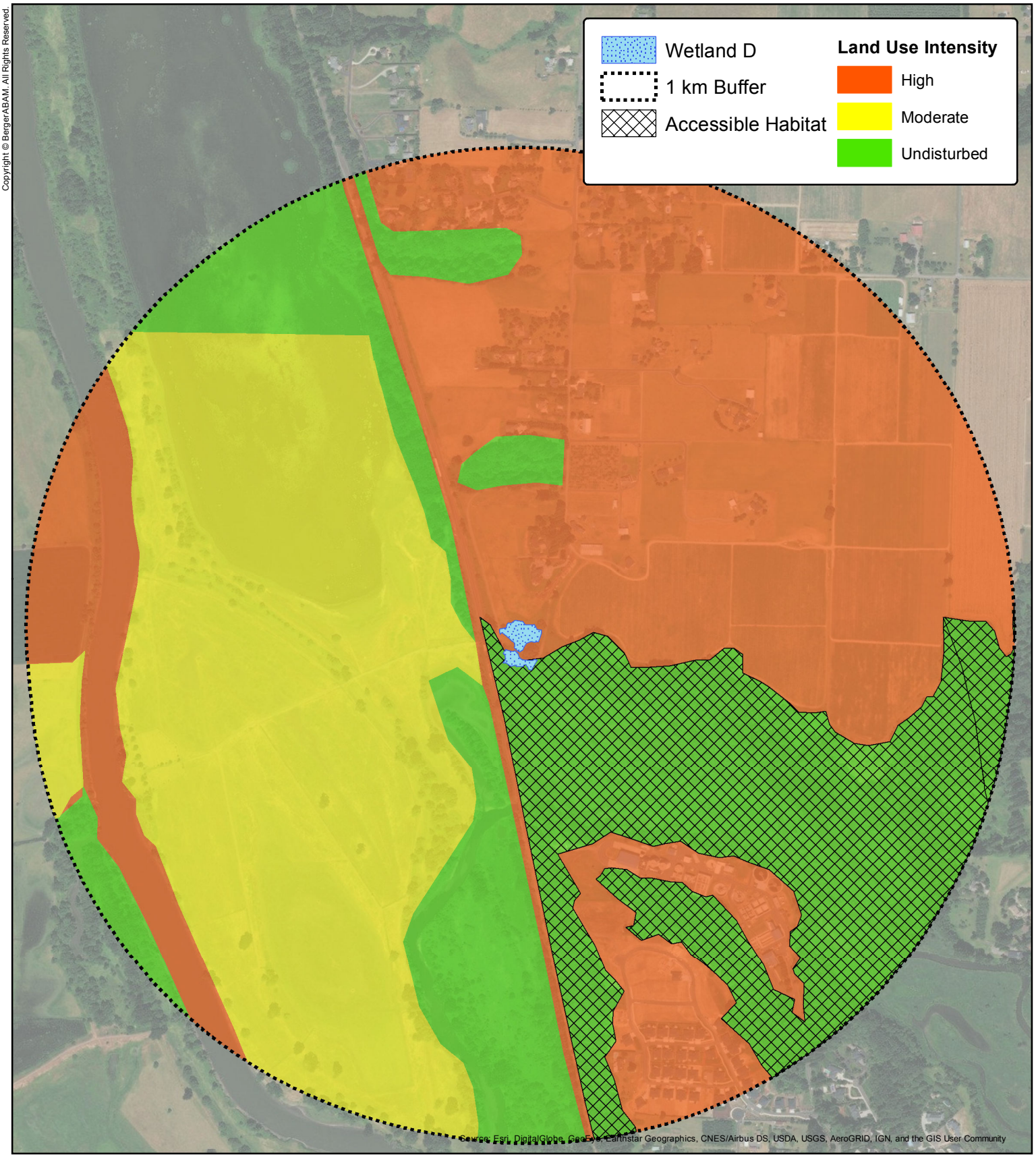
0 70 140 280 Feet

FIGURE 2: Cowardin Class

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland D\Fig2_Wetland D_Cowardin.mxd



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

0 250 500 1,000
Feet

FIGURE 3: Land Use Intensity Map

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland D\Fig3_Wetland_D1km.mxd


Knapp
Salmon Creek
Salmon Creek
Round Lake
Curtis Lake
501
NW Lower River Rd

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process

Project Catalog
- by WRIA
- by County

Funding Opportunities

Project Development Priority Lists

Related Information

TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

*** Status** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

Back to top of page

Wetland name or number E

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland E Date of site visit: 9.7.2017

Rated by Allison Kinney Trained by Ecology? X Yes ___No Date of training March 2015

HGM Class used for rating Riverine 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 Bing Maps

OVERALL WETLAND CATEGORY II (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

___**Category I** – Total score = 23 - 27

X **Category II** – Total score = 20 - 22

___**Category III** – Total score = 16 - 19

___**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	(H) M L	H (M) L	H (M) L	
Landscape Potential	(H) M L	(H) M L	H (M) L	
Value	(H) M L	H M (L)	(H) M L	TOTAL
Score Based on Ratings	9	6	7	22

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number E

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	1
Ponded depressions	R 1.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	1
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	1
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	1
Map of the contributing basin	R 2.2, R 2.3, R 5.2	3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	4
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	5

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number C

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

   (NO) - go to 3 **YES** – The wetland class is **Flats**

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

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

   __The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;

   __At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

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

   ___The wetland is on a slope (*slope can be very gradual*),

   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,

   ___The water leaves the wetland **without being impounded**.

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

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

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

   _X_The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,

   _X_The overbank flooding occurs at least once every 2 years.

Wetland name or number E

NO – go to 6 **YES** – The wetland class is **Riverine**

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

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

NO – go to 7 **YES** – The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number C

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 > ½ area of wetland — points = 4 Depressions present but cover < ½ area of wetland — points = 2 No depressions present — points = 0	4
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) > $^1/_3$ area of the wetland — points = 3 Trees, shrubs, and ungrazed herbaceous < $^1/_3$ area of the wetland — points = 0	8
Total for R 1 — Add the points in the boxes above	12

Rating of Site Potential If score is: X **12-16 = H** ___**6-11 = M** ___**0-5 = L** *Record the rating on 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	0
R 2.2. Does the contributing basin to the wetland include a UGA or incorporated area? Yes = 1 No = 0	1
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	1
R 2.4. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
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	0
Total for R 2 — Add the points in the boxes above	3

Rating of Landscape Potential If score is: X **3-6 = H** ___**1 or 2 = M** ___**0 = L** *Record the rating on 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	1
R 3.2. Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens? Yes = 1 No = 0	1
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	2
Total for R 3 — Add the points in the boxes above	4

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

Wetland name or number E

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 If the ratio is 5-<10 points = 4 If the ratio is 1-<5 points = 2 If the ratio is < 1 points = 1	1
R 4.2. Characteristics of plants that slow down water velocities during floods: *Treat large woody debris as forest or shrub. Choose the points appropriate for the best description (polygons 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	7
Total for R 4 Add the points in the boxes above	8

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

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	1
R 5.2. Does the up-gradient watershed include a UGA or incorporated area?	Yes = 1 No = 0	1
R 5.3. Is the up-gradient stream or river controlled by dams?	Yes = 0 No = 1	1
Total for R 5	Add the points in the boxes above	3

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

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	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	0
Total for R 6 Add the points in the boxes above	0

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

Wetland name or number E

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
_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) that each cover 20% within the Forested polygon

1

H 1.2. Hydroperiods

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

____Permanently flooded or inundated	4 or more types present: points = 3
_X_ Seasonally flooded or inundated	3 types present: points = 2
____Occasionally flooded or inundated	2 types present: points = 1
_X_ Saturated only	1 type present: points = 0
_X_ Permanently flowing stream or river in, or adjacent to, the wetland	
____Seasonally flowing stream in, or adjacent to, the wetland	
____**Lake Fringe wetland**	**2 points**
____**Freshwater tidal wetland**	**2 points**

2

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

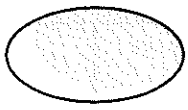
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

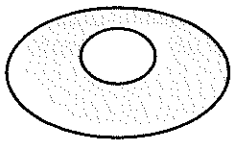
1

H 1.4. Interspersion of habitats

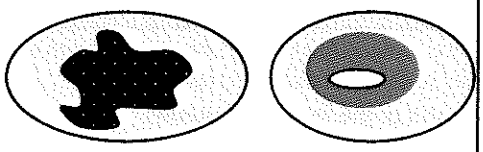
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points

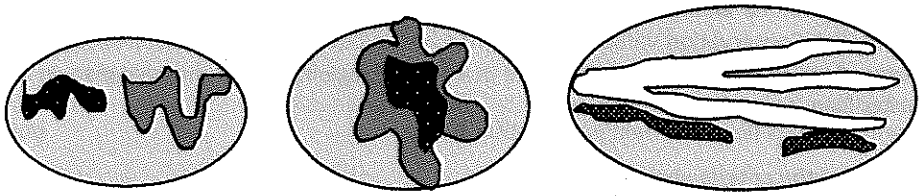


Low = 1 point



Moderate = 2 points

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



2

Wetland name or number E

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) X Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* X At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	3
Total for H 1 Add the points in the boxes above	9

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 5 + [(% moderate and low intensity land uses)/2] 14 = 19 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 18 + [(% moderate and low intensity land uses)/2] 26 = 44 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	2
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	3

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

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

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

Wetland name or number E

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

X **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

X **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number 2

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No= **Not an estuarine wetland**)	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No – Go to **SC 2.3**) SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** (No = **Not a WHCV**) SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No – Go to **SC 3.2**) SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No = **Is not a bog**) SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No = **Is not a bog**	**Cat. I**

Wetland name or number E

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	

PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

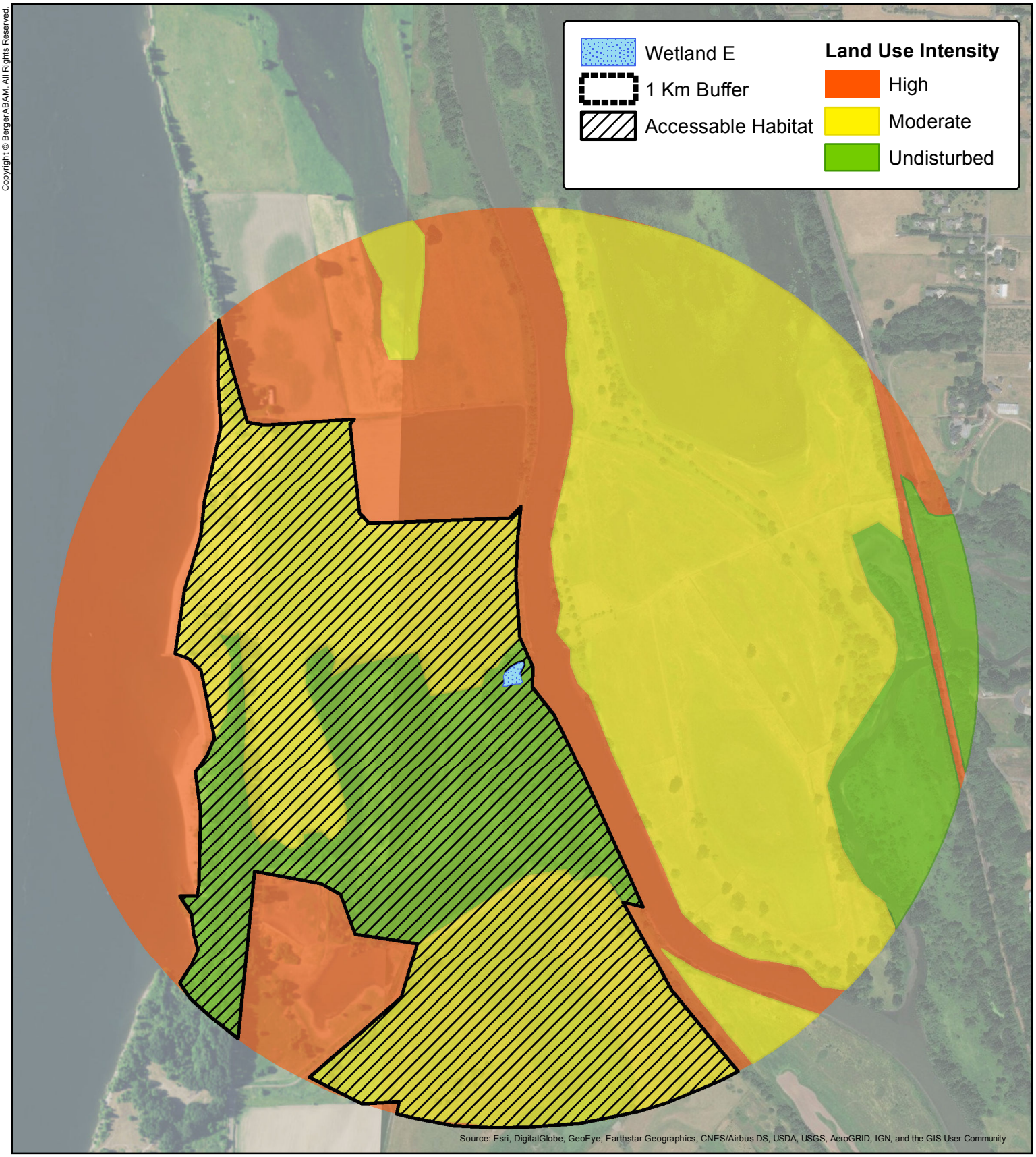
0 40 80 160 Feet

FIGURE: 1 Hydroperiods, Ponded Depressions, & Cowardin Class

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

October 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland E\Fig1_Wetland E.mxd



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

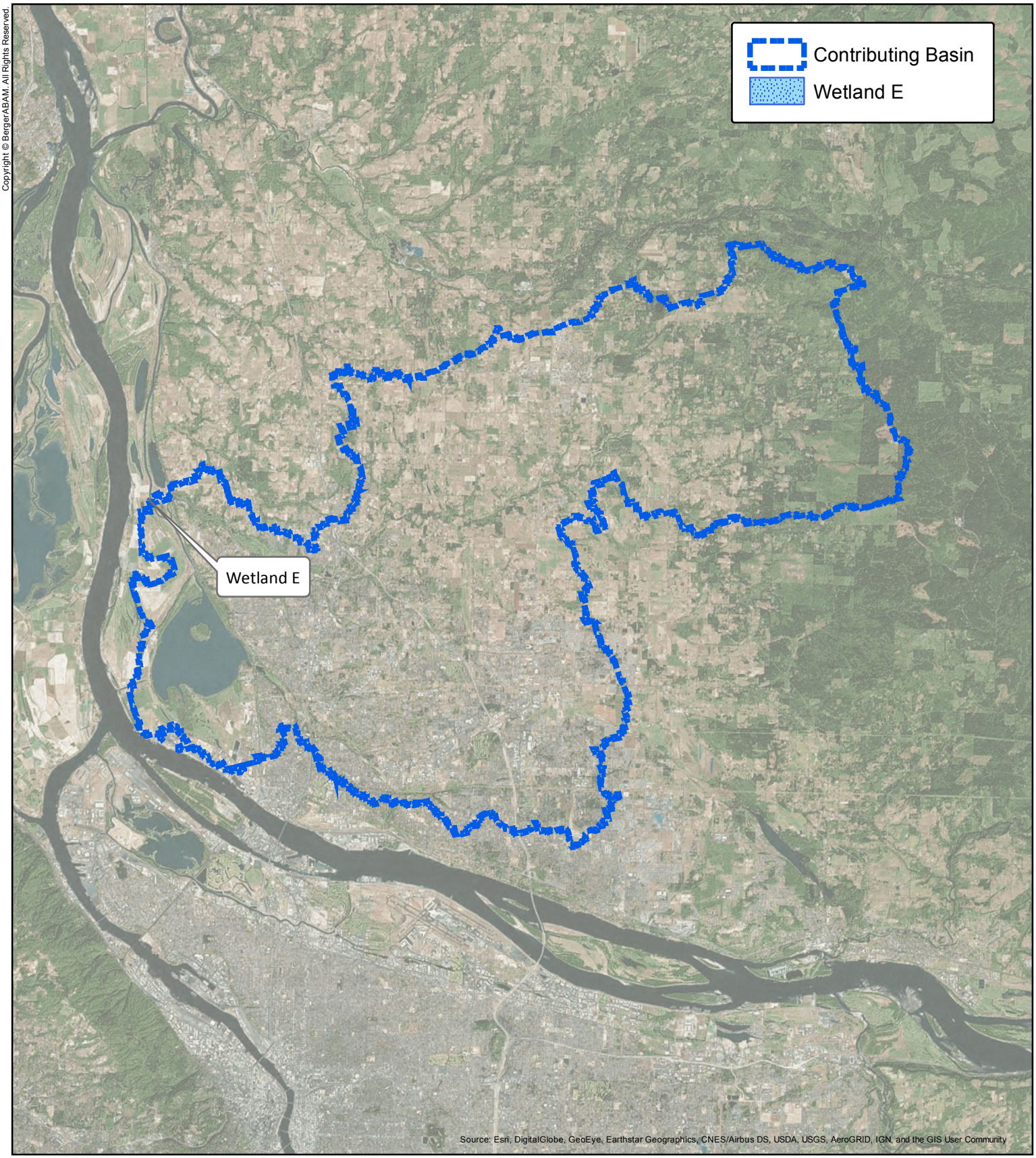
0 250 500 1,000
Feet

FIGURE: 2 Land Use Intensity Map

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

October 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland E\Fig2_Wetland E1km.mxd



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

0 0.5 1 2 3 4 5
Miles

FIGURE: 3 Contributing Basin

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

October 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland E\Fig3_Wetland E Contributing Basin.mxd


Knapp
Salmon Creek
Salmon Creek
Round Lake
Curtis Lake
501
NW Lower River Rd

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process

Project Catalog
- by WRIA
- by County

Funding Opportunities

Project Development Priority Lists

Related Information

TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

*** Status** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

Back to top of page

Wetland name or number Wetland F

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland F Date of site visit: April - May 2012

Rated by Nicelle Talal Trained by Ecology? __ Yes X No Date of training _____

HGM Class used for rating Depressional Wetland has multiple HGM classes? ___Y X N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map ESRI World Imagery

OVERALL WETLAND CATEGORY X (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

X **Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	H (M) L	H (M) L	H M (L)	
Landscape Potential	H (M) L	H (M) L	(H) M L	
Value	(H) M L	(H) M L	(H) M L	TOTAL
Score Based on Ratings	7	7	7	21

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number Wetland F

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet *(can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	See Appendix A: Figure 3 (Topo)
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	4

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number Wetland F

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

NO – go to 3 **YES** – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded**.

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number Wetland F

NO – go to 6 **YES** – The wetland class is **Riverine**

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

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

NO – go to 7 **YES** – The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number Wetland F

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?

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

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

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

D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 (No = 0)		0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? (Yes = 1) No = 0		1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 (No = 0)		0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 (No = 0)		0
Total for D 2 Add the points in the boxes above		1

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

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

D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? (Yes = 1) No = 0		1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? (Yes = 1) No = 0		1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality *(answer YES if there is a TMDL for the basin in which the unit is found)*? (Yes = 2) No = 0		2
Total for D 3 Add the points in the boxes above		4

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

Wetland name or number Wetland F

DEPRESSIONAL AND FLATS WETLANDS

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

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

D 4.1. Characteristics of surface water outflows from the wetland:

Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	(points = 2)	2
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	

D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*

Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	
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	0
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	(points = 0)	

D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*

The area of the basin is less than 10 times the area of the unit	(points = 5)	5
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	

Total for D 4	Add the points in the boxes above	7

Rating of Site Potential If score is: ___ **12-16 = H** (7) **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

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

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

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

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

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.*

The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):

• Flooding occurs in a sub-basin that is immediately down-gradient of unit.	(points = 2)	2
• Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
Flooding from groundwater is an issue in the sub-basin.	points = 1	
The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____	points = 0	
There are no problems with flooding downstream of the wetland.	points = 0	

D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	(Yes = 2) No = 0	2
Total for D 6	Add the points in the boxes above	4

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

Wetland name or number wetland F

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	0
_X_ Emergent	3 structures: points = 2	
____ Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1	
____ Forested (areas where trees have > 30% cover)	(1 structure: points = 0)	
If the unit has a Forested class, check if:		
____ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon		

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
_X_ Seasonally flooded or inundated	3 types present: points = 2	
____ Occasionally flooded or inundated	(2 types present: points = 1)	
_X_ Saturated only	1 type present: points = 0	
____ Permanently flowing stream or river in, or adjacent to, the wetland		
____ Seasonally flowing stream in, or adjacent to, the wetland		
____ **Lake Fringe wetland**	**2 points**	
____ **Freshwater tidal wetland**	**2 points**	

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

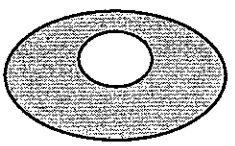
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

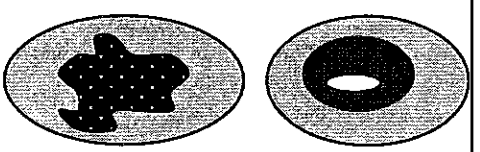
H 1.4. Interspersion of habitats

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

(**None** = 0 points)



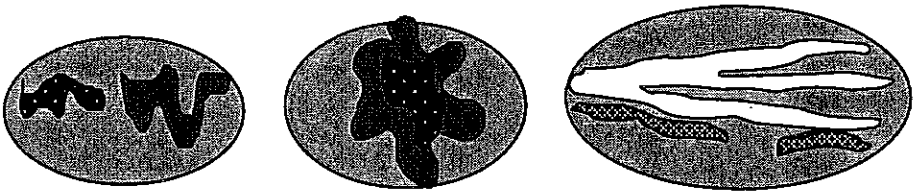
Low = 1 point



Moderate = 2 points

0

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



Wetland name or number Wetland F

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

Rating of Site Potential If score is: ___15-18 = H ___7-14 = M (3) 0-6 = L *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 50 = 50 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon (points = 3) 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	3
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 4 + [(% moderate and low intensity land uses)/2] 38 = 42 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches (points = 1) Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1 km Polygon is high intensity (points = 0)	0
Total for H 2 Add the points in the boxes above	4

Rating of Landscape Potential If score is (4) 4-6 = H ___1-3 = M ___< 1 = L *Record the rating on the first page*

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

Rating of Value If score is: (2) 2 = H ___1 = M ___0 = L *Record the rating on the first page*

Wetland name or number Wetland F

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

☒ **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number Wetland F

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No= **Not an estuarine wetland**)	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No – Go to **SC 2.3**) SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** (No = **Not a WHCV**) SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** (No = **Not a WHCV**) SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** (No = **Not a WHCV**)	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No – Go to **SC 3.2**) SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No = **Is not a bog**) SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** (No – Go to **SC 3.4**) **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** (No = **Is not a bog**)	**Cat. I**

Wetland name or number Wetland F

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** (No = **Not a forested wetland for this section**)	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** (No = **Not a wetland in a coastal lagoon**) SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** (No = **not an interdunal wetland for rating**) SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	Not Applicable

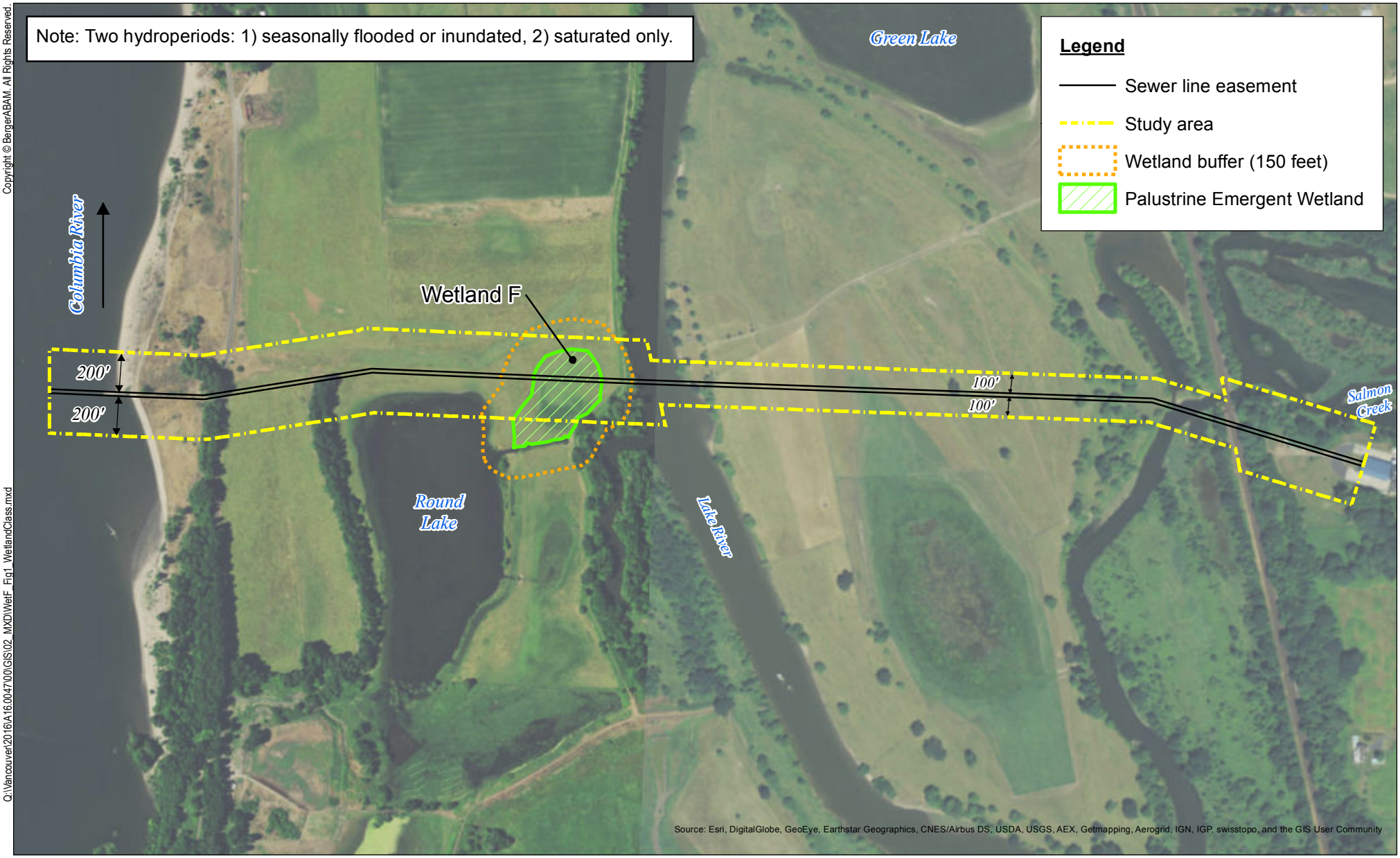


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Figure 1 - Wetland F Classification and Plant Cover

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

N

0 250 500 1,000 1,500 2,000 Feet

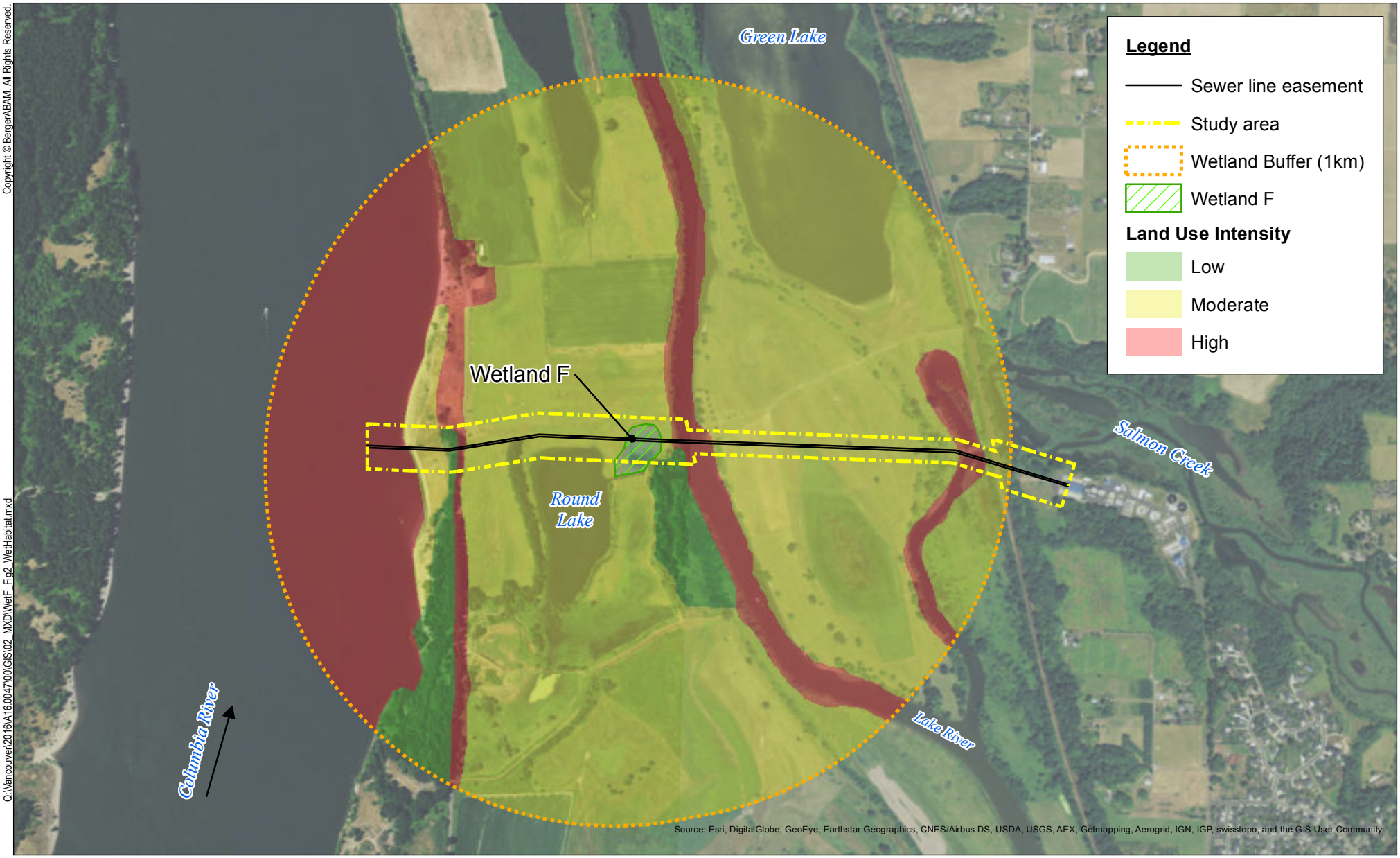

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Figure 2 - Wetland F Habitat Assessment

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

0 0.125 0.25 0.5 0.75 1 Kilometers

0 500 1,000 2,000 3,000 4,000 Feet

Wetland F

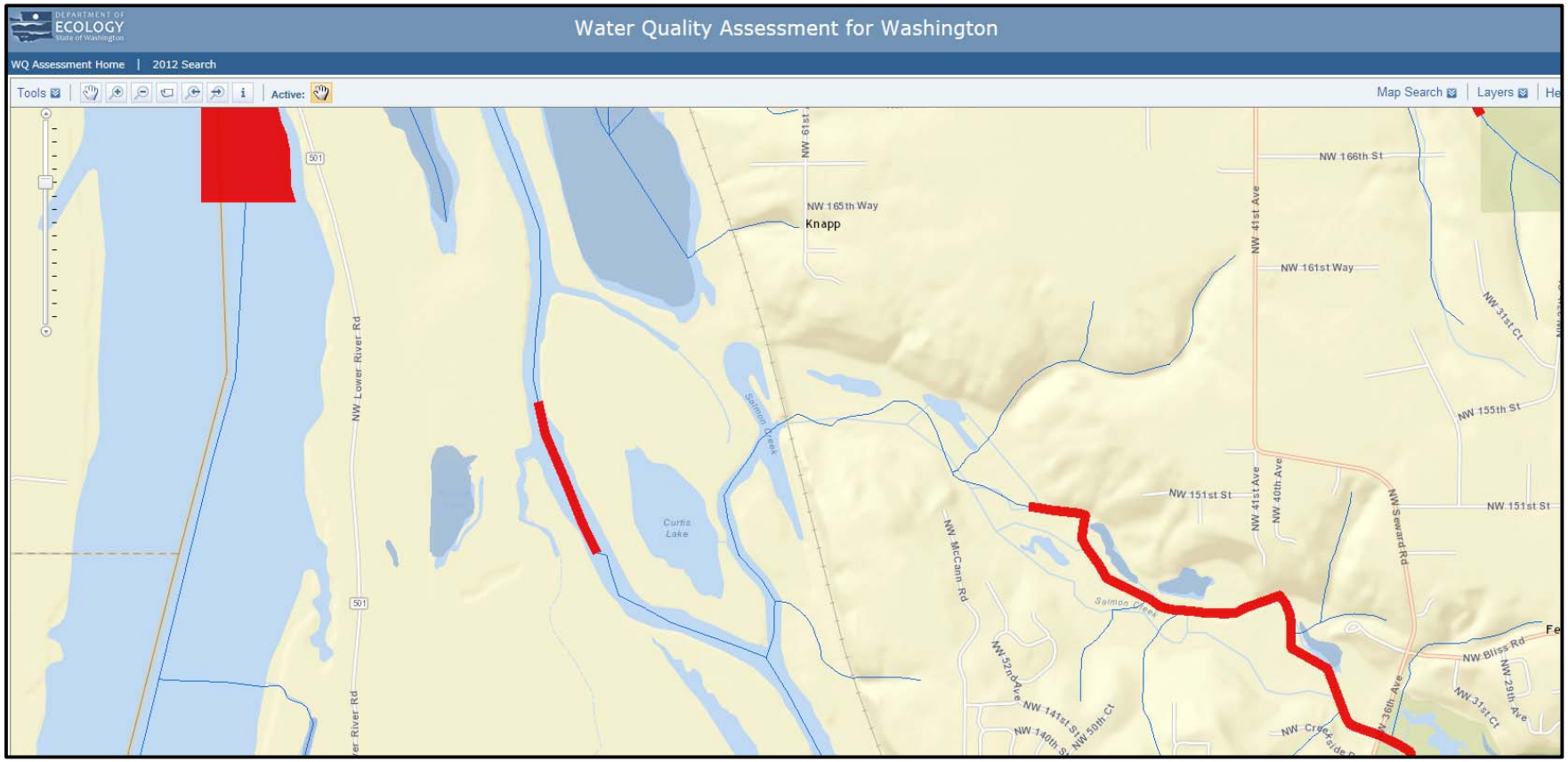


Figure 3 – 303(d) Listed Waters in Basin

Programs Services Publications & Forms Databases Laws & Rules Public Involvement Calendar Public Records

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process
Project Catalog
by WRIA
by County
Funding Opportunities
Project Development Priority Lists
Related Information
TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

** ***Status*** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

Figure 4 – List of TMDLs for WRIA 28 (Salmon-Washougal)

Wetland name or number G

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland G Date of site visit: 9.7.2017

Rated by Allison Kinney Trained by Ecology? X Yes ___ No Date of training March 2015

HGM Class used for rating Lake Fringe 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 Bing Maps

OVERALL WETLAND CATEGORY II (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

___ **Category I** – Total score = 23 - 27

X **Category II** – Total score = 20 - 22

___ **Category III** – Total score = 16 - 19

___ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	(H) M L	H M (L)	H (M) L	
Landscape Potential	(H) M L	H (M) L	H (M) L	
Value	(H) M L	H M (L)	(H) M L	TOTAL
Score Based on Ratings	9	4	7	20

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number G

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

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

Riverine Wetlands

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

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	1
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	4

Slope Wetlands

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

Wetland name or number G

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

   NO – go to 3 **YES** – The wetland class is **Flats**

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

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

   _x_ 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;

   _x_ At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

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

   ___ The wetland is on a slope (*slope can be very gradual*),

   ___ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,

   ___ The water leaves the wetland **without being impounded**.

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

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

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

   ___ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,

   ___ The overbank flooding occurs at least once every 2 years.

Wetland name or number G

NO – go to 6 **YES** – The wetland class is **Riverine**

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

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

NO – go to 7 **YES** – The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number 9

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	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. *These are not Cowardin classes. Area of cover is total cover in the unit, but it can be in patches. Herbaceous does not include aquatic bed.*		6
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 > $^{1}/_{3}$ vegetated area	points = 1	
Aquatic bed plants and open water cover > $^{2}/_{3}$ of the unit	points = 0	
Total for L 1	Add the points in the boxes above	12

Rating of Site Potential If score is: X **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	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	1
L 2.3. Does the lake have problems with algal blooms or excessive plant growth such as milfoil?	Yes = 1 No = 0	1
Total for L 2	Add the points in the boxes above	2

Rating of Landscape Potential: If score is: X **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	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	1
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	2
Total for L 3	Add the points in the boxes above	3

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

Wetland name or number G

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): *Choose the highest scoring description that matches conditions in the wetland.*		
> 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	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** X **0-5 = L** *Record the rating on the first page*

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

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

NOTES and FIELD OBSERVATIONS:

Wetland name or number G

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.*

- [X] Aquatic bed
- [X] Emergent
- [ ] Scrub-shrub (areas where shrubs have > 30% cover)
- [X] Forested (areas where trees have > 30% cover)

4 structures or more: points = 4
3 structures: points = 2
2 structures: points = 1
1 structure: points = 0

If the unit has a Forested class, check if:

- [X] The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

4

H 1.2. Hydroperiods

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

- [ ] Permanently flooded or inundated
- [ ] Seasonally flooded or inundated
- [ ] Occasionally flooded or inundated
- [ ] Saturated only

4 or more types present: points = 3
3 types present: points = 2
2 types present: points = 1
1 type present: points = 0

- [ ] Permanently flowing stream or river in, or adjacent to, the wetland
- [ ] Seasonally flowing stream in, or adjacent to, the wetland
- [X] **Lake Fringe wetland** — **2 points**
- [ ] **Freshwater tidal wetland** — **2 points**

2

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

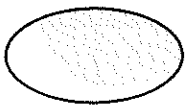
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

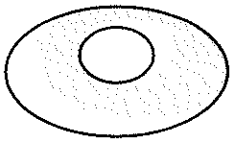
1

H 1.4. Interspersion of habitats

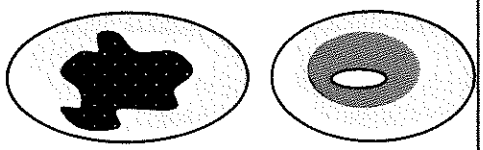
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points

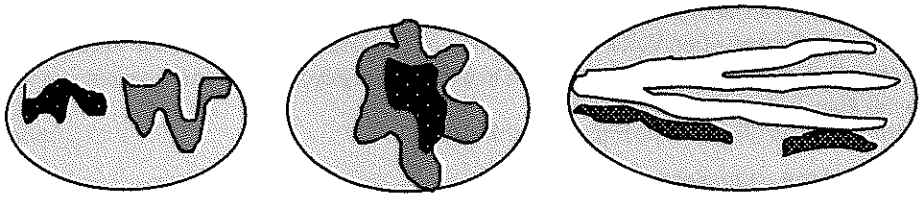


Low = 1 point



Moderate = 2 points

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



2

Wetland name or number G

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

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 8 + [(% moderate and low intensity land uses)/2] 4 = 12 % If total accessible habitat is: 8/12 > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 37 + [(% moderate and low intensity land uses)/2] 13 = 50 % 26/2 Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	2

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

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

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

Wetland name or number G

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

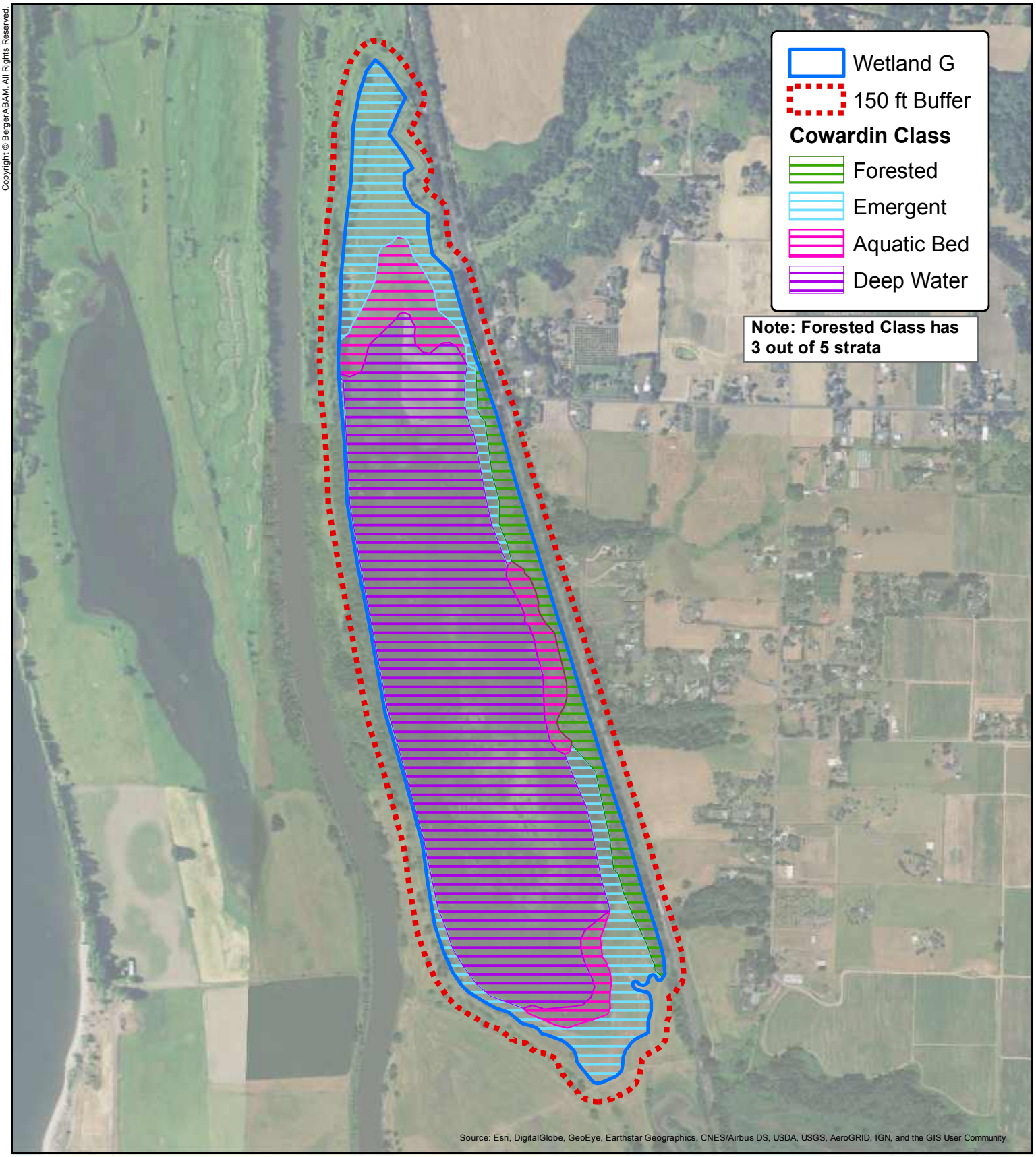
Wetland name or number G

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No= **Not an estuarine wetland**)	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No – Go to **SC 2.3**) SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** (No = **Not a WHCV**) SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No – Go to **SC 3.2**) SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No = **Is not a bog**) SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No = **Is not a bog**	**Cat. I**

