REVISED WETLAND AND ORDINARY HIGH WATER DELINEATION
SMITH ISLAND SITE
EVERETT, WASHINGTON

MARCH 11, 2008

FOR
CEDAR GROVE COMPOSTING

GEOENGINEERS

March 11, 2008

Cedar Grove Composting
9010 East Marginal Way South, Suite 200
Seattle, Washington 98108

Attention: Jerry Bartlett

We are pleased to submit our revised report entitled "Revised Wetland and Ordinary High Water Delineation, Smith Island Site, Everett, Washington". This report details the wetland and ditch delineations and groundwater monitoring completed at Cedar Grove's Smith Island site. It revises our August 31, 2007 report and addresses agency comments on that report.

We appreciate the opportunity to be of service to Cedar Grove on this project and look forward to working with you again in the future. Please contact us if you have questions or require clarification regarding the information presented in this report.

Respectfully submitted,

GeoEngineers, Inc.

Wayne S. Wright, PWS
Principal

JA2:WSW:bmw
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cc: Mark Wolken

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Wetland and Ordinary High Water Delineation
Smith Island Site
File No. 10625-001-18
March 11, 2008

Prepared for:

Cedar Grove Composting
9010 East Marginal Way South, Suite 200
Seattle, Washington 98108

Attention: Jerry Bartlett

Prepared by:

GeoEngineers, Inc.
Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, Washington 98101
(206) 728-2674

GeoEngineers, Inc.

Shawn M. Mahugh
Wetland Scientist

Jonathan M. Ambrose
Senior Hydrologist

Wayne S. Wright, PWS
Principal

JA2:WSW:bmw
SEAT:\10\10625001\18\Finals\1062500118R.doc

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WETLAND AND ORDINARY HIGH WATER DELINEATION
SMITH ISLAND SITE, EVERETT, WASHINGTON
FOR
CEDAR GROVE COMPOSTING

1.0 INTRODUCTION

GeoEngineers, Inc. (GeoEngineers) is pleased to provide this wetland and ordinary high water delineation report for the Cedar Grove Composting site on Smith Island in Everett, Washington. This report presents the results of wetland and ordinary high water (OHW) delineation efforts conducted within the site between 2005 and 2008. The site consists of approximately 61 acres of agricultural lands located within tax parcels 29050500101300, 29050500100400, 29050500100600, 29050500400500 and 29050500400200. The local jurisdiction for this project is the City of Everett (the City). This report serves to document the findings of the wetland and OHW delineation and has been prepared in accordance with the City's Shoreline Master Program (SMP) and Washington Department of Ecology (Ecology) *Washington State Wetlands Identification and Delineation Manual* (1997), which is consistent with the United States Army Corps of Engineers corps *Wetlands Delineation Manual* (Environmental Laboratory 1987, Corps 1992).

1.1 PROJECT LOCATION

The study area for this project lies on Smith Island, located at the confluence of Steamboat and Union Sloughs in the Snohomish River Delta (Figure 1). It occurs entirely within the City of Everett. The site is west of State Route 529 and the Burlington Northern Santa Fe (BNSF) railroad right-of-way within Section 5, Township 29N, and Range 5E of the Willamette Meridian.

1.2 SCOPE

The scope of this investigation included the following items:

- Identify wetlands and delineate wetland boundaries within the subject property using standard routine delineation methods with reference to historic site alteration and disturbance.
- Monitor shallow groundwater elevations from October 2006 through June 2007 to better define wetland hydrology on the site and adjust the results of the routine wetland delineation as appropriate, if groundwater monitoring data demonstrates that any delineated areas do not meet the wetland hydrology criteria.
- Complete Ecology rating forms for the wetlands.
- Identify ditches and delineate ordinary high water (OHW) of ditches at the site.

1.3 GENERAL SITE DESCRIPTION

The 61-acre site is located within five tax parcels located on Smith Island in the Snohomish River estuary, south of Union Slough. The site is bordered to the north by a dike along Union Slough, to the west by the Cedar Grove Composting Facility and to the east by the Burlington Northern Santa Fe (BNSF) right-of-way. The southeastern portion of the study area consists of a graded fill pad that was previously permitted site by the City of Everett for a concrete batch plant. A delineation report previously prepared for this area identified the presence of two wetlands within the property boundaries (GeoEngineers, 2005; see Appendix E). These wetlands at the concrete bath plant site are included in this report as Wetlands SE1 and SE2 for the purpose of bundling the mitigation plan to address all wetland impacts on the property.

Since the 1960s, the majority of the site has been used for agricultural purposes, primarily for haying and cattle grazing activities (see Appendix A for historical aerial photos taken between 1965 and 2001). Current site utilization is primarily for agricultural purposes. The topography of the site is generally level with elevations ranging from approximately less than 1 foot to 9 feet (NAVD 88 vertical datum). Ditches occur along the margins of the agricultural fields.

The site generally drains north to Union Slough with the southernmost areas draining south to a blind slough. A series of ditches conveys drainage water to a primary, longitudinal drainage ditch in the northeastern eastern portion of the site. Water collected in this ditch drains to Union Slough via a tide gate located at the northeast corner of the site. The southern border of the study area is defined by the northern bank of that blind slough. The slough currently drains to Union Slough through a one-way tide gate during low tide. The tide gate prevents any upstream flow of tidal waters to Smith Island through the southern slough.

2.0 METHODS

2.1 PAPER INVENTORY

To prepare for the field delineation effort, a search for pertinent and applicable literature and digital data was conducted. The Washington State Department of Ecology (1989) recommends a thorough review of existing information regarding a particular site prior to conducting the fieldwork. Data sources that were reviewed for this wetland delineation included digital 1973 USGS Marysville quadrangle topographic map, 1987 National Wetlands Inventory (NWI) Marysville quadrangle 1:24,000 map, 1999 NWI digital data from U.S Fish and Wildlife Service (USFWS), the *Soil Survey of Snohomish County Area, Washington* (Soil Conservation Service 1983), 1999 digital data from Natural Resource Conservation Service (NRCS) and review of the City of Everett Shoreline Master Program (SMP).

During initial site reconnaissance it was determined the site had a high degree of disturbance from past land use activities associated with agricultural production. Background information on the history of the site was collected from literature and official sources at the Army Corps of Engineers, the City of Everett, Snohomish County and the Port of Everett. Support documents include the *Snohomish Estuary Wetland Integration Plan* (SEWIP) (City of Everett 1997) and the *Salmon Overlay to the Snohomish Estuary Wetland Integration Plan* (City of Everett and Pentec Environmental 2001), among others. Additionally, GeoEngineers sought to obtain specific information about the creation of the dike, any fill related activity, and the use of the site for dredge spoil disposal from individuals familiar with the history of the site.

2.2 AERIAL PHOTOGRAPH ANALYSIS

Historic conditions of the site were evaluated using a series of aerial photographs dating back to 1965. Photographs dated 1965, 1969, 1978, 1983, 1987, 1991 1996 and 2001 were obtained from the Washington Department of Natural Resources (DNR) and are shown in Appendix A. These photographs were scanned and specific site features were then digitized from each photograph for further analysis in Arc GIS software. The aerial photographs were reviewed to identify changes to the topography and vegetative composition of the site. This additional investigation method is valuable because it illustrates the significant and ongoing level of site disturbance.

2.3 FIELD INVESTIGATION

2.3.1 Wetland Delineation

The routine wetland delineation method for this project followed the procedures outlined in the *Washington State Wetlands Identification and Delineation Manual* (1997) which is consistent with the

1987 *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987, Corps 1992). The delineation method used and the results given in this report are valid for both manuals. Vegetation, soil and hydrology information was gathered at sample plots located in the wetland and surrounding upland areas. The wetland boundaries were staked and flagged. The locations of staked wetland boundaries and flagged sample plots were subsequently recorded by a GeoEngineers scientist using a Trimble® Global Positioning System (GPS) unit with an accuracy of within one meter. GPS locations of the staked wetland boundary were then overlaid to an aerial photograph of the site using Geographic Information Systems (GIS) software.

The dike along the northern and western boundaries of Smith Island was constructed circa 1870 (personal communication with Mark Wolken, project consultant, 2008). The island was used primarily for agricultural purposes after dike construction. Hydrologic conditions on the site are influenced by the dike, farming practices, ditches and tide gates.

Farming has been active on the site and has included grazing and cropping as recently as 2005. Based on guidance provided by Ecology (1997), wetlands that have been disturbed through natural and/or anthropogenic alteration of vegetation, soils, and/or hydrology do not necessarily exist under "normal circumstances." If one or more parameters have been significantly altered by an activity that would normally require a permit, an "atypical" situation may exist. In such cases, additional procedures are used to determine whether positive indicators of hydrophytic vegetation, hydric soils and/or wetland hydrology existed prior to alteration of the area. Authorized and permitted agricultural production is considered to be normal for the site. As a result, a "routine" delineation was conducted and supplemented with a retrospective photograph analysis of historic conditions and installation of groundwater monitoring wells.

The routine field delineations for wetlands within the study area were performed by a team of GeoEngineers scientists between May 2005 and April 2007. The northwest and southeast portions of the study area (NW1, NW2, NW3, SE1 and SE2) were delineated between May 12 and May 25, 2005. The southwestern wetlands (Wetlands SW1, SW2, SW3 and SW4) were delineated on April 23, 2007 and the northeast wetland (NE1) was delineated on April 24, 2007.

Field delineation work included a thorough investigation to identify areas within the project boundary having characteristics consistent with jurisdictional wetland parameters and to determine the wetland boundary limits. Scientists established representative, non-random, 5-foot-radius sample plots located in both wetland and upland habitats to document conditions within the study area. Sample plots were established and documented during the wetland delineation efforts for all wetlands except the northwest wetlands, which were documented on July 25 and August 9, 2006.

Plant species were identified and percent coverage per species was estimated for understory and herbaceous strata within each sample plot. The *National List of Plant Species that Occur in Wetlands: Northwest (Region 9)* (Reed 1988) and *Supplement to the National List of Plant Species that Occur in Wetlands: Northwest (Region 9)* (Reed et al. 1993) were referenced to classify identified plants using the categories outlined in Table 1. Prevalence of hydrophytic vegetation was determined by calculating the percent of dominant plant species within a sample plot that were OBL, FACW or FAC. All wetland vegetation communities present within the project site were classified according to the USFWS wetland classification system (Cowardin et al. 1979). Each sample location was staked and labeled. Sample plot data collected in the field was transcribed onto data forms (Appendix B).

Table 1. U.S. Fish & Wildlife Service Plant Indicator Status

Indicator Status	Definition
Obligate Wetland (OBL)	Occur almost always (estimated probability greater than 99 percent) under natural conditions in wetlands.
Facultative Wetland (FACW)	Usually occur in wetlands (estimated probability 67 percent to 99 percent), but occasionally found in non-wetlands.
Facultative (FAC)	Equally likely to occur in wetlands or non-wetlands (estimated probability 34 percent to 66 percent).
Facultative Upland (FACU)	Usually occur in non-wetlands, but occasionally found in wetlands (1 percent to 33 percent).
Obligate Upland (UPL)	Plants that rarely occur (estimated probability less than 1 percent) in wetlands, but occur almost always in non-wetlands under natural conditions.
No Indicator Status (NI)	Insufficient information exists to assign an indicator status.
Not Listed (NL)	Not on the National List in any region.

In addition to vegetation data, information on soils and hydrology was collected at the established sample plots. Soils were inspected at each sample plot and numerous points along the delineated wetland boundaries in hand-dug soil pits 15 to 20 inches deep. At each formal sample plot, soil texture, soil matrix color and presence or absence of redoxomorphic features (redox) or gleying were recorded. Soil matrix and redox colors were determined using a *Munsell Soil Color Chart* (Kollmorgen Corporation 1998). Wetland hydrology indicators, including drainage patterns, presence of surface water, depth of soil saturation, depth of groundwater within hand-dug pits and evidence of inundation (e.g., drift lines, water marks and oxidized root zones) were also noted at each sample plot. Soil and hydrology information collected during the field efforts is also presented on the standard wetland delineation data sheets in Appendix B.

Wetlands were evaluated and classified based on existing site conditions to identify the appropriate wetlands category. Because the City of Everett is the local lead agency for this project, the Everett Shoreline Overlay District (Everett Municipal Code (EMC) Chapter 33D) provided the categorization methodology utilized in this report. However, Ecology's Wetland Rating Form for Western Washington (Hruby 2006) was also completed for each of the wetlands to provide supplemental information regarding the values of these wetlands and to compare the two rating methods for general consistency. These forms are included in Appendix D. The wetlands were also categorized according to the U.S. Fish and Wildlife Service (USFWS) *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).

2.3.2 Ditch OHW Delineation

The site contains several drainage ditches and swales and lies adjacent to two sloughs. Field delineation of the ditches was conducted in January 2008, and delineation methods followed the Corps Regulatory Guidance Letter entitled *Ordinary High Water Mark Identification* (December 7, 2005). Corps regulations define the term "ordinary high water mark" as "the line on the shore established by the fluctuations of water and indicated by the physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR 328.3(e)).

Due to the man-made nature of the ditches at the site, the ordinary high water (OHW) mark delineation efforts relied on the shift between terrestrial and aquatic vegetation as well as shelving and drift lines.

Two primary types of ditches were found at the site and are referred to in this report as water conveyance ditches and drainage swales. Water conveyance ditches are roughly 10 feet in width and 4 feet deep with water present throughout most of the year. Although water depths in the water conveyance features vary throughout the year from dry to about 4 feet in depth, drainage sloughs are typically observed to be much shallower, less frequently inundated and typically fully vegetated. Additionally, surface drainage features identified at the site were classified according to the guidance set forth in the Everett Shoreline Overlay District (EMC Title 19 Chapter 33D.480) and the DNR Interim Water Typing System (WAC 222-16-031).

2.4 GROUNDWATER MONITORING

GeoEngineers installed 15 shallow groundwater monitoring wells on the site (Figure 5) to measure groundwater elevations at the site beginning in October 2006 and ending in June 2007, as recommended by the Corps (1992). Due to historic land use on the site, the routine delineation methodology proved problematic to make final delineation boundaries for wetlands on this site. This portion of Smith Island has been subject to a high degree of disturbance and modification over time such that traditional wetland indicators (soils, vegetation and hydrology) are no longer a reliable means for identifying wetlands and delineating their boundaries. Mapping the presence of wetland hydrology as determined from the monitoring wells was used to either confirm or invalidate areas that were determined to be wetlands using the routine delineation methodology.

Subsurface soil conditions were observed and documented at the time of well installation. Well locations were selected after the routine wetland delineation was performed with the intent of verifying wetland boundaries. Data loggers in each well were used to record the elevation of free water in the well casing relative to the ground surface. The data was downloaded and verified for accuracy in the field weekly. With this data, it is possible to accurately determine the depth of groundwater and duration of soil saturation at each well location.

Both the *Washington State Wetlands Identification and Delineation Manual* (Ecology 1997) and the 1987 *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987, Corps 1992) define wetland hydrology criteria as areas in which soil conditions are seasonally inundated and/or saturated for a consecutive number of days greater than or equal to 5 percent of the growing season. When this level of saturation occurs within 12 inches of the surface, it promotes the establishment of hydrophytic vegetation and the formation of hydric soils. For Smith Island, we determined the growing season using the WETS station weather data, located at Everett Junior College provided by the NRCS (2008). The WETS station data identifies the local growing season as 267 days in duration commencing on February 28 and continuing to November 20. To achieve jurisdictional hydrology, a well location would need to display groundwater within 12 inches of the surface for 5 percent of the growing season, or approximately 13 days.

3.0 RESULTS

3.1 PAPER INVENTORY

The NWI map for this site indicates the presence of wetlands within the project area (Figure 2). NWI maps, produced from interpretation of aerial photographs and topographic maps, are limited to the time frame in which they were produced. The Union Slough channel adjacent to the northern boundary of the site is classified as riverine, tidal, unconsolidated bottom, permanently flooded (R1UBv) deep water habitat. The inter-tidal wetlands associated with the slough are identified as tidal riverine aquatic bed, unconsolidated, regularly exposed bed wetlands (R1AB/USN). Four areas of palustrine, emergent,

temporarily flooded (PEMA) are mapped within the project area, as well as one seasonally inundated, palustrine emergent/scrub-shrub area (PEM/SSC).

Figure 3 is the current soil survey coverage from the NRCS. Soil data excerpted from the *Soil Survey of Snohomish County Area, Washington* (Soil Conservation Service 1983) identified one soil unit within the project area as Puget silty clay loam (Map Unit 55), a mesic Typic Fluvaquent. This soil is listed as hydric. According to the soil survey, this soil is a very deep, artificially drained soil formed in alluvium found on depressional areas in flood plains from sea level to 650 feet elevation. Slopes are generally inclined at gradients ranging from 0 to 2 percent. The top layer is dark grayish brown silty clay loam about 9 inches thick. Beneath the surface layer is an olive gray or gray silty clay loam about 60 inches thick or more. A seasonal water table is at a depth of 24 to 48 inches. Permeability is low and available water capacity is high with 60 inches or more of effective rooting depth.

Other soil units mapped adjacent to the project area are classified as urban land (Map Unit 78) and Xerorthents, level (Map Unit 82). Urban land units are areas that have been developed and covered by streets, buildings, parking lots and other structures that obscure or alter the soils. Xerorthents are found on till plains ranging from 5 to 1,000 feet in elevation. These units consist of nearly level areas where the surface layer, subsoil and substratum have been greatly disturbed, removed or replaced by other soil material. These areas include unpaved parking lots, dikes and levees, mobile home parks, athletic fields and other urban uses. Also included are areas of debris such as wood chips from lumber mills (Soil Conservation Service 1983).

3.2 Aerial Photograph Analysis

Aerial photographs obtained from DNR include the years 1965, 1969, 1978, 1983, 1987, 1991, 1996 and 2001. These photos have been digitally reproduced and are presented in Appendix A. Oblique aerial photos were produced from over-flights in 2006 and are used as background for the report figures. Since 1965 the site has been primarily used for agriculture with the site actively cultivated as recently as spring 2005. Based on historic records, the abandoned railroad grade was constructed in 1895 and was in use until 1901. A structure was located within the center portion of the project area. The longitudinal drainage ditch located in the northeastern portion of the project area was present in 1965 (Appendix A; Figure A-1)

The 1969 photograph (Appendix A; Figure A-2) shows the majority of the study area to be cleared and graded with a developing tree and shrub layer within the abandoned railroad grade. Additional shrubs or trees can be seen in the southern portion of the study area. The study area is dominated by grasses and has a network of ambulating trails, most likely trodden by livestock. The site appears to be drier than other areas of Smith Island that do not show evidence of agricultural use in 1969.

By 1978 (Appendix A; Figure A-3), the east-west access road had been constructed to service a log yard facility at the present Cedar Grove Composting facility site. Shrub and trees species have been removed from the majority of the study area with the exception of a few scattered clumps. However, emergent vegetation structure and diversity appear to be increasing. Subsequent photos from 1983 and 1987 (Appendix A; Figure A-4, Figure A-5) display a vegetation pattern indicative of non-forested, palustrine wetlands. Agricultural use of the site is apparent in the 1978 photograph. Evidence of small clearings are present in the 1978 photo, which persist up to the 1987 photo. These may be livestock wallows.

By 1991, a localized area of filling had recently been completed in the east portion of the project area (Appendix A; Figure A-6). The southern portion of the site showed a greater diversity in vegetation, with shrub vegetation becoming established on a portion of the site.

Up until 2001, there appears to be little change in land use of the site. The 2001 photo (Appendix A; Figure A-8) shows clear distinctions in land use with little change in the western half of the site relative to previous photos. The area immediately west of the longitudinal ditch appears to have been drained and/or cleared due to the prevalent vegetation shift. The area east of the longitudinal ditch has a vegetation pattern associated with wetland conditions with a series of wide linear paths possibly created by farm machinery. The photo also shows the southern portion of the project area with an irregular network of trails for apparent cattle grazing or localized agricultural uses.

3.3 FIELD DELINEATIONS

The site was investigated by a thorough field review of the entire study area during three separate field visits. Wetlands in the northwestern and southeastern portions of the site were delineated between May 12 and May 25, 2005, wetlands in the southwestern portion of the site were delineated on April 23, 2007 and in the northeastern portion of the site on April 24, 2007. Data was collected at numerous locations within the study area to identify the presence of wetland indicators. Figure 4 presents sample plot locations. Surface water ditches and sloughs were delineated on January 29, 2008. Photographs taken during the wetland delineations are included in Appendix C of this report.

3.4 GROUNDWATER MONITORING

Groundwater data was collected at 15 shallow monitoring wells located in transects throughout the project area. Figure 5 presents locations for the monitoring wells overlain atop the original wetland boundaries as determined by the routine delineation method. Data was collected by the data loggers eight times daily beginning on February 15, 2007, approximately two weeks prior to the start of the growing season identified by the NRCS (2008). Analysis of collected groundwater data continued into the summer months of 2007

Appendix F presents depth to groundwater for all wells from February 15 through April 9, 2007. This period was selected for presentation because groundwater depths site-wide tend to be deeper than 12 inches after early May, as the site dries up during the summer months. This time period includes the 13 day time span necessary for determining jurisdictional hydrology at the well sites.

A review of groundwater data indicates that shallow groundwater depth on the Smith island site fluctuates primarily in response to rainfall. Soil conditions in the well borings are topsoil atop a less permeable, silty clay loam layer. Shallow groundwater appears to be perched atop this less permeable silty clay loam layer throughout the site. Inundation depths and wetland presence are largely determined by the heterogeneity of depth to this soil layer throughout the site. Data was compared to tidal data as well to determine whether tidal fluctuations affect shallow groundwater depth. Small, diurnal elevation changes are detected, but on a much smaller scale than the tides. We conclude that rainfall atop a less permeable layer is the primary determinant for shallow groundwater elevation throughout the site, with tidal influence being negligible.

According to the defined growing season for this site (267 days), a well must demonstrate inundation to within 12 inches of the surface for a consecutive number of days equal or exceeding 5 percent (13 days) to meet the wetland hydrology criteria. Of 15 wells, nine meet or exceeded these criteria: wells 1, 2, 5, 10, 11, 12, 13, 14 and 15. Of these wells, 1, 2, 12, 13 and 15 match wetland areas established by the routine methodology.

Wells 5, 10, 11 and 14 met hydrologic criteria, but indicators for soils and/or vegetation were lacking at these locations during the field delineation; as such, it was concluded that these four areas do not satisfy the definition of a jurisdictional wetland.

Wells that did not meet the wetland hydrology criteria include wells 3, 4, 6, 7, 8, 9 and 11. Of these sites, wells 3, 4, 6, 7, 8 and 11 are located in areas determined to be "upland" by the routine methodology. However, well 9 is located within an area determined to be wetland by the field delineation. The data demonstrates that this location does not meet the wetland hydrology criteria. Soils and vegetation at these locations are highly disturbed and thus are no longer clear indicators for wetland presence. Hydrology clearly shows that this location does not meet the criteria set forth by the Washington State Wetland Delineation Manual, and, accordingly, an area around well 9 was removed from areas delineated during the routine method wetland delineation as shown on the final determination of jurisdictional wetland areas figures (Figures 6 and 7).

3.5 Existing Site Conditions

The project area is located on Smith Island west of SR 529 and the BNSF right-of-way. This portion of Smith Island is bisected by the Cedar Grove Composting Facility access road. Smith Island is bound on the north and east by Union Slough and to the south and west by the Snohomish River. Past land use practices on Smith Island include diking and draining areas for cropland and pasture and logging yard operations and storage. The project site is generally level and dominated by grasses.

3.5.1 Site Vegetation Characteristics

The site had been disked prior to the time of the wetland surveys. Grass species are by far the dominant vegetation types on the site. Characteristic species include reed canary grass (*Phalaris arundinacea*), redtop (*Agrostis alba*), colonial bentgrass (*A. capillaries*) and northern mannagrass (*Glyceria borealis*). Other plant species commonly observed on the site included bull thistle (*Cirsium vulgare*) and creeping buttercup (*Ranunculus repens*).

3.5.2 Site Wildlife Observations

Wildlife observed during the delineations consisted mainly of passerine bird species. Osprey (*Pandion haliaetus*) were observed utilizing on-site trees as defensive positions against bald eagle (*Haliaeetus leucocephalus*) nest predation; osprey nests are common on pilings at the mouth of Steamboat Slough and further offshore (WDFW 2007). Several great blue herons (*Ardea herodias*) were also observed flying over the area.

3.5.3 Surface Hydrology

The site contains several man-made agricultural drainage ditches that convey surface water within the site towards the tide gate in the northeastern portion of the site. The tide gate discharges into Union Slough and is designed to prohibit any flow of tidal waters into the site. Ditches are oriented adjacent and parallel to the dikes and the primary access road. The southern border of the site abuts a blind slough that discharges through a tide gate into Steamboat Slough.

3.5.4 Site Buffers

Generally, the subject site has a high degree of disturbance and modification in the wetland buffers and adjacent areas due to ongoing farming practices. The southeastern portion of the site has been filled and graded for use as a concrete batch plant under a fully permitted activity by the City of Everett. The paved access road through the center of the site represents a high degree of disturbance near the subject wetlands. This road experiences a low level of traffic but severs continuity of wetland habitats on either side of the road. There is no habitat continuity to the north because the dike separates the site from the open water, tidal habitat of Steamboat Slough. The BNSF railroad disrupts habitat continuity to the east.

To the west, Cedar Grove Compost operates a facility with expansive impervious surface. This area provides no functional buffer to the on-site wetlands.

3.6 WETLAND CONDITIONS

Combining the field assessment and long-term shallow groundwater monitoring data, 10 wetlands have been identified and delineated within the study area. These wetlands are shown in Figure 7. The wetland boundaries are based on the vegetation and soils of the site and are defined on hydrology measurements over time. Groundwater data from the northwestern portion of the study area shows that seven of 15 monitoring wells do not meet the wetland hydrology criteria. Figure 7 presents the adjusted wetland boundary for NW2 as discussed previously in Section 3.4 – Groundwater Monitoring. The wetlands delineated within the study area are emergent wetlands located within managed agricultural areas.

The following paragraphs describe each of the wetlands, including City of Everett and Ecology ratings. Everett Municipal Code (EMC) Chapter 33D.440 has been used to derive the local ratings for information purposes only. However, the wetlands are formally subject to EMC Chapter 33D.090A(36) and associated Figure 3.9-2, which means that all wetlands in the Cedar Grove site are considered Category 2 wetlands for purposes of establishing buffers.

Wetland NE1 is palustrine emergent wetland located in the northeastern portion of the study area, east of the longitudinal drainage ditch and west of the BNSF right-of-way. The wetland area was identified to be 2.25 acres in size. Soils in Wetland NE1 are dark grayish brown to olive gray (10YR 4/2 - 5Y 5/1) clay loam with dark red (2.5YR 4/6) redox present throughout the investigated soil horizon (see data plot SP1, SP3 and SP6, Appendix B). Due to the grayish color and contrast between soil matrix and redox, it is clear that this area experiences prolonged periods of inundation. At the time the sample pits were dug, soils were saturated approximately 3 inches below the ground surface with no free standing water below the ground surface in the hand-dug pits. Toad rush (*Juncus bufonius*), velvetgrass (*Holcus lanatus*), reed canary grass and redtop are the dominate species of vegetation in Wetland NE1. Wetland NE1 is a depressional wetland that receives hydrologic input from groundwater exchange and precipitation. Backwater from the onsite ditches may contribute to wetland hydrology. Wetland NE1 is over one acre in size however, the wetland does not contain forty to sixty percent open water with two or more wetland classes, does not have a forested wetland class, nor is it a riparian wetland. Therefore, Wetland NE1 has been rated to be a Category III wetland (EMC 33D.440). Furthermore, the Ecology rating form completed for Wetland NE1 confirmed the Category III rating for this feature.