Wetland name or number G

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

0 550 1,100 2,200
Feet

FIGURE 1: Cowardin Class

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland G\Fig1_Wetland G.mxd

PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
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Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

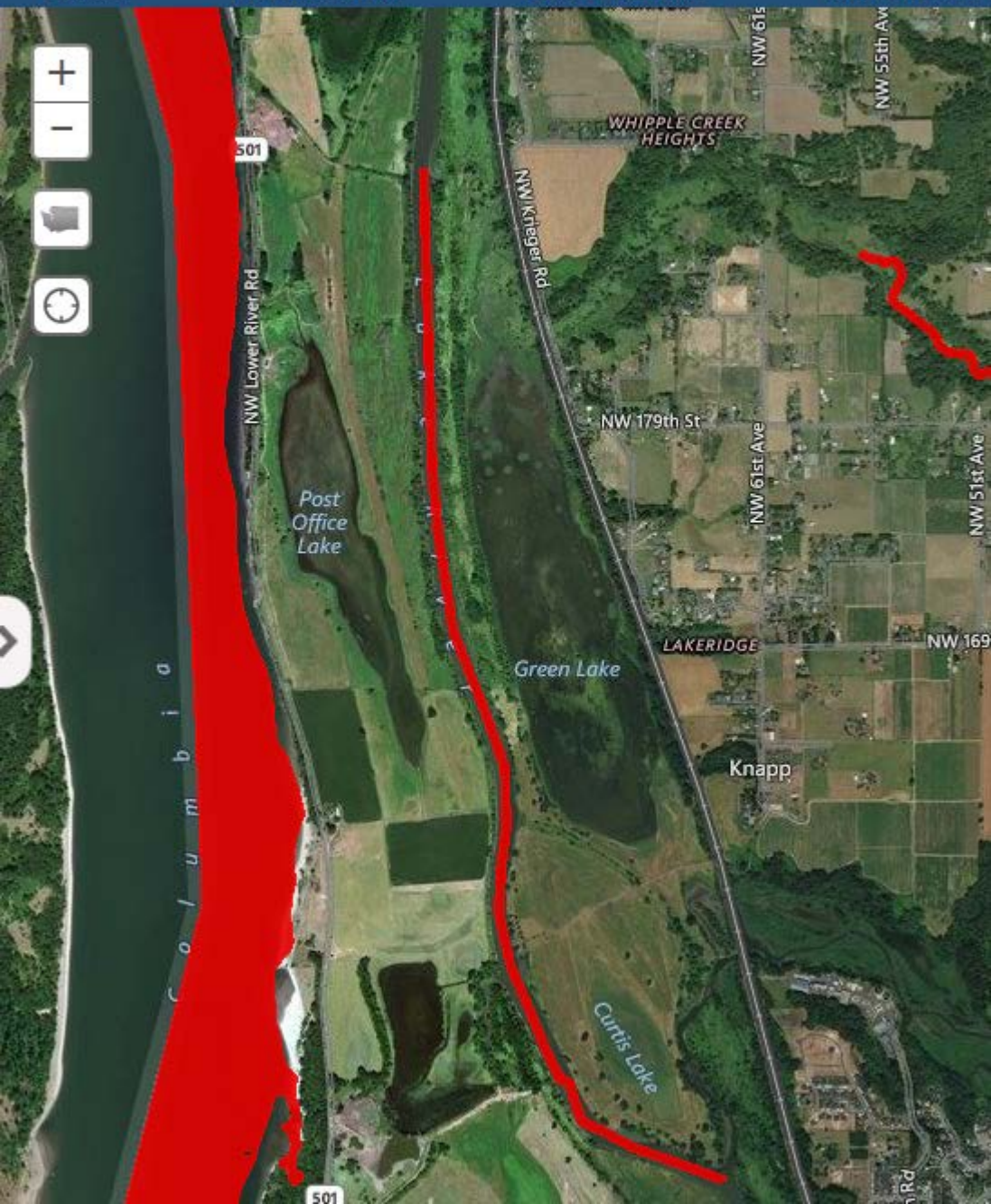
0 250 500 1,000
Feet

FIGURE: 2 Land Use Intensity Map

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland G\Fig2_Wetland_G1km.mxd


WHIPPLE CREEK HEIGHTS
NW Krieger Rd
NW Lower River Rd
NW 179th St
NW 61st Ave
NW 55th Ave
NW 51st Ave
Post Office Lake
Green Lake
LAKERIDGE
Knapp
Curtis Lake
Columbia
501

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process

Project Catalog
- by WRIA
- by County

Funding Opportunities

Project Development Priority Lists

Related Information

TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

*** Status** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

Back to top of page

Wetland name or number H

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland H Date of site visit: 9.7.2017

Rated by Allison Kinney Trained by Ecology? X Yes ___ No Date of training March 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 Bing Maps

OVERALL WETLAND CATEGORY II (based on functions X or special characteristics ___)

1. Category of wetland based on FUNCTIONS

___ **Category I** – Total score = 23 - 27

X **Category II** – Total score = 20 - 22

___ **Category III** – Total score = 16 - 19

___ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	H (M) L	
Landscape Potential	(H) M L	(H) M L	H (M) L	
Value	H (M) L	H M (L)	(H) M L	TOTAL
Score Based on Ratings	7	6	7	20

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number H

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	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	2
Map of the contributing basin	D 4.3, D 5.3	4
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	3
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	6

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number H

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

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

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

3. Does the entire wetland unit **meet all** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
___The wetland is on a slope (*slope can be very gradual*),
___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
___The water leaves the wetland **without being impounded**.

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
___The overbank flooding occurs at least once every 2 years.

Wetland name or number H

NO – go to 6 **YES** – The wetland class is **Riverine**

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

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

NO – go to 7 **YES** – The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number H

DEPRESSIONAL AND FLATS WETLANDS

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

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

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

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	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 grazing Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above	3

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

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	1

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

Wetland name or number #1

DEPRESSIONAL AND FLATS WETLANDS

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

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

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

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

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

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

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

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

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0 There are no problems with flooding downstream of the wetland. points = 0	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** X **0 = L** *Record the rating on the first page*

Wetland name or number H

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

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

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

____Aquatic bed	4 structures or more: points = 4
_X_Emergent	3 structures: points = 2
_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) that each cover 20% within the Forested polygon

2

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*).

_X_Permanently flooded or inundated	4 or more types present: points = 3
____Seasonally flooded or inundated	3 types present: points = 2
____Occasionally flooded or inundated	2 types present: points = 1
_X_Saturated only	1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland	
____Seasonally flowing stream in, or adjacent to, the wetland	
____**Lake Fringe wetland**	**2 points**
____**Freshwater tidal wetland**	**2 points**

1

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

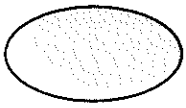
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

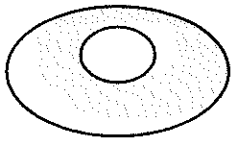
1

H 1.4. Interspersion of habitats

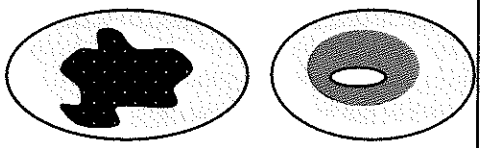
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points

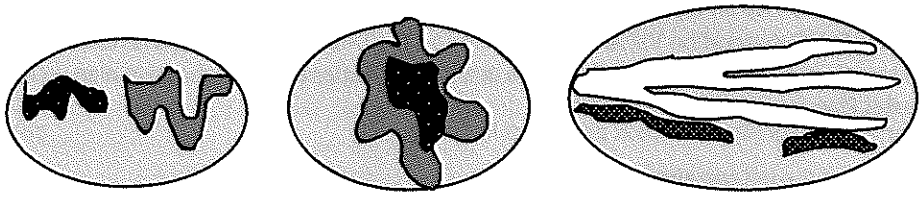


Low = 1 point



Moderate = 2 points

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



2

Wetland name or number H

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

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 18 + [(% moderate and low intensity land uses)/2] 15 = 25.5 % If total accessible habitat is: 27/2 > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	2
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 23 + [(% moderate and low intensity land uses)/2] 15 = 41.5 % Undisturbed habitat > 50% of Polygon points = 3 (29/2) Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	3

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

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

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

Wetland name or number H

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

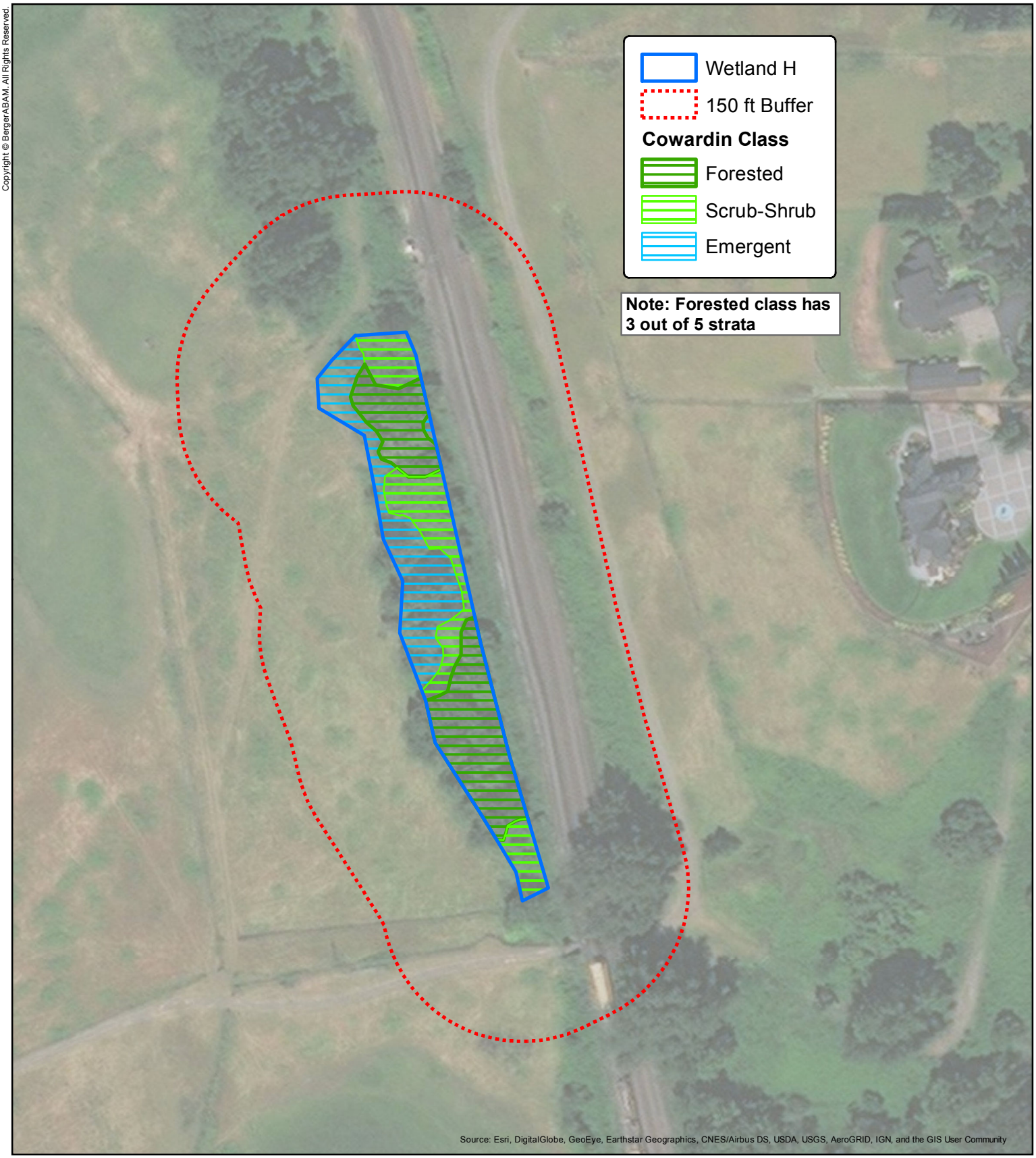
Wetland name or number H

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** No – Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** No = **Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No = **Is not a bog**	**Cat. I**

Wetland name or number H

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

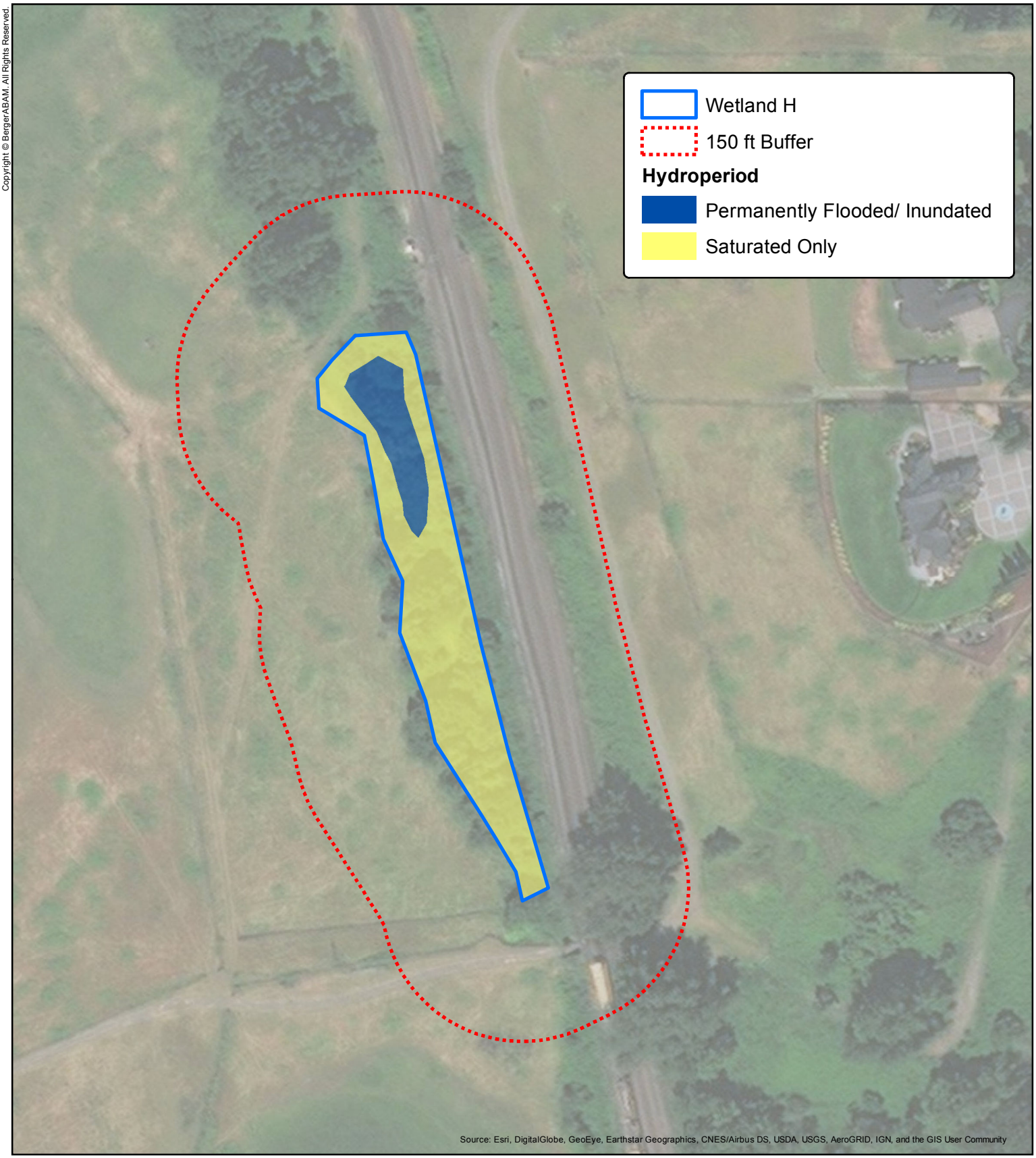
0 70 140 280
Feet

FIGURE 1: Cowardin Class

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland H\Fig1_Wetland H_Cowardin.mxd



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

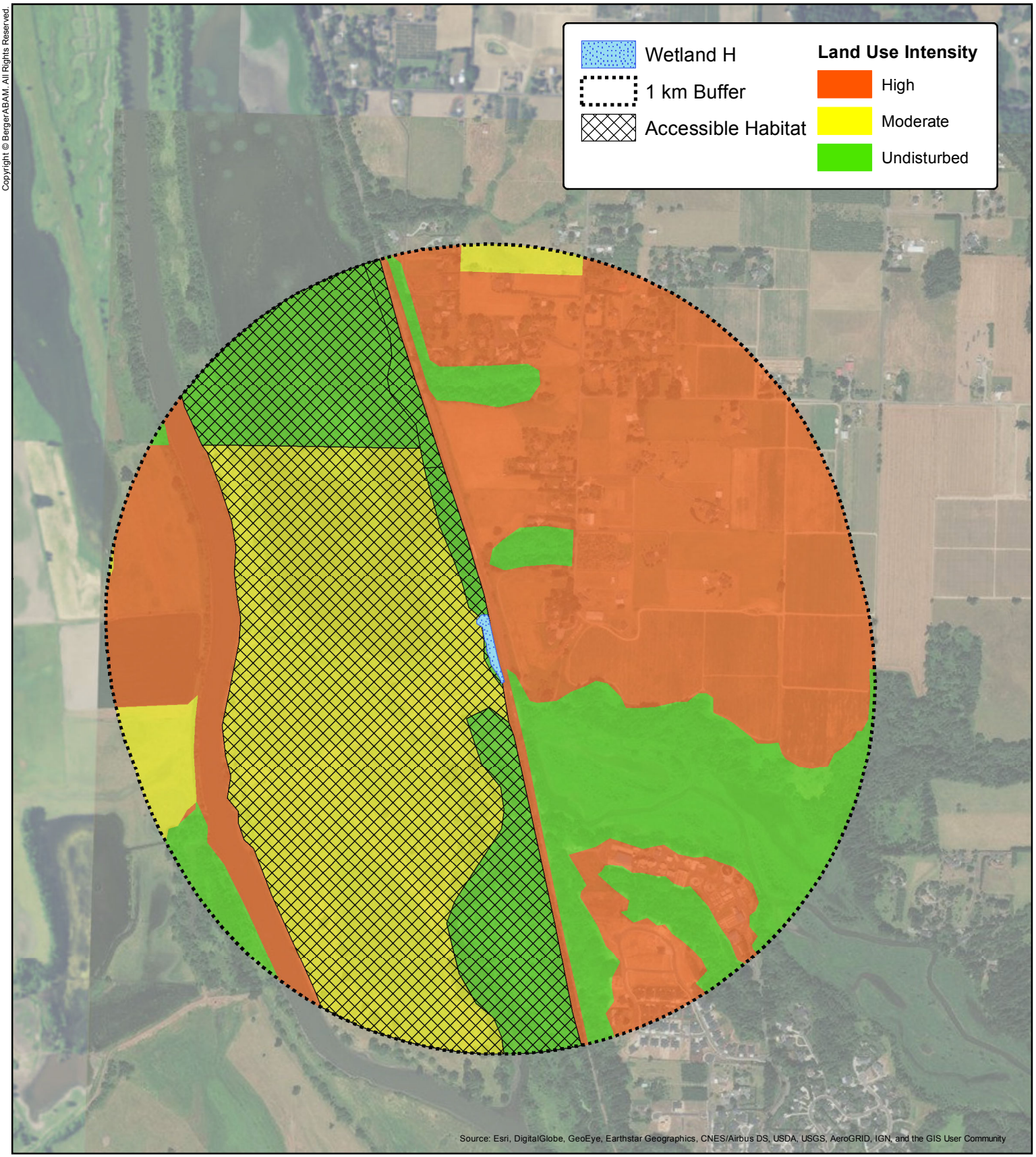
0 70 140 280 Feet

FIGURE 2: Hydroperiods

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland H\Fig1_Wetland H_Hydroperiod.mxd



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

0 250 500 1,000
Feet

FIGURE 3: Land Use Intensity Map

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland H\Fig3_Wetland_H1km.mxd

PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

0 70 140 280 Feet

FIGURE 4: Contributing Basin

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetland H\Fig4_Wetland H _Contributing Basin.mxd


Knapp
Salmon Creek
Salmon Creek
Round Lake
Curtis Lake
501
NW Lower River Rd

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process

Project Catalog
- by WRIA
- by County

Funding Opportunities

Project Development Priority Lists

Related Information

TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

*** Status** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

Back to top of page

Wetland name or number IKL

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetlands I.K.L Date of site visit: 9 7 2017

Rated by Allison Kinney Trained by Ecology? X Yes ___No Date of training March 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 Bing Maps

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

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	H M (L)	H (M) L	H M (L)	
Landscape Potential	H (M) L	H (M) L	H (M) L	
Value	(H) M L	H M (L)	(H) M L	TOTAL
Score Based on Ratings	6	5	6	17

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number IKL

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet *(can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	3
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	4
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	5

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number IKL

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

(NO) - go to 3 **YES** – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded**.

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number IKL

NO – go to 6 **YES** – The wetland class is **Riverine**

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

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

NO – go to 7 **YES** – The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number IKL

DEPRESSIONAL AND FLATS WETLANDS

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

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

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

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
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 grazing Yes = 1 No = 0	1
Total for D 2 Add the points in the boxes above	1

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

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

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

Wetland name or number 11KL

DEPRESSIONAL AND FLATS WETLANDS

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

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

D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	1
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	5
Total for D 4 Add the points in the boxes above	8

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

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

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

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

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

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0 There are no problems with flooding downstream of the wetland. points = 0	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** X **0 = L** *Record the rating on the first page*

Wetland name or number IKL

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	0
_X_ Emergent	3 structures: points = 2	
____ Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1	
____ Forested (areas where trees have > 30% cover)	1 structure: points = 0	

If the unit has a Forested class, check if:

____ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

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	2
_X_ Seasonally flooded or inundated	3 types present: points = 2	
_X_ Occasionally flooded or inundated	2 types present: points = 1	
_X_ Saturated only	1 type present: points = 0	
____ Permanently flowing stream or river in, or adjacent to, the wetland		
____ Seasonally flowing stream in, or adjacent to, the wetland		
____ **Lake Fringe wetland**	**2 points**	
____ **Freshwater tidal wetland**	**2 points**	

H 1.3. Richness of plant species

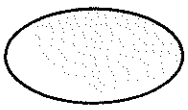
Count the number of plant species in the wetland that cover at least 10 ft^2.

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***

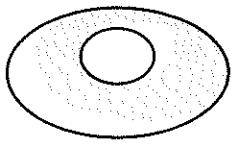
If you counted: > 19 species	points = 2	1
5 - 19 species	points = 1	
< 5 species	points = 0	

H 1.4. Interspersion of habitats

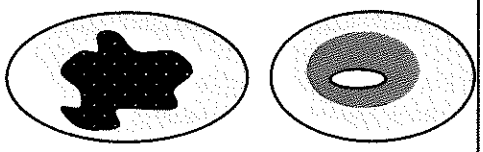
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always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



None = 0 points



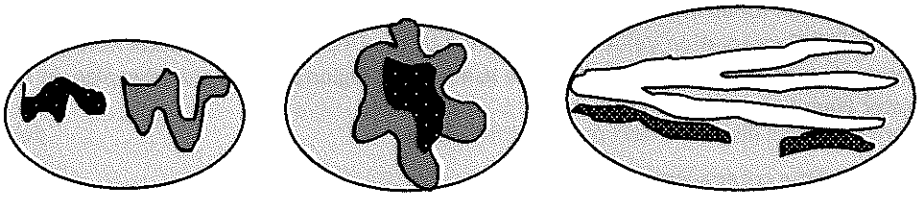
Low = 1 point



Moderate = 2 points

0

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



Wetland name or number IKL

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

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

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 11 + [(% moderate and low intensity land uses)/2] 19/2 = 20.5 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	2
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 32 + [(% moderate and low intensity land uses)/2] 33/2 = 48.5% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	0
Total for H 2 Add the points in the boxes above	3

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

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

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

Wetland name or number IKL

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

✓ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

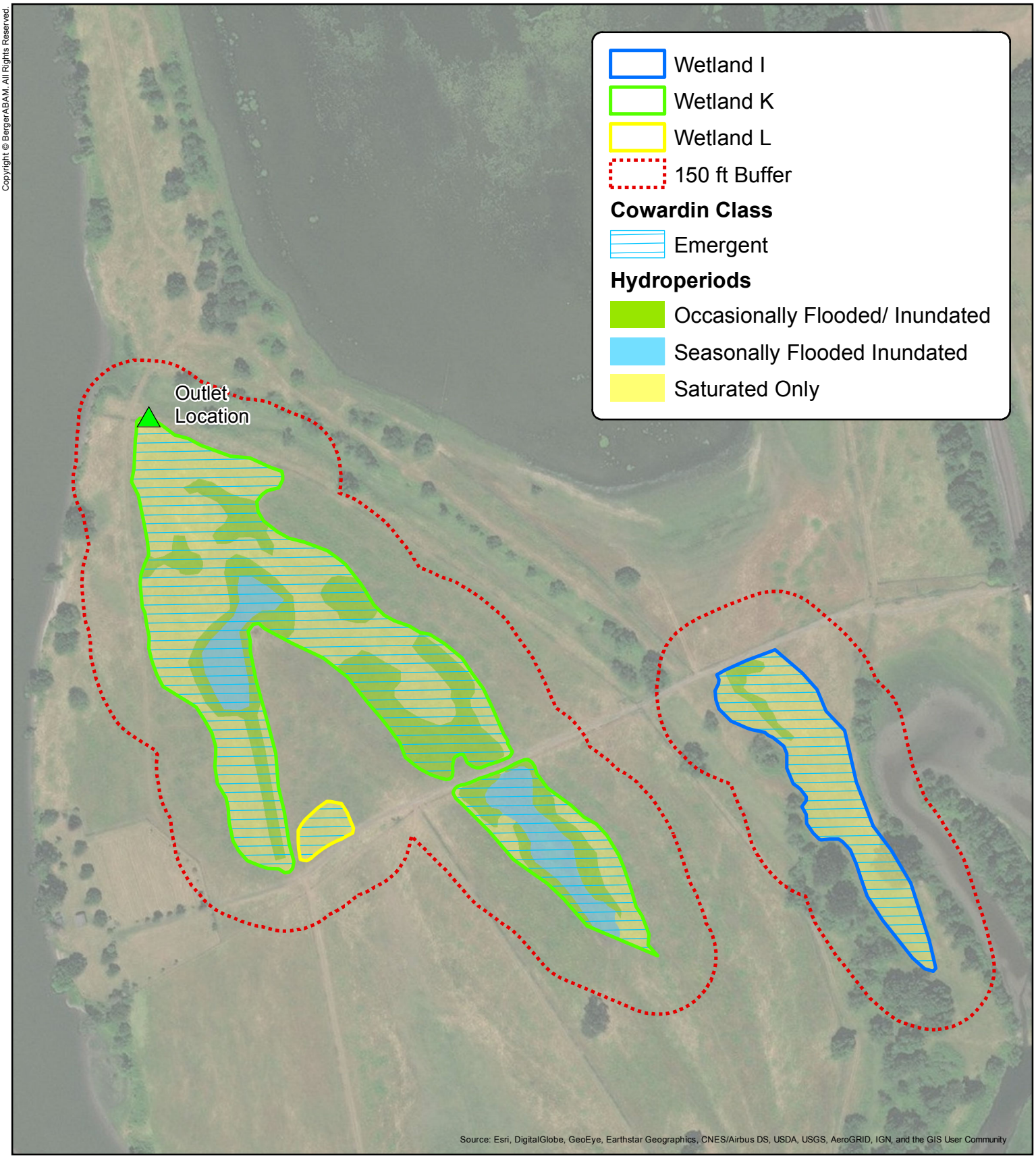
Wetland name or number IKL

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No= **Not an estuarine wetland**)	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No – Go to **SC 2.3**) SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** No = **Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** (No = **Not a WHCV**) SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No – Go to **SC 3.2**) SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No = **Is not a bog**) SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No = **Is not a bog**	**Cat. I**

Wetland name or number IKL

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon**	**Cat. 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 ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** No = **not an interdunal wetland for rating**	**Cat I**
SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2**	**Cat. 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** No – Go to **SC 6.3**	**Cat. 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** No = **Category IV**	**Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

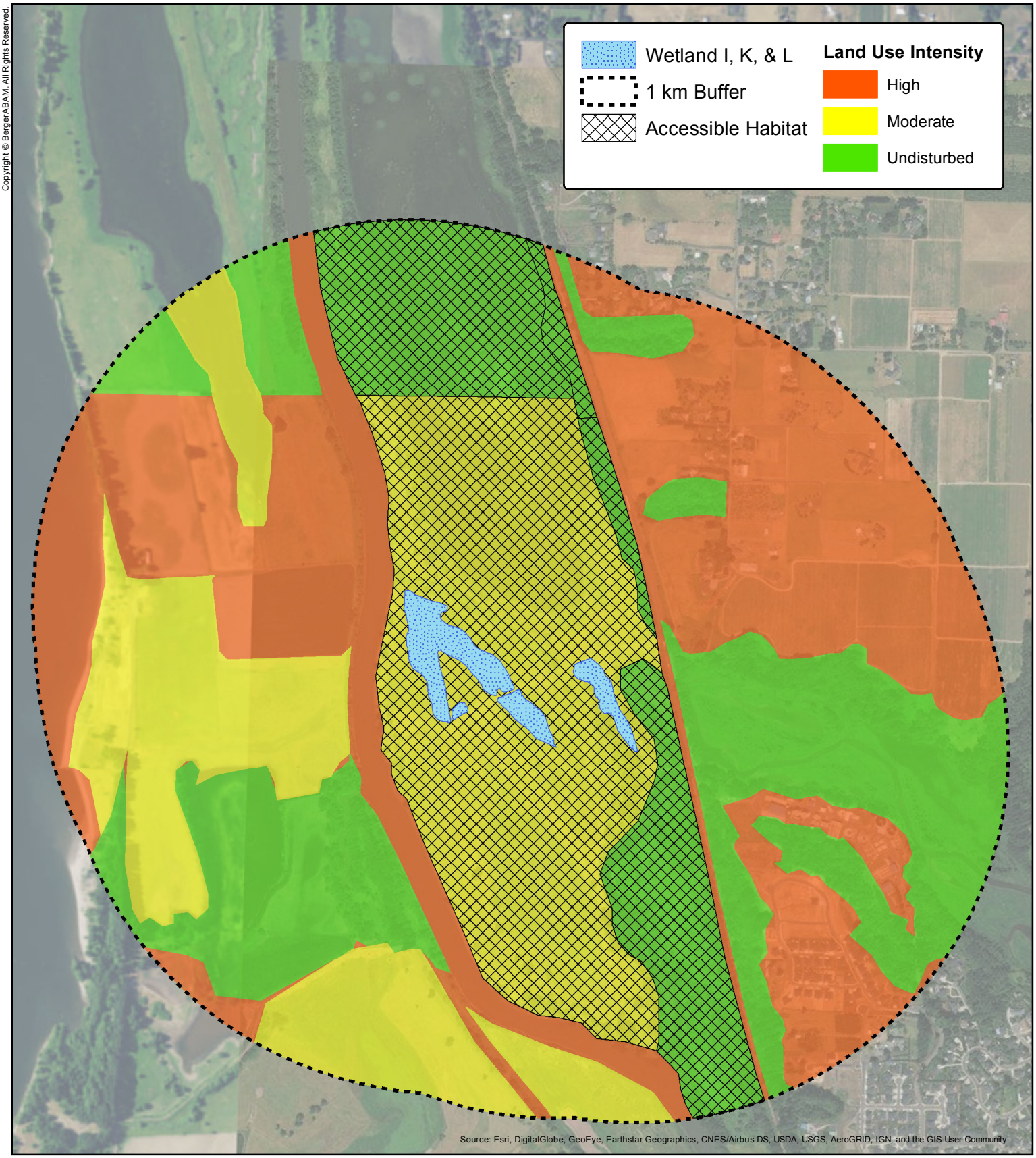
0 175 350 700 Feet

FIGURE: 1 Hydroperiods & Cowardin Class

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetlands IKL\Fig1_Wetland IKL.mxd



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

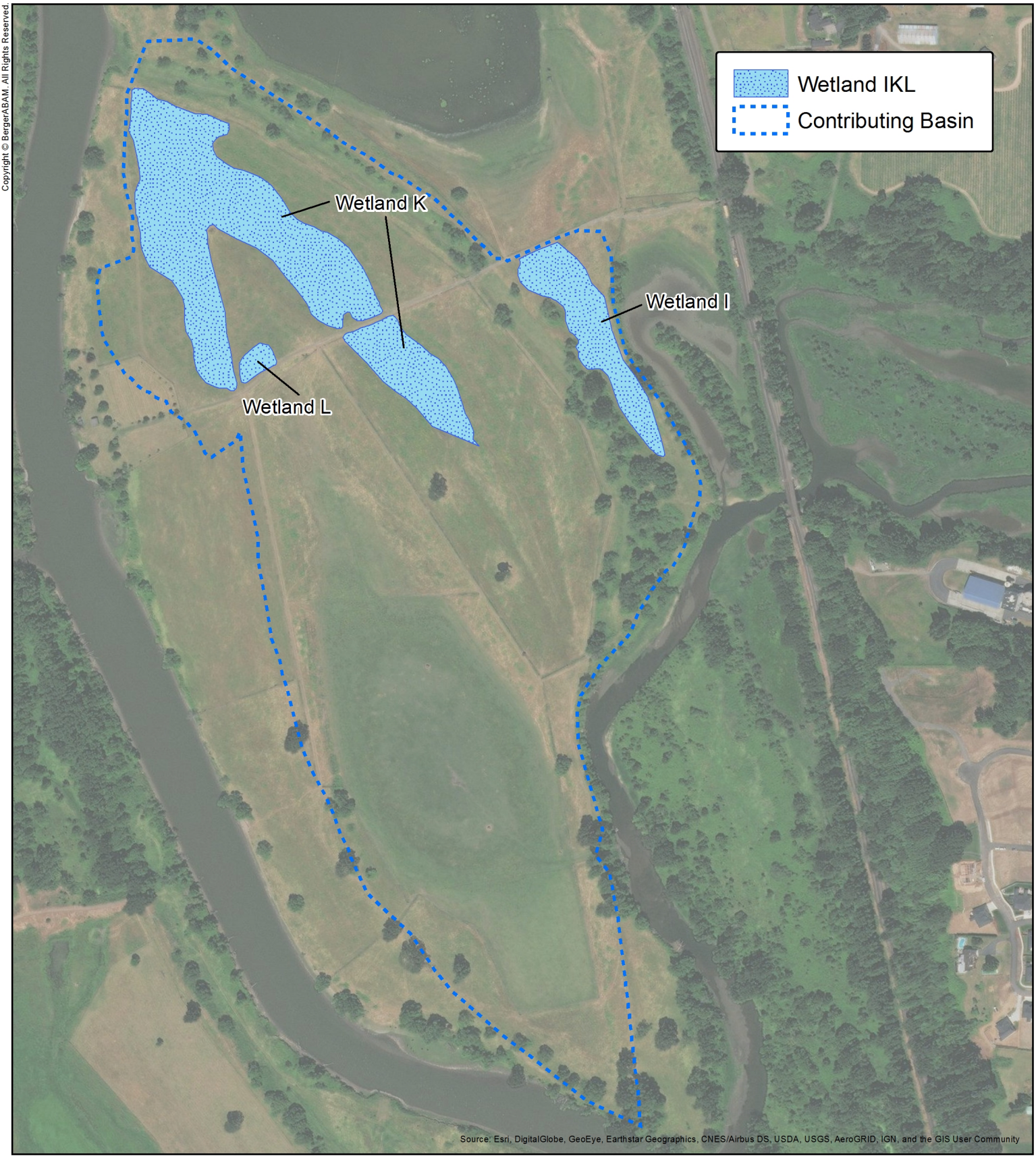
0 250 500 1,000
Feet

FIGURE: 2 Land Use Intensity Map

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetlands IKL\Fig2_Wetland IKL_1km.mxd



PURPOSE: WETLAND DELINEATION

Latitude: 45°43'57.48"N
Longitude: 122°44'55.96"W

Clark Regional Wastewater District
8000 NE 52nd Court
Vancouver, WA 98665

Columbia Outfall and Effluent Pipeline

BergerABAM

0 250 500 1,000 Feet

FIGURE 3: Contributing Basin

In: Columbia River
Near: Vancouver
County: Clark
State: WA
Datum: NAD 1983

November 2017

Path: Q:\Vancouver\2016\A16.0047\00\GIS\02_MXD\2017 Wetland Delineation\1 Km\Wetlands IKL\Fig3_Wetland IKL_ContributingBasin - Copy.mxd


Knapp
Salmon Creek
Salmon Creek
Round Lake
Curtis Lake
501
NW Lower River Rd

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process

Project Catalog
- by WRIA
- by County

Funding Opportunities

Project Development Priority Lists

Related Information

TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

*** Status** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

* The Department of Ecology and other state resource agencies frequently use a system of 62 "Water Resource Inventory Areas" or "WRIAs" to refer to the state's major watershed basins.

Back to top of page

Wetland name or number Wetlands Q and W

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetlands Q and W Date of site visit: April - May 2012

Rated by Michelle Tolal Trained by Ecology? __ Yes X No Date of training ____

HGM Class used for rating Depressional Wetland has multiple HGM classes? ___Y X N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map ESRI World Imagery

OVERALL WETLAND CATEGORY X (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

__X__**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	H M (L)	
Landscape Potential	H (M) L	H (M) L	(H) M L	
Value	(H) M L	(H) M L	(H) M L	TOTAL
Score Based on Ratings	7	7	7	21

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number Wetlands Q and W

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	See Appendix A: Figure 3 (Topo)
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	4

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number Wetlands Q and W

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

NO – go to 3 **YES** – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded**.

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number Wetlands Q and W

NO – go to 6 **YES** – The wetland class is **Riverine**

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

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

NO – go to 7 **YES** – The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number Wetlands Q and W

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?		
D 1.1. Characteristics of surface water outflows from the wetland:		
Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet).	(points = 3)	3
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet.	points = 2	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 1	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 1	
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	0
Wetland has persistent, ungrazed, plants > ½ of area	points = 3	
Wetland has persistent, ungrazed plants > $^1/_{10}$ of area	points = 1	
Wetland has persistent, ungrazed plants < $^1/_{10}$ of area	(points = 0)	
D 1.4. Characteristics of seasonal ponding or inundation:		
This is the area that is ponded for at least 2 months. See description in manual.		
Area seasonally ponded is > ½ total area of wetland	(points = 4)	4
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	7

Rating of Site Potential If score is: ___ **12-16 = H** (7 **6-11 = M**) ___ **0-5 = L** *Record the rating on the first page*

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

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

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

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

Wetland name or number Wetlands Q and W

DEPRESSIONAL AND FLATS WETLANDS

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

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

D 4.1. Characteristics of surface water outflows from the wetland:		4
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	(points = 4)	
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*		0
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	(points = 0)	
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*		5
The area of the basin is less than 10 times the area of the unit	(points = 5)	
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
Total for D 4	Add the points in the boxes above	9

Rating of Site Potential If score is: ___ **12-16 = H** (9 **6-11 = M**) ___ **0-5 = L** *Record the rating on the first page*

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

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

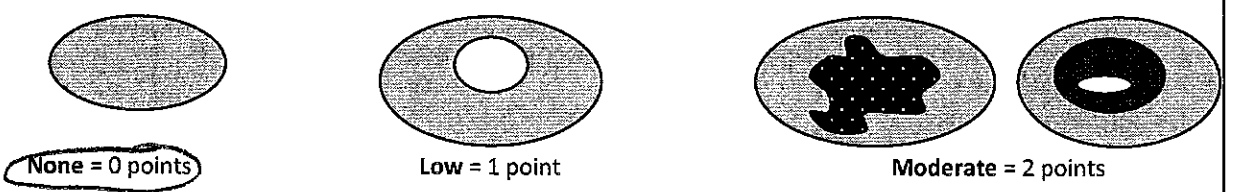
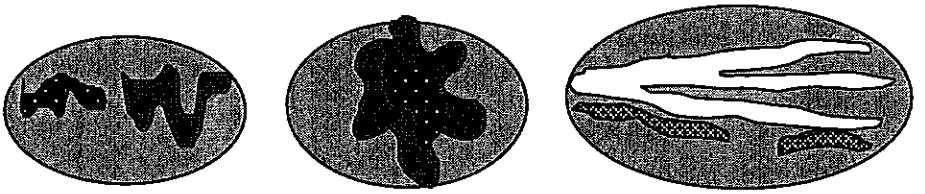
Rating of Landscape Potential If score is: ___ **3 = H** (2 **1 or 2 = M**) ___ **0 = L** *Record the rating on the first page*

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

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

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

Wetland name or number Wetlands Q and W

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 _X_ Emergent ___Scrub-shrub (areas where shrubs have > 30% cover) ___Forested (areas where trees have > 30% cover) *If the unit has a Forested class, check if:* ___The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon 4 structures or more: points = 4 3 structures: points = 2 2 structures: points = 1 (1 structure: points = 0)	0
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ___Permanently flooded or inundated _X_ Seasonally flooded or inundated ___Occasionally flooded or inundated _X_ Saturated only ___Permanently flowing stream or river in, or adjacent to, the wetland ___Seasonally flowing stream in, or adjacent to, the wetland ___**Lake Fringe wetland** **2 points** ___**Freshwater tidal wetland** **2 points** 4 or more types present: points = 3 3 types present: points = 2 (2 types present: points = 1) 1 type present: points = 0	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species points = 2 5 - 19 species (points = 1) < 5 species points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  (**None** = 0 points) **Low** = 1 point **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	0

Wetland name or number Wetlands Q and W

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

Rating of Site Potential If score is: ___**15-18 = H** ___**7-14 = M** (3 **0-6 = L**) *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 50 = 50 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon (points = 3) 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	3
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 4 + [(% moderate and low intensity land uses)/2] 34 = 38 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches (points = 1) Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity (points = 0)	0
Total for H 2 Add the points in the boxes above	4

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

H 3.0. Is the habitat provided by the site valuable to society?