Wetland NW1 is a palustrine emergent wetland located in the northwestern corner of the project site, east of the existing Cedar Grove composting facility. The wetland area was determined to be 3.61 acres in size. Soils in the wetland are a dark brown (10YR 3/2) silty loam with some small redox present throughout the investigated soil horizon (see data plots SP5 and SP8 Appendix B). At the time when the sample pits were dug, primary wetland hydrology indicators were not present at the sample point locations. Reed canary grass dominated the vegetation in NW1. Wetland NW1 is a depressional wetland that receives hydrologic input from groundwater exchange and precipitation. Wetland NW1 is over one acre in size however, the wetland does not contain forty to sixty percent open water with two or more wetland classes, does not have a forested wetland class, nor is it a riparian wetland. Therefore, Wetland NW1 has been rated to be a Category III wetland (EMC 33D.440). Furthermore, the Ecology rating form completed for this wetland confirmed the Category III rating for this wetland.

Wetland NW2 is a palustrine emergent wetland which dominates the center of the northern portion of the study area, west of the longitudinal drainage ditch and east of NW1. The wetland area was determined to be 2.89 acres in size. Soils in the wetland are a light yellowish brown (7.5YR 4/2) clay loam with an

increasing concentration of dark yellowish brown (7.5YR 4/6) redox downward through the investigated soil horizon (see data plot SP4 Appendix B). At the time the sample pits were dug, primary wetland hydrology indicators were not present at the sample point locations. Northern mannagrass dominated the vegetation in NW2. Wetland NW2 is a depressional wetland that receives hydrologic input from groundwater exchange and precipitation. Wetland NW2 is over one acre in size however, the wetland does not contain forty to sixty percent open water with two or more wetland classes, does not have a forested wetland class, nor is it a riparian wetland. Therefore, Wetland NW2 has been rated to be a Category III wetland (EMC 33D.440). The Ecology rating form completed for Wetland NW2 confirmed the Category III designation.

Wetland NW3 is a small palustrine emergent wetland immediately north of the existing parking area in the northern portion of the study area, west of the longitudinal drainage ditch. The wetland area was determined to be 0.08 acres. Soils in the wetland are a light yellowish brown (7.5YR 4/2) clay loam with dark yellowish brown (7.5YR 4/6) redox throughout the investigated soil horizon. Wetland NW3 is a small depressional wetland that receives hydrologic input from groundwater exchange and precipitation. Wetland NW3 is a small isolated wetland that contains one emergent vegetation class, more than eighty percent of which is dominated by species listed in EMC 33D.440(B)(4). This wetland is rated to be a Category IV wetland under both the City of Everett rating system and the Ecology rating system.

Wetland SW1 is a 3.56 acre, palustrine emergent wetland located in the center of the southern half of the site. Soils in the wetland are very dark gray to dark grayish brown (10YR 4/2 – 5Y4/1) silty clay loams with common dark reddish brown (5YR 3/4 – 10YR 4/3) redox present in the upper 12 inches (see data plots SP10, SP15, and SP18, Appendix B). Soils were saturated approximately 6 to 10 inches below the ground surface with free standing water observed at 12 inches below the ground surface in the hand-dug pits. Free-standing water was also observed throughout the central portion of the wetland.

Reed canary grass and smartweed (*Polygonum hydropiperoides*) dominate the vegetation in Wetland SW 1 with creeping buttercup and bird's-foot trefoil (*Lotus corniculatus*) also occurring in the wetland. Wetland SW1 is a depressional wetland that receives hydrologic input from groundwater exchange and precipitation. Wetland SW1 provides low habitat functions due to its low vegetative and structural diversities. Wetland SW1 provides limited stormwater control, water quality improvement and some groundwater support benefits. Wetland SW1 is over one acre in size however, the wetland does not contain forty to sixty percent open water with two or more wetland classes, does not have a forested wetland class, nor is it a riparian wetland. Therefore, Wetland SW1 has been rated to be a Category III wetland (EMC SMP 37.090). Furthermore, the Ecology rating form completed for this wetland confirmed the Category III designation.

Wetland SW2 is a 0.03 acre palustrine emergent wetland located on the eastern perimeter of the project site. Soils in the wetland are dark grayish brown (10YR 4/2) silty clay loams with dark reddish brown (5YR 3/4) redox present in the upper 6 to 14 inches (see data plot SP17, Appendix B). Soils were saturated to the ground surface with free standing water observed at about 5 inches below the ground surface in the hand-dug pits. Free standing water was observed at the surface in the central portion of the wetland. Reed canarygrass was the primary species of vegetation observed in Wetland SW2. Wetland SW2 is a small isolated wetland that contains one emergent vegetation class, more than eighty percent of which is dominated by species listed in EMC 33D.440(B)(4). This wetland is rated to be a Category IV wetland under both the City of Everett and Ecology rating systems.

Wetland SW3 is a 0.23 acre palustrine emergent wetland located in the western portion of the study area. Soils in the wetland are dark grayish brown to greenish gray (2.5Y 4/2 – 10Y 5/1) silty clay loams with common yellowish brown (10YR 5/6) redox present in the upper 6 to 14 inches (see data plot SP6 and

SP8, Appendix B). Soils were saturated approximately 6 to 8 inches below the ground surface with free standing water observed at 10 inches below the ground surface in the hand-dug pits. Free standing water was observed at the surface in the central portion of the wetland. Reed canarygrass dominates the vegetation in Wetland SW3 with soft rush (*Juncus effusus*) and creeping buttercup also occurring in the wetland. Wetland SW3 is rated to be a Category IV wetland (EMC 33D.440). Additionally, the Ecology rating form completed for this wetland confirmed the Category IV rating designation.

Wetland SW4 is a 0.15 acre palustrine emergent wetland located immediately adjacent to the south of the existing access road. Soils in the wetland are very dark gray to very dark grayish brown (2.5Y 3/2 – 5Y 4/1) silty clay loams with several dark reddish brown to dusky red (2.5YR 3/4 – 10R 3/2) redox present in the upper 4 to14 inches (see data plot SP2 and SP4, Appendix B). Soils were saturated approximately 8 inches below the ground surface with free standing water observed at about 12 inches below the ground surface in the hand-dug pits. Reed canarygrass, velvetgrass and bird's-foot trefoil dominate the vegetation in Wetland SW4. Wetland SW4 is rated to be a Category III wetland due to its connection to irrigation ditches that connect to the tide gate in the northwestern corner of the study area (EMC 33D.440). However, the Ecology rating form completed for this wetland designated it as a Category IV wetland feature.

Additionally, two small wetlands (Wetlands SE1 and SE2) were identified and delineated in the southeastern portion of the site at the site of the Concrete Nor'West concrete batch plant. GeoEngineers prepared a formal wetland delineation report for this area (Appendix E), which was approved by the City of Everett.

Wetland SE1 is a palustrine emergent wetland located along the eastern perimeter of the project site. Soils in the wetland are very dark grayish brown (10YR 3/2) silty clay loams with many dark yellowish brown (10YR ¾) redox features present in the upper 10 to 11 inches (see data plots SP1 and SP3, Appendix B). Soils were saturated approximately 6 to 7 inches below the ground surface with free standing water observed at 7 to 18 inches below the ground surface in the hand-dug pits. Reed canarygrass dominated the vegetation in Wetland SE1 with creeping buttercup and Pacific silverweed also occurring in the wetland. Wetland SE1 is a small depressional wetland that is hydrologically isolated. Wetland SE1 is approximately 0.25 acres in size. The wetland in the project area is characterized as a Category IV wetland (EMC 33D.440). This wetland feature was also rated as a Category IV wetland using the Ecology rating system.

Wetland SE2 is a palustrine emergent wetland located along the southeastern perimeter of the project site. Soils in the wetland are very dark grayish brown (10YR 3/2) silty clay loams with many dark yellowish brown (10YR ¾) redox present in the upper 10 to 12 inches (see data plots SP5 and SP7, Appendix B). Soils were saturated approximately 6 to 7 inches below the ground surface with free standing water observed at 5 to 18 inches below the ground surface in the hand-dug pits. Reed canarygrass dominated the vegetation in Wetland SE2 with creeping buttercup and Pacific silverweed also occurring in the wetland. Wetland SE2 is a small depressional wetland that is hydrologically isolated. This wetland is approximately 0.25 acres in the project area and extends south and off-site for a total approximate area of 0.5 acres. The wetland is rated as a Category IV wetland (EMC 33D.440) using both the City rating system and the Ecology wetland rating form.

3.7 DITCH CONDITIONS

The ditch delineation identified the presence of two sloughs and nine ditches at the site (Figure 8). The City of Everett SMP designates four stream types regulated by the City (EMC 33D.480). The sloughs and ditches at the site were assessed according to this classification. Ditches observed at the site are

actively managed for agriculture. Ditches 1 through 8 are excavated ditches used to convey surface water offsite into Union Slough via the tide gate in the northeast portion of the site. Ditch 9 is a vegetated swale containing various pasture grasses. Ditches 5 through 9 intermittently contain surface water during wet periods which becomes absent during the summer months.

Ditches 1 through 4 are approximately 10 feet in width with water depths of up to four feet during wet periods. Substrate within these ditches consists of silt and riparian vegetation is limited to herbaceous species. Ditches 5 through 9 range in width from two to three feet with depths of up to 2 feet. Due to the presence of the tide gate at the outlet of these ditches, no fish are present within the onsite ditches. Ditches 1 through 4 are rated as Category II ditches due to the perennial nature of these features. Ditches 5 through 8 are classified as Category III drainages because they are intermittent and do not contain salmonids. Ditch 9 is rated as a Category IV feature because it is a vegetated intermittent swale.

Additionally, the ditches and sloughs at the site were classified using the DNR Interim Water Typing System (WAC 222-16-031). The DNR system uses a five tiered ranking system to characterize surface waters within Washington State. Under the rating system established by DNR, Ditches 1 through 4 are rated to be Type 3 waters because they have a defined channel of more than two feet in width, while ditches 5 through 9 are rated to be Type 5 waters because they are seasonal, nonfish habitat streams in which surface flow is not present for at least some portion of the year and are not located downstream from any stream reach that is a Type 4 Water. Both DNR and Everett water types are contained in Table 3 in the following section of this report.

4.0 SUMMARY

The subject property supports 10 wetlands in an area historically utilized for agricultural production. The wetlands are palustrine emergent systems supported by shallow groundwater that sits atop a less permeable soil layer ranging between 0.5 feet and 3 feet below the surface. The depth of this layer throughout the site appears to be the primary determinant for the presence/absence of wetlands. Results from a field wetland delineation and long-term shallow groundwater monitoring program were coupled to establish the wetland boundaries. The groundwater study demonstrated that shallow groundwater levels respond to rainfall and are disconnected from tidal fluctuations.

The wetlands delineated within the site were dominated by emergent vegetation including reed canarygrass, soft rush, redtop and various other grasses and rushes. Reed canarygrass is an invasive species that was observed throughout the study area. Additional invasive species found within and adjacent to the wetlands included Himalayan blackberry (*Rubus armeniacus*) and Scotch broom (*Cytisus scoparius*). The wetlands have been maintained for agricultural uses since at least the 1960s. The wetlands experience seasonal inundation with water levels below ground surface through most of the growing season.

For information purposes, wetlands were rated using the City of Everett's Shoreline Master Program criteria for categorization of wetland habitats (EMC 33D.440). Wetlands NE1, NW1, NW2, SW1 and SW4 are rated as Category III wetlands due to seasonal or permanent surface water connections to onsite ditches or nearby wetland features. The remaining wetlands (Wetlands NW3, SW2, SW3, SE1, and SE2) are rated as Category IV wetlands because they are less than one acre in size, isolated, and contain one emergent vegetation class, more than eighty percent of which are dominated by species listed in 33D.440(B)(4). According to the City's SMP, Category III wetlands require a 50-foot buffer and Category IV wetlands require a 25-foot buffer (EMC 33D.450).

All the wetlands within the Cedar Grove site fall under the jurisdiction of EMC 33D.090A(36). This means that, regardless of their ratings under EMC 33D.440, all the wetlands are rated as Category 2 with 100-foot buffers. Figure 7 presents the final wetland determinations for the wetlands within the study area including the acreages, wetland categories and assigned wetland buffers. Table 2 identifies the wetlands sizes, classifications and recommended buffer widths. Table 3 shows classifications for each of the onsite ditches.

Table 2. Wetland Sizes, Classifications, and Recommended Buffer Widths

Wetland	Cowardin Classification	Size (Acres)	Wetland Category per EMC 33D.440	Ecology Rating	Jurisdictional Category and Recommended Buffer Width (EMC 33D.090A(36))
NE1	Palustrine, emergent, semipermanently flooded	2.25	Cat. III	Cat. III	Cat. 2 – 100 feet
NW1	Palustrine, emergent, seasonally flooded	3.61	Cat. III	Cat. III	Cat. 2 – 100 feet
NW2	Palustrine, emergent, seasonally flooded	2.89	Cat. III	Cat. III	Cat. 2 – 100 feet
NW3	Palustrine, emergent, seasonally flooded	0.08	Cat. IV	Cat. III	Cat. 2 – 100 feet
SW1	Palustrine, emergent, semi-permanently flooded	3.56	Cat. III	Cat. III	Cat. 2 – 100 feet
SW2	Palustrine, emergent, seasonally flooded	0.03	Cat. IV	Cat. IV	Cat. 2 – 100 feet
SW3	Palustrine, emergent, seasonally flooded	0.23	Cat. IV	Cat. IV	Cat. 2 – 100 feet
SW4	Palustrine, emergent, seasonally flooded	0.15	Cat. III	Cat. IV	Cat. 2 – 100 feet
SE1	Palustrine, emergent, seasonally flooded	0.25	Cat. IV	Cat. IV	Cat. 2 – 100 feet
SE2	Palustrine, emergent, seasonally flooded	0.25 (onsite) 0.50 (total)	Cat. IV	Cat. IV	Cat. 2 – 100 feet

Table 3. Stream Classifications

Stream	City of Everett Stream Rating	DNR Interim Water Typing System
Ditch 1	Cat. II	Type 3
Ditch 2	Cat. II	Type 3
Ditch 3	Cat. II	Type 3
Ditch 4	Cat. II	Type 3
Ditch 5	Cat. III	Type 5
Ditch 6	Cat. III	Type 5
Ditch 7	Cat. III	Type 5
Ditch 8	Cat. III	Type 5
Ditch 9	Cat. IV	Type 5

This report serves to document the existing site conditions for wetlands, ditches and sloughs within the study area. Ten wetlands were identified and delineated within the subject properties through routine wetland field delineation methods and supplemented with groundwater monitoring data. Wetland delineation efforts were initiated in May of 2005 and continued through June of 2007, and ditches were delineated in January 2008. The wetland areas were observed during numerous site visits conducted at varying times of year and agricultural production stages to more accurately assess the wetland boundaries. This report contains the results of almost three years of wetland and ditch delineation activities conducted by GeoEngineers for Cedar Grove Composting.

5.0 LIMITATIONS

GeoEngineers has performed this Wetland Delineation for Cedar Grove Composting in general accordance with the scope and limitations of our proposal. Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices for wetland delineation in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This report has been prepared for the exclusive use of Cedar Grove Composting their authorized agents and regulatory agencies following the described methods and information available at the time of the work. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. The information contained herein should not be applied for any purpose or project except the one originally contemplated.

The applicant is advised to contact all appropriate regulatory agencies (local, state, and federal) prior to design or construction of any development to obtain necessary permits and approvals. Wetland boundaries, classifications and discussions are based on our understanding of the local, state, and federal regulations, and site conditions at the time of our work. The final wetland boundary determinations and wetland classification is to be made or verified by the appropriate jurisdictional agency. Any alteration, deletion or editing of this document without explicit written permission from GeoEngineers, Inc. is strictly prohibited. Any other unauthorized use of this document is prohibited. This document is intended to be used in its entirety. If an excerpt is quoted or paraphrased, it must be properly referenced.

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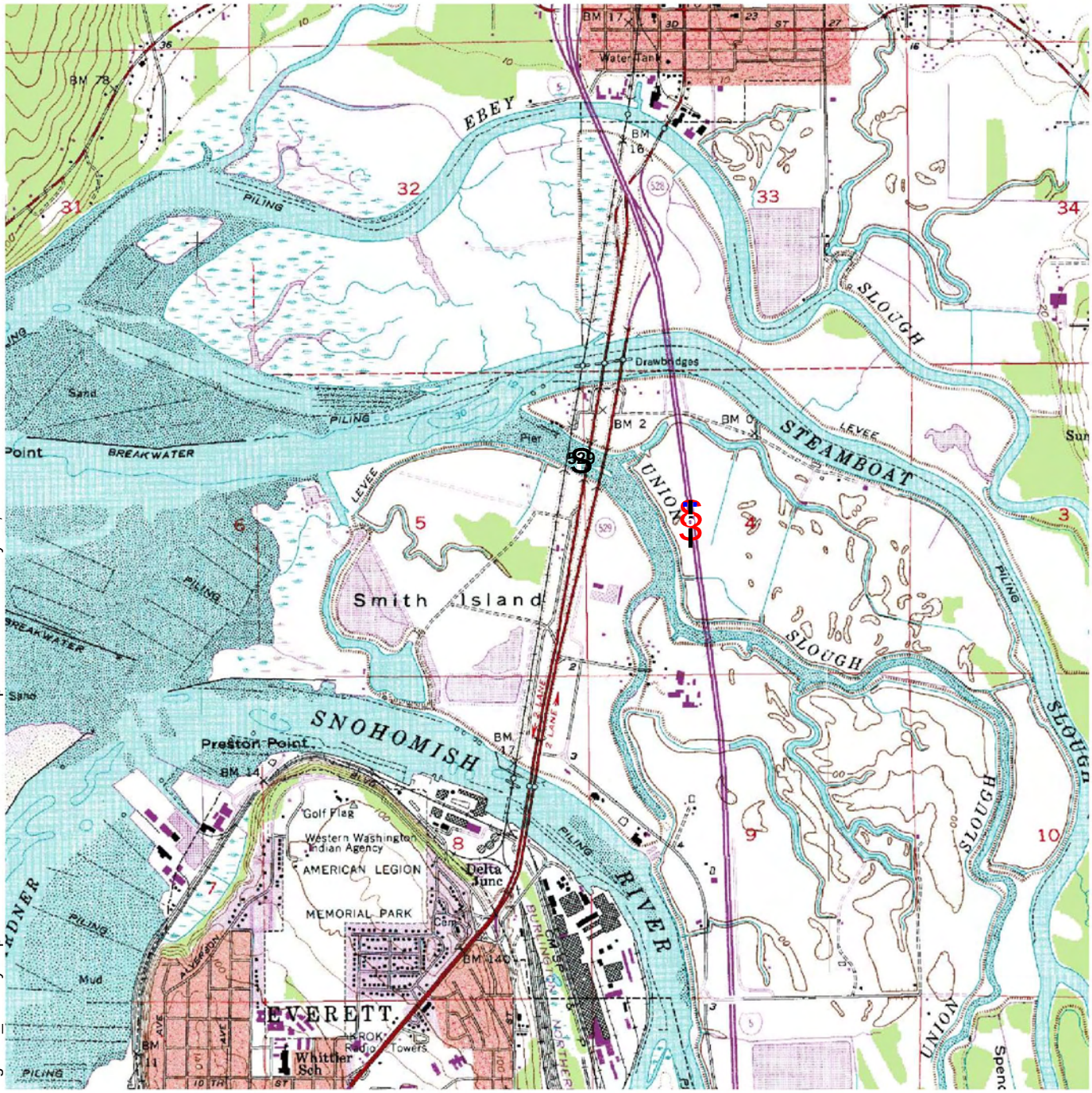

Map Revised: February 26, 2008

Path: P:\10\1062500118\GIS\1062500118Figure1_VicinityMap.mxd

Office: SEAT

Explanation

Study Area

Interstates

State Routes

Rail Line

2,000 0 2,000

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005

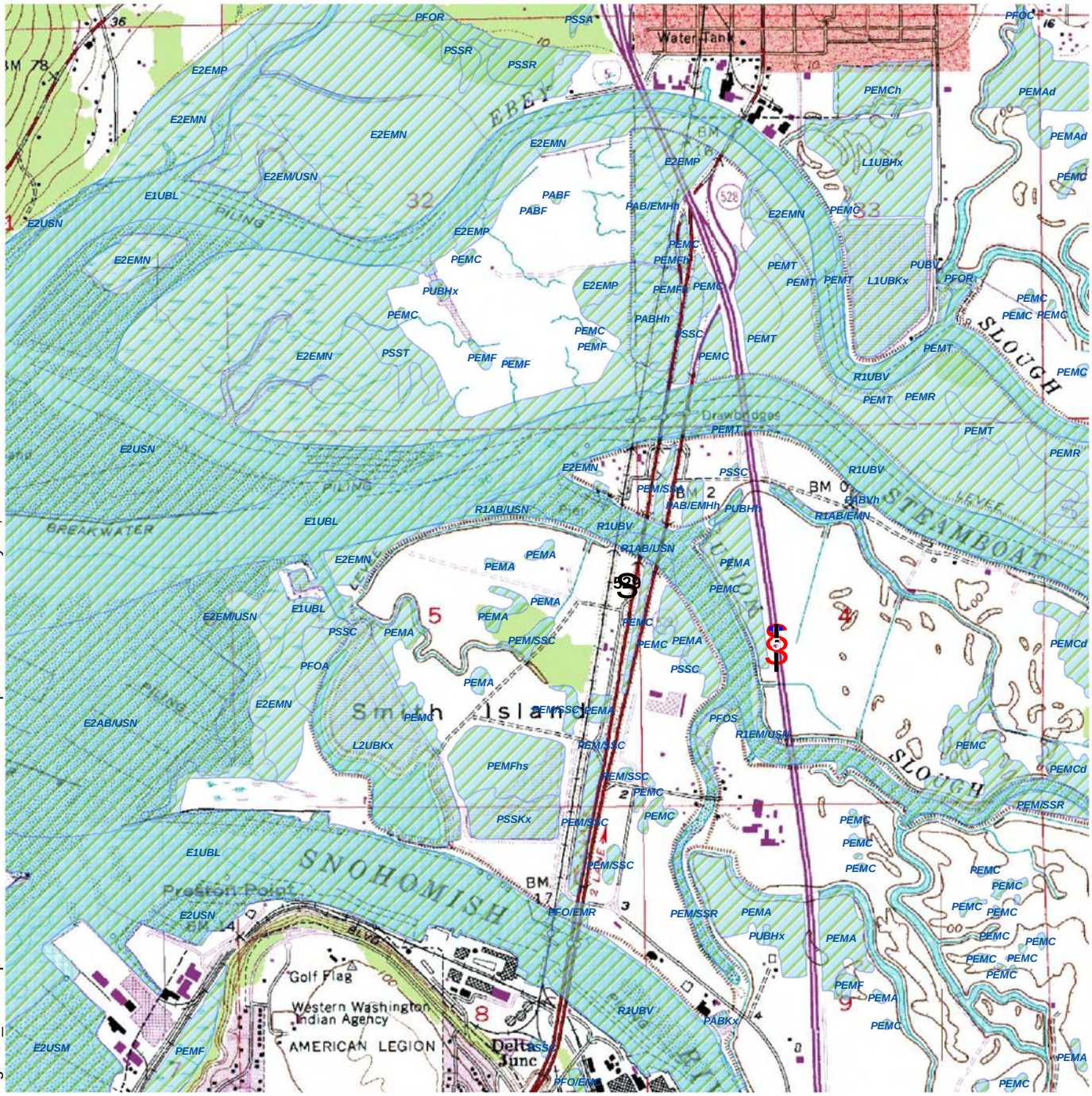
Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Cedar Grove Project
Vicinity Map

Smith Island
Everett, Washington

GEOENGINEERS

Figure 1



Explanation

Study Area

NWI Data

PEMA = Palustrine, Emergent, Temporarily Flooded

PEM/SSC = Palustrine, Emergent/Scrub-Shrub, Seasonally Flooded

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Data Sources: ESRI Data & Maps, Street Maps 2005

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

2,000 0 2,000

Feet

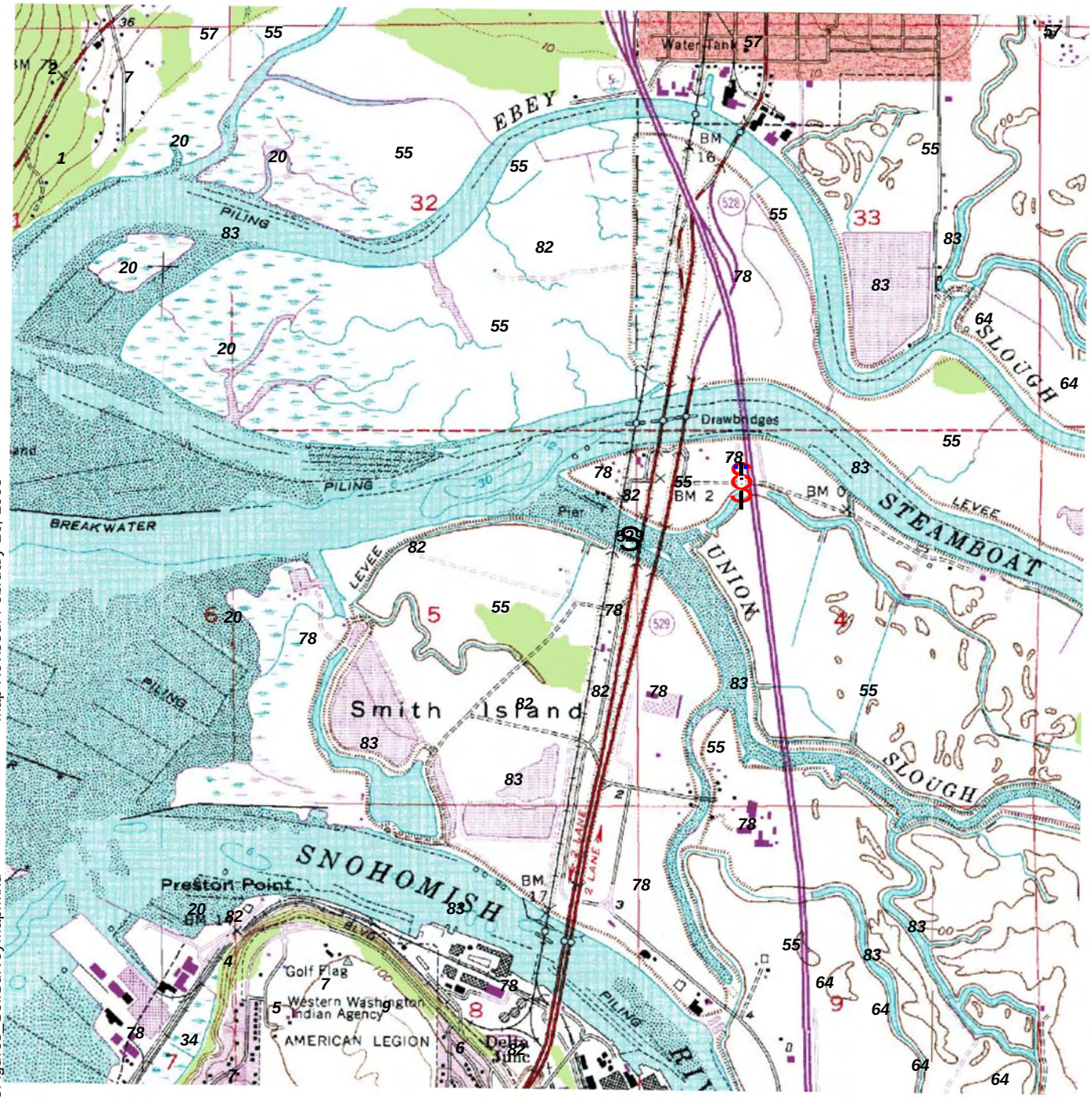
Cedar Grove
National Wetlands Inventory Map

Smith Island
Everett, Washington

GEOENGINEERS

Figure 2

Office: SEAT Path: P:\10\1062500118\GIS\1062500118Figure2_NWIMap.mxd Map Revised: February 26, 2008



Explanation

Study Area	State Routes
Soil Boundary	Rail Line
Interstates	55 = Puget Silty Clay Loam

2,000 0 2,000

Feet

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Data Sources: ESRI Data & Maps, Street Maps 2005

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Cedar Grove
Soil Survey Map

Smith Island
Everett, Washington

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Figure 3

Map Revised: February 26, 2008

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Office: SEAT

Explanation

A Sample Plots

Study Area

Wetland Area

Sampling Area Boundaries (Correspond to wetland data sheets in Appendix B)

350 0 350

Feet

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Data Sources: ESRI Data & Maps, Street Maps 2005
Sample plots and wetland features obtained by GeoEngineers staff using Trimble GeoXT GPS unit.