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

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

Wetland name or number wetlands Q and W

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

X **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number Wetlands Q and W

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No= **Not an estuarine wetland**)	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No – Go to **SC 2.3**) SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** (No = **Not a WHCV**) SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** (No = **Not a WHCV**) SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** (No = **Not a WHCV**)	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No – Go to **SC 3.2**) SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No = **Is not a bog**) SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** (No – Go to **SC 3.4**) **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** (No = **Is not a bog**)	**Cat. I**

Wetland name or number Wetlands Q and W

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** **No = Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** **No = Not a wetland in a coastal lagoon**	**Cat. 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 ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** **No = not an interdunal wetland for rating**	**Cat I**
SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2**	**Cat. 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** No – Go to **SC 6.3**	**Cat. 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** No = **Category IV**	**Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	Not Applicable

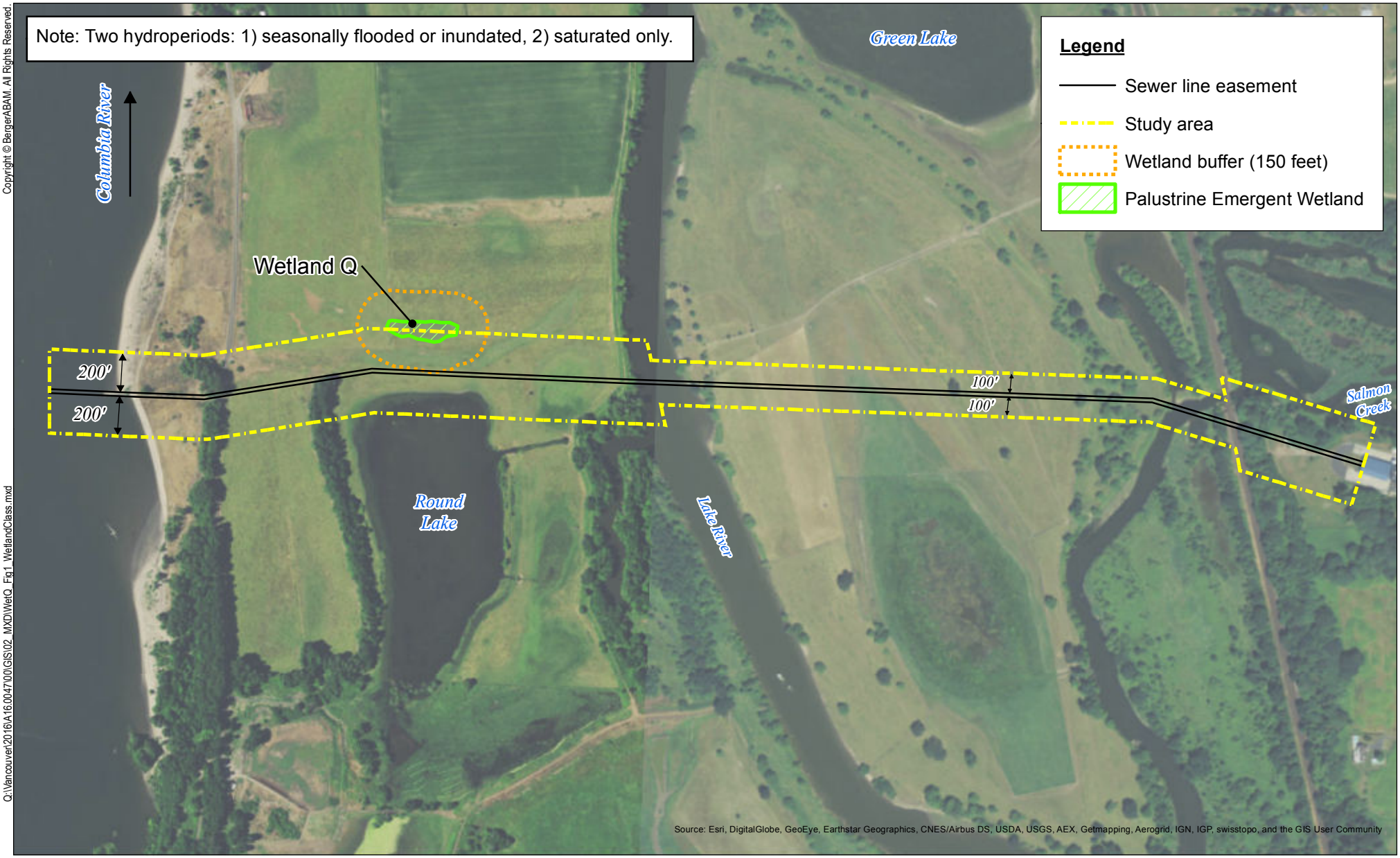


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Figure 1 - Wetland Q Classification and Plant Cover

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

N

0 250 500 1,000 1,500 2,000 Feet

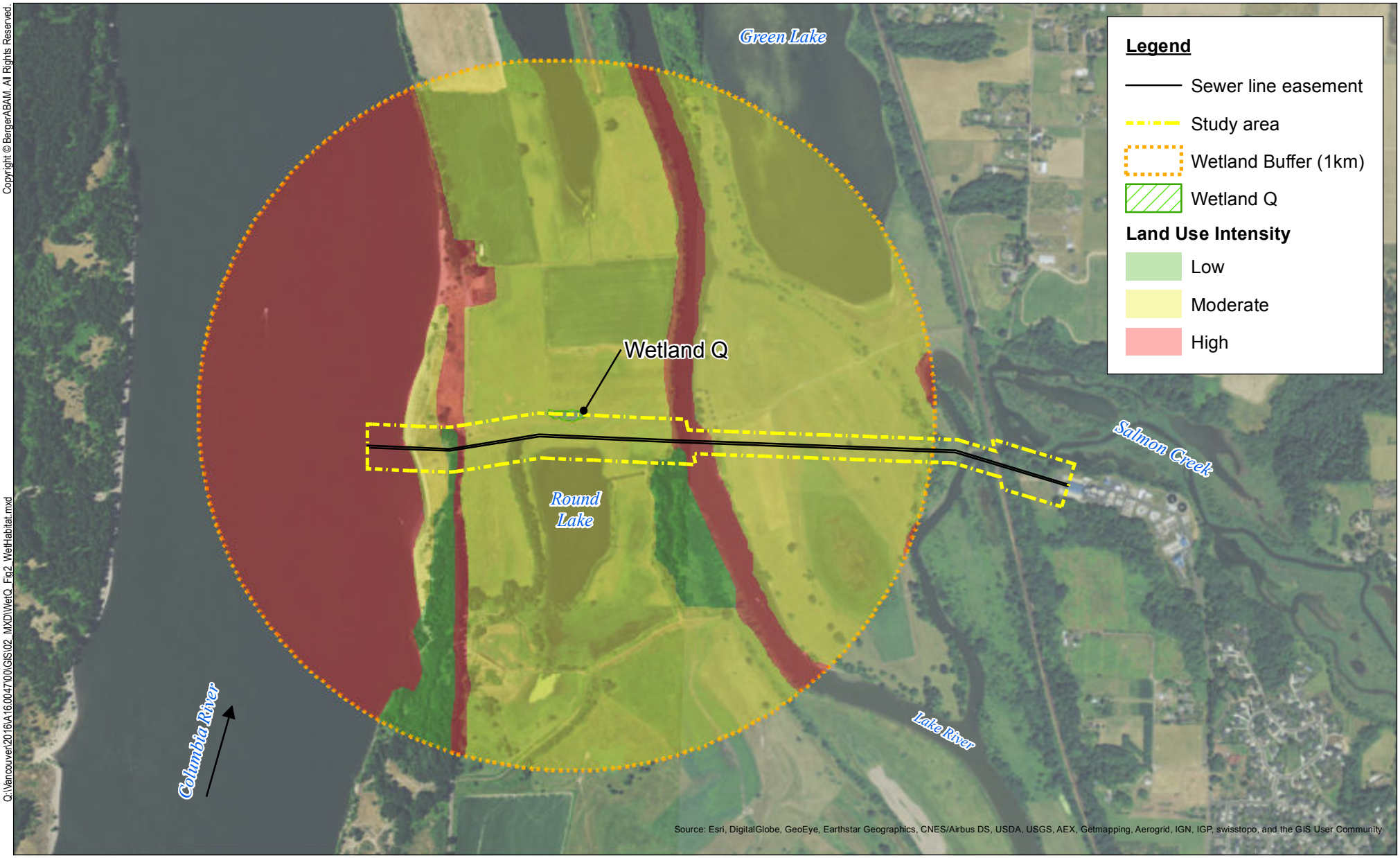

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Figure 2 - Wetland Q Habitat Assessment

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

0 0.125 0.25 0.5 0.75 1 Kilometers

0 500 1,000 2,000 3,000 4,000 Feet

Wetland Q

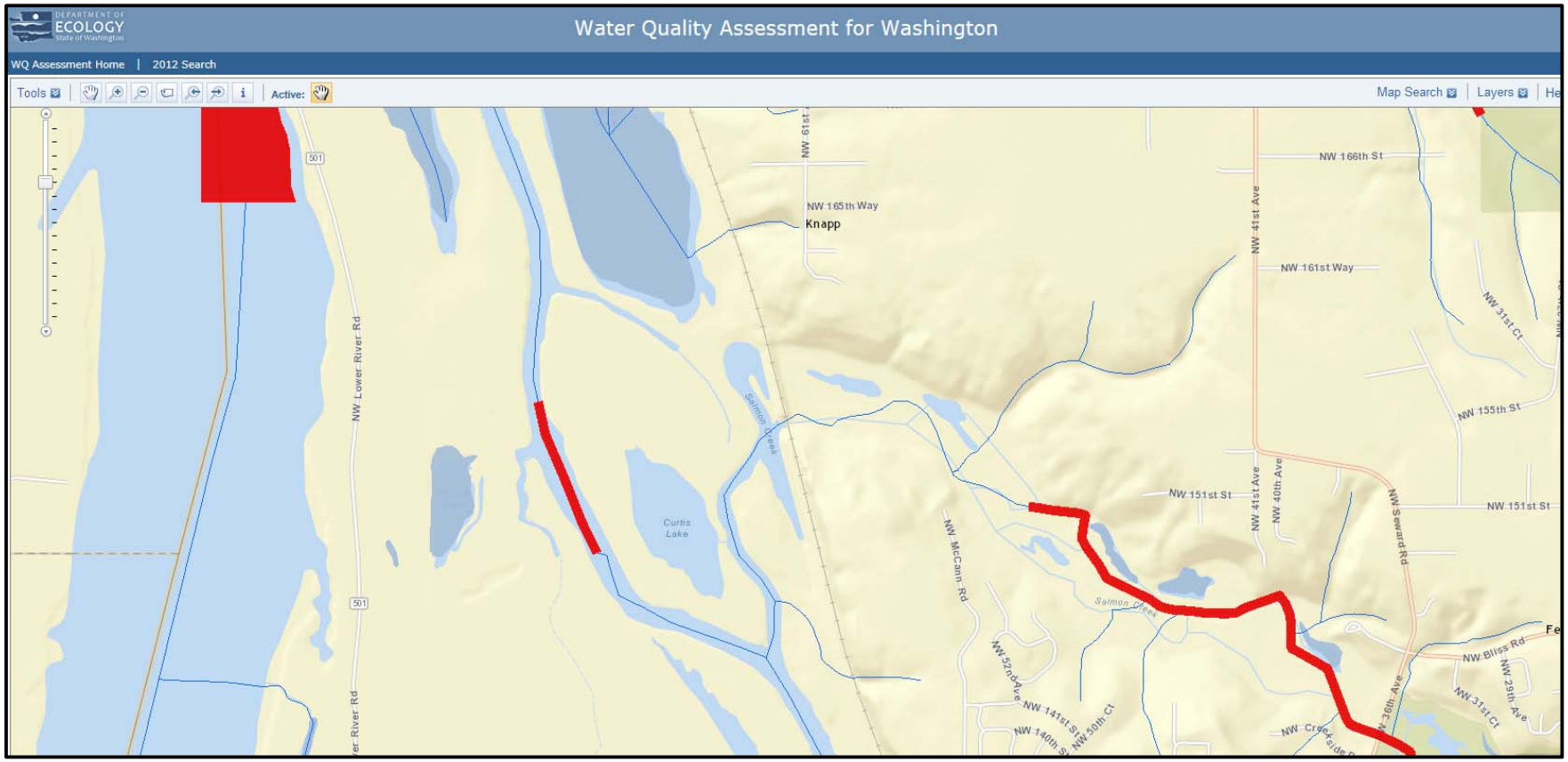


Figure 3 – 303(d) Listed Waters in Basin

Programs Services Publications & Forms Databases Laws & Rules Public Involvement Calendar Public Records

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process
Project Catalog
by WRIA
by County
Funding Opportunities
Project Development Priority Lists
Related Information
TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

** ***Status*** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

Figure 4 – List of TMDLs for WRIA 28 (Salmon-Washougal)

Wetland name or number R (Round Lake)

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland R (Round Lake) Date of site visit: April-May 2016

Rated by Michelle Talal Trained by Ecology? __ Yes X No Date of training _____

HGM Class used for rating Depressional Wetland has multiple HGM classes? ___ Y X N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map ESRI World Imagery

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

1. Category of wetland based on FUNCTIONS

_____ **Category I** – Total score = 23 - 27

X **Category II** – Total score = 20 - 22

_____ **Category III** – Total score = 16 - 19

_____ **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
		Circle the appropriate ratings		
Site Potential	H (M) L	(H) M L	H M (L)	
Landscape Potential	H (M) L	H (M) L	(H) M L	
Value	(H) M L	(H) M L	(H) M L	TOTAL
Score Based on Ratings	7	8	7	22

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number R (Round Lake)

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	See Appendix A: Figure 2 (Topo)
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	4

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number R (Round Lake)

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

NO – go to 3 **YES** – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded.**

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number R (Round Lake)

(NO – go to 6) **YES** – The wetland class is **Riverine**

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

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

NO – go to 7 (YES) The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number R (Round Lake)

DEPRESSIONAL AND FLATS WETLANDS

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

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

Rating of Site Potential If score is: ___ 12-16 = H (7) 6-11 = M ___ 0-5 = L *Record the rating on the first page*

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

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

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

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

Wetland name or number R (Round Lake)

DEPRESSIONAL AND FLATS WETLANDS

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

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

D 4.1. Characteristics of surface water outflows from the wetland:		4
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	(points = 4)	
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*		7
Marks of ponding are 3 ft or more above the surface or bottom of outlet	(points = 7)	
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	points = 0	
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*		5
The area of the basin is less than 10 times the area of the unit	(points = 5)	
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
Total for D 4	Add the points in the boxes above	16

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

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

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

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

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

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.*		2
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		
• Flooding occurs in a sub-basin that is immediately down-gradient of unit.	(points = 2)	
• Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
Flooding from groundwater is an issue in the sub-basin.	points = 1	
The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____	points = 0	
There are no problems with flooding downstream of the wetland.	points = 0	
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	(Yes = 2) No = 0	2
Total for D 6	Add the points in the boxes above	4

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

Wetland name or number R (Round Lake)

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	0
X Emergent	3 structures: points = 2	
___ Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1	
___ Forested (areas where trees have > 30% cover)	(1 structure: points = 0)	

If the unit has a Forested class, check if:

___ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

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*).

X Permanently flooded or inundated	4 or more types present: points = 3	1
___ Seasonally flooded or inundated	3 types present: points = 2	
___ Occasionally flooded or inundated	(2 types present: points = 1)	
X Saturated only	1 type present: points = 0	
___ Permanently flowing stream or river in, or adjacent to, the wetland		
___ Seasonally flowing stream in, or adjacent to, the wetland		
___ **Lake Fringe wetland**	**2 points**	
___ **Freshwater tidal wetland**	**2 points**	

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

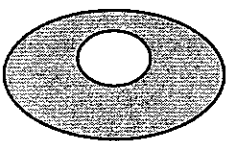
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

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

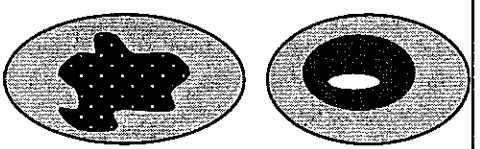
H 1.4. Interspersion of habitats

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

None = 0 points



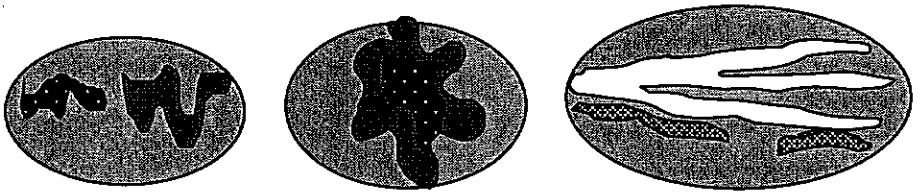
Low = 1 point



Moderate = 2 points

1

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



Wetland name or number R (Round Lake)

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

Rating of Site Potential If score is: ___15-18 = H ___7-14 = M (4) 0-6 = L *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 50 = 50 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon (points = 3) 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	3
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 4 + [(% moderate and low intensity land uses)/2] 32 = 36 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches (points = 1) Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity (points = 0)	0
Total for H 2 Add the points in the boxes above	4

Rating of Landscape Potential If score is: (4) 4-6 = H ___1-3 = M ___< 1 = L *Record the rating on the first page*

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

Rating of Value If score is: (2) = H ___1 = M ___0 = L *Record the rating on the first page*

Wetland name or number R (Round Lake)

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

X **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

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

Wetland name or number 2 (Round Lake)

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No= **Not an estuarine wetland**)	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** (No - Go to **SC 1.2**)	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** (No = **Category II**)	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No – Go to **SC 2.3**) SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** (No = **Not a WHCV**) SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** (No = **Not a WHCV**) SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** (No = **Not a WHCV**)	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No – Go to **SC 3.2**) SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No = **Is not a bog**) SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** (No – Go to **SC 3.4**) **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** (No = **Is not a bog**)	**Cat. I**

Wetland name or number R (Round Lake)

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** (No = **Not a forested wetland for this section**)	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** (No = **Not a wetland in a coastal lagoon**) SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** (No = **not an interdunal wetland for rating**) SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	Not Applicable

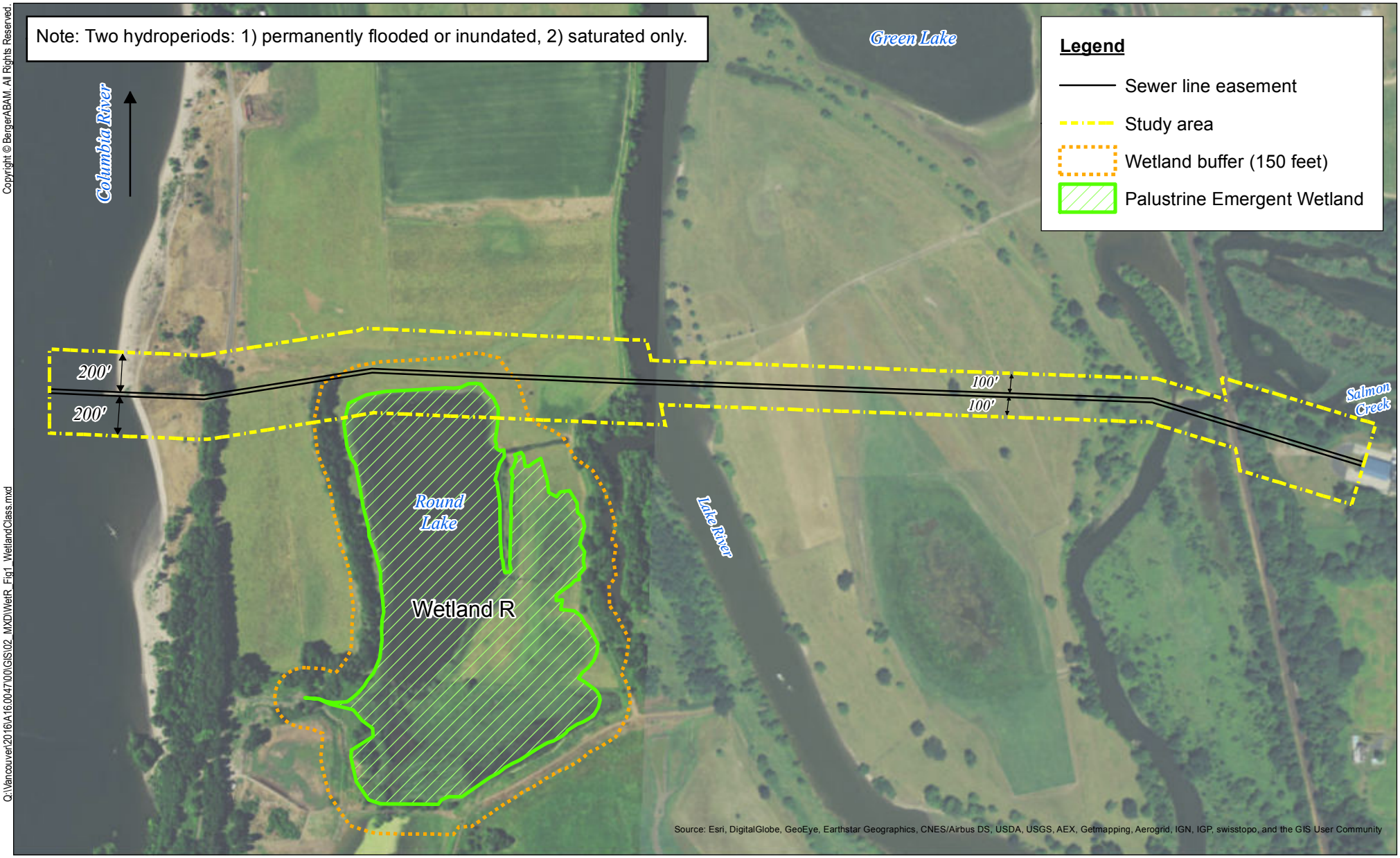


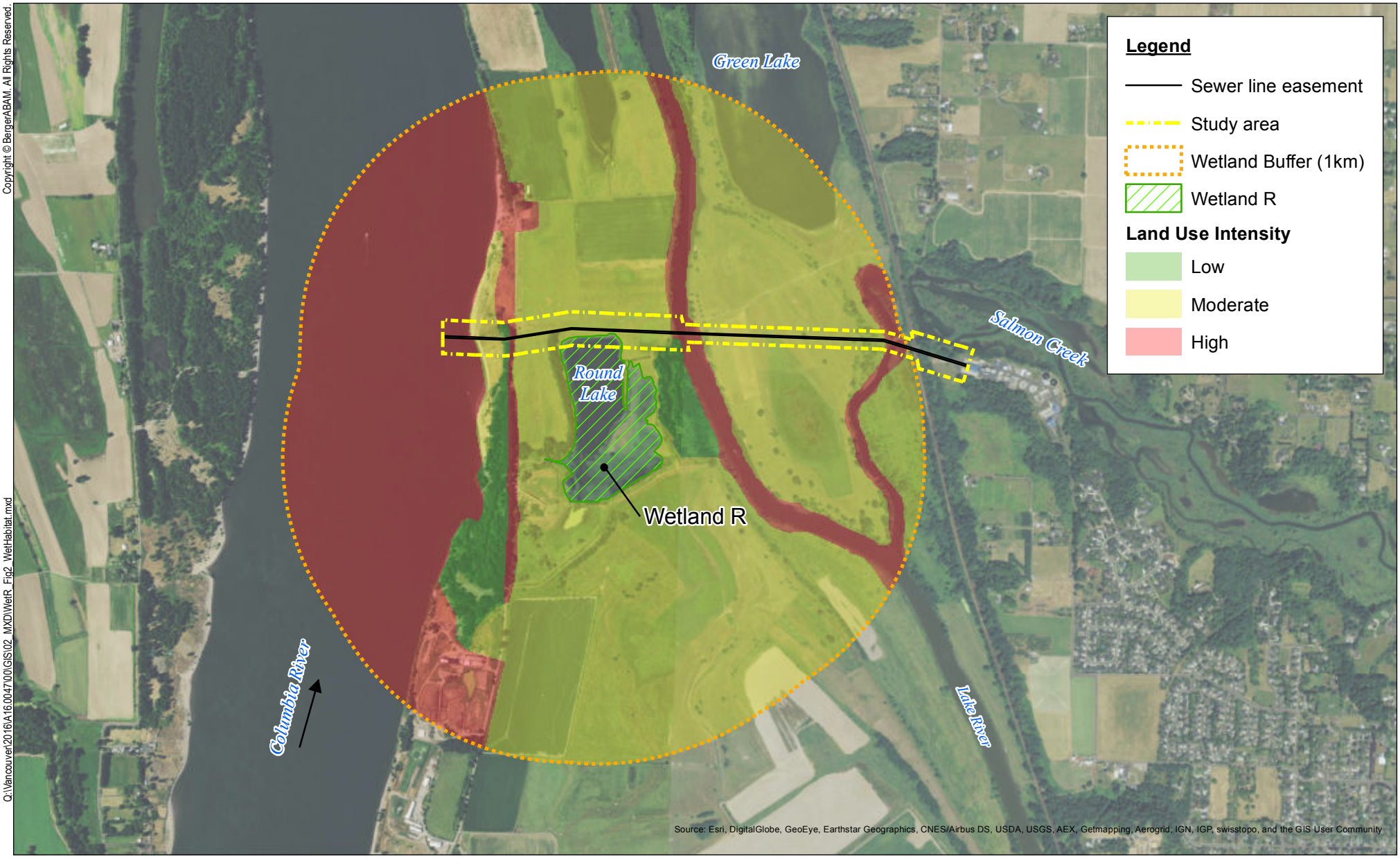
Figure 1 - Wetland R Classification and Plant Cover

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

N

0 250 500 1,000 1,500 2,000 Feet



Q:\Vancouver\2016\A16.004700\GIS\02_MXD\WetR_Fig2_WetHabitat.mxd

Figure 2 - Wetland R Habitat Assessment

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

0 0.125 0.25 0.5 0.75 1 Kilometers

0 500 1,000 2,000 3,000 4,000 Feet

Wetland R (Round Lake)

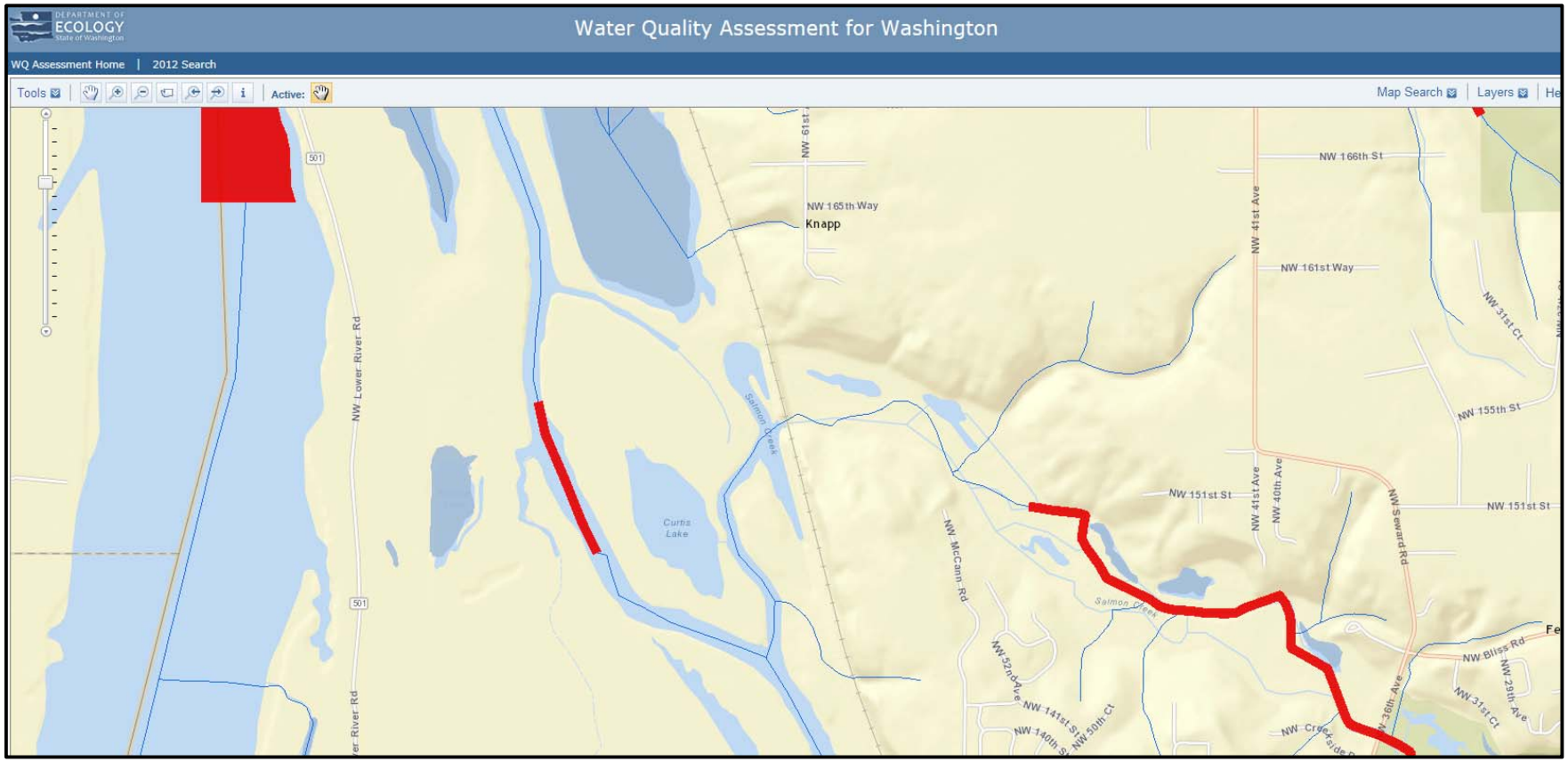


Figure 3 – 303(d) Listed Waters in Basin

Programs Services Publications & Forms Databases Laws & Rules Public Involvement Calendar Public Records

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process
Project Catalog
by WRIA
by County
Funding Opportunities
Project Development Priority Lists
Related Information
TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

** ***Status*** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

Figure 4 – List of TMDLs for WRIA 28 (Salmon-Washougal)

Wetland name or number Wetlands Q and W

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetlands Q and W Date of site visit: April - May 2012

Rated by Michelle Tolal Trained by Ecology? __ Yes X No Date of training ____

HGM Class used for rating Depressional Wetland has multiple HGM classes? ___Y X N

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map ESRI World Imagery

OVERALL WETLAND CATEGORY X (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

__X__**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	H M (L)	
Landscape Potential	H (M) L	H (M) L	(H) M L	
Value	(H) M L	(H) M L	(H) M L	TOTAL
Score Based on Ratings	7	7	7	21

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

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

2. Category based on SPECIAL CHARACTERISTICS of wetland

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

Wetland name or number Wetlands Q and W

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	1
Hydroperiods	D 1.4, H 1.2	1
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	1
Map of the contributing basin	D 4.3, D 5.3	See Appendix A: Figure 3 (Topo)
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	4

Riverine Wetlands

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

Lake Fringe Wetlands

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

Slope Wetlands

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

Wetland name or number Wetlands Q and W

HGM Classification of Wetlands in Western Washington

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

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

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

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

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

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

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

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

NO – go to 3 **YES** – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

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

4. Does the entire wetland unit **meet all** of the following criteria?
   ___The wetland is on a slope (*slope can be very gradual*),
   ___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded**.

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

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

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number Wetlands Q and W

NO – go to 6 **YES** – The wetland class is **Riverine**

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

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

NO – go to 7 **YES** – The wetland class is **Depressional**

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

NO – go to 8 **YES** – The wetland class is **Depressional**

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

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

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

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

Wetland name or number Wetlands Q and W

DEPRESSIONAL AND FLATS WETLANDS

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

D 1.0. Does the site have the potential to improve water quality?		
D 1.1. Characteristics of surface water outflows from the wetland:		
Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet).	(points = 3)	3
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet.	points = 2	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 1	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch.	points = 1	
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	0
Wetland has persistent, ungrazed, plants > ½ of area	points = 3	
Wetland has persistent, ungrazed plants > $^1/_{10}$ of area	points = 1	
Wetland has persistent, ungrazed plants < $^1/_{10}$ of area	(points = 0)	
D 1.4. Characteristics of seasonal ponding or inundation:		
This is the area that is ponded for at least 2 months. See description in manual.		
Area seasonally ponded is > ½ total area of wetland	(points = 4)	4
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	7

Rating of Site Potential If score is: ___ **12-16 = H** (7 **6-11 = M**) ___ **0-5 = L** *Record the rating on the first page*

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

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

D 3.0. Is the water quality improvement provided by the site valuable to society?		
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list?	(Yes = 1) No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list?	(Yes = 1) No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality *(answer YES if there is a TMDL for the basin in which the unit is found)*?	(Yes = 2) No = 0	2
Total for D 3	Add the points in the boxes above	4

Rating of Value If score is (4 **2-4 = H**) ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number Wetlands Q and W

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland:		4
Wetland is a depression or flat depression with no surface water leaving it (no outlet)	(points = 4)	
Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.*		0
Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	
Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet	points = 5	
Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet	points = 3	
The wetland is a "headwater" wetland	points = 3	
Wetland is flat but has small depressions on the surface that trap water	points = 1	
Marks of ponding less than 0.5 ft (6 in)	(points = 0)	
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.*		5
The area of the basin is less than 10 times the area of the unit	(points = 5)	
The area of the basin is 10 to 100 times the area of the unit	points = 3	
The area of the basin is more than 100 times the area of the unit	points = 0	
Entire wetland is in the Flats class	points = 5	
Total for D 4	Add the points in the boxes above	9

Rating of Site Potential If score is: ___ **12-16 = H** (9 **6-11 = M**) ___ **0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 No = 0	0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?	Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	(Yes = 1) No = 0	1
Total for D 5	Add the points in the boxes above	2

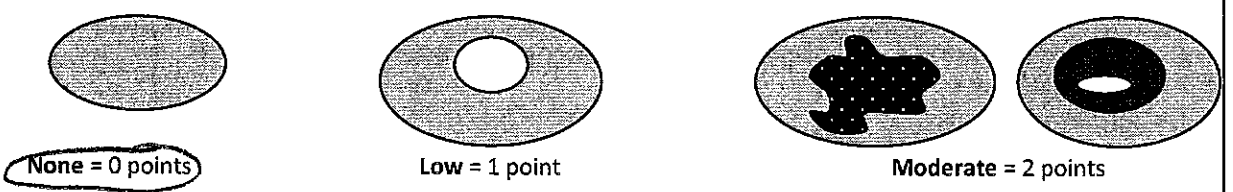
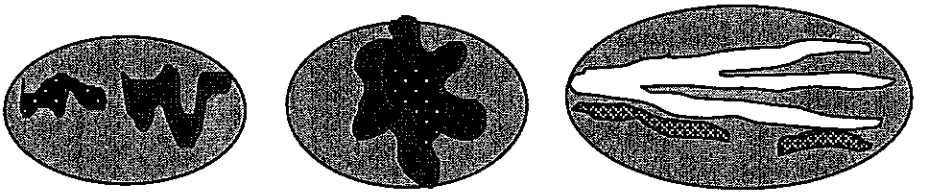
Rating of Landscape Potential If score is: ___ **3 = H** (2 **1 or 2 = M**) ___ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.*		2
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		
• Flooding occurs in a sub-basin that is immediately down-gradient of unit.	(points = 2)	
• Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
Flooding from groundwater is an issue in the sub-basin.	points = 1	
The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____	points = 0	
There are no problems with flooding downstream of the wetland.	points = 0	
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	(Yes = 2) No = 0	2
Total for D 6	Add the points in the boxes above	

Rating of Value If score is: (4 **2-4 = H**) ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number Wetlands Q and W

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 _X_ Emergent ___Scrub-shrub (areas where shrubs have > 30% cover) ___Forested (areas where trees have > 30% cover) *If the unit has a Forested class, check if:* ___The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon 4 structures or more: points = 4 3 structures: points = 2 2 structures: points = 1 (1 structure: points = 0)	0
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ___Permanently flooded or inundated _X_ Seasonally flooded or inundated ___Occasionally flooded or inundated _X_ Saturated only ___Permanently flowing stream or river in, or adjacent to, the wetland ___Seasonally flowing stream in, or adjacent to, the wetland ___**Lake Fringe wetland** **2 points** ___**Freshwater tidal wetland** **2 points** 4 or more types present: points = 3 3 types present: points = 2 (2 types present: points = 1) 1 type present: points = 0	1
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species points = 2 5 - 19 species (points = 1) < 5 species points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  (**None** = 0 points) **Low** = 1 point **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	0

Wetland name or number Wetlands Q and W

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ____Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* __X__At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	3

Rating of Site Potential If score is: ___**15-18 = H** ___**7-14 = M** (3 **0-6 = L**) *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?

H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] 50 = 50 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon (points = 3) 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	3
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat 4 + [(% moderate and low intensity land uses)/2] 34 = 38 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches (points = 1) Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity (points = 0)	0
Total for H 2 Add the points in the boxes above	4

Rating of Landscape Potential If score is: (4 **4-6 = H**) ___**1-3 = M** ___**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?