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Cedar Grove Routine Methodology Wetland Delineation Exhibit

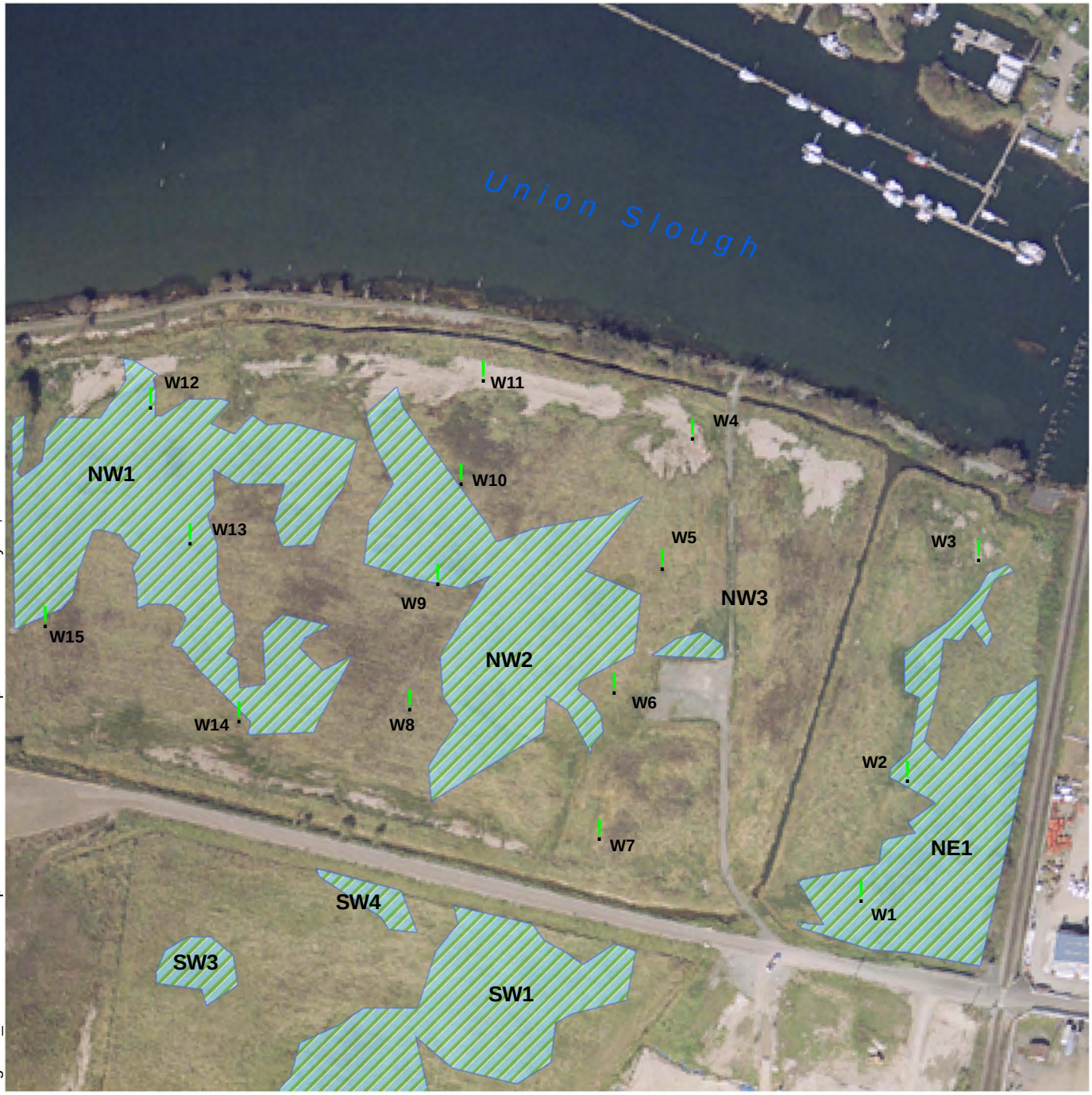
Smith Island
Everett, Washington

GeoEngineers

Figure 4

Path: P:\10\1062500118\GIS\1062500118Figure4_RoutineWetlandDelineationExhibit.mxd Map Revised: February 26, 2008

Office: SEAT



Explanation

! Piezometers

Routine Delineation Wetland Areas

250 0 250

Feet

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Data Sources: ESRI Data & Maps, Street Maps 2005
Sample plots and wetland features obtained by GeoEngineers staff using Trimble GeoXT GPS unit.

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Cedar Grove Groundwater Monitoring Well Location Map

Smith Island
Everett, Washington

GeoEngineers

Figure 5

Map Revised: February 26, 2008

Path: P:\10\1062500118\GIS\1062500118Figure5_WellLocationsMap.mxd

Office: SEAT

Legend

- Hydrology Criteria Met
- Did Not Meet Hydrology Criteria
- Groundwater Exclusion Area
- Revised Wetland Area

250 0 250

Feet

Notes:
1. The locations of all features shown are approximate.
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Data Sources: ESRI Data & Maps, Street Maps 2005
Sample plots and wetland features obtained by GeoEngineers staff using Trimble GeoXT GPS unit.

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

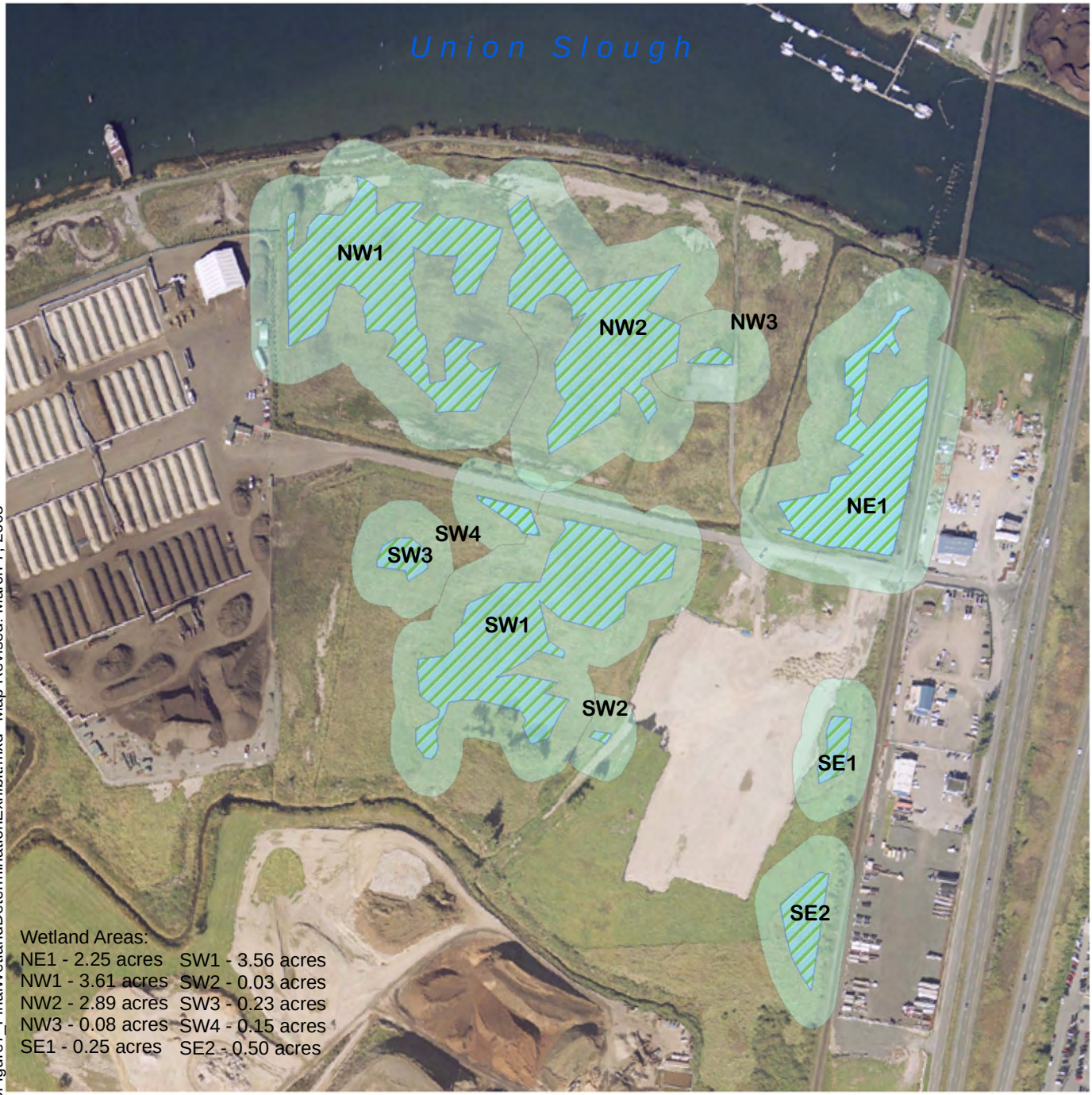
Cedar Grove Wetland Hydrology Criteria Determination Map

Smith Island
Everett, Washington

GeoEngineers

Figure 6

Office: SEAT Path: P:\10\1062500118\GIS\1062500118Figure6_Wetland HydrologyCriteriaMap.mxd Map Revised: February 26, 2008



Legend

Wetland Areas*

100-Foot Wetland Buffer

*All Category II per Everett Municipal Code Title 19, Chapter 33D.0901(36)

400 0 400

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005
Sample plots and wetland features obtained by GeoEngineers staff using Trimble GeoXT GPS unit.

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

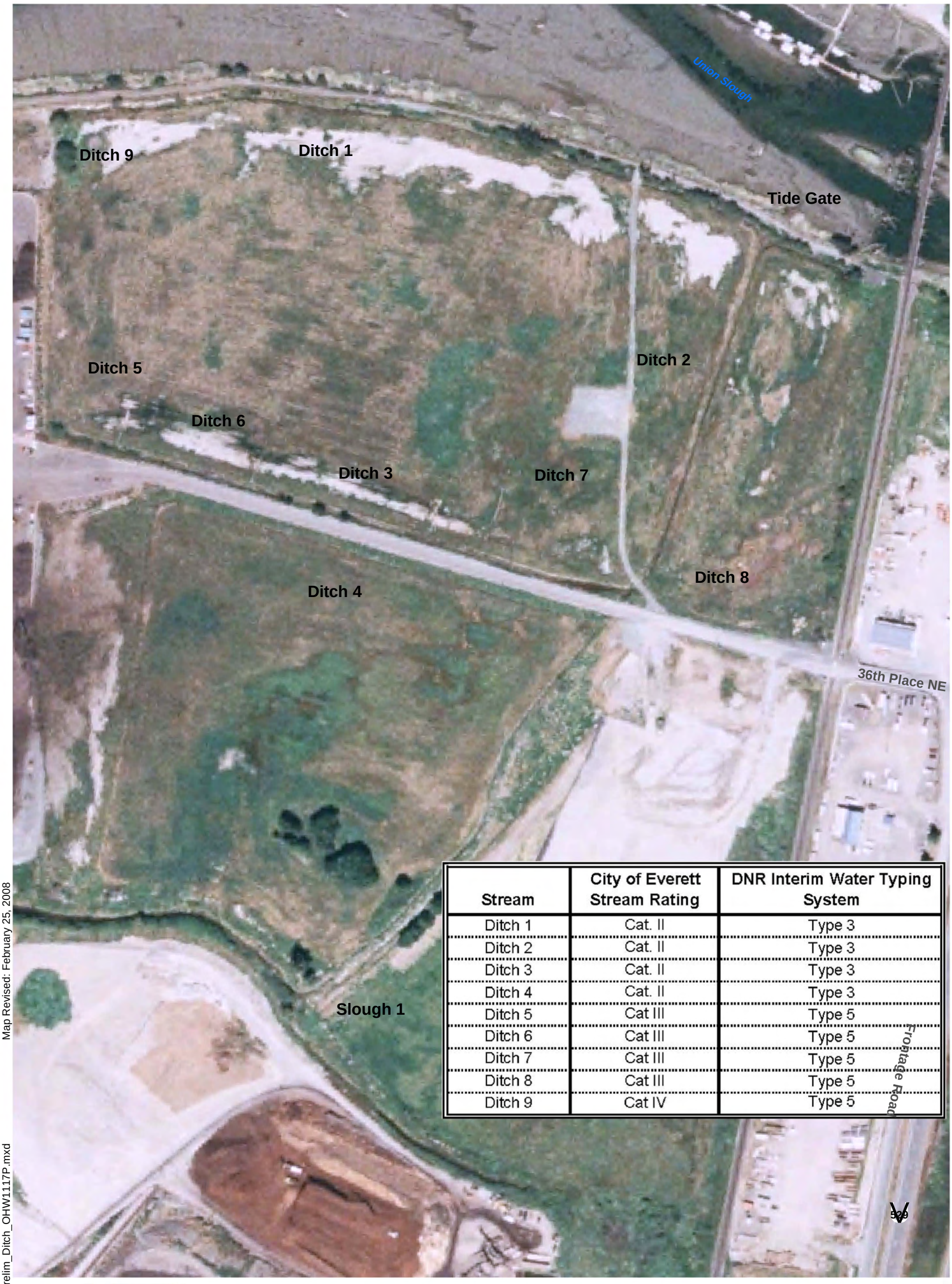
Cedar Grove Final Wetland Determinations Exhibit