H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: (points = 2) — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) X It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	2

Rating of Value If score is: (2 **2 = H**) ___**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number wetlands Q and W

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

X **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number Wetlands Q and W

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	Category
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** (No= **Not an estuarine wetland**)	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to **SC 2.2** (No – Go to **SC 2.3**) SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = **Category I** (No = **Not a WHCV**) SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – **Contact WNHP/WDNR and go to SC 2.4** (No = **Not a WHCV**) SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = **Category I** (No = **Not a WHCV**)	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** (No – Go to **SC 3.2**) SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** (No = **Is not a bog**) SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** (No – Go to **SC 3.4**) **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** (No = **Is not a bog**)	**Cat. I**

Wetland name or number Wetlands Q and W

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** **No = Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** **No = Not a wetland in a coastal lagoon**	**Cat. 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 ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** **No = not an interdunal wetland for rating**	**Cat I**
SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2**	**Cat. 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** No – Go to **SC 6.3**	**Cat. 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** No = **Category IV**	**Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	Not Applicable

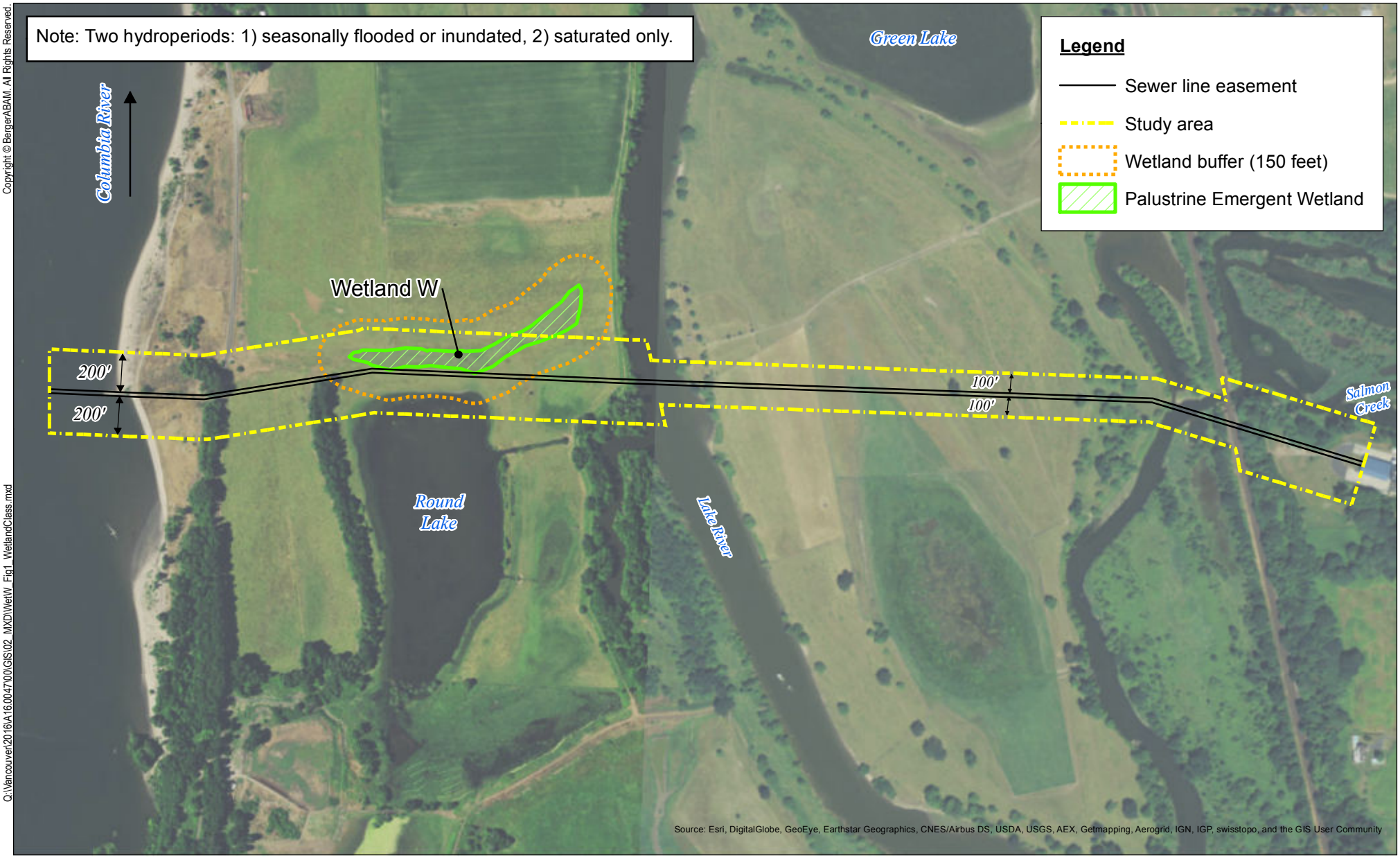


Figure 1 - Wetland W Classification and Plant Cover

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

N

0 250 500 1,000 1,500 2,000 Feet

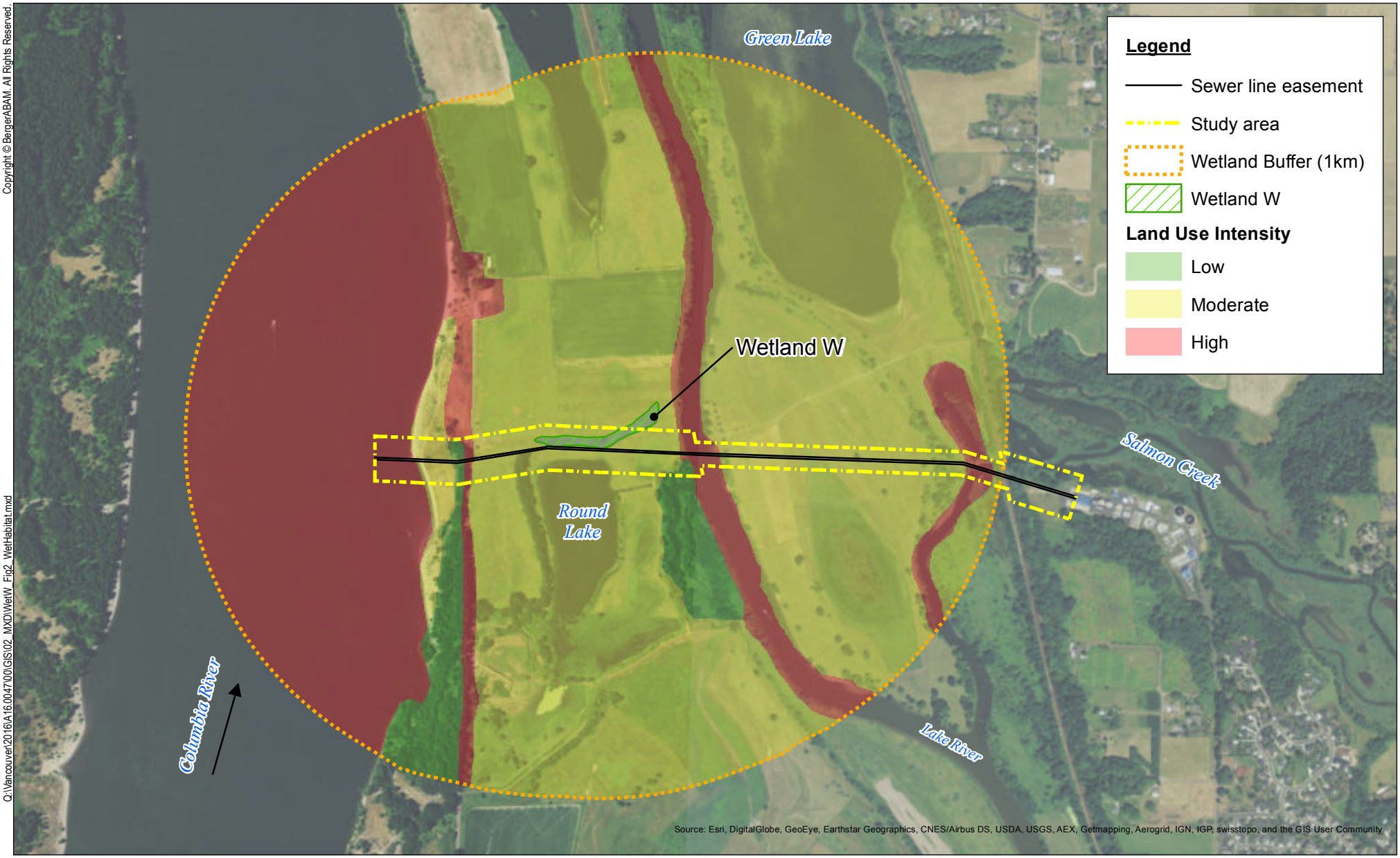


Figure 2 - Wetland W Habitat Assessment

Wetland and Stream Delineation and Assessment
Clark Regional Wastewater District
Columbia River Outfall and Effluent Pipeline
Location: Clark County, WA

BergerABAM

0 0.125 0.25 0.5 0.75 1 Kilometers

0 500 1,000 2,000 3,000 4,000 Feet

Wetland Q

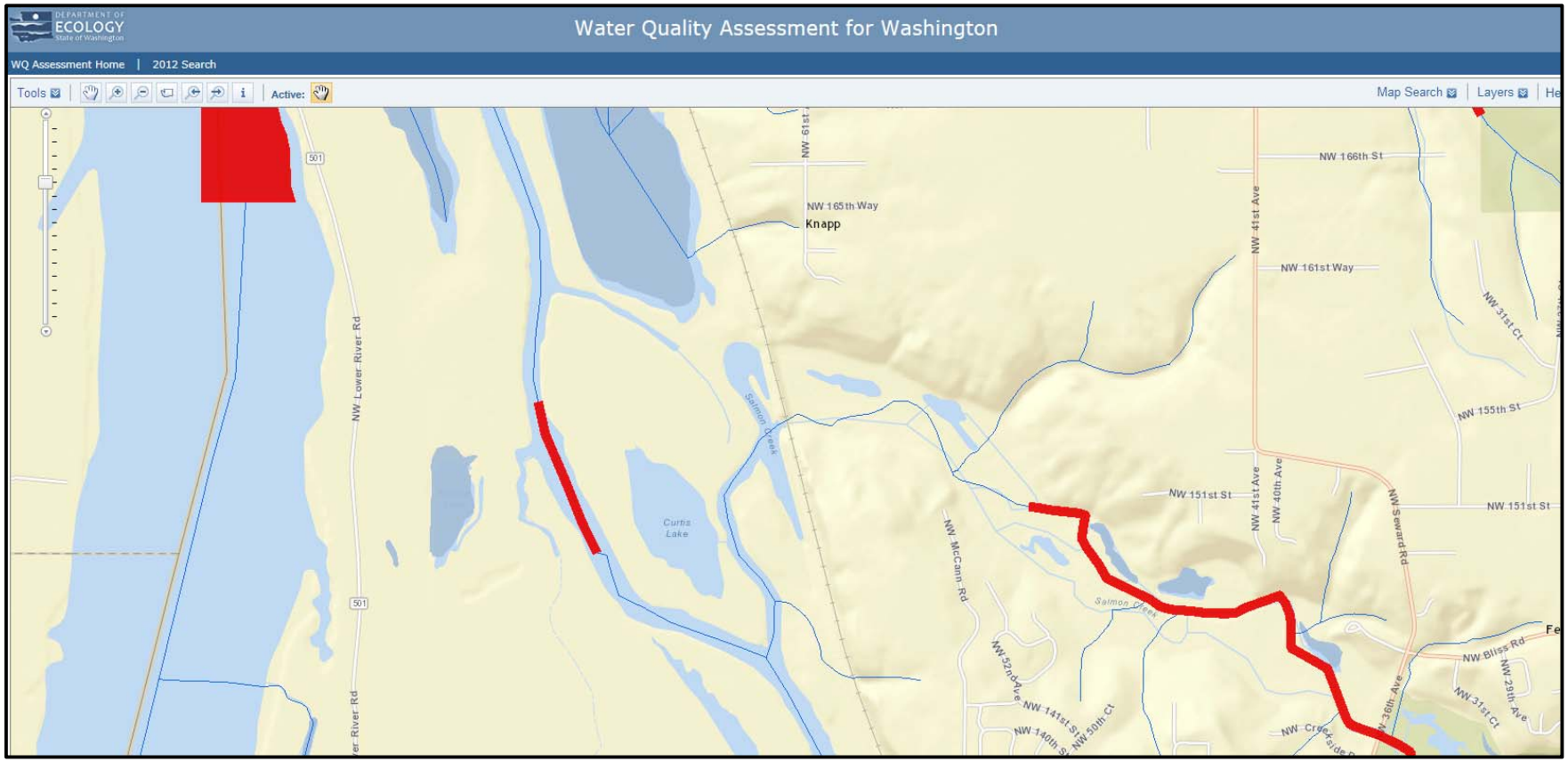


Figure 3 – 303(d) Listed Waters in Basin

Programs Services Publications & Forms Databases Laws & Rules Public Involvement Calendar Public Records

Water Quality Improvement Projects (TMDLs)

WATER QUALITY IMPROVEMENT PROJECTS (TMDLs)

Overview of the process
Project Catalog
by WRIA
by County
Funding Opportunities
Project Development Priority Lists
Related Information
TMDL Contacts

RELATED ECOLOGY PROGRAMS

Water Quality

Water Quality Improvement > Water Quality Improvement Projects by WRIA > WRIA 28: Salmon-Washougal

WRIA 28: Salmon-Washougal

The following table lists overview information for water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- Clark
- Skamania

Waterbody Name	Pollutants	Status**	TMDL Lead
Burnt Bridge Creek	Multi-parameter	Under development	Brett Raunig 360-690-4660
Gibbons Creek	Fecal Coliform	EPA approved	Brett Raunig 360-690-4660
Gifford Pinchot USFS	Temperature	On hold	Tony Whiley 360-407-7241
Lacamas Creek	Dissolved Oxygen Fecal Coliform pH Temperature	Under development	Brett Raunig 360-690-4660
Salmon Creek	Fecal Coliform Turbidity	EPA approved Has an implementation plan	Brett Raunig 360-690-4660
	Temperature	EPA approved Has an implementation plan	
Weaver Creek	Ammonia-N BOD (5-day)	EPA approved	Brett Raunig 360-690-4660

** ***Status*** *will be listed as one of the following: Approved by EPA, Under Development or Implementation*

For more information about WRIA 28:

- Water bodies in WRIA 28 - using the Water Quality Assessment Query Tool
- Watershed Information for WRIA 28 (Water website)

Figure 4 – List of TMDLs for WRIA 28 (Salmon-Washougal)

Appendix D
Ordinary High Water Mark Field Data Forms

Appendix D: OHWM Field Data Form

General Information

Site/Project Name/Owner:	Columbia Outfall and Effluent pipeline, Clark Regional Wastewater District
Location:	Ridgefield, WA
Description:	Columbia River (eastern side) within project area = 200ft north and south of pipeline.

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. Often, a team consisting of a hydrologist/ geomorphologist and a biologist is needed to accurately determine the Ordinary High Water Mark.

General Observations: Day of Site Visit

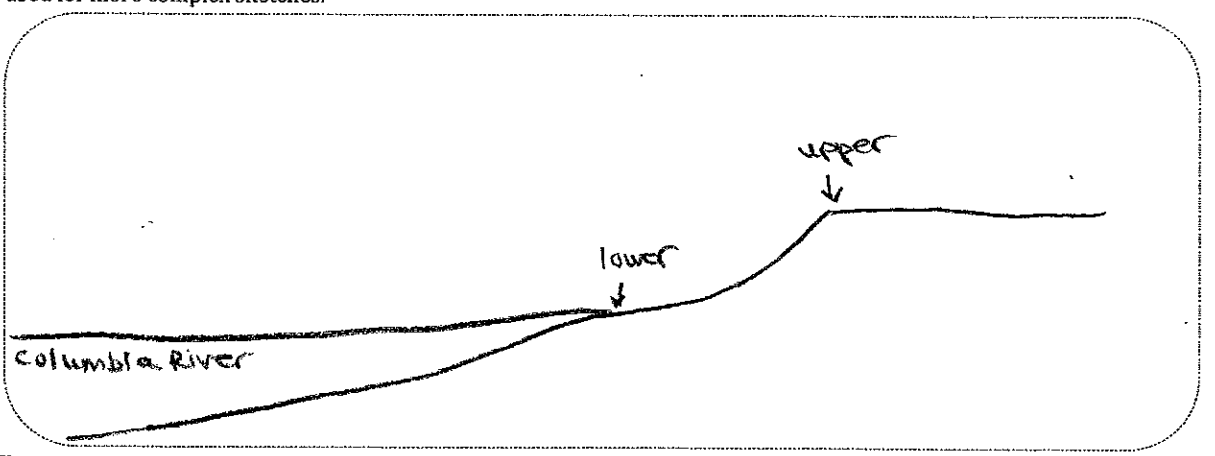
Date of site visit:	26 August 2015		
Time of site visit:	10:00 AM		
Weather conditions:	Sunny, 70°F		
Watershed development:	Highly developed ○	Mod. Developed ●	Undeveloped ○
Recent site disturbance?	No ●	Yes ○	Describe:
Upstream flow control devices?	No ○	Yes ●	Describe: Bonneville Dam
Bank armoring at the site?	No ○	Yes ●	Describe: some areas had riprap
Bank ar downst			
Observa			
In-water structures? (i.e. bridge pilings, railroad embankments)	No ●	Yes ○	Describe:
Animals grazing in riparian zone?	No ●	Yes ○	Describe:
Observable beaver activity?	No ●	Yes ○	Describe:

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches.



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

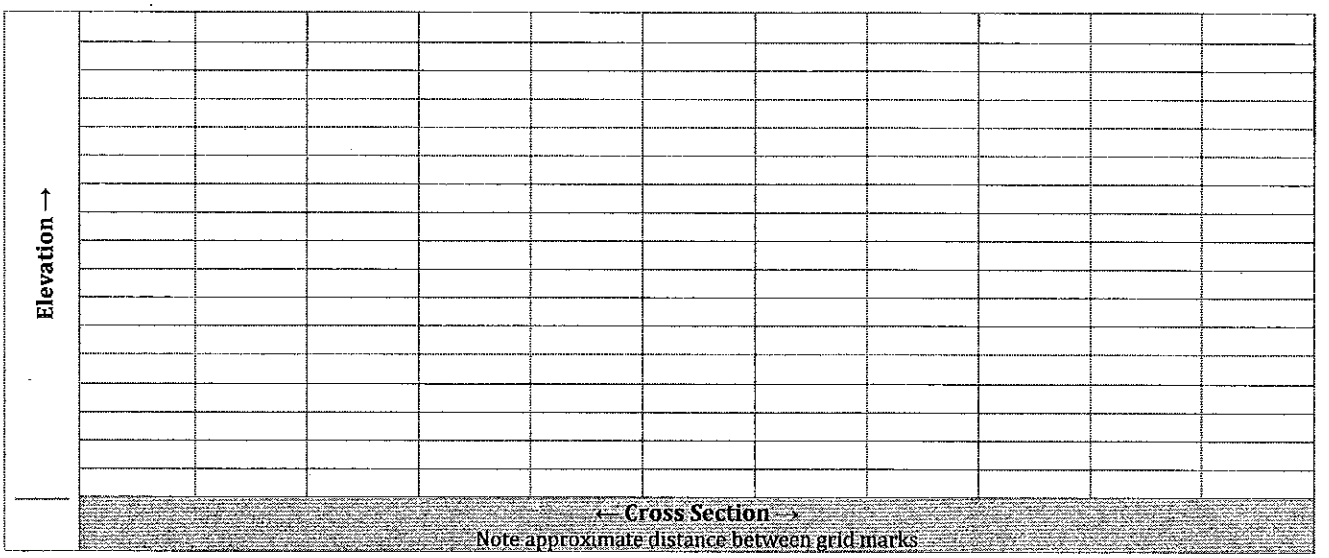
	Soil and geomorphic indicators [1]	Vegetative indicators [2]	Other indicators
Below OHWM	● Sediment bars ● Scour line ○ Clean cobbles/boulders. ● Bank erosion/channel scour ○ Lack of soil horizons	Vegetation tolerant of high flow disturbances such as: ● Willows ○ Black cottonwood ○ Japanese knotweed ○ Skunk cabbage ○ Aquatic plants	○ Exposed roots/root scour ● Drainage patterns, as shown by flattened vegetation
At or straddling OHWM	● Top of bank ○ Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ○ Benches	● Willows ○ Western red cedar ○ Vine maple (streams) ● Black cottonwood ○ Red alder ○ Salmonberry ○ Nootka rose ○ Maidenhair and lady fern ○ Blackberries	○ Little to no soil profile development ○ Sediment lines on vegetation or other fixed objects ○ Change from channel deposits to older alluvium. ○ Darker stain lines on fixed objects ○ Exposed roots/root scour. ● Drainage patterns, as evidenced by flattened vegetation
Above OHWM	○ Hillslope toe ○ Terraces or alluvium with an organic horizon or other developed soil horizons ● Relic floodplain surface	○ Indian plum ○ Red alder ○ Western red cedar ○ Douglas fir ○ Western hemlock ○ Ponderosa pine ○ Oregon white oak ○ Coast pine ○ Quaking aspen ○ Vine maple (lakes) ● Blackberries	○ Lighter or no staining on fixed objects ● Overbank deposits

Notes

The OHWM is located on a sandy shoreline of the Columbia River. The vegetation at the OHWM is sparse, but contains some grassy vegetation at and above the OHWM, and willows at and below the OHWM. Large pieces of woody debris were found at the lower end of the OHWM.

[1] Refer to Chapter 4 for a more complete description of indicators.

[2] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.



Plant Distribution Across OHWM Gradient					
~~Below~~ Above OHWM		At/Straddling OHWM		Above OHWM	
Salix sp		Salix sp.		Salix sp.	
Amorpha Fruiticosa		Populus balsamifera		Populus balsamifera	
		moss sp.		moss sp.	
		Unknown grass sp.		Unknown grass sp.	

Appendix D: OHWM Field Data Form

General Information

Site/Project Name/Owner:	Columbia Outfall and Effluent Pipeline Clark Regional Wastewater District
Location:	Ridgefield, WA
Description:	Lake River (eastern and western sides) within project area ~200ft north and south of pipeline.

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. Often, a team consisting of a hydrologist/ geomorphologist and a biologist is needed to accurately determine the Ordinary High Water Mark.

General Observations: Day of Site Visit

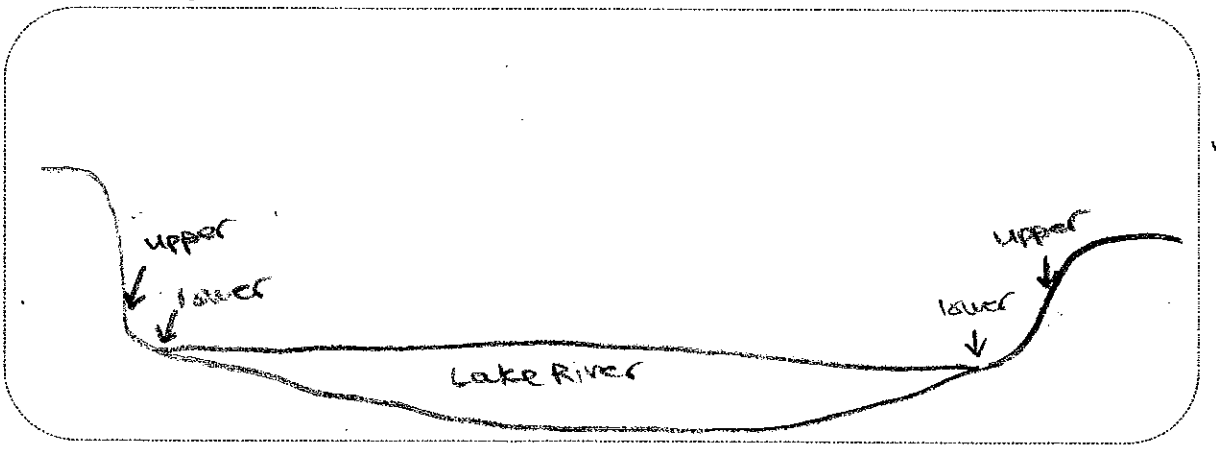
Date of site visit:	26 and 27 August, 2015		
Time of site visit:	10:00 AM		
Weather conditions:	Sunny, 70		
Watershed development:	Highly developed ○	Mod. Developed ●	Undeveloped ○
Recent site disturbance?	No ●	Yes ○	Describe:
Upstream flow control devices?	No ●	Yes ○	Describe:
Bank armoring at the site?	No ●	Yes ○	Describe:
Bank ar downst Observe			
In-water structures? (i.e. bridge pilings, railroad embankments)	No ●	Yes ○	Describe:
Animals grazing in riparian zone?	No ●	Yes ○	Describe:
Observable beaver activity?	No ○	Yes ●	Describe:

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches.



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

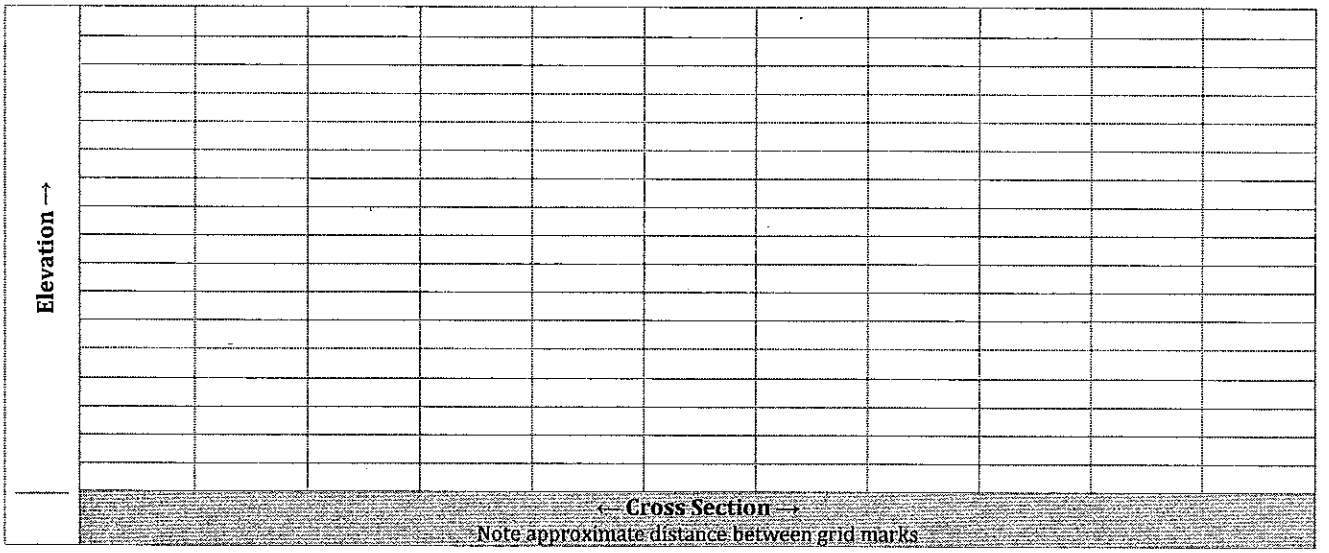
	Soil and geomorphic indicators [1]	Vegetative indicators [2]	Other indicators
Below OHWM	○ Sediment bars ● Scour line ○ Clean cobbles/boulders. ● Bank erosion/channel scour ○ Lack of soil horizons	Vegetation tolerant of high flow disturbances such as: ● Willows ○ Black cottonwood ○ Japanese knotweed ○ Skunk cabbage ● Aquatic plants	● Exposed roots/root scour ● Drainage patterns, as shown by flattened vegetation
At or straddling OHWM	● Top of bank ○ Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ○ Benches	● Willows ○ Western red cedar ○ Vine maple (streams) ○ Black cottonwood ○ Red alder ○ Salmonberry ● Nootka rose ○ Maidenhair and lady fern ● Blackberries	○ Little to no soil profile development ○ Sediment lines on vegetation or other fixed objects ○ Change from channel deposits to older alluvium. ○ Darker stain lines on fixed objects ● Exposed roots/root scour. ● Drainage patterns, as evidenced by flattened vegetation
Above OHWM	○ Hillslope toe ○ Terraces or alluvium with an organic horizon or other developed soil horizons ● Relic floodplain surface	○ Indian plum ○ Red alder ○ Western red cedar ○ Douglas fir ○ Western hemlock ○ Ponderosa pine ○ Oregon white oak ○ Coast pine ○ Quaking aspen ○ Vine maple (lakes) ● Blackberries	● Lighter or no staining on fixed objects ○ Overbank deposits

Notes

The OHWMs are located on the eastern and western banks of Lake River within the study area. The banks on both sides are raised and have evidence of erosion. The western side of Lake River has a beaver dam and observable beaver activity.

[1] Refer to Chapter 4 for a more complete description of indicators.

[2] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.



Plant Distribution Across OHWM Gradient					
~~Below~~, ~~Above~~ OHWM		At/Straddling OHWM		Above OHWM	
Amorpha fruticosa		Rubus armeniacus		Rubus armeniacus	
Cornus sericea		Rosa nutkana		Rosa nutkana	
Reed canarygrass		Populus balsamifera		Populus balsamifera	
		Cornus sericea		Cornus sericea	
		Reed canarygrass		Holcus lanatus	
				Reed canarygrass	

Appendix D: OHWM Field Data Form

General Information

Site/Project Name/Owner:	Salmon Creek outfall Project – Salmon Creek
Location:	Clark Regional Wastewater District
Description:	North shore of Salmon Creek at existing utility crossing

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. Often, a team consisting of a hydrologist/ geomorphologist and a biologist is needed to accurately determine the Ordinary High Water Mark.

General Observations: Day of Site Visit

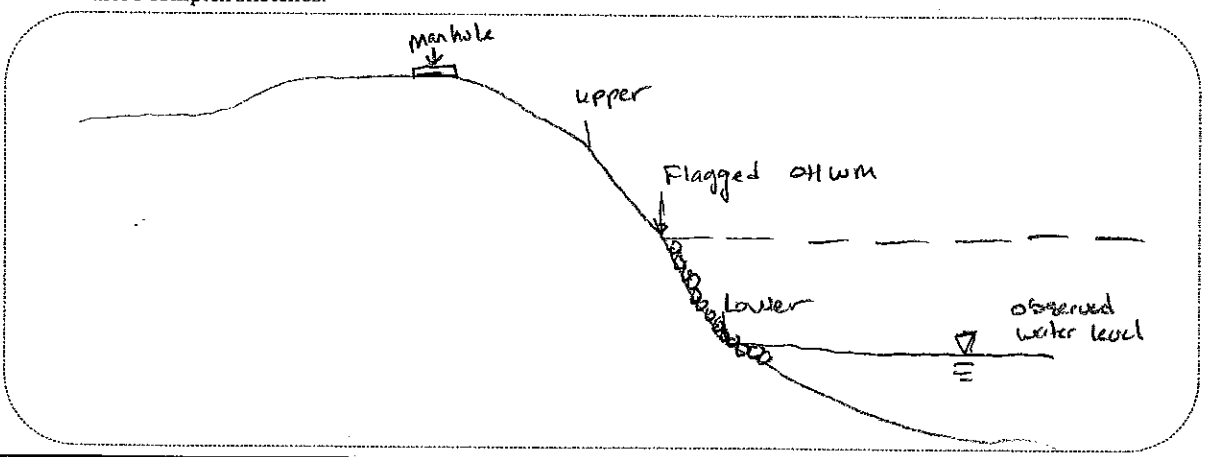
Date of site visit:	27 August 2015		
Time of site visit:	1:00 PM		
Weather conditions:	Sunny 70° F		
Watershed development:	Highly developed ○	Mod. Developed ●	Undeveloped ○
Recent site disturbance?	No ●	Yes ○	Describe:
Upstream flow control devices?	No ●	Yes ○	Describe:
Bank armoring at the site?	No ○	Yes ●	Describe: rip rap placed at utility crossing at Salmon Creek
Bank ar downst			
Observa			
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ●	Describe: bridge piling for RR tracks
Animals grazing in riparian zone?	No ○	Yes ●	Describe: Cows were seen in the area
Observable beaver activity?	No ●	Yes ○	Describe:

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches.



Additional Indicators

Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

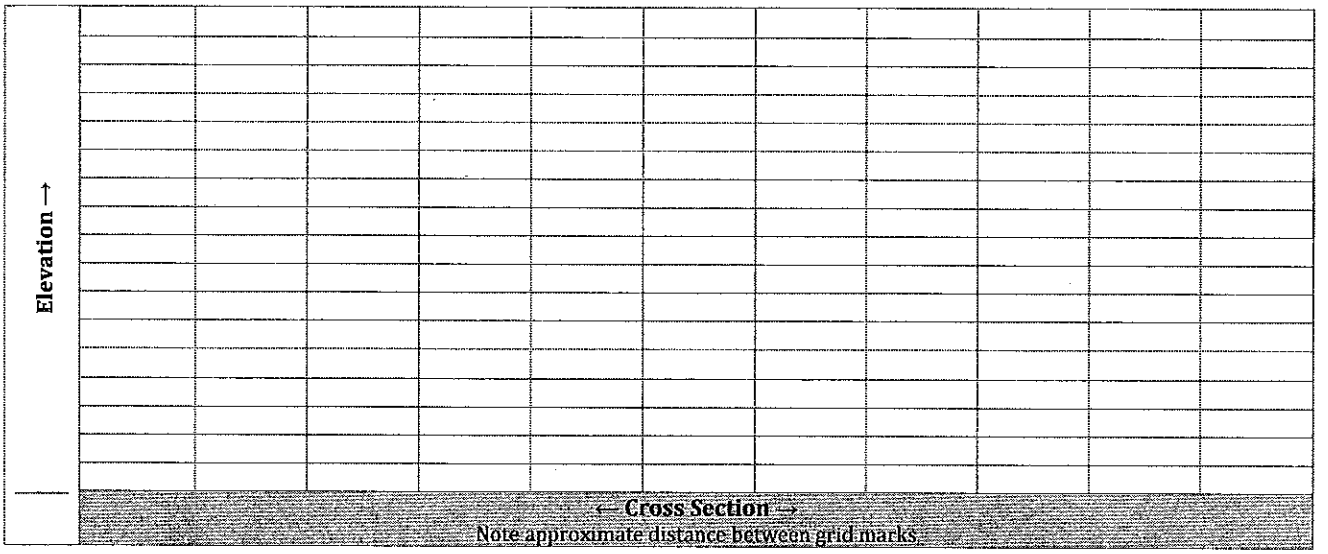
	Soil and geomorphic indicators [1]	Vegetative indicators [2]	Other indicators
Below OHWM	○ Sediment bars ● Scour line ● Clean cobbles/boulders. ● Bank erosion/channel scour ○ Lack of soil horizons	Vegetation tolerant of high flow disturbances such as: ○ Willows ○ Black cottonwood ○ Japanese knotweed ○ Skunk cabbage ● Aquatic plants	● Exposed roots/root scour ○ Drainage patterns, as shown by flattened vegetation
At or straddling OHWM	○ Top of bank ○ Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ○ Benches	○ Willows ○ Western red cedar ○ Vine maple (streams) ○ Black cottonwood ○ Red alder ○ Salmonberry ○ Nootka rose ○ Maidenhair and lady fern ● Blackberries	○ Little to no soil profile development ● Sediment lines on vegetation or other fixed objects ○ Change from channel deposits to older alluvium. ○ Darker stain lines on fixed objects ● Exposed roots/root scour. ○ Drainage patterns, as evidenced by flattened vegetation
Above OHWM	○ Hillslope toe ○ Terraces or alluvium with an organic horizon or other developed soil horizons ● Relic floodplain surface	○ Indian plum ○ Red alder ○ Western red cedar ○ Douglas fir ○ Western hemlock ○ Ponderosa pine ○ Oregon white oak ○ Coast pine ○ Quaking aspen ○ Vine maple (lakes) ● Blackberries	● Lighter or no staining on fixed objects ○ Overbank deposits

Notes

Flagged ordinary High water mark above visable evidence of scour on steep bank

[1] Refer to Chapter 4 for a more complete description of indicators.

[2] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.



Below OHWM		At/Straddling OHWM		Above OHWM	
spike-rush	OBL	Himalayan blackberry	FACU	Himalayan blackberry	FACU
				Fescue (tall)	FAC
				bentgrass (creeping)	FAC
				Canada thistle	FAC

Appendix D: OHWM Field Data Form

General Information

Site/Project Name/Owner:	Salmon Creek outfall Project Salmon Creek Site
Location:	Clark Regional Wastewater District
Description:	South shore Salmon Creek from railroad tracks to treatment Plant

The following field form is for use in the field to help in making ordinary high water mark delineations on streams. The form should be used as a guide. Often, a team consisting of a hydrologist/ geomorphologist and a biologist is needed to accurately determine the Ordinary High Water Mark.

General Observations: Day of Site Visit

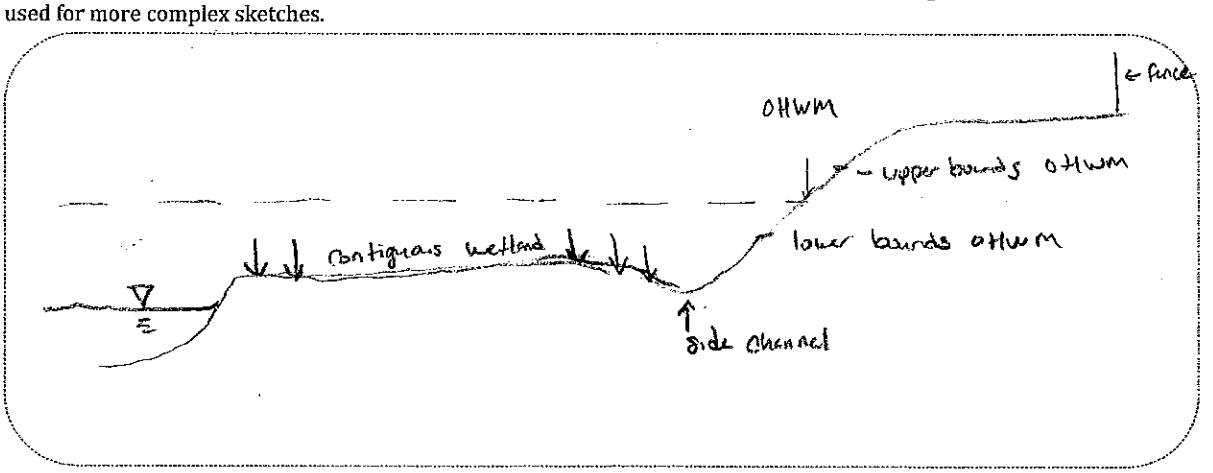
Date of site visit:	8 September 2015		
Time of site visit:	11:00 AM		
Weather conditions:	Sunny 80°F		
Watershed development:	Highly developed ☒	Mod. Developed ○	Undeveloped ○
Recent site disturbance?	No ●	Yes ○	Describe:
Upstream flow control devices?	No ○	Yes ○	Describe:
Bank armoring at the site?	No ○	Yes ●	Describe: Shoreline is armored at the RR crossing
Bank ar downst			
Observe			
In-water structures? (i.e. bridge pilings, railroad embankments)	No ○	Yes ●	Describe: there are two bridge pilings associated with the RR bridge
Animals grazing in riparian zone?	No ●	Yes ○	Describe: not on south shoreline, but were observed on north shoreline west of RR bridge
Observable beaver activity?	No ●	Yes ○	Describe:

Complete Vegetation Transects

- Use guidelines in Chapter 4 to complete vegetation transects.
- Determine upper and lower bounds of the OHWM from vegetation transects.
- After completing vegetation transects, look for more field indicators near the upper and lower bounds of the OHWM. Use the checklist as guidance.

Sketch

If a simple site, sketch a cross-sectional diagram of the site below. Include location of the waterway and upper and lower bounds of the OHWM defined by the vegetation communities or other OHWM indicators. Page 3 of the data form can be used for more complex sketches.



Additional Indicators

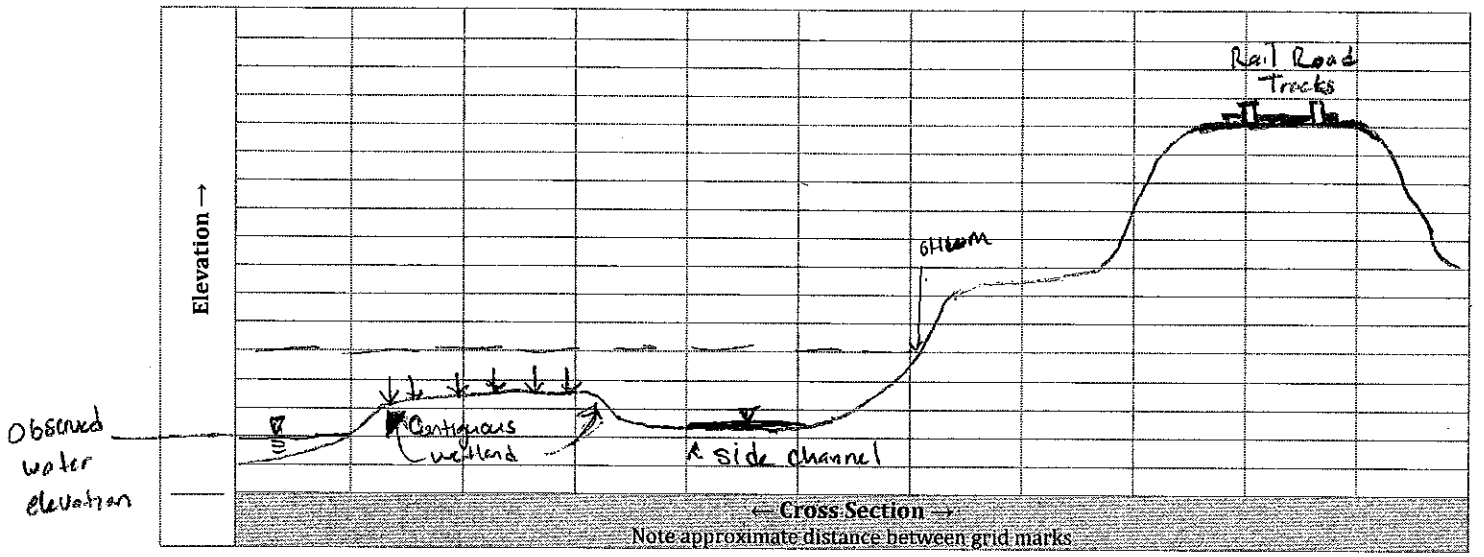
Check the indicators that are observable at the site that provide rationale for establishing the OHWM at this location. The rationale should be described in detail in the report and should be supported with photographs taken during the site visit.

	Soil and geomorphic indicators [1]	Vegetative indicators [2]	Other indicators
Below OHWM	○ Sediment bars ● Scour line ● Clean cobbles/boulders. ● Bank erosion/channel scour ○ Lack of soil horizons	Vegetation tolerant of high flow disturbances such as: ○ Willows ○ Black cottonwood ○ Japanese knotweed ○ Skunk cabbage ● Aquatic plants	● Exposed roots/root scour ● Drainage patterns, as shown by flattened vegetation
At or straddling OHWM	○ Top of bank ○ Toe of lowest terrace (if terrace has developed horizons which may include a duff layer and A and B horizons versus freshly deposited alluvium) ○ Benches	● Willows ○ Western red cedar ○ Vine maple (streams) ● Black cottonwood ● Red alder ○ Salmonberry ● Nootka rose ○ Maidenhair and lady fern ● Blackberries	● Little to no soil profile development ● Sediment lines on vegetation or other fixed objects ○ Change from channel deposits to older alluvium. ● Darker stain lines on fixed objects ● Exposed roots/root scour. ● Drainage patterns, as evidenced by flattened vegetation
Above OHWM	○ Hillslope toe ○ Terraces or alluvium with an organic horizon or other developed soil horizons ● Relic floodplain surface	○ Indian plum ● Red alder ○ Western red cedar ○ Douglas fir ○ Western hemlock ○ Ponderosa pine ○ Oregon white oak ○ Coast pine ○ Quaking aspen ○ Vine maple (lakes) ● Blackberries	● Lighter or no staining on fixed objects ○ Overbank deposits

Notes

[1] Refer to Chapter 4 for a more complete description of indicators.

[2] Species are provided as examples. Refer to Appendix B for a more complete listing of plant species and their distribution across the OHWM gradient. Some species occur in more than one category depending on site conditions. For example Indian plum and red alder may straddle the OHWM where soil drainage is high. They may occur above OHWM were soil drainage is low to moderate.



Plant Distribution Across OHWM Gradient					
Below [redacted] OHWM		At/Straddling OHWM		Above OHWM	
Skunk Cabbage	OBL	reed canarygrass	FACW	Canada Thistle	FACU
broad-leaf arrowhead	OBL	Oregon ash	FACW	Himalayan blackberry	FACU
reed canary grass	FACW	red Alder	FAC	big leaf maple	FACU
Slough Sedge	FACW	Nootka Rose	FAC	red alder	FAC
Spike-rush	OBL	red-osier dogwood	FACW	Cottonwood	FAC
		Willow			
		Himalayan blackberry	FACU		
		Cottonwood			

Appendix E

Round Lake Conservation Bank Study Area Wetland Delineation
Round Lake Conservation Bank Memorandum (Addendum)
USACE Jurisdictional Determination Letter

AECOM Environment

Submitted to:
Mr. Richard Fazio
Vancouver, Washington

Mr. Don Andersen
Battleground, WA

Submitted by:
AECOM
Portland, Oregon
60217054

Round Lake Conservation Bank Study Area Wetlands Delineation

Clark County, Washington

AECOM Environment

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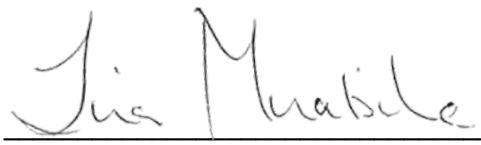
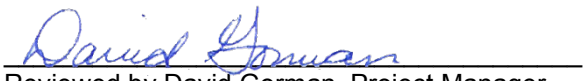


Prepared by Tina Mirabile, Professional Wetland Scientist



Reviewed by David Gorman, Project Manager

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1.0 Introduction

This report presents the results of wetland delineations conducted by AECOM on the approximate 200-acre Round Lake Conservation Bank Study Area (study area) in southwest Clark County, Washington (Figure 1). The study area consists of two parcels (191177000 and 191279000) utilized for livestock grazing and agricultural purposes within the diked floodplain adjacent to the Columbia River. The Lake River dike bounds the eastern edge of the Study Area. The northern parcel (19177000) is developed with a single-family residence located at 15017 Northwest Lower River Road (Figure 2). The Andersen dairy farm is operated on the southern parcel.

The study area, which includes Post Office Lake and Round Lake as major habitat components, is being considered for restoration as a habitat conservation mitigation bank with re-established connection to the Columbia River floodplain for fish passage and refuge. This delineation report is intended to serve as a reference document describing the baseline environmental conditions at the site.

1.1 Project Contacts

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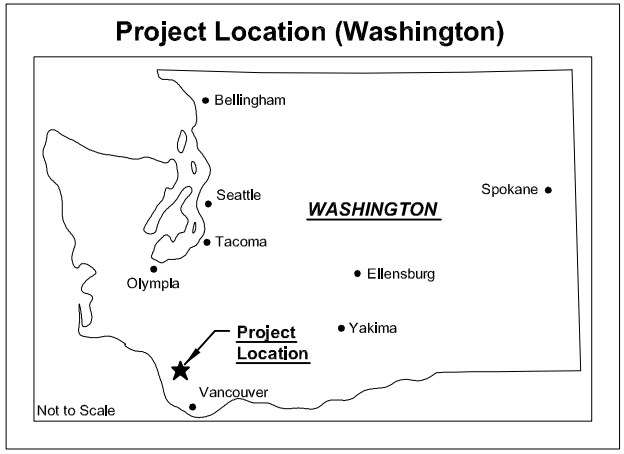

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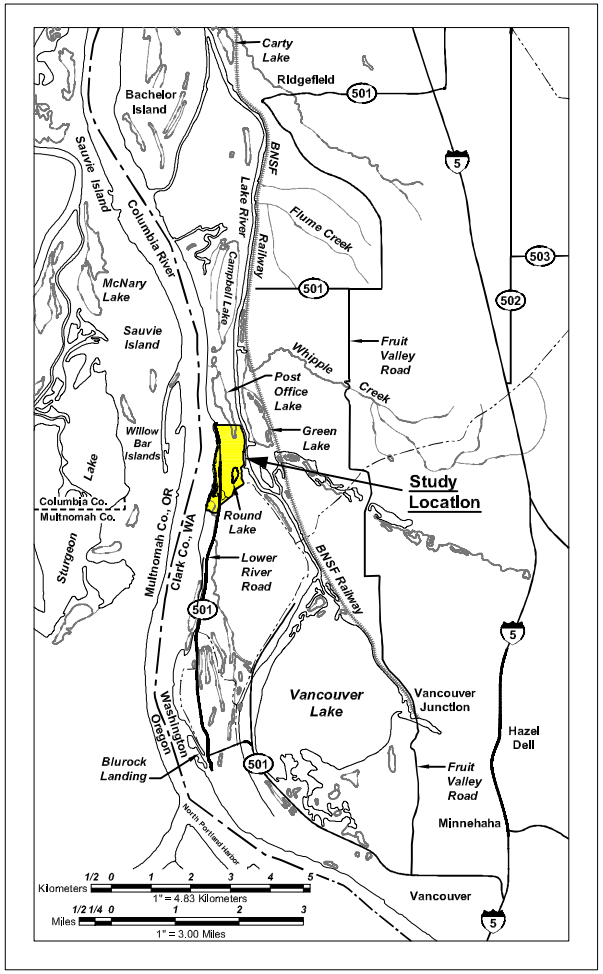

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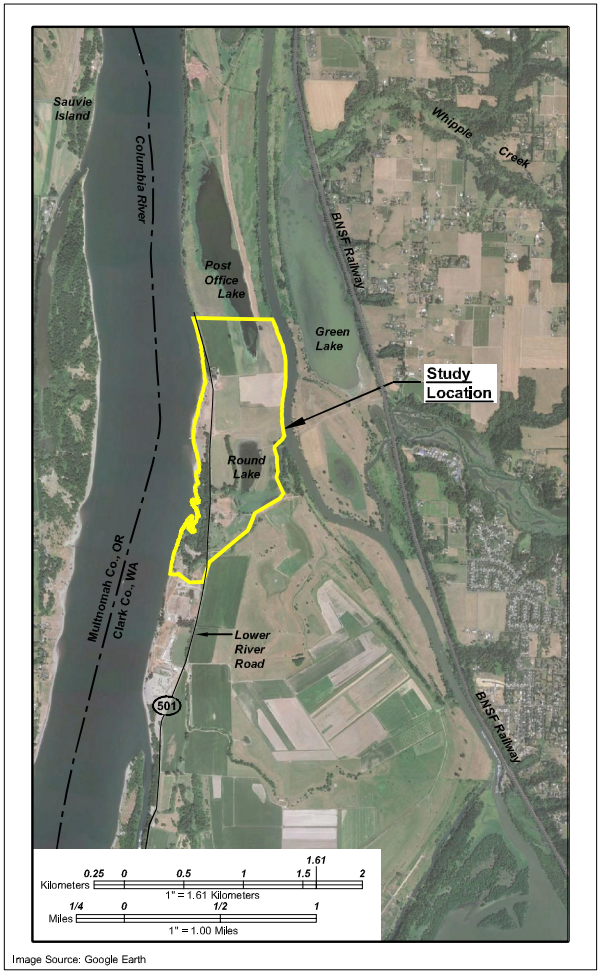

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PROJECT LOCATION MAP

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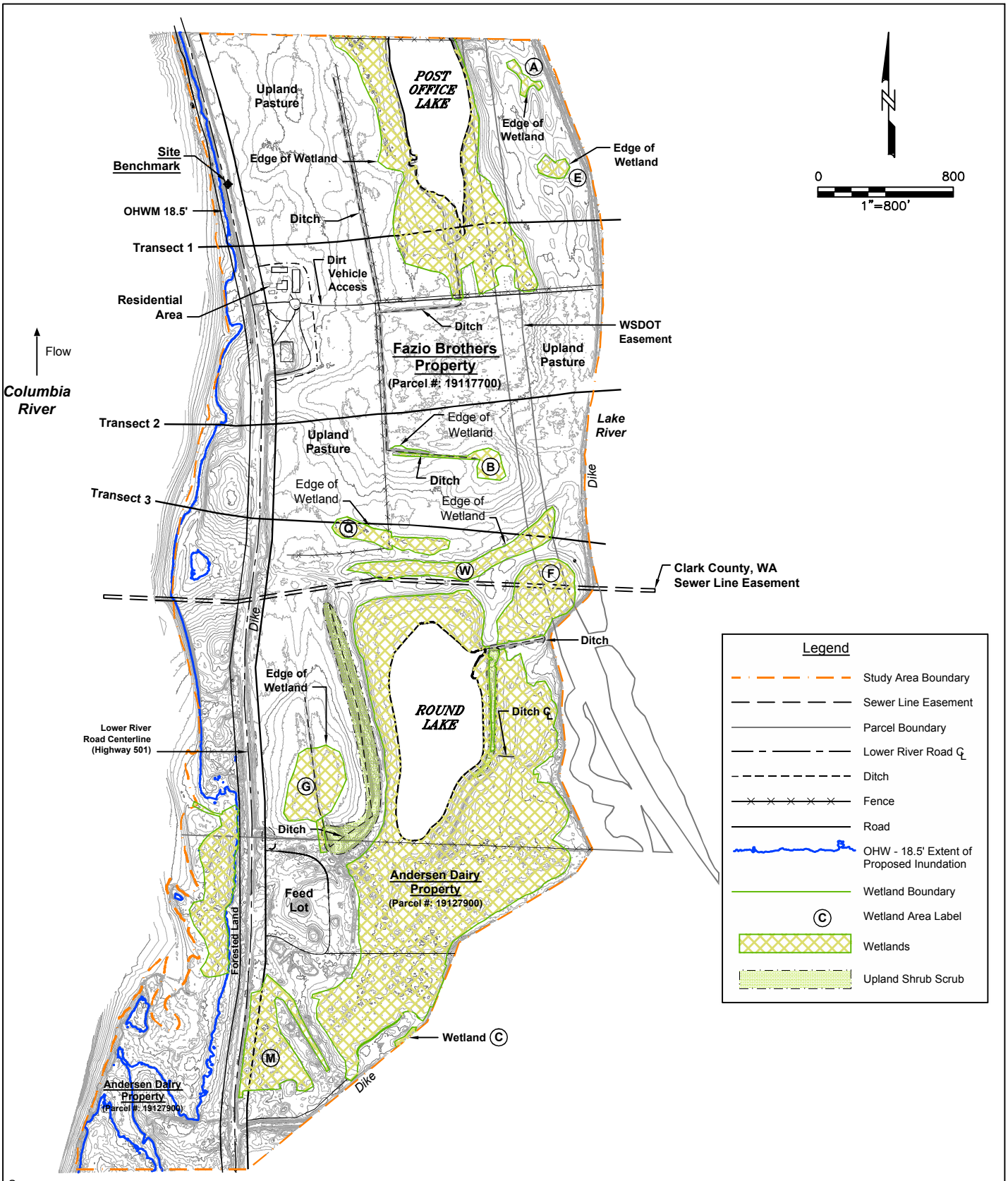
Figure: 1



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227 N. Main Avenue
Gresham, Oregon 97030
Statewide Project No. 2012-35

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EXISTING CONDITIONS - PLAN VIEW

AECOM

Figure: 2

2.0 Methods

A review of existing data resources relevant to the site and a field investigation were completed to assess the environmental conditions within the study area.

2.1 Background Review

AECOM conducted a review of background materials to obtain information about existing environmental conditions in the study area. Representative information reviewed in association with the project area included the following:

- Aerial photos of the study area
- LIDAR (USACE 2010)
- National Wetland Inventory (NWI) maps (U.S. Fish and Wildlife Service 1977 to present)
- Clark County GIS data layers showing locations of critical areas (wetlands, streams, etc.)
- Soil Survey of Clark County Area, Washington (McGee, et. al. 1972)
- Data on climatic conditions, such as precipitation and temperature (Western Regional Climate Center 2012; Weather Underground 2012)
- Water level tide predictions (National Oceanic and Atmospheric Administration 2012).

Results of the background review are presented in Section 3.0.

2.2 Field Investigation

AECOM biologists conducted a field investigation to identify, delineate, categorize, and map wetlands and drainages in the study area. Site visits were conducted over a series of eight days in April and four days mid-May, in 2012. Field dates include April 10, 11, 12, 23, 24, 25, 26, 27 and May 14, 15, 16, 17, 2012.

Wetland identification and delineation was conducted based on methodology presented in *The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineers [USACE] 2010). This manual is a supplement to the *1987 Corps of Engineers Delineation Manual* (USACE 1987). The USACE methodology requires evidence that at least one positive wetland indicator must be found for each of three parameters (vegetation, soils and hydrology) in order to make a regulatory wetland determination. Details regarding federal guidance and criteria for making regulatory wetland determinations are provided as Appendix A.

The field investigation was conducted according to federal guidance regarding normal environmental conditions. Although portions of the site's wetlands exhibit seasonal hydrology, these areas did represent potential problem areas, as described in the federal protocols. The field investigation was conducted during the early growing season rather than later in the summer season when drought conditions could alter hydrophytic vegetation characteristics. Historic and current agricultural land use within the study area, including diking, ditching, and active livestock grazing, was not considered of major significance to constitute assessment of the site's wetlands according to USACE guidance regarding atypical situations.

Sample plots (SPs) documenting the transition between upland and wetland communities were recorded throughout the study area and along three east-west oriented transects on the northern Fazio parcel. An east-west cross transect was not completed on the southern Andersen parcel due to elevated water levels associated with Round Lake which restricted pedestrian access.

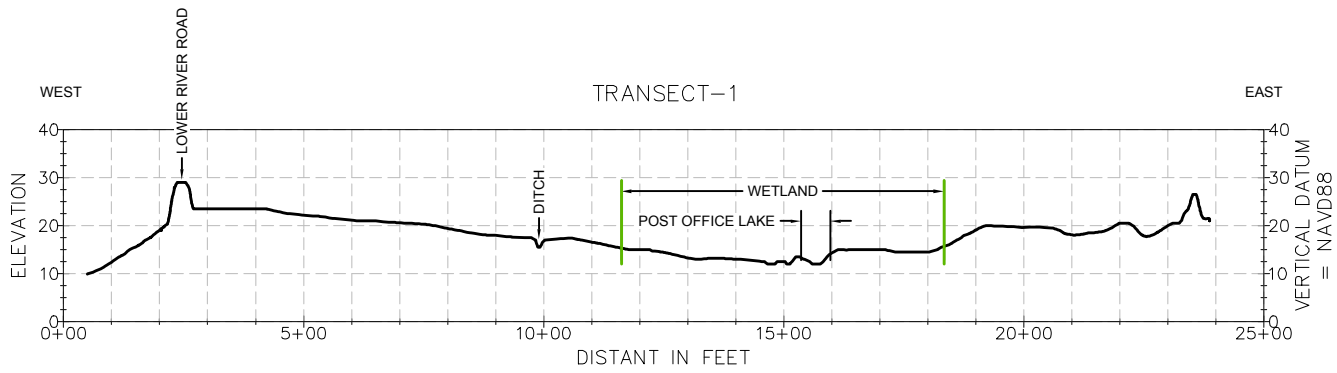
The Transects T1, T2, and T3, as measured from the east boundary of the Study Area, near the base of the Lake River dike, west to the Columbia River, are approximately 2,200, 2,300, and 2,400 linear feet in length, respectively (Figure 2). The spacings between the 10 SPs on Transect T1 and the 12 SPs on Transect T3 was generally 200 feet. Transect T2 was positioned in upland agricultural crop and pasture areas and along the Columbia River shoreline where sand from past dredging operations may have been deposited. Therefore, closer spacings of 100 feet were implemented between the 21 SPs investigated on Transect T2. The data collected at SPs along the transects provided details regarding the existing conditions in the agricultural crop and pasture fields on the northwest and central portions of the Fazio property, as well as giving reference locations for profiling the site topography (Figure 3).

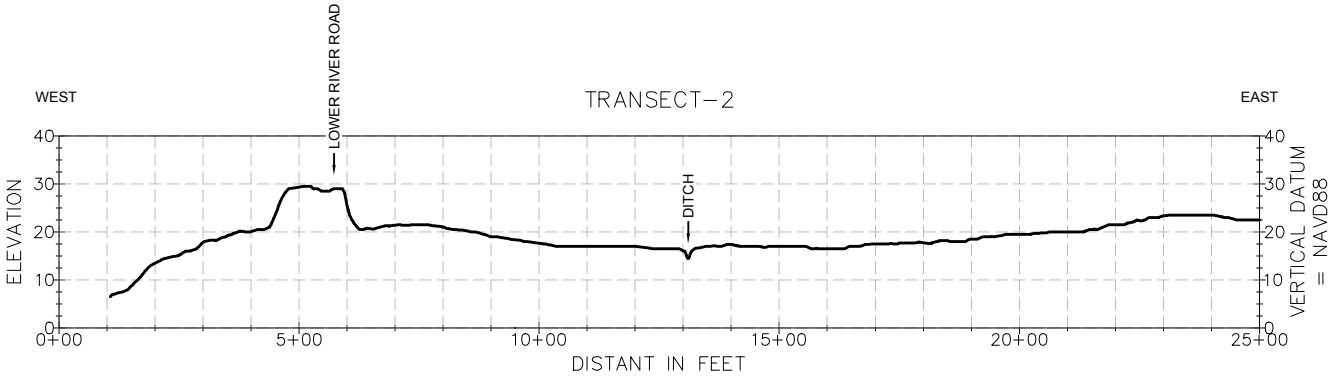
The Ordinary High Water Mark (OHWM) of the Columbia River in the southwest and northwest corners of the respective Fazio and Andersen parcels was field delineated by AECOM biologists. The OHWM determination was conducted in accordance with the protocols of the Washington State Department of Ecology (Ecology) for making an OHWM determination in the field. Evidence of scour and water marks, site topography, drift deposits, positioning of existing wrack and the transition of the vegetation from hydrophytic-dominated species to non-hydrophytic (upland) dominated species was used to delineate the OHWM. Data regarding the existing forested upland and riparian-associated wetland conditions on the southwest portion of the Study Area was recorded to serve as a reference for designing and monitoring natural forest habitats created by the Round Lake Conservation Bank project.

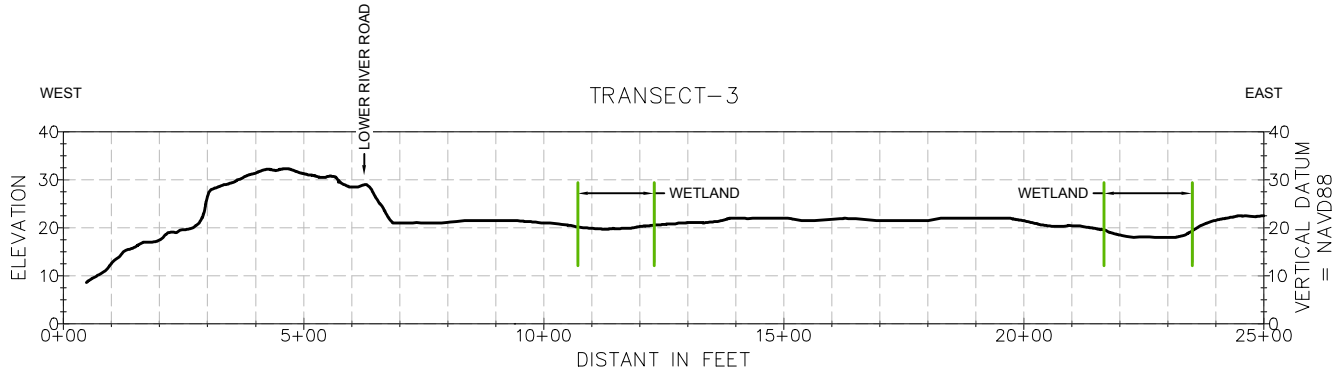
The boundaries of delineated wetlands and reference section of the OHWM of the Columbia River were flagged and sequentially numbered on brightly colored survey ribbon or pin flags in anticipation of a professional survey. AECOM used a Garmin GPSMAP60 handheld global positioning system (GPS) unit to document the locations of wetland boundaries and SPs situated along and within the vicinity of the three transects on the Fazio parcel. In active livestock grazing areas, Statewide Land Surveying Inc. of Gresham, Oregon professionally surveyed delineated areas concurrent with the field investigation using TrimbleGeoXT equipment. Maps depicting the results of the wetlands delineation and other area features are based on the combination of AECOM's GPS data and that of the professional survey. The field delineation of the river's OHWM was tied into the reference OHWM elevation of 18.5 feet along the western edge of the study area.

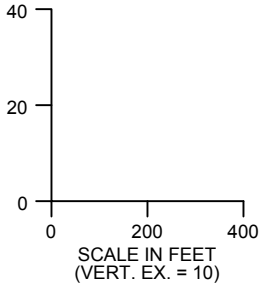
Details regarding the existing vegetation, soils, hydrology and fish and wildlife habitats observed during the field investigation at SPs throughout the study area were recorded on dataforms included in Appendix B. Photographs depicting existing conditions at the time of the site visits and taken in each of the cardinal directions: north, south, east, and west at the recorded SP locations are included in Appendix C.

AECOM biologists classified and categorically rated delineated wetlands according to the Cowardin (Cowardin et. al 1979) and hydrogeomorphic (HGM; Brinson 1993) classification systems and the *Washington State Wetland Rating System for Western Washington* using best professional judgment and other available reference information, as applicable. Additional information regarding the methodologies used to classify and rate wetlands is included in Appendix B. Completed wetland rating forms are included in Appendix D. The results of the field investigation are presented in Section 4.0.









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Wetland Delineation
Round Lake Conservation Bank
Vancouver, Washington
Project No.: 60217054 Date: 05/29/13

TRANSECTS

AECOM

Figure: 3

3.0 Results of Background Review

3.1 Mapped Wetlands and Water Bodies

Wetlands identified on the NWI are classified according to the Cowardin system (Cowardin, et al., 1979). This system classifies wetlands according to hydrologic, geomorphologic, chemical, and biological factors. Wetlands are first classified by the primary source of water to the wetland. These classes are usually identified by the physical form of the dominant plant community type, or less often, the substrate of the wetland.

The Columbia River is identified by the NWI as a Regularly Flooded, Seasonal-Tidal, and Permanent Tidal Riverine water body with an Unconsolidated Shore or Bottom (R1USN, R1USR, and R1UBV). Lake River is identified by the NWI as a Riverine Permanent-Tidal Unconsolidated Bottom (R1UBV) water body.

FEMA maps identify the properties in the Study Area as situated within the A11 zone of the 100-year floodplain of the Columbia River. Clark County's mapping resources identify floodway and fringe floodway hazards in association with the site.

Approximately 47 acres in the Study Area are represented as wetlands by the National Wetlands Inventory (NWI) mapping system (Figure 4). The NWI identifies Post Office Lake and Round Lake as Palustrine Emergent (PEM) wetlands with seasonal and semi-permanent freshwater hydrology. Two smaller seasonal freshwater PEM wetlands are additionally mapped on the southern portion of the Study Area. Seasonal-tidal Palustrine Scrub-Shrub (PSSR) wetlands and Temporarily Flooded Palustrine Forested (PFOA) wetlands are identified in association with the Columbia River near the southwest corner of the Study Area.

Palustrine systems are shallow ponds and wet areas, including all non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens. This system includes wetlands lacking such vegetation, but with all of the following four characteristics: 1) total area is less than 20 acres; 2) active wave-formed or bedrock shoreline features are lacking; 3) water depth in the deepest part of the basin is less than 6.6 feet at low water; and 4) salinity, due to ocean-derived salts, is less than 0.5 parts per thousand.

The NWI maps are largely based on interpretations of aerial photographs and other input data. The extent of forested wetland areas on NWI maps is often lacking due to the difficulty of assessing hydrology areas obscured in aerials by canopy cover. Hydrological connections between wetlands and ditches and small streams are also not typically indicated on the NWI maps.

Clark County's GIS mapping resources identify approximately 15.5 acres of additionally mapped wetland areas associated with Post Office Lake and Round Lake. A small wetland, less than 1 acre in size, is also mapped near the northeast corner of Study Area (Figure 4).

The total combined area of the NWI and Clark County GIS mapped wetland areas within the approximate 200-acre subject Study Area represents approximately 62 acres to the east of the Lower River Road. The mapped on-site portions of Post Office Lake and Round Lake, including adjacent wetlands communities, represent approximately 25 acres and 39 acres, respectively.

Post Office and Round Lake are situated in the Vancouver Lake/Lake River watershed within the Salmon-Washougal Water Resource Inventory Area (WRIA) # 28. The U.S. Geological Survey

Hydrological Unit Code (HUC) for the Study Area is 17080001-Lower Columbia-Sandy watershed. The Columbia River, Lake River, Post Office Lake and Round Lake are designated Shorelines of the State or Type “S” waters (WAC 2 22-16-030)

GIS Coverage	Acres
County	15.42
NWI	62.04
PEM/SSR	4.06
PEMA	1.87
PEMC	34.94
PEFM	12.39
PFOA	5.39
PUBF	0.89
R1UBV	2.47
Grand Total	77.46

Legend

- Study Area Boundary
- Ditch
- Road
- Parcel Boundary
- National Wetlands Inventory (NWI) Wetlands Delineation
- County Wetlands Delineation

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Round Lake Conservation Bank
Vancouver, Washington
Project No.: 60217054 Date: 05/29/13

NATIONAL WETLAND INVENTORY AND CLARK CLARK COUNTY GIS LAYERS WETLAND MAPPING, ROUND LAKE CONSERVATION STUDY AREA

AECOM

Figure: 4

3.2 Site Topography and Soils

The approximate average elevation on the upland portions of the site is 20 feet above mean sea level (msl). The site topography of the diked floodplain is relatively flat. The micro-topography consists of shallow swales and depressions that are subject to seasonal and permanent saturation/inundation relative to the elevation of the groundwater table and/or surface water flows occurring during flooding and riparian tidal fluctuations.

The *Soil Survey of Clark County, Washington* identifies Sauvie silt loams (SmA, SmB, and SnA), Sauvie silty clay loam (SpB) and Newberg silt loam (NbB), and Pilchuck fine sand (PhB) as mapped within the Study Area. Soil survey maps for the Study Area are provided in Appendix E. The Sauvie silt loam soil unit (SnA) that is mapped along the eastern Study Area boundary and adjacent to Lake River dike is identified as a hydric soil.

The Sauvie soil series consists of deep, moderately well drained, and somewhat poorly drained soils located on nearly level to gentle slopes on bottom lands along the Columbia River. Most of the soil unit is diked to protect it from flooding and agricultural hay, pasture and row crops are grown.

Sauvie silty clay loam (SpB) is located on the broad tops of old natural levees with 0 to 8% slopes. In a typical profile, the surface layer is very dark grayish-brown silty loam about 15 inches thick. Below the surface layer is friable, mottled, dark grayish-brown silty clay loam about 21 inches thick. The next layer, to a depth of 63 inches, is mottled, grayish-brown silt loam. The soil is somewhat poorly drained and has moderately slow permeability. Available water capacity is very high. Surface run-off is slow and the hazard of erosion is slight, except in some areas that are subject to flooding from the Columbia River. A seasonal high water table is common in winter and spring.

Sauvie silt loams (SmA [0 to 3% slopes], SmB [3 to 8% slopes] and SnA [sandy substratum, 0 to 3%]) are similar to Sauvie silty clay loam except that the surface layers are silt loams, the soil is moderately drained and fewer redox concentrations are represented in the profile. A substratum of permeable fine sandy loams occurs below 36 inches in the SnA soil unit, which makes diking more difficult. In areas were the sandy substratum is not cut off by diking, water will move through the permeable layer and break out in areas known locally as “boils” during periods when the water level is high.

The Newberg silt loam soil unit is a deep and well-drained soil located on 3 to 8% side slopes of natural levees on bottom lands along the Columbia River. The slopes are short and slightly convex or undulating. Most of the acreage that is protected from flooding by dike is used for and is well suited to agricultural crops, hay and pasture production. In a typical profile the surface layer, approximately 12 inches thick, is very dark grayish brown silt loam in the upper part and fine sandy loam in the lower part. Below the surface layer is very friable, brown fine sandy loam about 28 inches thick. The next layer is dark grayish-brown sandy loam about 12 inches thick. The underlying material, to a depth of 72 inches, is light brownish-gray sand. Permeability is moderately rapid and available water capacity is high. Surface run-off is very slow and there is no erosion hazard.

Pilchuck fine sand is located on terraces with 0 to 8% slopes along streams. This unit is mapped to the northwest of Round Lake and it extends west across Lower River Road to the Columbia River shoreline. Pilchuck fine sand is subject to overflow and deposition during periods when the water level is high. The surface layer, approximately 6 inches thick, consists of very dark gray sand. The next soil unit layer, to a depth of 60 inches, consists of gray fine sand. The Pilchuck soil unit is somewhat excessively drained and rapidly permeable. Roots penetrate to a depth of more than

48 inches. Available water capacity is low. Surface runoff is very slow. The hazard of erosion is normally slight unless there is flooding, at which time the erosion hazard is severe. Droughtiness limits use of this soil mostly to native grasses and to cottonwood production for pulp. If sprinkler irrigation is used and fertilizer applied, crops such as alfalfa, clover, grasses, and grain can be grown.

Transect T1 traverses the mapped Newberg (NbB) soil unit and the three Sauvie silt loam soil units: SnA, SmA, and SmB. Transect T2 also traverses the mapped Newberg (NbB) soil unit and two of the Sauvie silt loam units: SnA and SmA. The mapped Pilchuck (PhB) fine sand, Sauvie silt loams (SmA, SmB) and Sauvie silty clay loams (SpB) soil units are represented along Transect T3.

3.3 Climatic Conditions

Background information regarding climatic conditions within the project vicinity was gathered from several sources including the Western Regional Climate Center (WRCC), Weather Underground (WU), and the City of Portland HYDRA rainfall network as reported via the Oregon Water Science Center USGS website. Information regarding daily climatic conditions prior to and during the field investigation was obtained from the local Weather Underground-affiliated weather station WARIDGE6 (Ridgefield weather cam) and WARIDGE3 (country southeast of Ridgefield, Washington) and the Sauvie Island School Rain Gauge, located to the west of the project area and across the Columbia River at 14445 NW Charlton Road, in Multnomah County, Oregon.

3.3.1 Temperature

Daily low temperatures ranging from 35 degrees to 56 degrees Fahrenheit were recorded at the Ridgefield weather stations during the time of the site investigation (April 10 – May 17, 2012; WU 2012). In the month prior to the field investigation, daily low temperatures measuring 32 degrees Fahrenheit or lower were recorded on March 13, 18 ,19, 21, and 22, 2012 (WU 2012). Based on this information, it is concluded that the site investigation was conducted during the growing season when freezing conditions were not present.

3.3.2 Precipitation

Rainfall was recorded at the local Ridgefield weather stations on the following dates during the field investigation: April 10, 11, 12, 25, 26, and 27, 2012. During the first week of the field investigation, the field crew experienced high winds and a periodic downfall of hail. No precipitation was recorded on field days during the final phase of the field investigation in mid-May.

Based on data presented in the *Soil Survey of Clark County, Washington*, annual precipitation within the vicinity of the study area situated between Vancouver and Ridgefield, Washington, ranges, on average, between 40 and 50 inches. Based on a period of record from January 1856 through June 30, 2012, the average annual precipitation for Vancouver, Washington (Coop Station 458773 – Vancouver 4 NNE, Washington) is 39.61 inches (WRCC 2012). The following table details the total precipitation for each month, as averaged over the 156-year period of record:

Period of Record (1/1/1856 – 6/30/2012) Monthly Climate Summary

Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec
5.76	4.39	3.83	2.73	2.28	1.66	0.62	0.85	1.80	3.20	6.03	6.45

Notes:
All measurements given in inches.
Station: Vancouver 4 NNE, Washington: 458773 (WRCC 2012)

The months receiving the greatest average amount of rainfall include January, November, and December. July and August are typically the driest months of year.

Prior to the site investigation, higher than average monthly precipitation was recorded in January, February and March of 2012 at the local weather stations. Total monthly precipitation received in March (the month preceding the field investigation) at the local stations exceeded the average monthly total for rainfall in March in the Vancouver area by 5 inches or greater.

Precipitation measuring 22.84 inches for the first quarter of 2012 was recorded at the HYDRA Rain Gage #3 at the Sauvie Island School. Monthly precipitation totals measured at the school's rain gauge are presented in the table below.

HYDRA Rain Gauge #3 at Sauvie Island School, Oregon

January	February	March	April	First Quarter 2012 Total
5.9 inches	3.93 inches	9.2 inches	3.81 inches	22.84 inches

The school's rain gauge precipitation total for the first quarter of 2012 exceeds the average period of record for the months of January through April in Vancouver (16.7 inches) by approximately 6 inches.

Based on a review of the precipitation data, it is concluded that the spring of 2012 was wetter than an average year. The field crew anticipated that elevated levels of seasonal surface water ponding and the high water table could be experienced during the field investigation. However, consideration of various factors, including, for example, the geomorphic position of an investigated area, in combination with either positive or negative evidence regarding wetland associated vegetation and soils, as described in the USACE delineation manuals, was determined to preclude any temporarily inundated upland area from being misidentified as a jurisdictional wetland.

3.4 Tides

The upper tidal reach of the Columbia River near the Gorge is approximately 140 miles from the Pacific Ocean. The study area, located near River Mile 96 on the Lower Columbia, is situated upstream and downstream of NOAA's tidal stations in St. Helen's, Oregon, and Vancouver, Washington, respectively. The baseline elevation for the OHWM of the Columbia River in the study area is 18.5 feet above mean sea level (USACE 2010).

Site visits were conducted on western portions of the study area on April 11 and 25, and May 14 and 16, 2012. The diurnal tide was receding at the time of each of the site visits.

High tides of +2.7 feet and +2.4 feet were recorded at 8:25 am and 9:45 am, respectively, at the St. Helen's and Vancouver tide stations on 4/11/2012. At the time of the mid-afternoon site visit near the west end of Transect 2 in the study area, the receding tide was estimated at heights between +0.85 feet and +0.45 feet. A low tide of -1.3 feet was recorded at the St. Helen's and Vancouver tide stations at 05:11 pm and 6:41 pm, respectively.

High tides of +2.4 feet and +2.2 feet were recorded at 7:23 am and 8:44 am, respectively, at the St. Helen's and Vancouver tide stations on 4/25/2012. At the time of the late afternoon site visit on

the western boundaries of the Fazio and Andersen parcels along Columbia River, the receding tide was estimated at heights between +0.6 and +0.15 feet. Low tides of -1.0 feet and -1.2 feet were recorded at 8:04 pm and 9:21 pm, respectively, at the St. Helen's and Vancouver tide stations.

High tides of +0.8 and +0.5 were recorded at 12:05 pm and 1:24 pm, respectively, at the St. Helen's and Vancouver tide stations on 5/14/2012. At the time of the late afternoon site visit, the receding tide was estimated at heights between +0.2 feet and +0.1 feet within the vicinity of SPs at the western end of Transect 3 in the study area. Low tides of -1.0 and -1.2 were recorded at 8:04 pm and 9:21 pm, respectively at the St. Helen's and Vancouver tide stations that evening.

High tides of +0.6 feet and +0.4 feet were recorded on May 16, 2012 at 2:32 pm and 4:05 pm at the St. Helen's and Vancouver stations, respectively. The late afternoon site visit conducted along the northwestern shoreline on the Andersen parcel was conducted during or just shortly after high tide.

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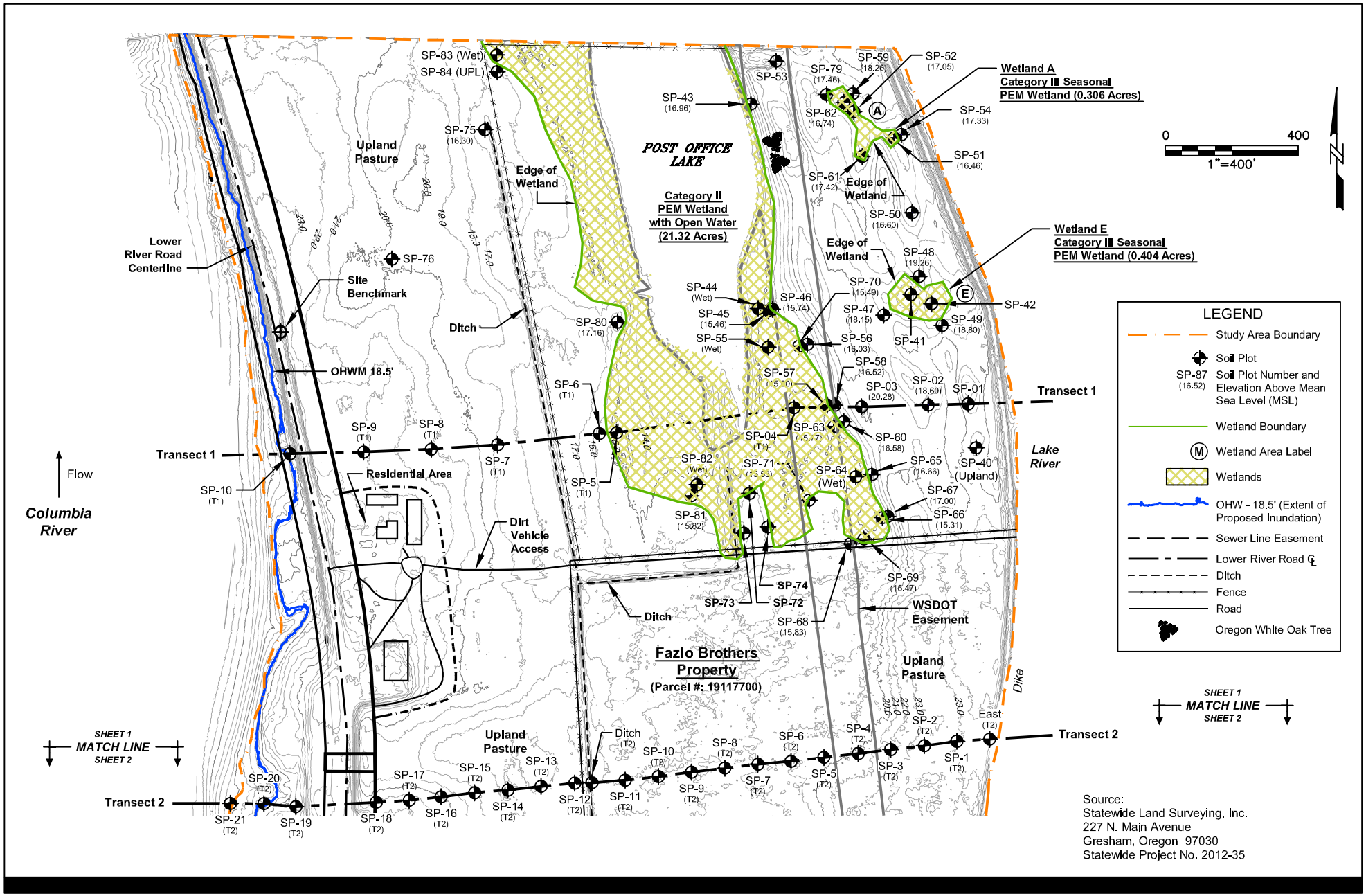

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Statewide Project No. 2012-35

Wetland Delineation
Round Lake Conservation Bank
Vancouver, Washington
Project No.: 60217054 Date: 05/29/13

EXISTING CONDITIONS - PLAN VIEW
NORTH SAMPLE PLOT DETAIL
1 OF 3

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Figure: 5

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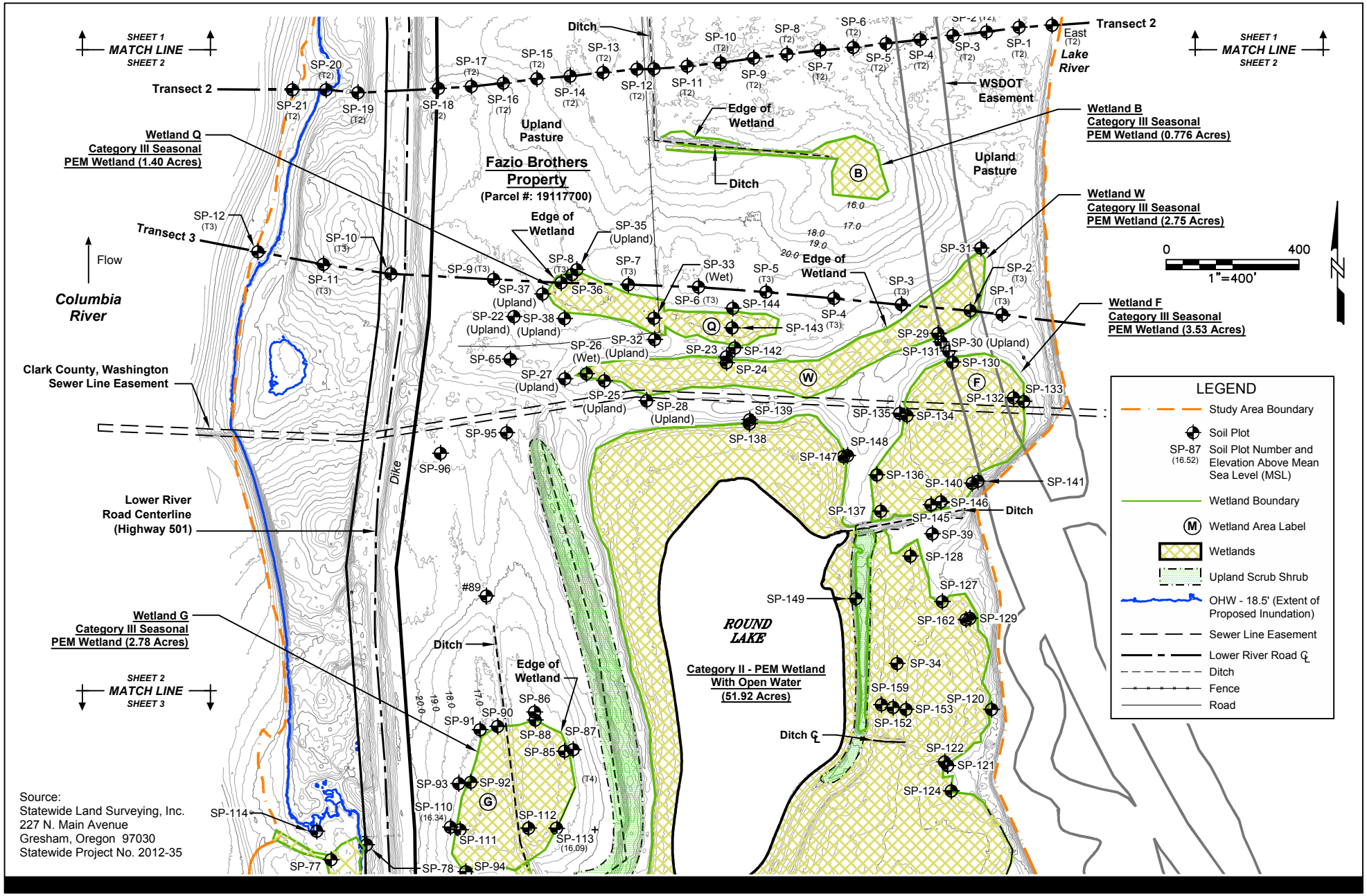

Wetland Delineation
Round Lake Conservation Bank
Vancouver, Washington
Project No.: 60217054 Date: 05/29/13

EXISTING CONDITIONS - PLAN VIEW
CENTRAL SAMPLE PLOT DETAIL
2 OF 3

AECOM

Figure: 6

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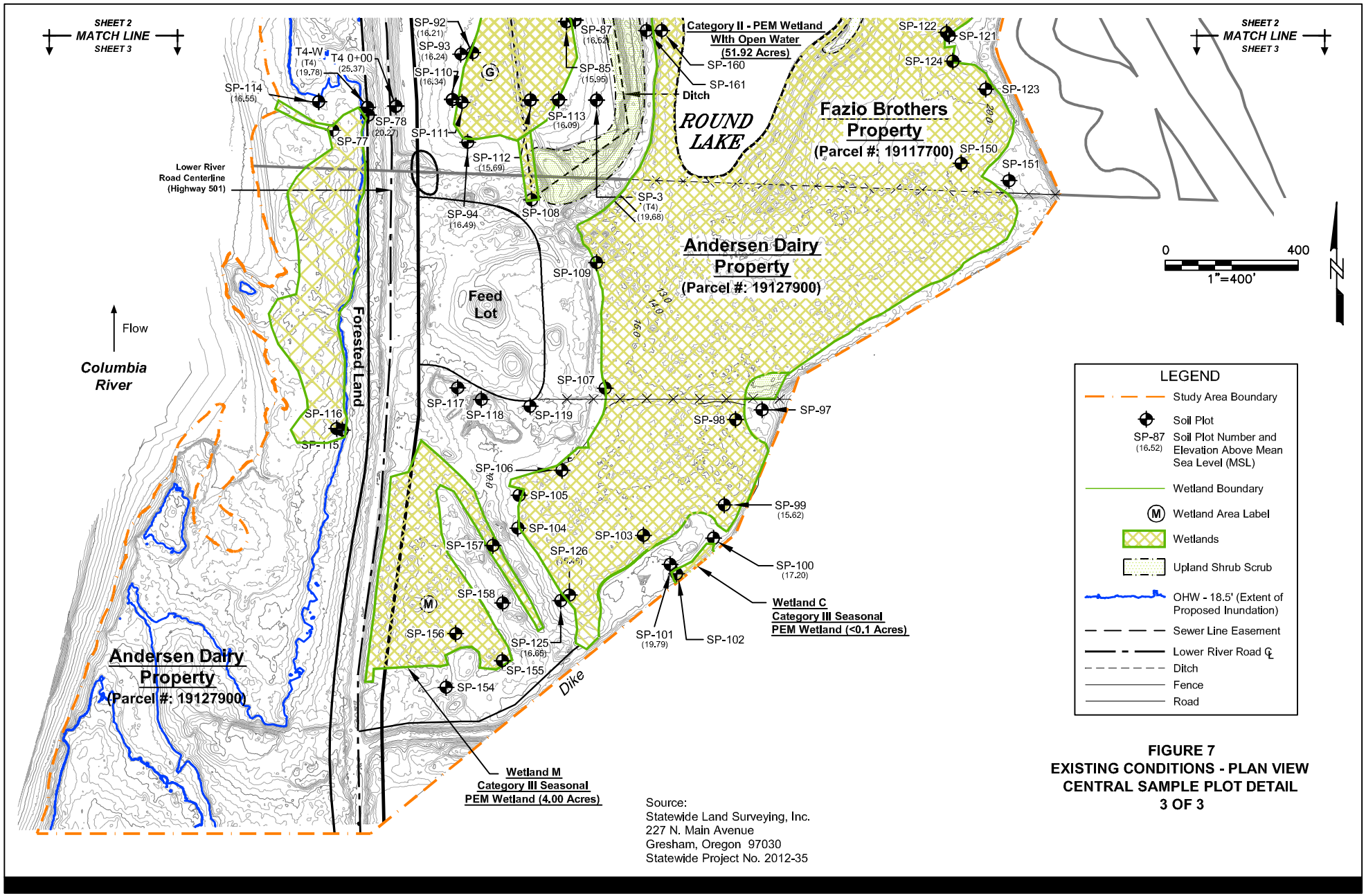

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FIGURE 7
EXISTING CONDITIONS - PLAN VIEW
CENTRAL SAMPLE PLOT DETAIL
3 OF 3

Wetland Delineation
Round Lake Conservation Bank
Vancouver, Washington
Project No.: 60217054 Date: 05/29/13

EXISTING CONDITIONS - PLAN VIEW
SOUTH SAMPLE PLOT DETAIL
3 OF 3

AECOM

Figure: 7

4.0 Results of Field Evaluation

A total of 184 SPs were investigated within the Study Area to characterize the site's upland and wetland conditions. The locations of the SPs on the northern, central, and southern portions of the Study Area are illustrated in detail on Figures 5, 6, and 7, respectively. Twelve of the SPs were located to the west of Lower River Road. A total of 43 SPs were located on the three transects (T1, T2, and T3). Tables 4-1 through 4-4 provide information on the general location of each SP, as well as findings pertaining to the wetland parameters for vegetation, soils, and hydrology.