Smith Island
Everett, Washington

GeoEngineers

Figure 7

Office: SEAT Path: P:\10\1062500118\GIS\1062500118Figure7_FinalWetlandDeterminationExhibit.mxd Map Revised: March 7, 2008



Stream	City of Everett Stream Rating	DNR Interim Water Typing System
Ditch 1	Cat. II	Type 3
Ditch 2	Cat. II	Type 3
Ditch 3	Cat. II	Type 3
Ditch 4	Cat. II	Type 3
Ditch 5	Cat III	Type 5
Ditch 6	Cat III	Type 5
Ditch 7	Cat III	Type 5
Ditch 8	Cat III	Type 5
Ditch 9	Cat IV	Type 5

Legend

Ordinary High Water

Break between Ditch Types

Culvert

200 0 200

Feet

Cedar Grove
Ordinary High Water Delineation Exhibit

Smith Island
Everett, Washington

GeoEngineers

Figure 8

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005
2006 Aerial Photography, Snohomish County 2006

Lambert Conformal Conic, Washington State Plane North, North American Datum 1983

Map Revised: February 25, 2008

Path: P:\10\10625001\GIS\1062500118Prelim_Ditch_OHW1117P.mxd

Office: SEA

APPENDIX A
HISTORIC AERIAL PHOTOGRAPHS

Explanation

Study Area

Rail Line

350 0 350

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps, Street Maps 2005
Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

1965 Aerial Photograph

Smith Island
Everett, Washington

GeoEngineers

Figure A-1

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Office: SEA Path: P:\10\1062500116\GIS\1062500116FigureA-1.mxd Map Revised: August 22, 2007

Explanation

Study Area

Rail Line

350 0 350

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005
Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

1969 Aerial Photograph

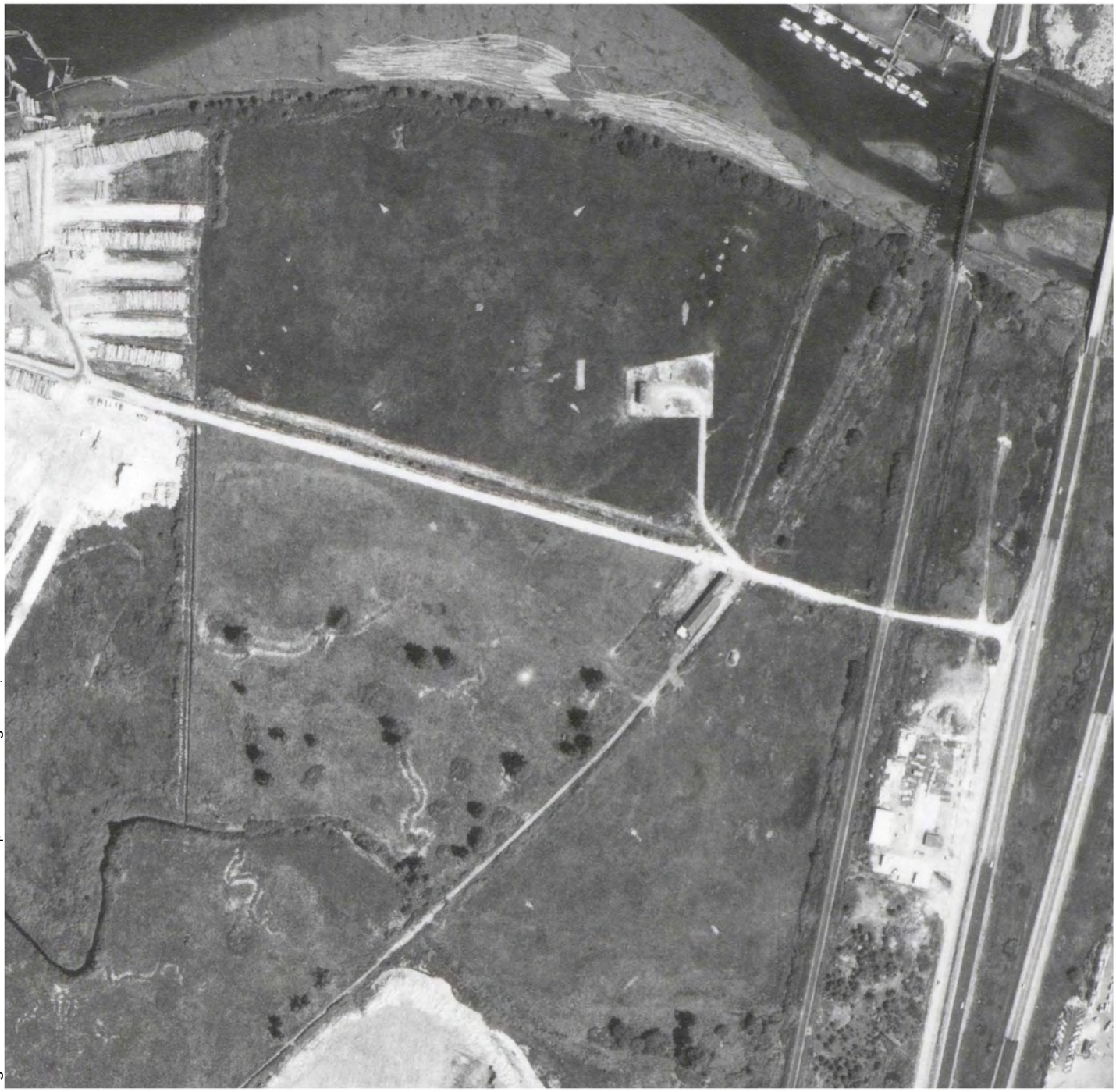
Smith Island
Everett, Washington

GeoEngineers

Figure A-2

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Office: SEA Path: P:\10\1062500\116\GIS\1062500116FigureA-2.mxd Map Revised: August 22, 2007



Explanation

Study Area

Rail Line

350 0 350

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005
Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

1978 Aerial Photograph

Smith Island
Everett, Washington

GeoEngineers

Figure A-3

Office: SEA Path: P:\10\1062500\116\GIS\1062500116FigureA-3.mxd Map Revised: August 22, 2007

Explanation

Study Area

Rail Line

350 0 350

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005
Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

1983 Aerial Photograph

Smith Island
Everett, Washington

GeoEngineers

Figure A-4

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Office: SEA Path: P:\10\1062500\116\GIS\1062500116FigureA-4.mxd Map Revised: August 22, 2007

Explanation

Study Area

Rail Line

350 0 350

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005
Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

1987 Aerial Photograph

Smith Island
Everett, Washington

GeoEngineers

Figure A-5

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Office: SEA Path: P:\10\1062500\116\GIS\1062500116FigureA-5.mxd Map Revised: August 22, 2007

Explanation

Study Area

Rail Line

350 0 350

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005
Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

1991 Aerial Photograph

Smith Island
Everett, Washington

GeoEngineers

Figure A-6

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Office: SEA Path: P:\10\1062500\116\GIS\1062500116FigureA-6.mxd Map Revised: August 22, 2007

Explanation

Study Area

Rail Line

350 0 350

Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
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Data Sources: ESRI Data & Maps, Street Maps 2005
Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

1996 Aerial Photograph

Smith Island
Everett, Washington

GeoEngineers

Figure A-7

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Office: SEA Path: P:\10\1062500\116\GIS\1062500116FigureA-7.mxd Map Revised: August 22, 2007

GeoEngineers

Appendix B-1
Northeast Wetland Data Forms

Project Name: Cedar Grove Northeast Wetlands
Sample Point Number: 1
Investigators: S. Mahugh, K. Sullivan, D. Conlin

Date: 4/24/07 Time:
County: Snohomish State: WA
Roll No: Photo No:

Yes Do Normal Circumstances exist on the site?
No Is the site significantly disturbed (Atypical Situation)?
No Is the site a potential Problem Area?

Datum: NAD83
North:
West:

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	AIRA CARYOPHYLLEA	Herb	UPL	10.00	No
2	HOLCUS LANATUS	Herb	FAC	30.00	Yes
3	RUBUS DISCOLOR	Herb	FACU	5.00	No
4	PHALARIS ARUNDINACEA	Herb	FACW	70.00	Yes

Total Number of Species: 4 Total Dominants: 2
Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00
Prevalence Index: 2.61 FAC Neutral: Yes

HYDROLOGY

Recorded Data:
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: ___ (in.)
- Depth to Free Water in Pit: 12<18 (in.)
- Depth to Saturated Soil: 10<12 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ___ Inundated
- X Saturated in Upper 12 inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12 inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- X FAC-Neutral Test
- ___ Other (Explain in Remarks)

SOILS

Map Unit Name:
(Series and Phase):
Taxonomy (Subgroup):

Drainage Class:
Field Observations
Confirm Mapped Type? No

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-16	A	10YR4/2		Prominent	2.5YR4/6

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____
____
____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- No Wetland Hydrology Present?
- Yes Hydric Soils Present?
- Yes Is this Sampling Point Within a Wetland?
- No Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

Wetland	WoUS		
X Yes	____ Yes	4	Species Richness
____ No	X No	2.61	Prevalence Index

Project Name: Cedar Grove Northeast Wetlands	Date: 4/24/07	Time:
Sample Point Number: 2	County: Snohomish	State: WA
Investigators: S. Mahugh, K. Sullivan, D. Conlin	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	HOLCUS LANATUS	Herb	FAC	90.00	Yes
2	PHALARIS ARUNDINACEA	Herb	FACW	10.00	No
3	BARE	Herb	NI	10.00	No
4	RUBUS DISCOLOR	Herb	FACU	10.00	No

Total Number of Species: 4 Total Dominants: 1

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 3.00 FAC Neutral: No

HYDROLOGY

Recorded Data:

- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

- Depth of Surface Water: _____ (in.)
- Depth to Free Water in Pit: _____ (in.)
- Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

SOILS

Map Unit Name:
(Series and Phase):
Taxonomy (Subgroup):

Drainage Class:
Field Observations
Confirm Mapped Type? No

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-16	A	10YR4/2			

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____
____
____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- No Wetland Hydrology Present?
- No Hydric Soils Present?
- No Is this Sampling Point Within a Wetland?
- No Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

Wetland	WoUS		
____ Yes	____ Yes	4	Species Richness
X No	X No	3.00	Prevalence Index

Project Name: Cedar Grove Northeast Area (NE1)	Date: 4/24/07	Time:
Sample Point Number: 3	County: Snohomish	State: WA
Investigators: SMM, KS, DC	Roll No:	Photo No:

Yes Do Normal Circumstances exist on the site?		Datum: NAD83
No Is the site significantly disturbed (Atypical Situation)?	North:	
No Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	AGROSTIS ALBA	Herb	FAC	60.00	Yes
2	PHALARIS ARUNDINACEA	Herb	FACW	30.00	Yes

Total Number of Species: 2 Total Dominants: 2

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.67 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

- Depth of Surface Water: ____ (in.)
- Depth to Free Water in Pit: 5<6 (in.)
- Depth to Saturated Soil: 3<4 (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

SOILS

Map Unit Name:
(Series and Phase):
Taxonomy (Subgroup):

Drainage Class:
Field Observations
Confirm Mapped Type? No

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-16		5Y4/2			2.5YR3/6

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____
____
____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- No Wetland Hydrology Present?
- Yes Hydric Soils Present?
- Yes Is this Sampling Point Within a Wetland?
- No Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

Wetland	WoUS		
X Yes	Yes	2	Species Richness
No	X No	2.67	Prevalence Index

Project Name: Cedar Grove Northeast Area (NE1)
Sample Point Number: 4
Investigators: SMM, KS, DC

Date: 4/24/07
County: Snohomish
Roll No:

Time:
State: WA
Photo No:

Yes Do Normal Circumstances exist on the site?
No Is the site significantly disturbed (Atypical Situation)?
No Is the site a potential Problem Area?