A total of 104 plant species, as listed in Table 4-5, were identified and recorded in the Study Area during the field surveys. The list of plants includes 6 species of trees, 17 species of shrubs and 81 species of grasses and weedy herbaceous plants.

Upland pasture that is maintained for livestock grazing is dominant in the Study Area (Figure 2). A total of 86 SPs were investigated in upland pasture. Comprised of a mix of grasses and weedy herbaceous plants, the pasture vegetation observed on upland areas in the Study Area, was often dominated by facultative and hydrophytic plant species that were also represented within in the site's wetlands. Representative grass species include, but is not limited to, meadow foxtail (*Alopercus pratensis*), Kentucky bluegrass (*Poa pratensis*), tall fescue (*Festuca arundinacea)*, velvet grass *(Holcua lanatus)*, redtop *(Festuca rubra*), bentgrass (*Agrostis* sp.), and reed canary grass (*Phalaris arundinacea*). Non-hydrophytic sweet vernal grass (*Anthoxanthum odoratum*) was often dominant and mixed with non-hydrophytic and weedy lance-leaved plantain (*Plantago lanceolata*) in the site's upland pasture areas.

Nine of the upland pastures SPs were located on the Andersen Dairy Farm (Figure 7). The height of the vegetation in heavily grazed areas was short (less than 1 inch) and areas bare of vegetation could represent as much as 40% of the overall ground surface.

Hydric soils were recorded at 38 of the upland pasture sample plots. The hydric soils met the criteria of either hydric soil indicator F3 (Depleted Matrix) or F6 (Redox Dark Surface). In a few cases where soils were mixed, both indicators were positively met.

At the majority of the upland pasture sample plots (80 out of 86, or 93%), no primary or secondary indicators of wetland hydrology were positive. The sample plots with positive hydrology indicators were typically located directly adjacent to a wetland boundary where saturated conditions were observed at 12 inches or less in soil profile. Oxidized root zones were recorded at two of the upland pasture SPs and secondary indicators, rather than primary wetland indicators were recorded at one sample plot. Non-hydric soils were present at five of these sample plots. Non-hydrophytic vegetation was dominant at the three upland sample plots where hydric soils and positive wetland hydrology indicators were present.

The environmental conditions of the upland pasture buffer areas directly associated with each of the site's PEM wetlands are described in Section 4.2. The wetland buffer descriptions include details regarding the vegetation, soils and hydrology indicators as recorded at each of upland pasture SP's located directly adjacent to and surrounding the subject wetland area.

A total of 16 SPs were located in upland fields dedicated to agricultural row crop or field production. Details are provided in Section 4.3.1. The fields, each approximately 40 acres in size, had not been planted at the time of the field investigation. Where regenerating grasses and weedy

herbaceous plants, including barley from prior seasons' harvest, were not present, the soils were bare. The fields were being prepared for tilling at the time of the field investigation. Non-hydric soils were observed at the sample plots in the agricultural fields and no primary or secondary wetland hydrology indicators were positive.

Canopy species on the northern portion of the Study Area are limited to two significant Oregon white oaks (*Quercus garryana)* located to the east of Post Office Lake. The trees measured approximately 67 inches and 47 inches at diameter at breast height.

Deciduous trees, including black cottonwood (*Populus balsamifera*), red alder *(Alnus rubra)* and Oregon ash *(Fraxinus latifolia)* are present along the Lake River dike that bounds the eastern Study Area. Solitary trees including small fruit trees and/or tall shrubs are scattered on the open pasture land to the south of Post Office Lake.

Narrow bands of upland forest parallel the southern Fazio/northern Andersen property boundary and the top of banks of ditches west of Round Lake. West of Lower River Road, in the southwest corner of the Study Area, upland and wetland forest vegetation communities are present in association with the Columbia River.

Upland scrub-shrub that is dominated by non-native Himalayan blackberry (*Rubus armeniacus*) is represented along the western shoreline of Round Lake and on the top of banks of ditches east of Round Lake (Figures 2, 6, and 7). Palustrine scrub-shrub (PSS) wetland vegetation is represented in association with Round Lake's western ditches.

The majority of the wetland plots were situated within seasonally inundated or saturated PEM vegetation communities. These areas are often referred to as "wet" pastures; the vegetation is comprised of a mix of grasses and weedy herbaceous plants that are similar to the upland pasture areas however facultative and hydrophytic species, that are adapted to wet conditions, are dominant. For example, hydrophytic reed canarygrass was often dominant with hydrophytic soft rush (*Juncus effusus*) on the southern portion of the Study Area in PEM wetland areas associated with Round Lake. Wetland descriptions are provided in Section 4.2.

4.1 Drainage Ditches

No streams were observed within the Study Area; however eight ditches were identified (Figures 2, 5, 6, and 7). The mapping of ditches is based on topography data and information provided by the surveyors; the ditches were not field delineated by AECOM biologists.

An outflow ditch from Post Office Lake connects with ditches to the east and south on the northern portion of the Study Area (Figures 2, 5 and 6). The north-south ditch adjacent to the agricultural field on the eastern portion of the Fazio parcel is approximately 5 feet wide and 3 feet deep. Reed canarygrass is dominant, and algae was observed on the water surface.

Black cottonwoods trees are present along the top of bank of the north-south oriented ditch that bounds the agricultural crop field west of Post Office Lake and near the northwest corner of the Fazio parcel. The ditch is approximately 3 feet wide and 3 to 4 feet deep.

Three ditches connect Round Lake and adjacent wetland areas east and west on the central portion of the Study Area (Figure 6). The east Round Lake cross ditch is approximately 8 feet wide with banks approaching 5 feet in height. A 16-inch culvert on the eastern end of the ditch appears to be defunct and does not provide hydrological connectivity to Lake River.

The top of banks to the west of Round Lake are approximately 5' tall and the ditch is approximately 4 feet wide. Deep surface water ponding occurs at the southern terminus of the west Round Lake ditch where it intersects with a inflow/outflow ditch from an adjacent wetland to the west (Figures 6 and 7).

4.2 Wetland Descriptions

Wetland areas represent approximately 89 acres in the approximate 200-acre Study Area. In addition to Post Office Lake and Round Lake, nine PEM wetlands (Wetlands A, B, C, E, F, G, M, Q and W) and a riverine forested wetland associated with the Columbia River were identified within the Study Area during field surveys.

Table 4-6 summarizes the characteristics of the wetlands according to size, HGM and Cowardin classifications, and categorical rating based on the Washington State wetland rating system for Western Washington. Supplemental field data forms, photographs and the Washington State wetland rating forms for each wetland are provided in Appendices B, C, and D, respectively.

The wetlands vary in size, with Round Lake representing the largest on-site at approximately 52 acres (Figures 6 and 7). The southern extent of Post Office Lake, which extends off-site to the Ridgefield National Wildlife Refuge (NWR) to the north, represents approximately 21 acres within the Study Area (Figure 5). Five of the site's identified PEM wetlands (Wetlands F, G, M, Q, and W) are between 1 and 5 acres in size and four (Wetlands A, B, C and E) are less than 1 acre.

The site wetlands do not exhibit attributes associated with bogs, coastal lagoons, intertidal, estuarine, old-growth or mature forested wetlands, and therefore do not qualify for categorization based on special characteristics on the Washington State rating forms. The wetlands within the Study Area have not been identified by the Washington State Department of Natural Resources Natural Heritage Program as either high quality undisturbed wetlands or wetland that support Threatened, Endangered or Sensitive plant species.

With the exception of the Columbia River-associated forested wetland located to the west of the Lower River Road levee, all of the identified site wetlands were classified according to the HGM system as "Depressional." Although Post Office Lake and Round Lake are remnants of broader historic Columbia River floodplain wetlands, due to diking and other management means to control hydrology, these areas were not considered as riverine or freshwater tidal fringe wetlands for the purposes of this review. The HGM criteria for classifying Lacustrine or lake-fringe wetlands is based on the vegetated part of the wetland being located on the shoreline of a body of permanent open water (without any vegetation on the surface) at least 20 acres in size and at least 30% of the open water area is deeper than 6.6 feet. More generally, a depressional wetland is situated within a topographic depression in which water ponds or is saturated to the surface at some time during the year. Any outlet, if present, is higher than the interior of the depressional wetland. When one or more HGM classifications are represented in a wetland that includes a depressional component, the depressional HGM class is used for the purposes of rating. Due to the shallow nature of Post Office and Round Lakes, the depressional HGM classification, rather than Lacustrine (Lake-fringe) HGM classification, was determined as most appropriate for evaluating these site wetlands as well as all of the other smaller wetlands identified and delineated within the Study Area.

The Columbia River associated forested wetland to the west of Lower River Road was classified as a Category II Freshwater Tidal Riverine wetland that serves water quality and habitat functions at high levels and hydrology functions at moderate levels (Appendix D). Post Office Lake and Round Lake were each classified as Category II PEM wetlands with open water as a hydrology and

habitat component. These wetlands were rated as serving hydrology functions at high levels, water quality functions at moderate levels and habitat at low levels. The nine PEM wetlands (A, B, C, E, F, G, M, Q and W) were each classified as Category III wetlands serving water quality and hydrology functions at moderate levels and habitat at low levels.

The site's PEM wetland areas east of Lower River Road are grazed by livestock. On the Washington State rating forms, these wetlands are considered to have an opportunity to improve water quality since they treat pollutants on-site that might otherwise reduce water quality in downgradient streams, lakes, or groundwater. Livestock grazing in or within 150 feet of wetlands results in a 2x multiplier for scoring the water quality functions section on the rating forms (Appendix D). The highest score for evaluating depressional wetlands for this function on the rating forms is 32 points. Scores for the wetlands ranged between 12 and 14 points on the rating form, thus indicating a moderate level of ability for the wetlands to provide water quality functions in the Study Area.

Although grazing does not occur within the forested riverine wetland to the west of Lower River Road, other pollutants, sediments and nutrients associated with the Columbia river were considered to be present and therefore provide the wetland with the potential or opportunity to improve downstream water quality. Application of the 2x multiplier resulted in a score of 20 points for this function on the wetland's rating forms (Appendix D). The 2x multiplier for scoring hydrological functions was also applied when rating the Study Area wetlands. The diked wetlands to the east of Lower River road serve to impound surface runoff that might otherwise flow into a river of streams during flood events. The forested riverine associated wetland to the west of Lower River Road serves to protect downstream property and aquatic resources from flooding or excessive and or erosive flows due to its flood storage capacity and ability to reduce water velocity.

Post Office Lake, Round Lake and the PEM depressional wetlands received low scores (ranging between 9 and 12 points) for habitat mostly due to lack of a diversity of and interspersion between Cowardin vegetation classes (PFO, PSS, and PEM) and disturbances associated with grazing. The Columbia River associated wetland received a high habitat score based on its relatively undisturbed (ungrazed and not mowed) forested vegetation corridor with special habitat features including the presence of large, downed woody debris. Detailed descriptions of each of the identified wetlands are provided in the following sections of the report.

4.2.1 Post Office Lake

Post Office Lake represents approximately 21 acres on the northern parcel of the Study Area (Figures 2 and 5). The southern extent of Post Office Lake situated within the Study Area was rated as a Category II freshwater depressional PEM wetland with an open water component. The wetland scored 52 points on the Western Washington Rating forms (Appendix D). The wetland rating forms include a section for considering whether a wetland may require additional protection than recommended for its category. Since the northern off-site portion of Post Office Lake is federally managed as a part of the Ridgeport Dairy Unit in the Ridgefield NWR, the wetland may qualify for a higher rating as a Category I wetland based on its protected status.

Public access is restricted and the refuge boundary is delineated along the northern Fazio property line by a wooden post and barbed wire fence that extends across the ponded portion of the Lake. The northern end of Post Office Lake at the Refuge is hydrologically connected to the Columbia River via a tidegate system, although it may not be currently operational.

The on-site open water component of Post Office Lake represents approximate 8 acres; surrounding seasonally inundated/saturated PEM areas represent approximately 13 acres. The on-

site PEM wetland conditions surrounding the open water component of Post Office Lake, were documented during the field investigation at SPs 44, 45, 55, 57, 63, 64, 66, 69, 70, 71, 72, 74, 82, 83, and at T1-SP4 and T1-SP5 on the Transect T1 (Figure 5). Details regarding the vegetation, soils, and hydrology observed at the 16 SPs in Post Office Lake are provided in the following sections.

Vegetation. The PEM vegetation community within Post Office Lake is dominated by a mix of hydrophytic grasses and weedy herbaceous plants. Representative hydrophytic and facultative grass species present within the wetland include meadow foxtail, reed canarygrass, velvet grass, bentgrass (*Agrostist capillaris, A. alba*) and redtop. Representative hydrophytic or facultative species of weedy herbaceous plants include creeping jenny (*Lysimachia nummulana*) tansy ragwort (*Senecio jacobae*a), bird's foot trefoil (*Lotus corniculatus*), thyme-leaf speedwell (*veronica serpylifoilia),* Canada thistle (*Cirsium arvense*), soft rush and baltic rush (*Juncus balticus).* Non-hydrophytic plant species represented within the wetland include sweet vernal grass, common dandelion (*Taraxacum officinale*), lanced-leaved plantain and aster. Due to grazing and field mowing, non-native English hawthorn (*Crataegus monogyna*) and Himalayan blackberry are limited in size to typically than 1' in the open wetland and upland pasture areas.

Lady's thumb (*Polygonum persicaria*, also called common smartweed) and common cattail (*Typha latifolia*) were observed along the more permanently inundated edges of the lake. Small flowered bulrush (*Scripus mircocarpus*) was observed in patches off-site to the north on the Ridgefield wildlife refuge property.

Soils. Very dark gray (10 YR 3/1) or very dark grayish brown (10 YR 3/2) loams with prominent strong brown (7.5 YR 5/8), yellowish brown (10 YR 5/8), or dark yellow brown (10 YR 3/6, 10 YR 4/6) redox concentrations meeting the criteria of hydric soil indicator F6 (Redox Dark Surface) were observed at the Post Office Lake SPs.

Hydric mottled very dark grayish brown (10 YR 3/2) soils mixed with dark grayish brown (10 YR 4/2) soils were observed throughout the soil profile at SP82, located near the southern extent of Post Office Lake. Very dark gray (10 YR 3/1) sandy loams were mixed with dark gray (10 YR 4/1) soils at SP83, located near the northwest boundary of the wetland along the northern property line. Redox concentrations were observed at depths of 8 inches and greater within the hydric soil profile.

Mixed hydric very dark grayish brown (10 YR 3/2) and dark gray (10 YR 4/1) silt loams with fine prominent yellowish red (5 YR 4/6) redox concentrations were observed at T1-SP5, located near the southwest boundary of Post Office Lake

Hydrology. The open water component of Post Office Lake represents approximately one-third (7 acres) of its total on-site area (21 acres). A ditch that extends from the southern terminus of Post Office Lake provides hydrological connectivity to Wetland B, located to the south of the Fazio's eastern agricultural crop field (Figures 2, 5, and 6). A north-south oriented ditch to the west of Post Office Lake bounds the agricultural crop field near the northwest corner of the Fazio parcel.

The water table was observed in soils that were saturated to the surface at SPs T1-SP4 and SP44, located near the wetland's eastern boundary, and at SPs 64 and at 74, located near the southern end of Post Office Lake (Figure 5). Saturated soils were observed at depths below 8 inches and at or above 12 inches from the ground surface at T1-SP5, 45, 55, 57, 62, 66, 69, 71, 72, 82, and 83. At SPs 63 and 70, the water table was observed immediately below saturated soils at a depth 13 inches from the ground surface.

Because Post Office Lake is situated within a shallow topographic depression, the secondary wetland hydrology indicator D2: Geomorphic Position was positive at all of the subject wetland plots. In general, the elevations of the wetland plots observed within Post Office Lake ranged between 15.5 and 15.8 feet above msl (Figure 2). The elevations of upland plots adjacent to Post Office Lake ranged between 16.03 feet and 17.76 feet above msl. The approximate elevation of permanently inundated/open water areas in Post Office Lake is 10 feet.

Adjacent Upland Pasture (Buffer) Areas Associated with Post Office Lake

Details regarding the upland pasture conditions directly surrounding Post Office Lake were recorded at the following 15 SPs: 46, 53, 56, 58, 59, 60, 65, 67, 68, 73, 80, 81, and 84 and at T1-SP3 and T1-SP6 situated near the east and west wetland boundaries, respectively, on Transect T1.

With the exception of SP67, the vegetation at the upland SPs adjacent to Post Office Lake was dominated by hydrophytic species of grasses and weedy herbaceous plants similar to those recorded within the wetland. At SP67, hydrophytic meadow foxtail was mixed with non-hydrophytic sweet vernal grass.

Non-hydric dark brown (10 YR 3/3) and brown (10 YR 4/3) with high matrix chromas and no display of redox concentrations were observed at depths above and below 8 inches in the soil profile, respectively, at SP 53. Non-hydric very dark grayish brown (10 YR 3/2) soils with redox concentrations less than 5% or not present at all were observed at the surface to depths of 11 inches or greater at SPs 56, 58, 59 and 65, 67, 68, and 73.

Soils meeting hydric criteria were observed at SPs T1-SP3 and T1-SP6 on Transect T1, and 46, 60, 80, 81, and 84. The mottled dark grayish brown (10 YR 4/2) loams observed at depths below 7 inches at SP 84 met the indicator F3 for depleted matrix. The soils observed at the other plots met the hydric soil criteria for indicator F6 (Redox Dark Surface).

With the exception of SP 59, where oxidized root zones were observed in non-hydric soils, no other primary or secondary indicators were positive at any of the upland SPs adjacent to Post Office Lake. Soils were dry at T1-SP3 on Transect T1 and at SPs 53, 60, 65, 67, 73, 80, and 84. Saturated soils were observed at depths below 12 inches at T1-SP6 on Transect T1 and at SPs 46, 56, 58, 68, and 81.

4.2.2 Round Lake

Round Lake, a Category II depressional PEM wetland with an open water component, encumbers approximately 52 acres on the southern portion of the Study Area (Figures 2, 6 and 7). The open water component represents approximately 12 acres of the total wetland area.

A total of 34 SPs were investigated to delineate the wetland/upland boundaries associated with Round Lake (Figures 6 and 7). Twenty of the SPs (SPs 34, 98, 99, 103, 106, 109, 122, 123, 126, 128, 129, 138, 147, 149, 150, 152, 153, 159, 160, and 162) were located within the PEM wetland areas surrounding the open water component of Round Lake. SP 108 was located within the lake's limited PSS component. Fourteen of the SPs (SPs 39, 97, 104, 105, 107, 120, 121, 124, 125, 127, 139, 148, 151, and 161) were investigated in the adjacent upland pasture buffer areas.

Vegetation. Hydrophytic reed canarygrass and facultative meadow foxtail dominate the PEM wetland vegetation in the eastern and western portions of Round Lake. Additional grass species present include bentgrass, redtop, and bluegrass. Hydrophytic species of weedy herbaceous

plants present include soft rush, creeping jenny or moneywort, and black medick. Parrot feather (*Myrlopaytum brasiliense)* was identified in association with Round Lake's aquatic open water area. Obligate slough sedge (*Carex obnupta*) was additionally present near the south end of the wetland. Non-hydrophytic plant species represented within Round Lake's PEM wetland areas include sweet vernal grass, common chickweed, and lance-leaved plantain. In heavily grazed, bare ground represented as much as 30% of the ground surface and remaining vegetation was minute in size.

A small PSS wetland component is present near the southern terminus of Round Lake's western ditch system (Figures 6 and 7). Approximately 50% of ground surface surrounding SP108 was represented as open water where Round Lakes' western ditch intersects with the inflow/outflow ditch associated with PEM Wetland G (Figure 7). The PSS wetland vegetation recorded at SP 108 consisted of Pacific willow (*Salix lucinda* var. *lasiandara),* Himalayan blackberry, reed canary grass and stinging nettle (*Urticia doicia*).

Upland scrub-shrub, dominated by Himalayan blackberry, is represented on the tops of the banks of Round Lake's eastern and western ditches (Figures 2, 6, and 7). Trees are also present along the western ditch line.

Soils. The soils within the Round Lake SPs typically met the hydric soil criteria of indicator F3 (Depleted Matrix) or indicator F6 (Redox Dark Surface).

Hydric depleted gray (10 YR 5/1), very dark gray (7.5 YR 4/1, 10 YR 3/1) and/or dark gray (10 YR 4/1, 7.5 YR 4/1) soils with redox concentrations were observed at SPs 34, 98, 99, 103, 126,129, 138, 152, and 159.

Very dark grayish brown (10 YR 3/2) or black (10 YR 2/1) very fine silt loams displaying strong brown (7.5 YR 5/8), dark brown (7.5 YR 3/4) or yellowish red (5 YR 5/8) redox concentrations were observed at the surface to depths of 10 inches or greater at SPs 123, 128, 150, 153, 160, and 162. Mottled very dark grayish brown silt loams were observed underlying non-mottled top soils at depths below 4 and 8 inches from the ground surface at SPs 149 and 147, respectively. Depleted mottled dark gray and dark grayish brown (10 YR 4/2) subsoils were observed below 10 inches at SPs 123 and 150, located along the east PEM boundary of Round Lake near the Fazio's southeast property corner.

The mixed soils observed at SP 122 met the hydric criteria of both indicators F3 and F6. The upper 8 inches of surface soils consisted of very dark brown (10 YR 2/2) silt loams displaying 5% prominent dark brown (7.5 YR 4/4) redox concentrations. At depths from 8 to 11 inches in the soil profile, mottled black (10 YR 2/1) silt loams were mixed with mottled brown (10 YR 4/2) silt loams. At depths below 11 inches at the SP, brown (7.5 YR 4/2) silt loam subsoils displaying yellowish red (5 YR 4/6) redox concentrations were observed.

The dark grayish brown (10 YR 4/2) sandy loams with prominent dark yellowish brown (10 YR 4/6) redox concentrations observed at SP 106, near the southwest end of the wetland on the Andersen Dairy Farm parcel, met the hydric criteria of S5:Sandy Redox (Figure 7). Dark gray mottled sandy loams were also observed at SP 109 located east of the feed lot along the western edge of the PEM wetland associated with Round Lake. Greenish gray (Gley1 10 YR 5/1) gleyed areas were also observed in a portion of the soil profile at SP109 (Figure 7).

Hydrology. Inundated wetland conditions were recorded at SP 98, located near the southern PEM boundary of Round Lake on the Andersen property. The depth of surface water ponding was

recorded as 3 inches at the SP. One inch of ponding on the surface and the smell of hydrogen sulfide (a primary wetland hydrology indicator) were recorded at SP 126, also located in the south end of Round Lake.

Saturated soils were observed at or near the ground surface at SPs 103, 108, 109, and 149. Open water and inundated conditions were observed to be adjacent to the SP at SPs 108 and 109, respectively. Saturated soils were recorded at depths between 7 and 12 inches from the ground surface at plots 34, 99, 106, 123, 128, 138, 150, 160, and 162. The water table was observed between 8 and 14 inches at these SPs. Oxidized rhizospheres along living roots, a primary indicator of wetland hydrology, were observed in the soil profile at SP 138, located along the northern shoreline of Round Lake sand at 160, located along the lake's west shore.

Although saturated soils were observed at depths of 12 inches or greater from the ground surface at SPs 122, 129, and 147, oxidized root zones were recorded in association with the eastern lakeshore and PEM boundary near the southeast corner of the Fazio parcel (Figure 6). Drift deposits, another primary indicator of wetland hydrology, were also recorded at SP 122.

SPs 152, 153, and 159 were investigated in the eastern PEM portion of Round Lake in order to investigate varying depths of the water table at locations within close proximity of one another. Saturated soils and the seasonal high standing water table were observed at depths of 10 and 16 inches, respectively, at SP 152. Soils were saturated to the surface at the adjacent SPs 153 and 159, situated at lower elevations and at locations to the east and west of SP 152, respectively. The water table was observed at a depth of 2.5 inches from the ground surface at SP153 and at the surface at SP 159.

Due to the lake's depressional topographic position, the secondary wetland indicator D2 (Geomorphic Position) is positive for all the Round Lake wetland plots. Additional secondary indicators that were positive at some of the wetland plots include a positive result for the FAC-neutral test (Indicator D5) and saturation visible on aerial imagery (C9).

Adjacent Upland Pasture (Buffer) Areas Associated with Round Lake

A total of 14 sample plots were investigated in upland pasture areas located directly adjacent to and surrounding Round Lake. Facultative and hydrophytic species of grasses and weedy herbaceous plants similar to those within the Round Lake wetland plots also dominated the vegetation at six of the adjacent upland pasture SPs (105, 120, 121, 125, 127, and 151). Hydrophytic plant species did not dominate the vegetation at eight of the other upland pasture SPs (39, 97, 104, 107, 124, 139, 148, and 161).

Representative grass species present in the upland pasture areas adjacent to Round Lake include bentgrass, Kentucky bluegrass, meadow foxtail, redtop, sweet vernal grass, velvet grass, tall fescue, and reed canarygrass. Hydrophytic and facultative weedy herbaceous plants including soft rush, field horsetail, black medick, Canadian thistle, tansy ragwort, and Bay forget-me-not *(Myosotis laxa)* are commonly mixed with non-hydophyic common chickweed, bull thistle, and lanced leaved plantain. Additional non-hydophytic species present in the upland pasture areas include barren fescue (*Vulpia bromoides*), lamb's quarters (*Chenopodium album),* hairy cat's ear, Common/Great mullein (*Verbascum thapsus*), and common Stork's bill (filaree). In some areas as much as 10% of the ground surface was bare of vegetation in livestock grazing or travel areas.

Hydric soils were observed at nine of the upland pasture SPs adjacent to Round Lake. Mottled very dark gray (10 YR 3/1) surface soils that met the hydric soil criterion of indicator F6 (Redox Dark Surface) were observed at SPs 39, 127, and 151. Mottled black (10 YR 2/1) silty loam

subsoils were observed underlying very dark brown (10 YR 2/2) surface soils with no redox concentrations at depths below 8 inches from the ground surface at SP 120. Similarly, mottled very dark grayish brown (10 YR 3/2) subsoils were observed underlying very dark grayish brown surface soils with no redox concentrations at depths below 9 inches at SP 148. Depleted dark grayish brown (4/2) and dark gray (10 YR 4/1) loams with redox concentrations were observed at SPs 104, 105, 107, and 125, located near the southern end of Round Lake on the Andersen property. Black to dark gray magnesium concentrations were observed in the subsoils at SPs 104 and 125.

Loamy sand with high matrix chromas (10 YR 3/3), characteristic of non-hydric soils, was observed at SP 97 located near the southern boundary of Andersen dairy farm property. Although redox concentrations were present, the soils did not meet the hydric criteria for indicator S5 (Sandy Redox). Mottled very dark gray (10 YR 3/1) clay subsoils were observed at depths below 14 inches in the soil profile.

Non-hydric soils were also recorded at SPs 121, 124, 139, and 151. Due to the lack of redox concentrations at required densities and or depths within the soil profile, the very dark grayish brown and dark grayish brown (10 YR 4/2) surface soils observed at the ground surface and to depths of 12 inches or greater, did not meet the hydric soil criteria of indicator F6. No redox concentrations were displayed at SP 139.

No primary or secondary indicators of wetland hydrology were observed at any of the upland SPs adjacent to and directly surrounding Round Lake. With the exception of SPs 97, 105, 107, and 125 where saturated soils were observed at depths below 12 inches or greater and the standing water table was observed at depths below 14 inches or greater from the ground surface, the soils at the upland sample plots adjacent to Round Lake were dry. At SP 105, saturated soils were recorded at a depth of 24 inches from the ground surface and the water table was not observed.

4.2.3 Depressional Category III PEM Wetlands

4.2.3.1 Wetland A (0.306 acre)

The existing environmental conditions within Wetland A, a small (0.306 acres) depressional seasonally saturated/inundated PEM wetland located near the northwest corner of the Fazio parcel were recorded at SPs (SP) 51, 52, 61, and 62 on April 24, 2012 (Figure 5). Details regarding the observed vegetation, soils and hydrology within the wetland and adjacent upland areas are provided in the following sections.

Vegetation. Facultative meadow foxtail dominates the wetland vegetation that is grazed by livestock. Reed canarygrass, soft rush, field horsetail and lance-leaved plantain are additionally present. Areas that were bare of vegetation represented as much as 20% of the ground surface at some of the sample plots; moss covered the ground surface in other areas of the wetland.

Soils. Hydric very dark grayish brown (10 YR 3/2) and very dark gray (10 YR 3/1) soils with redox concentrations were observed in the four SPs located within Wetland A during the field investigation. The soils within Wetland A meet the hydric criteria of indicator F6: Redox Dark Surface. The subsoils observed at depths below 18 inches from the ground surface at SP 61 consisted of mottled dark grayish brown (10 YR 4/2) loams. Soils with mixed matrix chromas (10 YR 3/2 and 10 YR 4/2) and redox concentrations were observed at depths between 8 and 14 inches at SP 51.

Hydrology. Saturated soils and the underlying water table were observed at depths between 8 and 12 inches at SPs 51, 52, and 62. Although saturated soils and the water table were recorded at depths below 16 inches at SP 62, oxidized rhizospheres were observed along living roots, thus meeting the positive criteria for the primary wetland hydrology indicator (C3). Since the wetland is situated within a shallow topographic depression, secondary wetland hydrology indicator D2 (Geomorphic Position), was positive at all of the Wetland A SPs.

Adjacent Upland Pasture (Buffer) Areas Associated with Wetland A

The environmental conditions of the adjacent upland pasture buffer areas located to the southeast, east, and north of Wetland A, respectively, were recorded at SPs 54, 59, and 79 (Figure 5). The hydrophytic dominated pasture vegetation observed in the adjacent upland areas is similar to that observed within Wetland A; however, non-hydrophytic sweet vernal grass is an additional grass species represented in the upland areas. Additional plant species represented at the upland plots that were not recorded within the wetland include velvet grass, tall fescue, and thyme leaved speedwell.

The non-hydric very dark grayish brown (10 YR 3/2) and very dark gray (10 YR 3/1) surface soils observed to depths of 12 inches or greater in the adjacent upland pasture SPs did not display redox concentrations. Although mottled depleted soils were observed below the dark surface soils, criteria to meet hydric soils indicators A11 (Depleted Below a Dark Surface) and or A12 (Thick Dark Surface) were not met. The required matrix value and/or chroma colors in relation to depth prescriptions for hydic soil indicators were not represented.

No primary or secondary indicators of wetland hydrology were observed to be present at SP54. Oxidized rhizospheres, a primary wetland hydrology indicator, however were observed in the non-hydric soils at SP 59. Water-stained leaves, a secondary hydrology indicator of periodic surface water ponding or inundation, were observed at the upland pasture SP79.

4.2.3.2 Wetland B (0.78 acre)

This depressional reed canary grass dominated PEM wetland is located to the south of the eastern agricultural crop field on the Fazio property. The wetland is seasonally saturated/inundated and has a hydrological connection with the ditch from Post Office Lake. The wetland boundary was surveyed according to observed areas of saturation/inundation.

4.2.3.3 Wetland C (< 0.1acres)

Wetland C is a small Category III PEM wetland (<0.1 acre) that is situated in a small depression adjacent to the southern property boundary and Study Area perimeter dike on the Andersen Parcel #191279000. A slight upland berm to the north separates Wetland C from Round Lake. Although the wetland is small, it is ranked as a Category III wetland mostly due to the multiplier effect of its score in regards to water quality functions. This wetland, as well as with all of the PEM depressional wetlands present within the Study Area where livestock graze, was considered to have the opportunity to improve water quality.

SP 102 was recored within Wetland C. The adjacent upland areas were delineated according to data recorded at upland pasture SPs 100 and 102 and the overall topography around the depressional wetland.

Vegetation. The vegetation was trampled by cows and areas that were bare of vegetation represented 20% of the ground surface within the vicinity of SP102. Facultative meadow foxtail and hydrophytic reed canary grass were recorded as dominant at the Wetland C SP.

Soils. Hydric dark gray (10 YR 4/1) clay soils displaying dark yellowish brown (10 YR 3/6) redox concentrations were observed in the SP. The soils meet the hydric criteria of indicator F3: Depleted matrix.

Hydrology. The wetland is seasonally saturated and inundated. During the field survey, soils were saturated to the surface and small pockets of ponded surface water, generally less than 1 inch in depth, were concentrated in livestock hoof prints. Surface water ponding occurs most likely due to the low infiltration rates of the dense clayey soil. No direct surface water connection between Wetland C and Round Lake to the north was observed to be present. The depressional wetland meets the criteria for the secondary wetland hydrology indicator D2 (Geomorphic Position).

Upland Pasture Buffer Areas Associated with Wetland C

In addition to the grass species observed in the Wetland C, non-hydrophytic species of barren fescue (*Vulpia bromoides*) and weedy herbaceous plants, such lance-leaved plantain, chickweed, and hairy cat's ear, dominated the upland pasture vegetation at SP 100, positioned on an upland berm directly adjacent to and north of Wetland C (Figure 7). Bare ground represented 15% of the ground surface at the SP.

Hydrophytic-dominated vegetation was recorded at upland pasture SP 101 located to the south of Wetland C (Figure 7). Additional grasses and weedy herbaceous plant species represented at the upland SP include redtop, tall fescue, bentgrass, vetch, and clover.

Mottled clay soils with low chromas similar to those observed in Wetland C and meeting the criteria for hydric soil indicator F3 (Depleted Matrix) were recorded at the adjacent upland sample plots. No primary or secondary indicators of wetland hydrology were observed at the upland pasture SPs adjacent to Wetland C. The SPs were positioned on a low berm topographically upslope of the small depressional wetland swale.

4.2.3.4 Wetland E (0.404 Acre)

Wetland E is a 0.404 acre depressional Category III PEM wetland that is seasonally ponded and saturated. The wetland is situated within a shallow topographic swale near the northeast corner of the Fazio property. The existing environmental conditions within the wetland were recorded at SPs 41 and 42 on April 23, 2012.

Vegetation. Dominant plant species in the wetland include reed canarygrass (*Phalaris arundinacea*) and meadow foxtail (*Alopecurus pratensis*), with thyme leaf speedwell (*Veronica serpyllifolia*) and shepherd's purse (*Capsella bursa-pastoris*). Moss and algal mats are present in the wetland where periodic inundation occurs. At the time of the site investigation, approximately 30% of the ground surface within the wetland was bare of vegetation.

Soils. The very dark grayish brown (10 YR 3/2) silt loams with prominent dark yellowish brown (10 YR 4/6) or strong brown (7.5 YR 4/6) redox concentrations observed from the surface to depths of 14 inches or greater at SPs 41 and 42 in Wetland E meet the criteria for hydric soil indicator F6 (Redox Dark Surface). Dark gray (10 YR 4/1) silt loam subsoils with prominent brown (7.5 YR 4/4) redox concentrations were observed below 18 inches at SP41. Dark grayish brown (10 YR 4/2) silt loam subsoils with a dark yellowish brown (10 YR 4/6) redox concentrations were observed at depths from 14 to 18 inches in the soil profile at SP 42.

Hydrology. The primary wetland hydrology indicators of saturation and the presence of algal mats or crust were observed at Wetland E. At wetland SPs 41 and 42, saturated soils were observed at

depths of 5 inches and greater from the ground surface. The underlying water table was observed at depth of 11 inches and 7 inches, respectively at the sample plots.

Upland Pasture Buffer Areas Associated with Wetland E

SPs 47, 48, and 49 were located in the adjacent upland pasture areas directly to the west, north, and south of Wetland E, respectively. No primary or secondary indicators of wetland hydrology were observed at the upland pasture SPs.

The pasture vegetation was similar to that observed within Wetland E however, red and tall fescue and non-hydrophytic sweet vernal grass, lanced-leaved plantain and dandelion are additionally represented. Hydric soils similar to those within the wetland and meeting the criteria of indicator F6 (Redox Dark Surface) were observed at SP 47. Non-hydric dark brown silt loams with a high matrix chroma (10 YR 3/3) and no display of redox concentrations were observed within the upper 9 inches of the soil profile at SP 48. Very dark grayish brown (10 YR 3/2) silt loams with no redox concentrations were observed within the upper 12 inches of the soil profile at SP49.