North:
West:

Datum: NAD83

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	HOLCUS LANATUS	Herb	FAC	90.00	Yes
2	RUBUS DISCOLOR	Herb	FACU	15.00	No
3	PHALARIS ARUNDINACEA	Herb	FACW	5.00	No

Total Number of Species: 3 Total Dominants: 1
Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00
Prevalence Index: 3.09 FAC Neutral: TBD

HYDROLOGY

Recorded Data:
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:
- Depth of Surface Water: _____ (in.)
- Depth to Free Water in Pit: _____ (in.)
- Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

SOILS

Map Unit Name:
(Series and Phase):
Taxonomy (Subgroup):

Drainage Class:
Field Observations
Confirm Mapped Type? No

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-16		5Y4/2			

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____
____
____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- No Wetland Hydrology Present?
- No Hydric Soils Present?
- No Is this Sampling Point Within a Wetland?
- No Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

Wetland	WoUS		
____ Yes	____ Yes	3	Species Richness
X No	X No	3.09	Prevalence Index

Project Name: Cedar Grove Northeast Area (NE1)	Date: 4/24/07	Time:
Sample Point Number: 6	County: Snohomish	State: WA
Investigators: SMM, KS, DC	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	30.00	Yes
2	AGROSTIS ALBA	Herb	FAC	20.00	Yes

Total Number of Species: 2 Total Dominants: 2

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.40 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

- Depth of Surface Water: ____ (in.)
- Depth to Free Water in Pit: 12<18 (in.)
- Depth to Saturated Soil: 5<6 (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

SOILS

Map Unit Name:
(Series and Phase):
Taxonomy (Subgroup):

Drainage Class:
Field Observations
Confirm Mapped Type? No

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0		5Y5/1			7.5YR3/3

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____ ____ ____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- No Wetland Hydrology Present?
- Yes Hydric Soils Present?
- Yes Is this Sampling Point Within a Wetland?
- No Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

Wetland	WoUS		
X Yes	Yes	2	Species Richness
No	X No	2.40	Prevalence Index

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Appendix B-2
Northwest Wetland Data Forms

WETLAND DATA FORM 1: TYPICAL PEM
(Section 5, Township 29N, Range 5E)

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	Thomas Bannister	Date:	7/27/06
Project/Site:	Smith Island, Everett	County:	Snohomish
Applicant/Owner:	Cedar Grove	State:	WA
Plant Community Name:	PEMA	Sample Plot #:	**SP-1**

Location: **Between Wetland NW2 and NW3**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes, explain: Site has recently been graded.		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Circium vulgare	bull thistle	FACU	HERB	5	
Festuca pratensis	Meadow fescue	FACU+	HERB	15	
Ranunculus repens	Creeping buttercup	FACW	HERB	40	
Solanum ducamara	Nightshade	FAC+	HERB	5	
Trifolium repens	White clover	FAC	HERB	5	
Phalaris arundinacea	Reed canary grass	FACW	HERB	60	

% of dominant species that are OBL, FACW, and/or FAC: 100%

Other indicators that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks:

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

WETLAND DATA FORM 1 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)

Taxonomy: Mesic Typic Fluvaquent

Drainage class:

Field observations confirm mapped type? Yes No

Is the soil on the hydric soils list? Yes No

Profile Description

Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.
0-6	10YR 3/2	10R 3/2	many	silty loam
6-16	10YR 4/2	10R 3/2	many	silty loam

Hydric soil indicators (check any that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks:

HYDROLOGY

Is it in the growing season? Yes No

Depth of inundation: n/a

Depth to free water in soil pit: n/a

Depth to saturated soil: n/a

Check any that apply:

- Aerial photograph
- Stream, lake or gage data
- Other

Check other indicators that apply:

Water marks:

Drift lines:

Sediment deposits:

Drainage patterns:

Other indicator(s):

Oxidized root channels:

Water-stained leaves:

FAC Neutral:

Local soil survey:

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: Previous subsurface monitoring supports wetland hydrology. Site is ditched. Recent weather pattern has been hot and dry. Exposed soils are present suggesting recent and prolonged inundation.

WETLAND DETERMINATION

Hydrophytic vegetation present? Yes No

Hydric soils present? Yes No

Wetland hydrology present? Yes No

Rationale/Remarks:

Is the sampling point within a wetland?

Yes No

Table adopted from the 1987 Corps Wetland Delineation Manual

WETLAND DATA FORM 1: TYPICAL PEM
(Section 5, Township 29N, Range 5E)

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	Thomas Bannister	Date:	7/25/06
Project/Site:	Smith Island, Everett	County:	Snohomish
Applicant/Owner:	Cedar Grove	State:	WA
Plant Community Name:	PEMA	Sample Plot #:	**SP-2**

Location: **Wetland NW2**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes, explain: Site has recently been graded.		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Glyceria borealis	Northern mannagrass	OBL	HERB	100	
Alopecurus aequalis	Short-awn foxtail	OBL	HERB	5	

% of dominant species that are OBL, FACW, and/or FAC: 100%

Other indicators that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks:

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

WETLAND DATA FORM 1 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)

Taxonomy: Mesic Typic Fluvaquent

Drainage class:

Field observations confirm mapped type? Yes No

Is the soil on the hydric soils list? Yes No

Profile Description

Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.
0-8	10YR 3/2		none	silty loam
8-16	10YR 3/2		some	silty loam

Hydric soil indicators (check any that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma (<2)	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks:

HYDROLOGY

Is it in the growing season? Yes No

Depth of inundation: n/a

Depth to free water in soil pit: n/a

Depth to saturated soil: n/a

Check any that apply:

Aerial photograph

Stream, lake or gage data

Other

Check other indicators that apply:

Water marks:

Drift lines:

Sediment deposits:

Drainage patterns:

Other indicator(s):

Oxidized root channels:

Water-stained leaves:

FAC Neutral:

Local soil survey:

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: Previous subsurface monitoring supports wetland hydrology. Site is ditched. Recent weather pattern has been hot and dry.

WETLAND DETERMINATION

Hydrophytic vegetation present? Yes No

Hydric soils present? Yes No

Wetland hydrology present? Yes No

Rationale/Remarks:

Is the sampling point within a wetland?

Yes No

Table adopted from the 1987 Corps Wetland Delineation Manual

WETLAND DATA FORM 1: TYPICAL PEM
(Section 5, Township 29N, Range 5E)

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	Thomas Bannister	Date:	7/25/06
Project/Site:	Smith Island, Everett	County:	Snohomish
Applicant/Owner:	Cedar Grove	State:	WA
Plant Community Name:	PEMA	Sample Plot #:	**SP-3**

Location: **Near Wetland NW2**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes, explain: Site has recently been graded.		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Circium vulgare	bull thistle	FACU	HERB	10	
Rubus armeniacus	Himalayan blackberry	FACW	HERB	5	
Ranunculus repens	Creeping buttercup	FACW	HERB	10	
Agrostis capillaris	Colonial bentgrass	FAC	HERB	80	
Festuca pratensis	Meadow fescue	FACU+	HERB	20	

% of dominant species that are OBL, FACW, and/or FAC: 0%

Other indicators that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks:

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

WETLAND DATA FORM 1 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)

Taxonomy: Mesic Typic Fluvaquent

Drainage class:

Field observations confirm mapped type? Yes No

Is the soil on the hydric soils list? Yes No

Profile Description

Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.
0-7	10YR 4/3		few	silty loam
7-16	10YR 4/3		few	silty loam

Hydric soil indicators (check any that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma (<2)	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks:

HYDROLOGY

Is it in the growing season? Yes No

Depth of inundation: n/a

Depth to free water in soil pit: n/a

Depth to saturated soil: n/a

Check any that apply:

- Aerial photograph
- Stream, lake or gage data
- Other

Check other indicators that apply:

Water marks:

Drift lines:

Sediment deposits:

Drainage patterns:

Other indicator(s):

Oxidized root channels:

Water-stained leaves:

FAC Neutral:

Local soil survey:

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: Previous subsurface monitoring supports wetland hydrology. Site is ditched. Recent weather pattern has been hot and dry.

WETLAND DETERMINATION

Hydrophytic vegetation present? Yes No

Hydric soils present? Yes No

Wetland hydrology present? Yes No

Rationale/Remarks:

Is the sampling point within a wetland?

Yes No

Table adopted from the 1987 Corps Wetland Delineation Manual

WETLAND DATA FORM 1: TYPICAL PEM
(Section 5, Township 29N, Range 5E)

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	Thomas Bannister	Date:	7/25/06
Project/Site:	Smith Island, Everett	County:	Snohomish
Applicant/Owner:	Cedar Grove	State:	WA
Plant Community Name:	PEMA	Sample Plot #:	**SP-4**

Location: **Wetland NW2**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes, explain: Site has recently been graded.		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Glyceria borealis	Northern mannagrass	OBL	HERB	100	
Solanum dolcamara	nightshade	FAC+	HERB	5	

% of dominant species that are OBL, FACW, and/or FAC: 100%

Other indicators that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks:

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

WETLAND DATA FORM 1 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)

Taxonomy: Mesic Typic Fluvaquent

Drainage class:

Field observations confirm mapped type? Yes No

Is the soil on the hydric soils list? Yes No

Profile Description

Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.
0-6	7.5YR 4/2		some	silty loam
6-16	7.5YR 4/2		many	silty loam

Hydric soil indicators (check any that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma (<2)	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks:

HYDROLOGY

Is it in the growing season? Yes No

Depth of inundation: n/a

Depth to free water in soil pit: n/a

Depth to saturated soil: n/a

Check any that apply:

- Aerial photograph
- Stream, lake or gage data
- Other

Check other indicators that apply:

Water marks:

Drift lines:

Sediment deposits:

Drainage patterns:

Other indicator(s):

Oxidized root channels:

Water-stained leaves:

FAC Neutral:

Local soil survey:

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: Site is ditched. Recent weather pattern has been hot and dry. Vegetation indicative of wetland hydrology.

WETLAND DETERMINATION

Hydrophytic vegetation present? Yes No

Hydric soils present? Yes No

Wetland hydrology present? Yes No

Rationale/Remarks:

Is the sampling point within a wetland?

Yes No

Table adopted from the 1987 Corps Wetland Delineation Manual

WETLAND DATA FORM 1: TYPICAL PEM
(Section 5, Township 29N, Range 5E)

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	Thomas Bannister	Date:	7/27/06
Project/Site:	Smith Island, Everett	County:	Snohomish
Applicant/Owner:	Cedar Grove	State:	WA
Plant Community Name:	PEMA	Sample Plot #:	**SP-5**

Location: **Wetland NW1**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes, explain: Site has recently been graded.		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Juncus effusus	Soft rush	FACW	HERB	50	
Phalaris arundinacea	Reed canary grass	FACW	HERB	80	

% of dominant species that are OBL, FACW, and/or FAC: 100%

Other indicators that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks:

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

WETLAND DATA FORM 1 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)

Taxonomy: Mesic Typic Fluvaquent

Drainage class:

Field observations confirm mapped type? Yes No

Is the soil on the hydric soils list? Yes No

Profile Description

Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.
0-8	10YR 3/2		some	silty loam
8-12	10YR 3/2		some	silty loam
12-16	10YR 3/2		some	silty loam

Hydric soil indicators (check any that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma (<2)	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks:

HYDROLOGY

Is it in the growing season? Yes No

Depth of inundation: n/a

Depth to free water in soil pit: n/a

Depth to saturated soil: n/a

Check any that apply:

Aerial photograph

Stream, lake or gage data

Other

Check other indicators that apply:

Water marks:

Drift lines:

Sediment deposits:

Drainage patterns:

Other indicator(s):

Oxidized root channels:

Water-stained leaves:

FAC Neutral:

Local soil survey:

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: Previous subsurface monitoring supports wetland hydrology. Site is ditched. Recent weather pattern has been hot and dry. Vegetation indicative of wetland hydrology.

WETLAND DETERMINATION

Hydrophytic vegetation present? Yes No

Hydric soils present? Yes No

Wetland hydrology present? Yes No

Rationale/Remarks:

Is the sampling point within a wetland?

Yes No

Table adopted from the 1987 Corps Wetland Delineation Manual

WETLAND DATA FORM 1: TYPICAL PEM
(Section 5, Township 29N, Range 5E)

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	Thomas Bannister	Date:	7/27/06
Project/Site:	Smith Island, Everett	County:	Snohomish
Applicant/Owner:	Cedar Grove	State:	WA
Plant Community Name:	PEMA	Sample Plot #:	**SP-6**

Location: **Near Wetland NW1**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes, explain: Site has recently been graded.		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Circium vulgare	bull thistle	FACU	HERB	50	
Phalaris arundinacea	Reed canary grass	FACW	HERB	50	
Rubus armeniacus	Himalayan blackberry	FACU	HERB	5	
Holcus lanatus	Velvet grass	FAC	HERB	5	

% of dominant species that are OBL, FACW, and/or FAC: 50%

Other indicators that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks:

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

WETLAND DATA FORM 1 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)

Taxonomy: Mesic Typic Fluvaquent

Drainage class:

Field observations confirm mapped type? Yes No

Is the soil on the hydric soils list? Yes No

Profile Description

Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.
0-8	10YR 4/2		none	silty loam
8-16	10YR 4/2		some	silty loam

Hydric soil indicators (check any that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma (<2)	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks:

HYDROLOGY

Is it in the growing season? Yes No

Depth of inundation: n/a

Depth to free water in soil pit: n/a

Depth to saturated soil: n/a

Check any that apply:

Aerial photograph

Stream, lake or gage data

Other

Check other indicators that apply:

Water marks:

Drift lines:

Sediment deposits:

Drainage patterns:

Other indicator(s):

Oxidized root channels:

Water-stained leaves:

FAC Neutral:

Local soil survey:

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: Site is ditched. Recent weather pattern has been hot and dry. Previous groundwater monitoring was inconclusive for wetland hydrology. No primary indicators were observed 7/27/06.

WETLAND DETERMINATION

Hydrophytic vegetation present? Yes No

Hydric soils present? Yes No

Wetland hydrology present? Yes No

Is the sampling point within a wetland?

Yes No

Rationale/Remarks: Wetland indicators for all parameters do not show strong evidence for a wetland determination. Wetland vegetation parameter is met due to presence of invasive Reed canary grass. Other species present are indicative of upland communities.

Table adopted from the 1987 Corps Wetland Delineation Manual

WETLAND DATA FORM 1: TYPICAL PEM
(Section 5, Township 29N, Range 5E)

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	Thomas Bannister	Date:	7/27/06
Project/Site:	Smith Island, Everett	County:	Snohomish
Applicant/Owner:	Cedar Grove	State:	WA
Plant Community Name:	PEMA	Sample Plot #:	**SP-7**

Location: **Near Wetland NW1**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes, explain: Site has recently been graded.		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Circium vulgare	bull thistle	FACU	HERB	10	
Phalaris arundinacea	Reed canary grass	FACW	HERB	90	
Ranunculus repens	Creeping buttercup	FACW	HERB	2	
Rubus armeniacus	Himalyan blackberry	FACU	HERB	5	
Solanum dulcamara	nightshade	FAC+	HERB	2	
Juncus effusus	Soft rush	FACW	HERB	10	
Dactilis glomerata	Orchard grass	FACU	HERB	2	
Plantago major	Common plantain	FACU+	HERB	2	

% of dominant species that are OBL, FACW, and/or FAC: 100%

Other indicators that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks: Wetland vegetation parameter is met due to presence of invasive Reed canary grass. Vegetation indicators are inconclusive. Non-random sample location appears to support a vegetation community more indicative of upland emergent communities.