4.2.3.5 Wetland F (3.53 acres)

Wetland F is a Category III depressional outflow seasonally inundated/saturated PEM wetland that is located to the east of Round Lake. The wetland is hydrologically associated with Round Lake via a cross-ditch. The wetland is 3.53 acres in size.

Twelve SPs were investigated to delineate the Wetland F boundary. Six SPs (130, 132, 134, 136, 137, and 140) were investigated within the wetland, and six SPs (131, 133, 135, 141, 145, and 146) were investigated along the upland edge which was topographically higher in elevation than the shallow depressional wetland basin. A low topographic ridge separates Wetland F from the adjacent depressional PEM Wetland W to the north. The east buffer of the wetland, adjacent to the Lake River boundary dike, is forested. Canopy from the adjacent black cottonwood trees in the buffer provide shade along the PEM wetland's eastern edge. The adjacent buffer areas to the north, west and south of Wetland F consisted of upland pasture.

Vegetation. The PEM wetland vegetation is dominated by hydrophytic species of grass and weedy herbaceous plants. Representative dominant facultative grass species present include meadow foxtail, tall fescue, Kentucky bluegrass, and bentgrass. Non-hydrophytic sweet vernal grass was also present as a dominant species at many of the wetland SPs. Although reed canarygrass and velvet grass were represented at some of the Wetland F plots, these grass species were not recorded as dominant. Hydrophytic weedy plants observed in the wetland include soft rush, creeping jenny (moneywort) and spearmint (*Menthae spicata)*. Non-hydrophytic lanced-leaved plantain was typically listed as a dominant weedy plant species present at the wetland plots. Common chickweed, another non-hydophytic weedy species, was represented in the wetland; however, it was not typically a dominant species. Blackberry measuring less than 1 foot in height (due to grazing and maintenance mowing) was recorded in the herbaceous layer of vegetation with cover estimates ranging between 5% and 15%. Areas bare of vegetation represented as much as 40% of the ground surface along the wetland's eastern edge and buffer where a trail for grazing livestock is present

Soils. The hydric soils observed at the majority of the SPs in Wetland F met the hydric criteria of indicator F6 (Redox Dark Surface). Very dark gray (10 YR 3/1, 7.5 YR 3/1) or very dark grayish brown (10 YR 3/2) surface soils with brown, strong brown, dark reddish brown (7.5 YR 4/4, 7.5 YR 4/6, 5 YR 3/4) and/or yellowish red (5 YR 5/8) redox concentrations were observed at SPs 132, 134, 136, and 137 within Wetland F. The concentration of mottles decreased from 40% within

the upper 7 inches of soil profile at SP 132 to 7% at depths below within the soil profile. Mottling increased from 20% to 30% at depths below 13 inches in the soil profile at SP 134.

Depleted brown (10 YR 4/2) silt loams with strong brown (7.5 YR 4/6) redox concentrations were observed in the surface soils at SP 130. The soils at this SP met the hydric criteria of indicator F3 (Depleted Matrix). Mottled black (7.5 YR 2.5/1) subsoils were observed at depths below 11 inches at the SP.

Hydric depleted dark gray (10 YR 4/1) sandy loams with strong brown (7.5 YR 4/6) redox concentrations were observed within the upper nine inches of the soil profile at SP 140. Very dark gray (10 YR 3/1) loams with redox concentrations were observed at depths below 9 inches at the SP.

Hydrology. Saturated conditions and the underlying seasonal high water table were observed within the upper 12 inches of the soil profiles at SPs 130, 132, 134, and 140. Oxidized root zones, a primary wetland hydrology indicator (C3), were recorded at SPs 134, 136, and 137. Due to the wetland's topographic position within a shallow swale/depression on the relatively flat site topography, the secondary wetland hydrology indicator D2 (Geomorphic Position) was positive for all the wetland plots.

Upland Pasture Buffer Areas Associated with Wetland F

With the exception of SP 141, the vegetation at the upland pasture SPs 131, 133, 134, 145, and 146, located in areas adjacent to and surrounding Wetland F, was not dominated by hydrophytic plant species. Grass and weedy herbaceous plant species similar to those observed within Wetland F were represented within the upland pasture areas; however non-hydrophytic sweet vernal grass, lanced-leaved plantain, and common chickweed were exceedingly more prevalent. Areas bare of vegetation represented 20% of the ground surface at SP 146.

SP 141 was located in upland forest to the east of Wetland F and adjacent to the Lake River boundary dike. Black cottonwood trees dominate the canopy. Livestock graze and travel on a trail within the vicinity of the SP, and therefore bare ground represented 60% of the SP area. Approximately 10% of the vegetation ground cover recorded within the SP was attributed to Kentucky bluegrass.

Depleted dark grayish brown (10 YR 4/2) silt loams with redox concentrations were recorded at SPs 133, 141, 145 and 146. The depleted silt loams observed at the surface and to a depth of 8 inches at SP 141 were underlain with depleted sandy loams of the same color. The display of redox concentrations was however reduced from 40% in the surface soils to 5% in the subsoils.

Dark brown fine silt loams with high matrix chromas (10 YR 3/3), characteristic of non-hydric soils, were recorded at SP 131. Redox concentrations were recorded through the soil profile at the SP. Non-hydric very dark gray grayish brown (10 YR 3/2) surface soils with no redox concentrations were observed within the upper 10 inches of the soil profile at SP 135.

No primary or secondary indicators of wetland hydrology were observed at the upland pasture SPs adjacent to the wetland.

4.2.3.6 Wetland G (2.78 acres)

Wetland G is a depressional inflow/outflow (ditched) seasonally saturated/inundated Category III PEM wetland (2.78 acres) that is 2.78 acres in size (Figures 6 and 7) The wetland is located in

open pasture to the west of Round Lake. The wetland is hydrologically associated with Round Lake via an intersecting ditch system.

The existing environmental conditions within the wetland were recorded at SP 85, 88, 90, 92, 111, 112, and 113 on April 25 and 26, 2012 (Figures 6 and 7). Data recorded regarding the vegetation, soils, and hydrology indicators at the SPs is summarized in the following sections.

Vegetation. The vegetation within Wetland G is dominated by hydrophytic grasses and weedy herbaceous plants. Representative grass species dominant within the wetland include tall fescue, velvet grass, meadow foxtail, and reed canarygrass. Red fescue is also present. Hydrophytic weedy herbaceous plant species present include field horsetail, soft rush, American vetch and thyme lead speedwell. Non-hydrophytic weedy herbaceous species represented include red clover, bull thistle, hairy cat's ear, and common chickweed.

Soils. Mixed very dark grayish brown (10 YR 3/2) and depleted gray (10 YR 4/1) or dark gray (7.5 YR 4/1) soils with prominent yellowish red (7.5 YR 5/8, 5 YR 4/6) soft mass redox concentrations were observed in the soil profiles at SP 111 and SP 112. Hydric brown (10 YR 4/2) or dark gray (10 YR 4/1) silty clay loams with dark gray (7.5 YR 4/1) or gray (10 YR 5/1) depletions were observed in the upper 10 to 16 inches of the soil profiles at SPs 85, 90, 92, and 113 situated along the upland edge of the wetland boundary. Prominent dark yellowish brown (10 YR 3/6, 4/6) or reddish brown (5 YR 4/4) redox concentrations were observed in the gray (10 YR 5/1), dark gray (10 YR 4/1) subsoils.

Hydrology. Saturated soils were recorded at depths less than 12 inches from the ground surface at each of the wetland SPs. The underlying water table was observed approximately 1 to 4 inches below the saturated soils at the SPs. Oxidized rhizospheres along living roots were observed as a primary wetland hydrology indicator at wetland plots SP 111, 112 and113. Algae mats and water-stained leaves representative of periodic inundated conditions were also observed within the wetland.

Upland Pasture Buffer Areas Associated with Wetland G

SPs 86, 87, 89, 91, 93, and 110 were situated in the upland pasture areas adjacent to and surrounding the depressional PEM Wetland G. The vegetation at the upland pasture SPs was generally not dominated by hydrophytic species. A mix of hydrophytic and non-hydrophytic species of grasses and weedy herbaceous plants including velvet grass, tall and red fescues, meadow foxtail, sweet vernal grass, vetch, common sowthistle (*Sonchus olearaceus)*, buttercup, common chickweed, lanced-leaved plantain, and bull thistle were represented in the upland pasture areas adjacent to Wetland G.

Facultative velvet grass and tall fescue did however dominate the vegetation recorded at SP 94, situated along the southern upland edge of PEM Wetland G. Although the parameters for wetland vegetation and hydric soils were positive at the SP, the lack of primary or secondary wetland hydrology indicators confirmed placement of the upland boundary for Wetland G at this location.

The hydric soils observed at the upland SPs met the criteria for Indicator F3 (Depleted Matrix). Brown (7.5 YR 4/4) and dark yellowish brown redox concentrations were observed in dark yellow brown (10 YR 4/2) top soils and gray clayey silt loam subsoils observed at depths above and below 10 inches, respectively at SP 86. Dark yellowish brown (10 YR 4/4, 10 YR 3/6, 10 YR 4/6) or brown (7.5 YR 4/4) redox concentrations were observed in the dry hydric dark grayish brown (10 YR 4/2) or dark gray (10 YR 4/1) soils observed at SPs 87, 89, 93, and 94. Prominent dark yellowish brown

(10 YR 4/6) soft mass redox concentrations and gray (10 YR 5/1) depletions were observed in the depleted matrix hydric soils observed at the upland plots SP 91 and SP 111.

Saturated soils and the seasonal high water table were observed at depths below 12 inches at the upland SPs. Oxidized rhizospheres however were observed at SP 91, situated immediately upslope from the depressional PEM wetland boundary. The non-hydrophytic vegetation confirmed the upland position of SP 91.

4.2.3.7 Wetland M (4.0 acres)

SPs 155, 156, and 157 were located within Wetland M, a 4-acre Category III depressional PEM wetland located in the southwest corner of the Andersen dairy property. Livestock grazing regularly occurs in this wetland as the property is an active dairy farm.

Vegetation. Reed canarygrass is the dominant grass species in the wetland with lesser amounts of bentgrass and Kentucky bluegrass, and weedy herbaceous Canada thistle. No tree, shrub, or vine strata are present within the wetland.

Soils. Hydric brown (7.5YR 4/2) and/or dark gray (10 YR 4/1) silt loams with prominent fine to medium sized strong brown (7.5 YR 5/6, 7.5 YR 5/8) redox concentrations were observed at the surface to depths of 10 inches or greater at SP 155 and SP 156. At depths below 10 inches, the surface soils at SP 155 were mixed with mottled very dark brown (10YR 2/2) very fine silt loams. The soils observed at Wetland M SPs 155 and 156 meet the hydric soil criteria for depleted matrix (F3). The hydric very dark grayish brown (10 YR 3/2) silt loams observed at SP 156 displayed strong brown (7.5 YR 5/8) redox concentrations meeting the criteria for the Redox Dark Surface (F6) hydric soil indicator.

Hydrology. No standing water, or saturated soils, or evidence of the water table within the top 12 to 18 inches of the soil were observed at any of the wetland SPs at the time of the field investigation (May 16, 2012). Wetland hydrology was determined based on the presence of oxidized rhizospheres along living roots at all three of the SPs located within Wetland M. Secondary indicators of wetland hydrology included a positive FAC-neutral test at all three plots, geomorphic position at SP 155 and SP 157, and drainage patterns at SP 156 were also recorded.

Adjacent Upland Pasture (Buffer) Areas Associated with Wetland M

SPs 154 and SP 158 were situated in upland pasture areas immediately adjacent to PEM Wetland M. The hydrophytic vegetation represented at SP 154 was comprised of the same species as that recorded within Wetland M: reed canarygrass and bentgrass. The hydrophytic dominated vegetation observed at SP 158, located a low ridge between swales associated with the eastern end of Wetland M, differed in its composition of species. Representative species present included red fescue, Kentucky bluegrass, western dock *(Rumex occidentalis),* knotweed (*Polygonum sp.*), Canadian sand spurry, pineapple weed and non-hydrophytic Shepard's purse (*Capsella bursa-pastoris),*

No saturated soil conditions were observed at the upland SPs. The water table was observed at a depth of 24 inches from the ground surface at SP 158. However oxidized rhizospheres observed at both of the upland plots adjacent to Wetland M are a primary hydrology indicator. Wetland parameters are however not positively met at the upland plots due to the lack of hydric soils. Non-hydric, very dark grayish brown (10 YR 3/2) soils with no redox concentrations were observed within the upper 10 inches of the soil profile at SP 154. Redox concentrations were present at depths below 10 inches in the soil profile; however, the criteria for hydric soil indicators F6 (Redox

Dark Surface) or Thick Dark Surface (A12) were not met. The sandy soils observed at SP 158 did not display redox concentrations or organic matter as required for hydric classification.

4.2.3.8 Wetland Q (1.4 acres)

Wetland Q is a closed depressional seasonally saturated/inundated Category III PEM wetland that is located within a shallow linear swale to the north of Round Lake on the central portion of the Fazio property (Figure 6). A low upland pasture ridge separates Wetland Q from Wetland W, also situated within a similarly shallow linear depressional swale directly to the south.

Two SPs (SP33 and SP36) were investigated in the PEM Wetland Q on April 12, 2012 (Figure 6). An additional plot #143 was investigated in the eastern end of the wetland on May 14, 2012. The existing environmental conditions at the adjacent upland pasture areas surrounding Wetland Q were documented on April 11, 12 and May 14, 2012 at the following SPs: 22, 23, 32, 35, 37, 38, 142, and 144 and at SPs T3-SP4 through T3-SP9 on Transect T3 (Figure 6).

Vegetation. The dominant grass species represented in Wetland Q include redtop, tall fescue, and bentgrass. Meadow foxtail and sweet vernal grass were additionally present, but not recorded as dominant species. Hydrophytic spearmint was dominant at SP 143 located near the wetland's east end. Moss covered 10% of the ground surface at SP 36, located near the wetland's west end. Additional weedy herbaceous plants documented within the wetland include clover, soft rush, dock and non-hydrophytic hairy cat's ear, and lance-leaved plantain. Due to foraging geese and restricted vegetation growth habitat resulting from seasonal surface water inundation, the height of herbaceous vegetation within the PEM wetland was observed to be approximately 1 to 2 inches shorter than the height of the vegetation growing within the adjacent upland buffer areas. Although seasonal surface water ponding initially observed during the mid-April site visits had receded by mid-May, the variation in vegetation heights between the previously ponded areas and the adjacent upland areas could still be clearly demarked on the landscape.

Soils. The mottled very dark grayish brown (10 YR 3/2) silt loams observed at SPs 33 and 36 met the criteria of hydric soil indicator F6 (Redox Dark Surface). Depleted mottled dark gray (10 YR 4/1) soils meeting the criteria of hydric soil indicator F6 (Depleted Matrix) were observed at SP 143.

Hydrology. Surface water was ponded for approximately ½ inch at SP 33 located in the middle of the Wetland Q swale. Saturated soils and the seasonal high water table were observed at the ground surface at SP 33 at the time of the field survey. Saturated soils and the underlying water table were observed at depths below 5 and 9 inches from the ground surface, respectively at SPs 36 and 143. Algal mats were documented within the wetland at SP 143 (Figure 6). Surface water ponding previously observed to be present within the wetland during mid-April site visits had receded by the timing of the mid-May site visits.

Upland Pasture Buffer Areas Associated with Wetland Q

The vegetation at the eight upland pasture SPs (SPs: 22, 23, 32, 35, 37, 38, 142, and 144) surrounding Wetland Q and the six upland pasture SPs located on Transect T3 (SPs T3-SP4, T3-SP5, T3-SP6, T3-SP7, T3-SP8, and T3-SP9) to the north consisted of a mix of hydrophytic and non-hydrophytic species of grasses and weedy herbaceous plants (Figure 6). Non-hydrophytic sweet vernal grass, lance-leaved plantain, and/or hairy cat's ear were commonly dominant species at the upland pasture plots; however, hydrophytic plant species dominated the vegetation at SPs 23 and 32 and at T3-SP4 and T3-SP5 located to the north and east of Wetland Q on Transect T3. Orchard grass (*Dactylis glomerata*) was uniquely documented as a dominant non-hydrophytic

grass species present at T3-SP9, located in sandy soils to the west of the Wetland Q. Other facultative grass species represented at the upland pasture SPs include tall fescue, redtop, Kentucky bluegrass, and meadow foxtail. Weedy clover, black medick, filaree, common chickweed, Queen Anne's lace (*Daucus carota*), little western bittercress *(Cardamine oligosperma),* and vetch are additionally represented in the upland pasture plots adjacent to the wetland. Approximately 5% and 8% of the ground surface was covered with moss and thatch at SPs 22 and 37, respectively.

The *Soil Survey* indicates a transition in mapped soil units within the vicinity of Wetland Q. Sauvie silt loams (SmA) are mapped within the central portion of the Study Area and Pilchuck fine sand (PhB) is mapped to the west (Appendix E). The results of the field investigation confirmed this mapping. The majority of the SPs investigated within the immediate vicinity of PEM Wetland Q consisted of silt loams. Sandy loams however were documented at SPs 22 and T3-SP9, located west of PEM Wetland Q.

Brown sandy loams with high matrix chromas (10 YR 4/3) and no redox concentrations that are characteristic of non-hydric soils were observed within the upper 10 inches of the surface soils at SP T3-SP9. Redox concentrations were observed in the sandy loams below 10 inches. Very dark grayish brown (10 YR 3/2) sandy loams with no redox concentrations were observed to a depth of 11 inches in the soil profile at SP 22. The subsoils consisted of sand at the SP.

Non-hydric very dark brown (10 YR 2/2), very dark grayish brown (10 YR 3/2), dark grayish brown (10 YR 4/2) and dark brown (10 YR 3/3), surface silt loams with no redox concentrations were observed at SPs 23, 32, 35, 38, 142, 144 and at T3-SP4. T3-SP6, T3-SP7, and T3-SP8 on Transect T3. Faint redox concentrations observed in dark grayish brown (10 YR 4/2) surface soils at SP 37 and in the subsoils at depths below 13 inches from the ground surface at SP 35 and SP 142, did not meet hydric criteria. Prominent redox concentrations were observed in the very dark grayish subsoils at depths of 10 inches and below from the ground surface at T3-SP4 and T3-SP8.

A 1-inch wide band of grayish brown (10 YR 5/2) silt loams with strong brown (7.5 YR 4/6) redox concentrations was observed at depths between 8 and 9 inches at SP 38. The overlying very dark grayish brown surface soils and the underlying silt loams of the same color matrix observed to a depth of 17 inches at the SP did not display redox concentrations characteristic of hydric soils. Mixed and mottled very dark grayish brown and grayish brown soils were observed at depths below 17 inches at the SP located to the west of Wetland Q. Mixed mottled very dark grayish brown and dark grayish brown subsoils were observed at shallower depths (between 9 and 18 inches from the ground surface) at SP 32, located to the south of Wetland Q.

Depleted mottled dark grayish brown (10 YR 4/2) soils were observed underlying very dark grayish brown surface soils with no redox concentrations at a depth of 10 inches at the T3-SP5 SP located to the north of Wetland Q on Transect T3.

With the exception of SP37, no primary or secondary indicators of wetland hydrology were observed at the upland pasture SPs adjacent to and surrounding Wetland Q. Saturated soils and the underlying water table were observed at 8 and 10 inches, respectively from the ground surface at SP 37, located near the northwest corner of Wetland Q. Borderline hydrology conditions of saturated soils and the water table were observed directly below 12 inches from the ground surface at SP35. Saturated soils were observed at depths of 16 inches and 18 inches from the ground surface at SPs 23 and 32, respectively,

4.2.3.9 Wetland W (2.75 acres)

Wetland W is a Category III seasonally inundated/saturated PEM wetland situated within a shallow linear swale (2.75 acres) to the north of Round Lake on the Fazio parcel. Four SPs (24, 26, 29, and T3-SP2 on Transect T3) were investigated in the wetland. The following sections describe the conditions observed at the Wetland W SPs.

Vegetation. Hydrophytic species of grasses and weedy herbaceous plants dominate the PEM vegetation within the wetland. Representative grass species present include meadow foxtail, red fescue, tall fescue, bentgrass, reed canary grass, and non-hydrophytic sweet vernal grass. Weedy herbaceous plant species present include soft rush, clover, buttercup, and Thyme leaf speedwell. Foraging geese and surface water ponding during the early growing season appears to have stunted vegetation growth within the wetland. The height of vegetation growing in the wetland was shorter than in adjacent upland areas by approximately 2 inches.

Soils. The soils observed at the Wetland W SPs met the hydric criteria for indicator F6 (Redox Dark Surface). Mottled very dark grayish brown (10 YR 3/2) silt loams with fine distinct brown (7.5 YR 4/4) or dark yellowish brown (10 YR 4/6) redox concentrations were observed. Dark gray (10 YR 4/1) depletions and depleted subsoils were observed at SPs 24 and 29, respectively. Sand was observed at depths below 14 inches from the ground surface at SP 26.

Hydrology. Ponded surface water and saturated surface soils were observed at SP 24, located along the northern boundary of Wetland W. Saturated soils were observed at depths between 5 and 9 inches from the ground surface at the other plots. Saturated soils and the seasonal high water table were observed at depths between 5 and 11 inches from the ground surface at the other wetland SPs. The wetland is depressional, and therefore the secondary indicator for wetland hydrology based on geomorphic position is positive.

Adjacent Upland Buffer Areas Associated with Wetland W

The environmental conditions in the adjacent upland buffer areas adjacent to and surrounding Wetland W were recorded at seven SPs (23, 25, 28, 30, 31, and T3-SP 1 and T3-SP3 on Transect T3). Hydrophytic grass species similar to those recorded within Wetland W were observed to be either dominant or mixed in distribution with non-hydophytic species of herbaceous plants at the upland pasture SPs. Additional plant species represented in the upland pasture include Kentucky bluegrass, hairy cat's ear (*Hypochaeris radicata*), black medick (*Medicago lupulina*) and common stork's bill (filaree; *Erodium cicutarium*), common chickweed *(Stellaria media*)**,** little western bittercress and thistle. Himalayan blackberry is also present; however, livestock grazing and mowing to maintain the site as open pasture have restricted its height to less than 12 inches.

With the exception of SP 28, the soils observed at the upland SPs were non-hydric. Silt loams displaying matrix chromas greater than two (10 YR 4/2-4/3 and 10 YR 3/3) that are characteristic of non-hydric soils, were observed at SP T3-SP3 and SP30 located to the north and south, respectively, of Wetland W. Very dark grayish brown (10 YR 3/2) or dark grayish brown (10 YR 4/2) with no redox concentrations were observed within the surface soils to a minimum depth of 10 inches at SPs T3-SP 1 and SP 23 and 25. Although redox concentrations were displayed in the underlying soils, the subsoils were not depleted, and therefore the criteria for meeting hydric soil indicators were not met.

The soils observed at SP 28 met the criteria for hydric soil indicators F3 (Depleted matrix) and F6 (Redox Dark Surface). Depleted mottled gray (10 YR 5/1) silt loams were observed at depths between 4 and 8 inches in the soil profile at SP 28. Very dark grayish brown (10 YR 3/2) top soils

with no redox concentrations were observed at the ground surface to a depth of 3 inches in the soil profile. At depths below 8 inches in the soil profile, these dark soils displayed redox concentrations and were mixed with grayish brown (10 YR 5/2) silt loams.

No primary or secondary indicators of wetland hydrology were observed at the upland SPs. With the exception of moisture glistening observed at a depth of 12 inches from the ground surface at SP 30, saturated soil conditions were not recorded at any of the upland SPs at depths less than 16 inches from the ground surface.

4.3 Upland

4.3.1 Agricultural Fields

Two fields on the Fazio property are tilled and appear to have been planted with barley (*Hordeum munriunum)* during the prior season for agricultural crop production. Crop production is seasonally rotated between corn, barley, oats, and hay. The fields, each approximately 20 acres in size, are located to the south and to the west of Post Office Lake, respectively (Figure 5). Data recorded at SPs indicates that positive wetland conditions are not present in the fields used for agricultural crop production at the study site. Details regarding the conditions observed in the agricultural crops fields are provided in the following sections.

4.3.1.1 Agricultural Cropland – Northwest Corner of Fazio Parcel

The agricultural crop field in the northwest corner of the Fazio property was investigated on April 23, 2012. The field is bound to the east by a ditch and by the roadside berm associated with the Lower River Road to the west (Figure 5). A single-family residence (#15017 Lower River Road) and attendant features, including septic utilities, are present to the south.

Details regarding the existing vegetation, soils and any evidence of positive wetland hydrology indicators in the northwest agricultural crop field were recorded at SPs T1-SP7, T1-SP8, and T1-SP9, each separated by a distance of 200 feet along the west portion of Transect T1 (Figure 5). SP 76 was centrally located in the field within a low topographic swale. SP 75, located near the northeast corner of the field, is adjacent to the northern terminus of the east perimeter ditch.

At the time of the site investigation, vegetation was observed to be sparse; bare ground represented 20 to 50% of the ground surface at the SPs. Barley grass was identified in isolated clumps or by remnant thatch. Diminutive facultative Howell's candy-flower *(Montia howellii*) dominated the vegetation at the SPs. Non-hydrophytic Queen Anne's lace and common stork's bill (filaree) was also present. Next to the roadberm on the western end of the field, Whitlow grass (*Draba sp*.) and common chickweed were recorded as the dominant species.

The soils observed at the SPs in the northwest agricultural field did not meet hydric criteria. Sauvie (SmA) and Newberg (NbB) silt loams are mapped in the northern and southern portions of the field, respectively. Very dark grayish brown (10 YR 3/2) or dark grayish brown (10 YR 4/2) silt loams with no redox concentrations were observed at the surface to a minimum depth of 15 inches at the SPs. At SPs T1-SP-7 and SP-8, mixed top soils and dark gray (10 YR 4/1) subsoils with a sandy component were observed at depths below 15 inches. Fine and medium grained-sized sand was observed below 18 inches at SP-7. Dark grayish brown (10 YR 4/2) subsoils with reddish brown (5 YR 4/4) redox concentrations were observed at depths below 15 inches at T1-SP9.

No primary or secondary indicators of wetland hydrology were observed at the SPs. Soils were dry and friable. No saturated soils conditions were encountered in the SPs.

4.3.1.2 Agricultural Crop Field – South of Post Office Lake

The environmental conditions in the agricultural field to the south of Post Office Lake were investigated on April 10, 2012. The field is situated to the south of Post Office Lake and is accessed via an unpaved access road west of Lower River Road. The field is bound to the east by the Lake River dike and to the west and south by ditches (Figure 5). Data recorded at SPs 1 through 11, each separated by a distance of 100 feet, on the eastern portion of Transect 2, indicated that wetland conditions were not present on this upland portion of the project site. Details regarding the vegetation, non-hydric soils, and the lack of hydrology indicators observed at the SPs are provided below.

Barley regenerating from the prior season's crop and weedy herbaceous plants dominate the vegetation. In comparison to the exposed bare ground areas observed on the northwest field, thatch covered approximately 20 to 30% of the ground surface in the subject agricultural crop field. Barley was consistently dominant, representing greater than 40% and up to 80% of the vegetation ground cover at the SPs. Although other non-hydrophytic weedy herbaceous species are present, the vegetation, including barley (a facultative species) is dominated by hydrophytic species. Other grass and weedy herbaceous plant species represented, but not typically dominant at the SPs include: tall fescue,Miner's lettuce *(Claytonia perfoliata),* common selfheal (*Prunella vulgaris),* American field mint *(Mentha arvensis),* little western bittercress, common chickweed and Canadian thistle.

None of the soils observed in the subject agricultural field met hydric soil criteria. Non-hydric very dark grayish brown (10 YR 3/2) loamy top soils with no redox concentrations were observed to a minimum depth of 13 inches at each of the SPs. Non-mottled very dark brown (10 YR 2/2) or black (10 YR 2/1, 10 YR 3/1) silt loams or grayish brown loams (10 YR 3/2, 10 YR 4/2) with faint (10 YR 3/3) redox concentrations were observed directly below the surface soils at approximate depths between 13 and 18 inches in the SPs.

The subsoils recorded on the eastern portion of the field at SPs T2-SP 3, 4, and 5 consisted of sandy loams that may be indicative of mapped soil unit, SnA (sandy substratum) on this portion of the site (Figure 5 and Appendix E). Near the western end of the field at SPs T2-SP-9, 10, and 11, mixed top soils and subsoils were observed at depths below 13 inches. The subsurface mixing of the soils may be attributed to agricultural disturbances (till, ditch maintenance) and/or the transition of the mapped SmA and NbB silt loam soil units.

No primary or secondary wetland hydrology indicators were observed to be positive at the SPs. Saturated soil conditions and/or observations of the groundwater table were generally not present; however moisture glistening in the soils was recorded at depths greater than 14 inches from the ground surface at T2-SP 2 and SP 3. On the western end of the field, the water table was observed at T2-SP 9, 10, and 11; however, the recorded depth at 14 inches or greater from the ground surface did not meet positive criteria for wetland hydrology.

4.3.2 Other Areas

SPs 117, 118, and 119 were located in small depressional areas that appear to have been excavated to the south of the feed lot on the Andersen property (Figure 7). The depressions appear to be artificial or man-made due to their size, depths, and steep-sided banks in sandy soils, which are inconsistent with the sizes and shapes of the shallow depressional PEM wetland delineated elsewhere on the site.

Hydrophytic Palustrine scrub-shrub (PSS) and emergent (PEM) wetland communities were documented within the depressional SPs 117 and 118, respectively. Willows dominate the shrub component at SP 117. Obligate species of duckweed (*Lemma minor*) and spikerush (*Eleocharis sp.*) are represented with sweet vernal grass. Brome and Himalayan blackberry rim the depressions.

Saturated hydric dark grayish brown (10 YR 4/2) and dark gray (10 YR 4/1) sand with redox concentrations were observed at the sample plots. The water table was observed at depths of 3 inches and 11 inches from the ground surface at SP 117 and SP 118, respectively. Although wetland parameters are met in these depressional areas, they were not considered regulatory wetlands due to their artificial or apparent man-made occurrence.

SP 119 was situated in a upland pasture depressional area to the east of the small wet depressions. This area also appeared to have excavated in the past. The vegetation was dominated by hydrophytic reed canarygrass, soft rush, and facultative velvet grass. Hydric grayish brown (10 YR 5/2) sandy silt loams with redox concentrations were observed at the sample plot. Although the wetland parameters for vegetation and soils were positive at SP 119, positive indicators of wetland hydrology were not present. Saturated soils and the underlying water table were observed at a depth of 14 inches from the ground surface. This upland pasture depressional area was shallower than the adjacent observed PSS and PEM wet depressions. Past excavations may not have been implemented at a deep enough depth to reach and daylight the water table at the upland depression.

4.4 Columbia River Shoreline – West of Lower River Road

Twelve SPs were investigated within the Study Area west of Lower River Road and adjacent to the Columbia River (Figures 5, 6 and 7):

- T1-SP 10 on Transect T1
- T2-SP 19, T2-SP20, and T2-SP21 on Transect T2
- T3-SP 10, T3-SP 11, and T3-SP 12 on Transect T3
- SP 77
- SP 78
- SP 114
- SP 115
- SP 116.

The majority of the SPs were located in altered upland meadow habitat associated with sand deposits. The sand deposits may have been placed along the shoreline as spoils from past river dredging activities and/or as a result of receding flood or high water flows. The gray (5 Y 5/1) and dark grayish brown (10 YR 4/2) sand did not display redox concentrations and/or the organic streaking that are characteristic of hydric soils, even at locations waterward of the OHWM of the Columbia River.

SPs 77, 78, 114, and T1-SP 10 on Transect T1 were located in forested habitats both landward and waterward of the OHWM of the river. The riverine forested wetland associated with the shoreline near the southwest corner of the Study Area was characterized at SP 77.

Large woody debris and deposited wrack cover the ground surface adjacent to the bermed road right-of-way and OHWM of the Columbia River.

Access west of Lower River Road to the river shoreline is restricted by gates. A gravel access loop road is present to the west of road near the northwest corner of the Andersen property.

Upland Meadow and Riverine Emergent Vegetation Communities. These vegetation communities, comprised of mixed native and non-native grasses and weedy herbaceous plants, at respective locations landward and waterward of the OHWM of the Columbia River are represented primarily along the altered western shoreline on the Fazio property (Parcel 19117700). Representative grass species present in the upland meadow vegetation community include redtop, tall fescue and brome (*Bromus sp*.). Representative weedy herbaceous plants present include hairy cat's ear, field horsetail, clover, chickweed, and common stork's bill. Non-native Scotch broom and Himalayan blackberry are present along the outer edges of the meadow community. Lichen formed a crust over 90% of the sandy ground surface at SP T3-SP 11, located landward of the OWHM on Transect T3 (Figure 6).

Reed canary grass, horsetail, and/or tall scouring rush are dominant in the riverine emergent areas waterward of the OHWM. Exposed sand represents approximately 50% to 80% of the ground surface at the Transect T2 and T3 samples plots located waterward of the OHMW (Figures 5 and 6).

No primary or secondary indicators of wetland hydrology were observed at the T3 SPs located to the west of road and landward of the OHWM (Figure 6). Saturated conditions, as indicated by moisture glistening in the sandy plots at T2-SP 19 and T2-SP20, located landward of the OHWM along Transect T2 ,were recorded at depths of 13 inches and below from the ground surface (Figure 5). Saturated sand was observed at depths of 10 inches from the ground surface at T2-SP21, located waterward of the OHWM of the river.

Hydrology was inferred by secondary indicators B10 (drainage patterns) and D2 (geomorphic position) at SP T3-SP 12 located waterward of the OHWM of the river (Figure 6).

Upland Forest. This vegetation community is represented to the west of Lower River Road near the far northwest and southwest corners of the Study Area at locations landward of the OHWM of the Columbia River (Figures 2, 5 and 7). Deciduous black cottonwood and Oregon ash trees dominate the forest canopy.

Near the northwest corner of the Study Area, at SP T1-SP 10 on Transect T1, sessile-leaf willow (*Salix sessifolia*) was dominant with Himalayan blackberry and horsetail (Figure 5). No primary or secondary wetland hydrology indicators were observed at this SP located just landward of the OHWM of the River. Bare sand represented 60% of the ground surface. Open water and exposed sandy areas with no vegetation were present to directly to the west and waterward of the OHWM.

Representative native shrubs present in the cottonwood and ash dominated upland forest located near the southwest corner of the Study Area include: Pacific crabapple (*Malus facas*), cascara (Fangula purshaina), western snowberry (*Symphoricarpos albus*), western salmonberry (*Rubus spectabilis*), red osier dogwood (*Cornus alba),* and Nootka rose (*Rosa nutkana*). Non-native Himalayan blackberry is also present. Leaf litter covered the ground surface at SP78. Bedstraw (*Gallium* sp.) was the only ground cover plant species recorded at the SP. Reed canarygrass is the dominant ground cover at SP 115, located further to the south along the forested shoreline.

Very dark brown (10 YR 2/2) and dark grayish brown (10 YR 4/2) loamy sand interspersed with black organic matter was observed depths above and below 12 inches, respectively, at SP78. Non-hydric dark grayish brown (10 YR 4/2) silt loams with no redox concentrations were recorded at SP 115, located further to the south along the forested shoreline. No primary or secondary indicators of wetland hydrology were recorded at the upland forest SPs 78 and 115.

Riverine Associated Palustrine Forest (PFO) Wetland

The Category II forested wetland associated with the Columbia River in the southwest corner of the Study Area received a score of 60 points on the Washington State Rating forms (Appendix D). Due to the wetland's relatively undisturbed and ungrazed forest vegetation and existing large woody debris component, the wetland received the majority of its rating points (24) in association with habitat. Multipliers were also applied based on the wetland's opportunity to perform water quality and hydrology functions in a riverine system.

The vegetation within the forested wetland is dominated by Oregon ash, willow, red-osier dogwood, and reed canary grass. Eighty percent of the ground surface was bare of vegetation at SP 77, located at an elevation of 16.27 inches above msl and waterward of the OHWM of the Columbia River.

Redox concentrations were observed in very dark grayish brown (10 YR 3/2) sand at SP 77. The soils met the hydric criteria of indicator S5 (Sandy Redox). Hydric mottled dark grayish brown (10 YR 4/2) silt loams that satisfied the criteria for hydric soil indicator F3 (Depleted Matrix) were observed at SP 116. Although SP 114 was located waterward of the OHWM of the Columbia River, the observed sand did not display redox concentrations or any other hydric characteristics.

Saturated soils were observed at the surface and the water table was observed at a depth of 2 inches at the SP 77. The water table was not observed at SP 116; however, saturated conditions were recorded within the upper 4 inches of the soil profile. Moisture glistening was observed at depths below 11 inches in the very dark grayish (10 YR 3/2) sand at the SP 114, located to the west of the OHMW of the river.

4.5 Wildlife

The Study Area wetlands provide vital migration and wintering habitat for birds migrating through the region west of the Cascade Mountains in the Pacific flyway. The Ridgefield NWR, situated on greater than 5,218 acres adjacent to and north of the Study Area, provides year-round sanctuary for a variety of species of birds, amphibians, fish, and mammals. The refuge was established in 1965 to provide wintering habitat for the dusky subspecies of Canada goose, however more than 180 additional species of waterfowl, shorebirds, raptors, and passerines have been verified within its boundary. Due to the project site proximity and similar habitat conditions, it is assumed that many of the species that are associated with the refuge and that are also adaptable to existing land use practices are also likely to occur within the Study Area.

Representative nesting birds at the refuge, which may also have the potential to utilize the subject Study Area, include:

Pied-billed grebe	American bittern	Bald eagle
Canada goose	Common snipe	Great blue heron
Northern harrier	Wood duck	Spotted sandpiper
Great egret	Red-tailed hawk	Gadwall

Wilson's phalarope	Rufted grouse	American kestrel
Blue-winged & cinnamon teal	Black-necked stilt	California quail
W. screech owl	Mallard	Killdeer
Virginia rail	Great horned owl	Eurasian wigeon
Black tern	Sora	Barn owl
American wigeon	Rock dove	Mourning dove
Hairy woodpecker	Northern shoveler	Belted kingfisher
American coot	Downy woodpecker	Northern pintail
Ruddy duck	Northern flicker	Pileated woodpecker
Common merganser	Hooded merganser	Warbling vireo
Red-eyed vireo	Western wood-peewee	Dusky flycatcher
Steller's jay	Western scrub-jay	American crow
Cliff swallow	Tree swallow	Bank swallow
Northern rough-winged swallow	Common bushtit	Purple martin
Violet-green swallow	Red-breasted nuthatch	Brown creeper
Berwick's wren	House wren	Rufous hummingbird
Winter wren	Marsh wren	American robin
Black-capped chickadee	Swainson's thrush	Cedar waxwing
European starling	White-breasted nuthatch	Yellow warbler
Yellowthroat	Western tanager	Orange-crowned warbler
Spotted towhee	Song sparrow	Savannah sparrow
MacGillivray's warbler	White-crowned sparrow	Chestnut-backed chickadee
Black-headed grosbeak	Brown-headed cowbird	Western meadowlark
Yellow-headed blackbird	Brewer's blackbird	Bullock's oriole
Red-winged blackbird	House sparrow	Purple finch
House finch	Pine siskin	American goldfinch

Other common species to the refuge include double-crested cormorant, green winged teal, ring-necked duck, lesser scaup, dunlin, mew, ring-billed, California, Thayer's and glacous-winged gulls, sandhill crane, golden-crowned kinglet, yellow-rumped and Wilson's warbles, and dark-eyed junco.

Mammals identified at the Ridgefield NWR that are also likely to be associated with the Study Area include: opossum, shrews, moles, rabbits, rodents, and black-tailed deer. Common carnivores, including coyote, raccoon, skunk, weasel and fox are also likely to be present within the project area. Non-native nutria has been documented within the general vicinity. Thirteen species of amphibians and reptiles (salamanders, newts, frogs, turtles, lizards, and snakes) have been verified within the Ridgefield NWR. Habitat to support amphibians and reptiles is available on-site.

The Washington State Department of Natural Resources (WDNR) water typing maps indicate Post Office Lake and Round Lake as Type "F" (fish habitat associated) water bodies. No on-site ditches or streams are indicated in addition to the lakes on the WDNR map.

Although the mapped PFO/PSS/PEM wetland complex near the southeast corner of the study area appears to be associated with Lake River, a non-fish barrier is indicated to be present on the Washington Department of Fish and Wildlife (WDFW) SalmonScape database. Fish passage via culverts is not likely to be accommodated along the elevated levee roadway that terminates in

southeast corner of the Study Area. The Study Area's southern boundary levee intersects with the eastern Lake River boundary dike (Figure 4). The adjacent wetland mapped to the south of the Andersen's property southern boundary dike is not directly associated with the Study Area wetlands.

The Columbia River provides habitat for native Chinook, sockeve and chum salmon, sea-run cutthroat trout, Western brook lamprey, white and green sturgeon, Eulachon (smelt), northern pike minnow, bridgelip and largescale sucker, and starry flounder. Native fish species common to both the Columbia River and Lake River include coho, steelhead (rainbow trout), Pacific lamprey, mountain whitefish, chiselmouth, longnose sucker, and sandroller. Introduced species present within both of these rivers include brown trout and channel catfish. Additional introduced species associated with the Columbia River and the Ridgefield NWR include carp, black crappie, pumpkinseed, walleye and yellow perch. Goldfish, mosquitofish, white crappie, bluegill, and largemouth bass have additionally been introduced within the Refuge.

No endangered or threatened fish, animal, or plant species were observed within the subject project area at the time of the site visit. Wildlife observed within Post Office Lake and within its immediate vicinity included dragonflies, chorus frog, and the following bird species:

Red-winged blackbird	Golden-crowned sparrow	Fox sparrow
Song sparrow	American goldfinch	Great egret
Killdeer	Mallard	Cinnamon teal
American coot	Canada goose	Spotted sandpiper
Spotted towhee	Common yellowthroat	Yellow-rumped warbler
Violet-green swallow	Tree swallow	Barn swallow
Northern harrier	Great horned owl	Northern flicker
Bald eagle	Turkey vulture	

The PFO/PSS/PEM wetland complex near the study area's southeast corner and Lake River levee is associated with a blue heron rookery. Several platforms for nesting osprey are present along Lower River Road to the south of the study area. Great blue heron and osprey were additionally sighted during the delineation field surveys.

Table 4-1 Summary of Wetland Parameters at Sample Plots – Transect 1

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
T1-SP 1 @ 79 ft	04/23/12	No	No	No	Upland pasture east of Post Office Lake	N/A
T1-SP2 @ 200 ft		Yes	Yes	No	Upland pasture	
T1-SP3 @ 400 ft		No	Yes	No		
T1-SP4 @ 600 ft		Yes	Yes	Yes	Wetland	East boundary of PEM wetland associated with Post Office Lake
T1-SP5(6) @ 1,050 ft		Yes	Yes	Yes.		West boundary of PEM Post Office Lake
T1-SP6(7) @ 1,100 ft		Yes	Yes	No	Upland pasture	N/A
T1-SP7(8) @ 1,400 ft		Yes	No	No	Upland agricultural crop field – northwest corner of Fazio parcel. North of residence.	
T1-SP8(9) @ 1,600 ft		Yes	No	No		
T1-SP9(10) @ 1,800 ft		No	No	No		
T1-SP 10(11) @ 2,200 ft	04/25/12	Yes	No	No	Upland forest	Landward of OHWM Columbia R.

Notes:
ft = feet; OWHM = ordinary high water mark; PEM = Palustrine Emergent

Table 4-2 Summary of Wetland Parameters at Sample Plots – Transect 2

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
T2-SP 1 @ 100 ft	04/10/12	Yes	No	No	Upland – agricultural cropland seasonally planted with barley	N/A
T2-SP2 @ 200 ft		Yes	No	No		
T2-SP3 @ 300 ft		Yes	No	No		
T2-SP4 @ 400 ft		Yes	No	No		
T2-SP5 @ 500 ft		Yes	No	No		
T2-SP6 @ 600 ft		Yes	No	No		
T2-SP7 @ 700 ft		Yes	No	No		
T2-SP8 @ 800 ft		Yes	No	No		
T2-SP9 @ 900 ft		Yes	No	No		
T2-SP 10 @ 1,000 ft		Yes	No	No		
T2-SP 11 @ 1,100 ft		Yes	No	No		
T2-SP 12 @ 1,250 ft		No	No	No	Upland pasture– west of fence and cross ditch	N/A
T2-SP 13 @ 1350 ft		Yes	Yes	No		
T2-SP 14 @1450 ft		Yes	Yes	No		
T2-SP 15 @ 1550 ft	04/11/12	No	Yes	No		
T2-SP 16 @ 1650 ft		Yes	No	No		
T2-SP 17 @ 1750 ft		Yes	No	No		
T2-SP 18 @ 1850’		Yes	No	No		
T2-SP 19 @ 2100 ft	04/11/12	Yes	No	No	West of Lower River Road - Upland Landward of OHWM of Columbia River	
T2-SP20 @ 2200 ft		No	No	No		
T2-SP21 @ 2300 ft		Yes	Yes	Yes	West of Lower River Road Within the OHWM of the Columbia River (R1UBV)	

Notes:
ft = feet; N/A = not applicable; OWHM = ordinary high water mark

Table 4-3 Summary of Wetland Parameters at Sample Plots – Transect 3

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
T3-SP 1 @ 100 ft	5/14/2012	Yes	No	No	Upland pasture	North of Round Lake
T3-SP2 @ 200 ft		Yes	Yes	Yes	Wetland	PEM Wetland W
T3-SP3 @ 400 ft		No	No	No	Upland pasture	Wetland W Buffer (west)
T3-SP4 @ 600 ft		Yes	No	No		
T3-SP5 @ 800 ft		No	Yes	No		Wetland Q Buffer (north)
T3-SP6 @ 1,000 ft		No	No	No		
T3-SP7 @ 1,200 ft		No	No	No		
T3-SP8 @ 1,400 ft		Yes	No	No		
T3-SP9 @ 1,600 ft		No	No	No		
T3-SP 10 @ 2,000 ft		Yes	No	No	Upland meadow	ROW, west of Lower River Road, landward of Columbia River
T3-SP 11 @ 2,200 ft		Yes	No	No	Upland	West of Lower River Road, landward of Columbia River
T3-SP 12 @ 2,400 ft		Yes	No	Yes	R1UBV	Columbia River

Notes:
ft = feet; ROW = right-of-way

Table 4-4 Summary of Wetland Parameters at Numbered Sample Plots 22-162

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
22	4/11/2012	No	No	No	Upland Pasture	N/A
23		Yes	No	No		Wetland W Buffer (north)
24		Yes	Yes	Yes	Wetland	PEM Wetland W
25		Yes	No	No	Upland Pasture	Wetland W Buffer (south)
26		Yes	Yes	Yes	Wetland	PEM Wetland W
27		Yes	No	No	Upland Pasture	Wetland W Buffer (west)
28		Yes	Yes	No		Wetland W Buffer (south)
29		Yes	Yes	Yes	Wetland	PEM Wetland W
30		No	No	Yes	Upland Pasture – low ridge between Wetlands W (north) and F (south)	Buffer – Wetlands W and F
31		Yes	Yes	No	Upland Pasture	Wetland W Buffer (northeast)
32		Yes	No	No		Wetland Q Buffer (south)
33		Yes	Yes	Yes	Wetland	PEM Wetland Q
34 (166)	5/15/2012	Yes	Yes	Yes		Round Lake PEM Wetland (East)
35	4/12/2012	Yes	No	No	Upland Pasture	Wetland Q Buffer (northeast)
36		Yes	Yes	Yes	Wetland	PEM Wetland Q
37		No	No	Yes	Upland Pasture	Wetland Q Buffer (west, southwest, respectively)
38		No	No	No		

Table 4-4 Summary of Wetland Parameters at Numbered Sample Plots 22-162

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
39 (167)	5/15/2012	No	Yes	No	Upland Pasture	Round Lake Buffer (east)
40	4/23/2012	Yes	No	No	Upland pasture– South of Transect T1	N/A
41		Yes	Yes	Yes	Wetland	PEM Wetland E
42-		Yes	Yes	Yes		
43		Yes	No	No	Upland Pasture	P.O. Lake Buffer (east)
44		Yes	Yes	Yes	Wetland	P.O. Lake PEM Wetland
45		Yes	Yes	Yes		
46		No	Yes	No	Upland pasture	P.O. Lake Buffer (east)
47		Yes	Yes	No		PEM Wetland E Buffer (southwest, north and south, respectively)
48		No	No	No		
49		No - Mixed	No	No		
50	4/24/2012	Yes	No	Yes - borderline		N/A – south of Wetland A and north of Wetland E
51		Yes	Yes	Yes	Wetland	PEM Wetland A
52		Yes	Yes	Yes		
53		Yes	No	No	Upland pasture	N/A
54		No-Mixed	No	No		
55		Yes	Yes	Yes	Wetland	East shore of P.O. Lake
56 – SP paired with PEM Wetland SPs 55 and 70		Yes	No	No	Upland Pasture	P.O. Lake Buffer (east)
57	4/24/2012	Yes	Yes	Yes	Wetland	P.O. Lake PEM wetland east boundary

Table 4-4 Summary of Wetland Parameters at Numbered Sample Plots 22-162

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
58	4/23/2012	Yes	No	No	Upland pasture	P.O. Lake Buffer (east)
59	4/24/2012	Yes	No	Yes	Upland pasture	Wetland A Buffer (northeast)
60		Yes	Yes	No	Upland pasture	P.O. Lake Buffer (east)
61	4/23/2012	Yes	Yes	Yes	Wetland	PEM Wetland A
62		Yes	Yes	Yes water at 8		
63	4/24/2012	Yes	Yes	Yes		P.O. Lake PEM Wetland
64	4/23/2012	Yes	Yes	Yes		
65	4/24/2012	Yes	No	No	Upland pasture	P.O. Lake Buffer (east)
66		Yes	Yes	Yes	Wetland	P.O. Lake PEM Wetland
67 - paired with PEM SP66		No	No	No	Upland pasture	East of P.O. Lake
68 - paired with PEM SP 69	4/23/2012	Yes	No	No		The southern end of East of P.O. Lake
69		Yes	Yes	Yes	Wetland	Southern extent of P.O. Lake
70	4/24/2012	Yes	Yes	Yes		P.O. Lake east boundary
71	4/23/2012	*Yes*	Yes	Yes		P.O. Lake south end
72		Yes	Yes	Yes		South end of P.O. Lake
73		Yes	No	No	Upland pasture	South of P.O. Lake
74		Yes	Yes	Yes	Wetland	South end of P.O. Lake

Table 4-4 Summary of Wetland Parameters at Numbered Sample Plots 22-162

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
75 (77)	4/24/2012	Yes	No	No	Upland – crop field	East of ditch - near NW corner of Fazio property
76		Yes	No	No		
77	4/25/2012	Yes	Yes	Yes	Wetland	PFO Columbia River
78	4/25/2012	No	No	No	Upland forest	Columbia River
79 (54-upl2)	4/24/2012	Yes	No	Yes	Upland pasture	PEM Wetland A Buffer (northwest)
80		Yes	Yes	No		P.O. Lake Buffer (west)
81 - paired with PEM SP 82		Yes	Yes	No		P.O. Lake Buffer (south)
82		Yes	Yes	Yes	Wetland	P.O. Lake - southwest boundary
83	4/25/2012	Yes	Yes	Yes		P.O. lake - Northwest boundary
84		Yes	Yes	No	Upland pasture	P.O. Lake Buffer (west)
85	4/26/2012	Yes	Yes	Yes	Wetland	PEM Wetland G
86		No	Yes	No	Upland pasture	Wetland G Buffer (north)
87		No	Yes	No		Wetland G Buffer (east)
88		Yes	Yes	Yes	Wetland	PEM Wetland G
89		No	Yes	No	Upland pasture	Wetland G Buffer
90		Yes	Yes	Yes	Wetland	PEM Wetland G
91		No	Yes	Yes	Upland pasture	Wetland G Buffer

Table 4-4 Summary of Wetland Parameters at Numbered Sample Plots 22-162

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
92	4/26/2012	Yes	Yes	Yes	Wetland	PEM Wetland G
93		No	Yes	Yes	Upland pasture	Wetland G buffer
94		Yes	Yes	No		
95		No	Yes	No	Upland pasture	N/A
96		Yes	No	No		N/A
97	4/27/2012	No	No	No	Upland pasture	Round Lake buffer
98		Yes	Yes	Yes	Wetland	PEM Wetland Associated with Round Lake - Andersen parcel
99		Yes	Yes	Yes		PEM Wetland Associated with Round Lake- south of open water component- Andersen parcel
100		No	Yes	No	Upland pasture	N/A – Andersen Dairy Farm
101		Yes	Yes	No		
102		Yes	Yes	Yes	Wetland	PEM Wetland C
103		Yes	Yes	Yes		
104	4/27/2012	No	Yes	No	Upland pasture	Round Lake Buffer - Andersen
105		Yes	Yes	No		
106		Yes	Yes	Yes	Wetland	Round Lake
107		No	Yes	No	Upland pasture	N/A

Table 4-4 Summary of Wetland Parameters at Numbered Sample Plots 22-162

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
108(180)	5/17/2012	Yes	Yes	Yes	Wetland	PSS Associated with Round Lake – Andersen parcel – north
109 (181)	5/17/2012	Yes	Yes	Yes	Wetland	PEM Associated with Round Lake – Andersen-north
110	4/25/2012	No	Yes	No	Upland Pasture	Wetland G Buffer
111		Yes	Yes	Yes	Wetland	PEM Wetland G
112		Yes	Yes	Yes		
113		Yes	Yes	Yes		
114		Yes	No	Yes	West of Lower River Road - Waterward of the OHWM of the Columbia River (R1UBV PFO)	
115(182)	5/16/2012	Yes	No	No	Upland	West of Lower River Road – Upland Landward of OHWM Columbia River
116(183)		Yes	Yes	Yes	Wetland	West of Lower River Road - Columbia River (R1UBV PFO)
117(177)	5/16/2012	Yes	Yes	Yes	Upland-	N/A -

Table 4-4 Summary of Wetland Parameters at Numbered Sample Plots 22-162

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
118(178)	5/15/2012	Yes	Yes	Yes		
119(176)		Yes	Yes	No		
120(170)		Yes	Yes	No	Upland Pasture	Round Lake Buffer (East)
121(171)		Yes	No	No		
122(172)		Yes	Yes	Yes	Wetland	PEM Wetland Associated with Round Lake – east boundary
123(173)		Yes	Yes	Yes		
124(174)		No	No	No	Upland pasture	Round Lake Buffer (southwest)
125 Paired with PEM Wetland Round Lake SP 126		Yes	Yes	No		
126		Yes	Yes	Yes	Wetland	PEM Wetland Associated with Round Lake (south end)
127 (161-1)		Yes	Yes	No	Upland Pasture	Round Lake Buffer (east)
128 (168)		Yes	Yes	Yes	Wetland	PEM Wetland Associated with Round Lake (east)
129 (169)		Yes	Yes	Yes		
130	5/14/2012	Yes	Yes	Yes	Wetland	PEM Wetland F
131		No	No	No	Upland Pasture	Wetland F Buffer (north)
132		Yes	Yes	Yes	Wetland	PEM Wetland F

Table 4-4 Summary of Wetland Parameters at Numbered Sample Plots 22-162

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
133	5/14/2012	No	Yes	No	Upland Pasture	Wetland F Buffer (east)
134		Yes	Yes	Yes	Wetland	PEM Wetland F
135		No	No	No	Upland Pasture	Wetland F Buffer (west)
136		Yes	Yes	Yes	Wetland	PEM Wetland F – south end adjacent to Round Lake east cross ditch
137 (137-1)		Yes	Yes	Yes		
138 (137-2)		Yes	Yes	Yes		PEM Wetland Associated with Round Lake (north boundary)
139		No	No	No	Upland pasture	Round Lake Buffer (north)
140		Yes	Yes	Yes	Wetland	PEM Wetland F
141		Yes	Yes	No	Upland pasture – low ridge between wetlands	Wetland F buffer
142		No	No	No		Wetlands Q and W buffer
143		Yes	Yes	Yes	Wetland	PEM Wetland Q
144		No	No	No	Upland Pasture	Wetland Q Buffer (north)
145		No	Yes	No		Wetland F Buffer
146		No	Yes	Yes		
147 – Paired with upland pasture with 148	5/15/2012	Yes	Yes	Yes	Wetland	PEM Wetland associated with Round Lake (northeast boundary)
148 – Paired with PEM Wetland SP 147		No	Yes	No	Upland Pasture	Round Lake Buffer

Table 4-4 Summary of Wetland Parameters at Numbered Sample Plots 22-162

Plot ID	Date	Hydrophytic-Dominated Vegetation	Hydric Soils	Wetland Hydrology	Location	Associated Wetland
149	5/15/2012	Yes	Yes	Yes	Wetland	PEM Wetland and Open Water components of Round Lake east shoreline
150		Yes	Yes	Yes	Wetland	PEM Wetland Associated with Round Lake – east boundary
151		Yes	No	No	Upland Pasture	Round Lake Buffer (east)
152 (163)		Yes	Yes	Yes	Wetland	PEM Wetland Associated with Round Lake (east)
153 (164)		Yes	Yes	Yes		
154	5/16/2012	Yes	No	Yes	Upland pasture	Wetland M Buffer
155		Yes	Yes	Yes	Wetland	Wetland M Andersen Wetland
156	5/17/2012	Yes	Yes	Yes		
157	5/16/2012	Yes	Yes	Yes		
158		Yes	No	Yes	Upland Pasture	Wetland M Buffer
159	5/15/2012	Yes	Yes	Yes	Wetland	PEM Wetland Associated with Round Lake (east)
160		Yes	Yes	Yes	Wetland	PEM Wetland Round Lake (west shore)
161		No	Yes	No	Upland Pasture	Round Lake Buffer (west)
162		Yes	Yes	Yes	Wetland	PEM Wetland Associated with Round Lake (east)

Notes:
ft = feet; N/A = not applicable; PEM = Palustrine Emergent; PFO = Palustrine Forest; P.O. = Post Office; ROW = right-of-way

Table 4-5 Round Lake Conservation Bank Study Area – Plant List

Common Name	Scientific Name	Wetland Indicator Status	Location
Trees:			
Big-leaf maple	*Acer macrophyllum*	FACU	Upland
Red alder	*Alnus rubra*	FAC	Upland/Wetland
Oregon ash	*Fraxinus latifolia*	FACW	
Black cottonwood	*Populus balsamifera ssp. trichocarpa*	FAC	
Oregon white oak	*Quercus garryana*		Upland
Western red cedar	*Thuja plicata*	FAC	Upland/Wetland
Shrubs:			
English hawthorn	*Crataegus monogyna*	FAC	Upland/Wetland
Red-twig dogwood	*Cornus albus (C. stolonifera)*	FACW	Upland/Wetland West of Road
Beaked hazelnut	*Corylus cornuta*	FACU	Upland
Scotch broom	*Cytisus scoparius*	NI	
English holly	*Hedera helix*	NI	
Cascara	*Frangula purshiana*	FAC	Upland-west of Lower River road
Crabapple	*Malus fucus*	FACW	
Gooseberry	*Ribes divaricatum, R. lacustre*	FAC	Upland
Rosa sp.,Nootka rose wild clustered rose	*Rosa nutkana, Rosa pisocarpos*	FAC	Upland/Wetland
Himalayan blackberry	*Rubus armeniacus*	FACU	Upland
Thimbleberry	*Rubus parviflours*	FACU	
Western salmonberry	*Rubus spectabilis*	FAC	Upland/Wetland
Pacific willow	*Salix lucida var. lasiandra*	FACW	Wetland
Sessile-leaf willow	*Salix sessifolia*	FACW	
Red elderberry	Sambucus racemosa	FACU	Upland
Hardhack	*Spiraea douglasii*	FACW	Wetland
Western snowberry	Symphorcarpos albus	FACU	Upland
Herbaceous/Aquatic:			
Bentgrass	*Agrostsis sp.*	FAC	Upland/Wetland
Colonial bentgrass	*Agrostis capillaris*	FAC	Upland/Wetland
European water plantain	Alisma plantago-aquatica	OBL	PEM Wetland G
Meadow foxtail	*Alopecurus pratensis*	FAC	Upland/Wetland
Sweet vernal grass	*Anthoxanthum odoratum*	FACU	Upland/Wetland

Table 4-5 Round Lake Conservation Bank Study Area – Plant List

Common Name	Scientific Name	Wetland Indicator Status	Location
Aster	*Aster sp.*		Upland/Wetland
Brome sp.	*Bromus sp.*		Upland
Shepherd's purse	*Capsella bursa-pastoris*	FACU	Upland/Wetland
Little western bittercress	*Cardamine oligosperma*	FAC	Upland/Wetland
Dewey sedge	Carex deweyana	FACU	Upland
Thick-headed sedge	Carex pachystachya	FAC	Upland
Slough sedge	*Carex obnupta*	OBL	Wetland
Common mouse-ear chickweed	*Cerastium fontanum*	FACU	Upland
Lamb's quarter	*Chenopodium album*	UPL	Upland
Bull thistle	*Cirsium vulgare*	FACU	Upland/Wetland
Canada thistle (not bull)	Cirsium arvense	FAC	
Miner's lettuce	*Claytonia perfoliata*	FAC	
Orchard grass	*Dactylis glomerata*	UPL	Upland Pasture
Queen Anne's lace	*Daucus carota*	FACU	Upland
Fuller's teasel	*Dipsarcus fullorium*	FAC	Upland
Whitlow grass	*Draba* sp.	FAC	Upland meadow, ag field
Waston willowherb	*Epilobium cillatum, E. watsonii*	FACW	Upland/Wetland
Common stork's bill, Filaree	*Erodium cicutarium*	UPL	Upland
Field horsetail	*Equisetum arvense*	FAC	Upland/Wetland
Scouring rush	*Equisetum hyemale*	FACW	Wetland Columbia River
Tall fescue	*Festuca arundinacea*	FAC	Upland/wetland
Red fescue	*Festuca rubra*	FAC	
Cleaver/bedstraw	*Galium sp.*		Upland
Common velvet grass	*Holcus lanatus*	FAC	Upland /Wetland
Hare barley	*Hordeum murinum ssp. leporinum*	FAC	Upland/ Agricultural crop
Hairy cat's ear	*Hypochaeris radicata*	FACU	Andersen SP 107
Yellow flag iris	*Iris pseudoacorus*	OBL	West of road
Baltic rush	*Juncus balticus*	FACW	PEM – P.O. Lake
Soft rush	*Juncus effusus*	FACW	PEM – P.O. Lake

Table 4-5 Round Lake Conservation Bank Study Area – Plant List

Common Name	Scientific Name	Wetland Indicator Status	Location
Slender rush	*Juncus tenius*	FACW	PEM-Dan Andersen Farm
Hairy cat's ear	*Hypochaeris radicata*	FACU	Upland
Jewelweed	*Impatiens capensis*	FACW	Wetland – West of Road
Western lettuce	*Lactuca sp*		Wetland/Upland
Purple dead-nettle	*Lamiun purpureum*	UPL	Upland
Oxeye daisy	*Leucanthemum vulgare*	FACU	
Small duckweed	*Lemma minor*	OBL	Wetland
Bird's foot trefoil	*Lotus corniculatus*	FAC	Upland/Wetland
Lupin			Upland
Creeping jenny, moneywort	*Lysimachia nummularia*	FACW	Upland
Black medick	*Medicago lupulina*	FAC	Upland/Wetland
American wild(Field) mint	*Mentha arvensis*	FACW	
Spearmint	*Mentha spicata*	FACW	
Howell's candy-flower	Montia howellii	FAC	
Scorpion yellow-grass	*Myosotis discolor*	FAC	Upland
Bay forget-me-not	*Myosotis laxa*	OBL	
Parrotfeather	*Myrlopaytum brasiliense*	OBL	Wetland
Reed canary grass	Phalaris arundinecea	FACW	Upland/Wetland
Beardtongue (Pincushion)	*Penstemon sp. (P. procerus)*	FAC	PEM Wetland W
Lance-leaved plantain	*Plantago lanceolata*	FACU	Upland/Wetland
English plantain	*Plantago major*	FAC	
Kentucky bluegrass	*Poa pratensis*	FAC	
Water ladysthumb	*Polygonum amphibium var. stipulaceum*	FACW	Wetland
Licorice fern	*Polypodium glycyrrhiza*	FACU	Upland
Western sword fern	*Polylstichum munitum*	FACU	
Common selfheal	*Prunella vulgaris*	FACU	Upland/Wetland
Western Dock	*Rumex occidentailis*	FACW	
Sheep sorrell	*Rumex acetosella*	FACU	Upland
Trailing blackberry	*Rubus urinsus*	FACU	
Tansy ragwort	*Senecio jacobaea*	FAC	Upland/Wetland
Common chickweed	*Stellaria media*	FACU	
Hedgenettle	*Stachys* sp.	FACW	Upland – ag field

Table 4-5 Round Lake Conservation Bank Study Area – Plant List

Common Name	Scientific Name	Wetland Indicator Status	Location
Common sowthistle	*Sonchus oleraceus*	UPL	Upland/Wetland
Giant(broad-fruited) burreed	*Sparaganium eurycarpum*	OBL	Wetland
Bittersweet nightshade	*Solanum dulcamara*	FAC	Upland/Wetland
Common dandelion	*Taraxacum officinale*	FACU	
Red clover	*Trifolium partense*	FACU	
White clover	*Trifolium repens*	FAC	
Common cattail	*Typha lattifolia*	OBL	Wetland
Clover	*Trifolium* sp.	FAC	Upland/Wetland
Stinging nettle	*Urticia doicia*	FAC	
Common/Great mullein	*Verbascum thapsus*	FACU	Upland
Thyme leaf speedwell	*Veronica serpyllifolia*	FAC	Upland/Wetland
American brooklime	*Veronica Americana*	OBL	Wetland
American vetch	*Vicia Americana*	FAC	Upland/Wetland
Hairy vetch	*Vicia villosa*	NI-UPL	Upland
Barren fescue	*Vulpia bromoides*	FACU	Upland

Table 4-6 Round Lake Conservation Bank Study Area – Wetlands Summary Table

Wetland ID	Size (acres)	Classification		Washington State Wetland Rating Form – Western Washington[3]	
		Hydro-Geomorphic[1]	Cowardin[2]	Wetland Category	Total Points Scored on Rating Forms
Post Office Lake	21.32 aces	Depressional	PEM w/ open water component	II	52
Round Lake	51.92 acres	Depressional	PEM w/open water component	II	57
Columbia River Associated	N/A	Freshwater tidal riverine	Forested	II	60
A	0.306 acre	Depressional (Isolated)	PEM	III	42
B	0.776 acre	Depressional inflow/outflow (ditched)	PEM	III	32
C	<0.1 acre	Depressional (Isolated)	PEM	III	41
E	0.404 acres	Depressional (Isolated)	PEM	III	41
F	3.53 acres	Depressional	PEM	III	38
G	2.78 acres	Depressional	PEM	III	38
M	4.0 acres	Depressional (Isolated)	PEM	III	41
Q	1.4 acres	Depressional (Isolated)	PEM	III	41
W	2.75 acres	Depressional (Isolated)	PEM	III	41

Notes:
N/A – not available; PEM = Palustrine Emergent

[1] Brinson, M.M. 1993. *A hydrogeomorphic classification for wetlands.* Technical Report WRP-DE-4. US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

[2] Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States*. US Fish and Wildlife Service FWS/OBS-79/31, 103pp. 1979.

[3] Hruby, T. 2008. *Washington State Wetland Rating System for Western Washington – Revised* (Version 2, Updated October 2008). Washington State Department of Ecology Publication #04-06-025, Seattle, Washington.

5.0 Summary

AECOM identified and delineated 12 jurisdictional wetlands within the study area: Post Office Lake, Round Lake, nine PEM depressional wetlands (A, B, C, E, F, G, M, Q, and W) and a Forested Riverine wetland associated with the Columbia River. A summary of the wetland findings is provided in Table 5-1.

Table 5-1 Summary of Wetlands in the Round Lake Conservation Bank Study Area

Wetland ID	Size (acres)	Classification		Washington State Wetland Rating Form – Western Washington[3]	
		Hydro-Geomorphic[1]	Cowardin[2]	Wetland Category	Total Points Scored on Rating Forms
Post Office Lake	21.32	Depressional	PEM w/ open water component	II	52
Round Lake	51.92	Depressional	PEM with open water component	II	57
Columbia River Associated	N/A	Freshwater Tidal Riverine	Forested	II	60
A	0.306	Depressional (Isolated)	PEM	III	42
B	0.776	Depressional Inflow/Outflow (ditched)	PEM	III	32
C	<0.1	Depressional (Isolated)	PEM	III	41
E	0.404	Depressional (Isolated)	PEM	III	41
F	3.53	Depressional	PEM	III	38
G	2.78	Depressional	PEM	III	38
M	4.0	Depressional (Isolated)	PEM	III	41
Q	1.4	Depressional (Isolated)	PEM	III	41
W	2.75	Depressional (Isolated)	PEM	III	41

Notes:
N/A = not available; PEM = Palustrine Emergent

1 Brinson, M.M. 1993. *A hydrogeomorphic classification for wetlands*. Technical Report WRP-DE-4. US Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

2 Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States*. US Fish and Wildlife Serve FWS/OBS-79/31, 103pp. 1979.

3 Hruby, T. 2004. *Washington State Wetland Rating System for Western Washington – Revised* (Version 2, Updated October 2008). Washington State Department of Ecology Publication #04-06-025, Seattle, Washington.

6.0 References

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Appendix A

Wetland Delineation and Rating Methods

A.1 Wetland Delineation

The Regional Supplement to the Corps of Engineers *Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (U.S. Army Corps of Engineers [USACE] 2010) is the primary reference manual for conducting wetland delineations in the region. This manual is a supplement to the 1987 Corps of Engineers Delineation Manual (USACE 1987).

Wetlands, as defined by the U.S. Army Corps of Engineers, are:

> *Those areas that are inundated or saturated by surface or ground water (hydrology) at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation (hydrophytes) typically adapted for life in saturated soil conditions (hydric soils). Wetlands generally include swamps, marshes, bogs, and similar areas* (40 Code of Federal Regulations [CFR] 232).

An area must exhibit evidence of at least one positive wetland indicator from each of the following parameters to be defined as a wetland:

1. Vegetation – the land supports predominantly hydrophytic vegetation (macrophytes that are able to grow in water or on a substrate that is at least periodically deficient in oxygen).
2. Soils – the substrate is predominantly undrained hydric soil, or soils possess characteristics associated with reducing soil conditions.
3. Hydrology – The area is inundated either permanently or periodically at a mean water depth of less than 6.9 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation.

The growing season is defined as the portion of the year when the soil temperature 19.7 inches below the soil surface is greater than biological zero (41 °F). This period is usually approximated by the number of frost-free days for an area.

An area is not considered a regulatory wetland if any one of these three parameters is not observed under normal environmental conditions. Upland/wetland boundaries are determined by locating the transition where soils, vegetation, or hydrology no longer indicate that the wetland parameters are met.

Characteristics of Hydrophytic Vegetation

Hydrophytic vegetation is defined as macrophytic plant life growing in water or soil or on substrate that is at least periodically deficient in oxygen as a result of excessive water content (U.S. Army Corps of Engineers 1987). A list of plants able to tolerate saturated soil conditions was originally prepared by the U.S. Fish and Wildlife Service (USFWS; Reed 1988), with updated regional lists available from the USACE (2012). Vascular plants are classified according to their affinity for wetland areas, and thus their probability of being found in a wetland. There are five wetland indicator status ratings, as defined below:

- *Facultative (FAC):* Plants are equally likely to occur in wetlands and non-wetlands (estimated probability 34 to 66%).
- *Facultative Upland (FACU):* Plants usually occur in non-wetlands (estimated probability 67 to 99%), but are occasionally found in wetlands (estimated probability 1 to 33%).

- *Facultative Wetland (FACW):* Plants usually occur in wetlands (estimated probability 67 to 99%), but are occasionally found in non-wetlands.
- *Obligate Wetland (OBL):* Under natural conditions, plants occur almost exclusively in wetlands (estimated probability greater than 99%).
- *Obligate Upland (UPL):* Plants may occur in wetlands in another region, but under natural conditions almost always occur in non-wetlands in the region specified (estimated probability greater than 99%).

Wetland indicator categories should not be equated to degrees of wetness. Many obligate wetland species occur in permanently or semipermanently flooded wetlands, but some also occur in, or are restricted to, wetlands that are only temporarily or seasonally flooded. The actual frequency of occurrence of a species in wetlands may be anywhere within the frequency range of the indicator category. For example, a species assigned to the facultative upland category may actually have a frequency toward the upper end of the category (Reed 1988).

The presence of hydrophytic vegetation is determined using the wetland indicator status of species encountered. Hydrophytic plants are those rated as FAC or wetter. Wetland boundaries are identified based on the presence of a wetland plant community, rather than any one particular indicator species. For example, a plant community with scattered individual upland species, but dominated by hydrophytic species, is considered to be a wetland community. Within each wetland, specific communities are determined on the basis of their dominant plant species, soils, and hydrology.

Characteristics of Hydric Soil

Hydric soils are flooded, ponded, or saturated long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (Soil Conservation Service 1991). Anaerobic conditions are created when flooding, ponding, or saturation is of sufficient duration to eliminate oxygen from the environment. A prolonged anaerobic environment typically lowers the soil redox potential and causes a chemical reduction of soil components, such as iron and manganese oxides. This reduction affects solubility, movement, and aggregations of these oxides, and is often visible in the soil coloration. Soil physical features such as color are commonly used to indicate long-term soil moisture regimes.

The National Technical Committee of Hydric Soils developed criteria for hydric soils based on certain morphological features that can be observed in the field. (National Resource Conservation Service [NRCS] 2010). In order to document the presence or absence of hydric indicators within the soil profile, sample plots are hand dug using a shovel to an approximate depth of 18 inches. The Munsell color system is used to document observed soil hues and matrix chromas displayed within the plot.

Displayed matrix chromas equal to 2 or less in mineral soils are considered “low” chromas and are often diagnostic of hydric soils. Low chroma colors include black, various shades of gray and darker shades of brown and red. An example of a soil color that would be classified as hydric is 5 YR 5/1 (the number after the slash indicates the soil’s chroma).

Mineral soils that are alternately saturated and oxidized (aerated) during the year typically display redox concentrations resembling mottles or blotches of contrasting colors or shades interspersed within the dominant (matrix) color. The abundance, size, and color of the mottles usually reflect the duration of the saturation period. Mineral soils with matrix chromas equal to 2 must also display prominent or distinct contracting mottles in order to meet the criteria as a hydric soil.

Subsurface horizons in hydric soils are predominantly neutral gray in color and occasionally greenish or bluish. The distinctive colors result from a process known as gleization, in which prolonged saturation of mineral soil converts iron from its oxidized (ferric) form to its reduced (ferrous) state. The reduced compounds may be completely removed from the soil, resulting in low chromas. Mineral soils that are always saturated are uniformly gleyed throughout the saturated zone. Soils gleyed to the upper surface layer (within 12 inches of the surface) are hydric soils.

Soils that are predominantly brown or yellow with few gray redox features may be saturated for shorter periods and generally are not hydric. Non-hydric mineral soils that are never saturated are usually brightly colored, with non-mottled matrix chromas equal to 2 or higher. Two examples of soil colors that would not be classified as hydric are 5 YR 5/4 and 10 YR 7/3.

Characteristics of Wetland Hydrology

Permanent or periodic inundation (in which soil is at least seasonally saturated within the rooting zone) is the hydrologic force behind wetland formation. The presence of water for 5% or more of the growing season typically creates an anaerobic condition in the soil, which affects the types of plants that grow and the types of soils that develop (USACE 1987). Based on data from NRCS, approximately 13 days of saturation are needed to constitute 5% of the growing season (NRCS 1995). Numerous factors influence the wetness of an area: precipitation, soil stratigraphy (i.e., layering), topography and micro relief, and soil permeability. The water found in wetlands may come from direct precipitation, overbank flooding, surface water runoff, groundwater discharge, or tidal flooding. The frequency and duration of inundation and soil saturation vary widely, and may be permanent or intermittent. The duration of inundation or saturation is usually the most important factor affecting soils and vegetation. Soil permeability, which is affected by soil texture and density, influences the duration of inundation and soil saturation. For example, soils with high clay content generally have lower permeability, absorb water more slowly, and remain saturated for a longer period of time than sandy or loamy soils.

Of the three technical criteria for wetland identification, wetland hydrology is often the least exact and most difficult to characterize, primarily because of annual, seasonal, and daily fluctuations in water level. An area has wetland hydrology when saturated within the rooting zone (usually within 12 inches of the surface) for at least 5% of the growing season.

The water table can be defined as the upper surface of groundwater, or the level below which the soil is saturated with water (USACE 1987). A water table is at least 6 inches thick and persists in the soil for more than a few weeks.

Other field indicators used as evidence of wetland hydrology include ordinary high water marks, drift lines, drainage patterns, watermarks, sediment deposition, vegetation morphology (e.g., adventitious roots), and presence of algae or moss.

In areas where hydrology evidence is weak or lacking, the FAC neutral test may be employed to corroborate the presence of sufficient hydrology as a secondary indicator. The test is applied by comparing the number of dominant plant species that have indicator statuses of FACW and OBL with the number of dominants listed as FACU and UPL, thus ignoring the FAC dominants). If the number of dominants that are FACW or wetter is greater than the number of dominants that are FACU or drier, the FAC neutral test is positive, inferring that the plant community is reflecting the presence of wetland hydrology. If there is a tie, the number of FAC+ dominants is compared to the number of FAC- dominants to apply to determine the results of the test. If a tie ensues, non-dominant species are examined to determine how strongly hydrophytic the vegetation is represented.

When primary indicators of wetland hydrology (visual observation of inundation/saturated soils within 12 inches of the surface) are not present, at least two secondary indicators must be positive in order to infer positive wetland hydrology.

A.2 Cowardin Classification

Wetlands delineated in the study area are classified using the USFWS wetland hierarchical classification system (Cowardin et al. 1979). This system classifies wetlands into systems based according to hydrologic, geomorphologic, chemical, and biological factors. Classes of wetlands are usually identified by the physical form of the dominant plant community type, or the substrate of the wetland.

Palustrine systems are shallow ponds and wet areas, including all non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens. This system includes wetlands lacking such vegetation, but with all of the following four characteristics: 1) total area is less than 20 acres (8 hectares); 2) active wave-formed or bedrock shoreline features are lacking; 3) water depth in the deepest part of the basin is less than 6.6 feet (2 meters) at low water; and 4) salinity, due to ocean-derived salts, is less than 0.5 parts per thousand.

Descriptions of other wetland systems may be found in Cowardin et al. (1979).

The classification system further identifies wetlands by dividing them into different classes based on the general appearance of the life form in the plant community (e.g., trees, shrubs, aquatic vegetation), and subclasses based on finer differences in life form.

Palustrine classes pertinent to the study area include Forested, Scrub-Shrub, Emergent, and Unconsolidated Bottom. These classes are defined as follows (definitions from Cowardin et al. 1979):

- *Emergent* – Characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants (abbreviated as PEM).
- *Forested* – Characterized by woody vegetation that is 19.7 feet or taller (abbreviated as PFO in this report).
- *Scrub-Shrub* – Dominated by woody vegetation less than 19.7 feet. The species include shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions (abbreviated as PSS).
- *Unconsolidated Bottom* – Includes all wetland and deepwater habitats with at least 25% cover of particles smaller than stones, and vegetative cover of less than 30%. Water regimes are restricted to subtidal, permanently flooded, intermittently exposed, and semipermanently flooded (abbreviated as PUB).

A.3 Hydrogeomorphic (HGM) Classification

The hydrologic and geomorphic conditions of a wetland contribute towards its functionality (Hruby 2004). The hydrogeomorphic (HGM) classification system, described by Brinson in 1993, groups wetlands into categories based on the hydrologic and geomorphic characteristics. The following six HGM classes are distinguished for the purposes of rating wetlands using the Washington State Wetland Rating System for Western Washington (Hruby 2004):

- *Tidal Fringe* – Wetlands found along the coasts and in river mouths to the extent of tidal influence. The dominant source of water is from the ocean or river. The unifying characteristic of this class is the hydrodynamics; all tidal fringe wetlands have water flows dominated by tidal influences, and water depths controlled by tidal cycles in the adjacent ocean.
- *Flats* – Wetlands that occur in topographically flat areas that are hydrologically isolated from surrounding groundwater or surface water. The main source of water is precipitation directly on the wetland itself. Flats wetlands receive virtually no groundwater discharge or surface runoff from the surrounding landscape, a characteristic that distinguishes flats wetlands from depressional and slope wetlands.
- *Lake-Fringe* – Wetlands that are separated from other wetlands based on the area and depth of open water adjacent to them. If the area of open water next to a vegetated wetland is larger than 20 acres (8 hectares), and more than 6.6 feet (2 meters) deep over 30% of the open water areas, the HGM class of the wetland is lake-fringe.
- *Slope* – Wetlands that occur on hill or valley slopes where groundwater daylights and begins running along the surface or immediately below the soil surface. Water in these wetlands flows in only one direction (down the slope), and the gradient is steep enough that the water is not impounded. The “downhill” side of the wetland is always the point of lowest elevation in the wetland.
- *Riverine* – Wetlands that occur in valleys associated with stream or river channels. They lie in the active floodplain of a river, and have important hydrologic links to the water dynamics of the river or stream. The distinguishing characteristic of riverine wetlands in Washington is that they are frequently flooded by overbank flow from the stream or river, and the floodwater is a major environmental factor that structures the ecosystem in riverine wetlands. Riverine wetlands may also receive significant amounts of water from other sources such as groundwater and slope discharges. Wetlands that lie in the floodplain but are not frequently flooded are not classified as riverine.
- *Depressional* – Wetlands that occur in depressions where elevations within the wetland are lower than the surrounding landscape. The shapes of depressional wetlands vary, but in all cases the movement of surface water and shallow subsurface water is toward the lowest point in the depression. The depression may have an outlet, but the lowest point in the wetland is somewhere within the boundary, rather than at the outlet.

In some cases, multiple HGM classes occur within one wetland boundary.

A.4 Washington State Wetland Rating System

The Washington State Wetland Rating System for Western Washington (Hruby 2004) scores wetlands on the basis of their sensitivity to disturbance, the functions they provide, and whether they can be replaced. Based on a series of questions about attributes of the wetland, including its HGM

classification and the surrounding areas, scores pertaining to water quality functions, hydrologic functions, and habitat functions are generated. In some cases, wetlands may be categorized on the basis of special characteristics.

There are four categories of wetlands, which are briefly described below:

- *Category I* – Wetlands of exceptional value in terms of protecting water quality, storing flood and storm water, and/or providing habitat for wildlife, as indicated by a rating system score of 70 points or more. They are wetland communities of infrequent occurrence that often provide documented habitat for sensitive, threatened, or endangered species, and/or have other attributes that are very difficult or impossible to replace if altered.
- *Category II* – Wetlands that have significant value based on their function, as indicated by a rating system score of 51 to 69 points. They do not meet the criteria for Category I rating, but occur infrequently and have qualities that are difficult to replace if altered.
- *Category III* – Wetlands that have important resource value, as indicated by a rating system score of between 30 and 50 points. These wetlands are generally 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 of limited resource value, as indicated by a rating system score of less than 30 points. They typically have vegetation of similar age and class, lack special habitat features, and/or are isolated or disconnected from other aquatic systems or high quality upland habitats.

Appendix B through Appendix E

Available upon request