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

WETLAND DATA FORM 1 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)

Taxonomy: Mesic Typic Fluvaquent

Drainage class:

Field observations confirm mapped type? Yes No

Is the soil on the hydric soils list? Yes No

Profile Description

Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.
0-8	10YR 3/2		none	silty loam
8-16	10YR 3/2		some	silty loam

Hydric soil indicators (check any that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma (<2)	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks:

HYDROLOGY

Is it in the growing season? Yes No

Depth of inundation: n/a

Depth to free water in soil pit: n/a

Depth to saturated soil: n/a

Check any that apply:

Aerial photograph

Stream, lake or gage data

Other

Check other indicators that apply:

Water marks:

Drift lines:

Sediment deposits:

Drainage patterns:

Other indicator(s):

Oxidized root channels:

Water-stained leaves:

FAC Neutral:

Local soil survey:

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: Previous subsurface monitoring supports wetland hydrology. Site is ditched. Recent weather pattern has been hot and dry.

WETLAND DETERMINATION

Hydrophytic vegetation present? Yes No

Hydric soils present? Yes No

Wetland hydrology present? Yes No

Is the sampling point within a wetland?

Yes No

Rationale/Remarks: Wetland vegetation parameter is met due to presence of invasive Reed canary grass. Vegetation indicators are inconclusive. Non-random sample location appears to support a vegetation community more indicative of upland emergent communities and hydrology.

Table adopted from the 1987 Corps Wetland Delineation Manual

WETLAND DATA FORM 1: TYPICAL PEM
(Section 5, Township 29N, Range 5E)

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	Thomas Bannister	Date:	7/25/06
Project/Site:	Smith Island, Everett	County:	Snohomish
Applicant/Owner:	Cedar Grove	State:	WA
Plant Community Name:	PEMA	Sample Plot #:	**SP-8**

Location: **Wetland NW1**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes, explain: Site has recently been graded.		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Circium vulgare	bull thistle	FACU	HERB	50	
Phalaris arundinacea	Reed canary grass	FACW	HERB	50	
Ranunculus repens	Creeping buttercup	FACW	HERB	5	

% of dominant species that are OBL, FACW, and/or FAC: 50%

Other indicators that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks:

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

WETLAND DATA FORM 1 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)

Taxonomy: Mesic Typic Fluvaquent

Drainage class:

Field observations confirm mapped type? Yes No

Is the soil on the hydric soils list? Yes No

Profile Description

Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.
0-18	10YR 4/2	2.5YR 4/6	many	silty loam

Hydric soil indicators (check any that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks: Soils are frequently disturbed by machinery.

HYDROLOGY

Is it in the growing season? Yes No

Depth of inundation: n/a

Depth to free water in soil pit: n/a

Depth to saturated soil: n/a

Check any that apply:

Aerial photograph

Stream, lake or gage data

Other

Check other indicators that apply:

Water marks:

Drift lines:

Sediment deposits:

Drainage patterns:

Other indicator(s):

Oxidized root channels:

Water-stained leaves:

FAC Neutral:

Local soil survey:

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: Previous subsurface monitoring supports wetland hydrology. Site is ditched. Recent weather pattern has been hot and dry.

WETLAND DETERMINATION

Hydrophytic vegetation present? Yes No

Hydric soils present? Yes No

Wetland hydrology present? Yes No

Rationale/Remarks:

Is the sampling point within a wetland?

Yes No

Table adopted from the 1987 Corps Wetland Delineation Manual

GeoEngineers

Appendix B-3
Southwest Wetland Data Forms

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 1	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	40.00	Yes
2	HOLCUS LANATUS	Herb	FAC	20.00	Yes
3	RANUNCULUS REPENS	Herb	FACW	5.00	No
4	LOTUS CORNICULATUS	Herb	FAC	30.00	Yes
5	TRIFOLIUM REPENS	Herb	FAC	2.00	No
6	LOLIUM PERENNE VAR. MULTIFLORUM	Herb	UPL	3.00	No

Total Number of Species: 6 Total Dominants: 3

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.61 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

_____ Stream, Lake, or Tide Gauge

_____ Aerial Photographs

_____ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____ Inundated

_____ Saturated in Upper 12 inches

_____ Water Marks

_____ Drift Lines

_____ Sediment Deposits

_____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches

_____ Water-Stained Leaves

_____ Local Soil Survey Data

X FAC-Neutral Test

_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-12		2.5Y3/3			
12-14		5Y4/2		Common/Prominent	5YR4/6

Hydric Soil Indicators:

_____Histosol
_____Histic Epipedon
_____Sulfidic Odor
_____Aquic Moisture Regime
_____Reducing Conditions
_____Gleyed or Low-Chroma Colors

_____ Concretions
_____ High Organic Content in Surface Layer in Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on Local Hydric Soils List
_____ Listed on National Hydric Soils List
_____ Organic Pan
_____Other (Explain in Remarks)

NRCS Field Indicators: ___
___
___

WETLAND DETERMINATION

Yes Hydrophytic Vegetation Present?
No Wetland Hydrology Present?
No Hydric Soils Present?

No Is this Sampling Point Within a Wetland?
No Is this Sampling Point a Waters of the US?
No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland
_____ Yes
X No

WoUS
_____ Yes
X No

6 Species Richness
2.61 Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 2	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	30.00	Yes
2	JUNCUS BALTICUS	Herb	FACW+	5.00	No
3	RANUNCULUS REPENS	Herb	FACW	10.00	No
4	LOTUS CORNICULATUS	Herb	FAC	35.00	Yes
5	HOLCUS LANATUS	Herb	FAC	20.00	Yes

Total Number of Species: 5 Total Dominants: 3

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.55 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

- Depth of Surface Water: ____ (in.)
- Depth to Free Water in Pit: 12<18 (in.)
- Depth to Saturated Soil: 8<10 (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-8		2.5Y3/2		Common/Prominent	2.5YR3/4
8-14		5Y4/1		Common/Prominent	5YR4/6

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____ ____ ____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- Yes Wetland Hydrology Present?
- Yes Hydric Soils Present?
- Yes Is this Sampling Point Within a Wetland?
- Yes Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
X Yes	X Yes	5	Species Richness
____ No	____ No	2.55	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 3	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	35.00	Yes
2	RANUNCULUS REPENS	Herb	FACW	5.00	No
3	HOLCUS LANATUS	Herb	FAC	25.00	Yes
4	LOTUS CORNICULATUS	Herb	FAC	35.00	Yes

Total Number of Species: 4 Total Dominants: 3

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.60 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

_____ Stream, Lake, or Tide Gauge

_____ Aerial Photographs

_____ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____ Inundated

_____ Saturated in Upper 12 inches

_____ Water Marks

_____ Drift Lines

_____ Sediment Deposits

_____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches

_____ Water-Stained Leaves

_____ Local Soil Survey Data

X FAC-Neutral Test

_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-8		2.5Y4/2			
8-14		2.5Y4/2		Few/Prominent	7.5YR4/6

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____ ____ ____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- No Wetland Hydrology Present?
- Yes Hydric Soils Present?
- No Is this Sampling Point Within a Wetland?
- No Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
____ Yes	____ Yes	4	Species Richness
X No	X No	2.60	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 4	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	40.00	Yes
2	HOLCUS LANATUS	Herb	FAC	50.00	Yes
3	LOTUS CORNICULATUS	Herb	FAC	0.00	No

Total Number of Species: 3 Total Dominants: 2

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.56 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

- Depth of Surface Water: ____ (in.)
- Depth to Free Water in Pit: 12<18 (in.)
- Depth to Saturated Soil: 8<10 (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-10		10YR4/2			
10-14		5Y4/2		Common/Prominent	10R3/2

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____ ____ ____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- Yes Wetland Hydrology Present?
- Yes Hydric Soils Present?
- Yes Is this Sampling Point Within a Wetland?
- Yes Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
X Yes	X Yes	3	Species Richness
____ No	____ No	2.56	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 5	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	90.00	Yes
2	HOLCUS LANATUS	Herb	FAC	5.00	No
3	RANUNCULUS REPENS	Herb	FACW	5.00	No

Total Number of Species: 3 Total Dominants: 1

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.05 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

_____ Stream, Lake, or Tide Gauge

_____ Aerial Photographs

_____ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____ Inundated

_____ Saturated in Upper 12 inches

_____ Water Marks

_____ Drift Lines

_____ Sediment Deposits

_____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches

_____ Water-Stained Leaves

_____ Local Soil Survey Data

X FAC-Neutral Test

_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-12		5Y4/2			
12-14		5Y4/2		Few/Prominent	7.5YR3/4

Hydric Soil Indicators:

_____Histosol
_____Histic Epipedon
_____Sulfidic Odor
_____Aquic Moisture Regime
_____Reducing Conditions
_____Gleyed or Low-Chroma Colors

_____ Concretions
_____ High Organic Content in Surface Layer in Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on Local Hydric Soils List
_____ Listed on National Hydric Soils List
_____ Organic Pan
_____Other (Explain in Remarks)

NRCS Field Indicators: ___
___
___

WETLAND DETERMINATION

Yes Hydrophytic Vegetation Present?
No Wetland Hydrology Present?
No Hydric Soils Present?

No Is this Sampling Point Within a Wetland?
No Is this Sampling Point a Waters of the US?
No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
Yes	Yes	3	Species Richness
X No	X No	2.05	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 6	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	80.00	Yes
2	JUNCUS EFFUSUS	Herb	FACW	20.00	Yes

Total Number of Species: 2 Total Dominants: 2

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.00 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

- Depth of Surface Water: ____ (in.)
- Depth to Free Water in Pit: 10<12 (in.)
- Depth to Saturated Soil: 6<8 (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-14		10Y5/1		Common/Prominent	10YR5/6

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____
____
____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- Yes Wetland Hydrology Present?
- Yes Hydric Soils Present?
- Yes Is this Sampling Point Within a Wetland?
- Yes Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	WoUS		
X Yes	X Yes	2	Species Richness
____ No	____ No	2.00	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 7	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	90.00	Yes
2	RANUNCULUS REPENS	Herb	FACW	5.00	No
3	LOTUS CORNICULATUS	Herb	FAC	5.00	No

Total Number of Species: 3 Total Dominants: 1

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.05 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

_____ Stream, Lake, or Tide Gauge

_____ Aerial Photographs

_____ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____ Inundated

_____ Saturated in Upper 12 inches

_____ Water Marks

_____ Drift Lines

_____ Sediment Deposits

_____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches

_____ Water-Stained Leaves

_____ Local Soil Survey Data

X FAC-Neutral Test

_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-10		10YR4/2			
0		5Y5/2		Few/Prominent	5YR3/4

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____ ____ ____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- No Wetland Hydrology Present?
- Yes Hydric Soils Present?
- No Is this Sampling Point Within a Wetland?
- No Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
____ Yes	____ Yes	3	Species Richness
X No	X No	2.05	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 8	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	95.00	Yes
2	RANUNCULUS REPENS	Herb	FACW	0.00	No

Total Number of Species: 2 Total Dominants: 1

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.00 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

- Depth of Surface Water: ____ (in.)
- Depth to Free Water in Pit: ____ (in.)
- Depth to Saturated Soil: 8<10 (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-6		2.5Y4/2			
6-14		10Y5/1		Common/Prominent	10YR5/6

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____ ____ ____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- Yes Wetland Hydrology Present?
- Yes Hydric Soils Present?
- Yes Is this Sampling Point Within a Wetland?
- Yes Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
X Yes	X Yes	2	Species Richness
____ No	____ No	2.00	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 9	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	90.00	Yes
2	LOTUS CORNICULATUS	Herb	FAC	10.00	No

Total Number of Species: 2 Total Dominants: 1

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.10 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

_____ Stream, Lake, or Tide Gauge
_____ Aerial Photographs
_____ Other
X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)
Depth to Free Water in Pit: _____ (in.)
Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water Marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
X FAC-Neutral Test
_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-8		10YR4/2			
8-14		5Y5/2		Few/Prominent	2.5YR3/4

Hydric Soil Indicators:

_____ Histosol
_____ Histic Epipedon
_____ Sulfidic Odor
_____ Aquic Moisture Regime
_X_ Reducing Conditions
_____ Gleyed or Low-Chroma Colors

_____ Concretions
_____ High Organic Content in Surface Layer in Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on Local Hydric Soils List
_____ Listed on National Hydric Soils List
_____ Organic Pan
_____ Other (Explain in Remarks)

NRCS Field Indicators: ___
___
___

WETLAND DETERMINATION

Yes Hydrophytic Vegetation Present?
No Wetland Hydrology Present?
Yes Hydric Soils Present?

No Is this Sampling Point Within a Wetland?
No Is this Sampling Point a Waters of the US?
No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
Yes	Yes	2	Species Richness
X No	X No	2.10	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 10	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:
Yes Do Normal Circumstances exist on the site?		Datum: NAD83
No Is the site significantly disturbed (Atypical Situation)?	North:	
No Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	100.00	Yes

Total Number of Species: 1 Total Dominants: 1

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.00 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

_____ Stream, Lake, or Tide Gauge

_____ Aerial Photographs

_____ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: 12<18 (in.)

Depth to Saturated Soil: 10<12 (in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____ Inundated

X Saturated in Upper 12 inches

_____ Water Marks

_____ Drift Lines

_____ Sediment Deposits

_____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches

_____ Water-Stained Leaves

_____ Local Soil Survey Data

X FAC-Neutral Test

_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-10		5Y4/1			
10-14		5Y4/1		Common/Prominent	10YR4/3

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____ ____ ____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- Yes Wetland Hydrology Present?
- Yes Hydric Soils Present?
- Yes Is this Sampling Point Within a Wetland?
- Yes Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	WoUS		
X Yes	X Yes	1	Species Richness
____ No	____ No	2.00	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 11	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:
Yes Do Normal Circumstances exist on the site?		Datum: NAD83
No Is the site significantly disturbed (Atypical Situation)?	North:	
No Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	100.00	Yes

Total Number of Species: 1 Total Dominants: 1

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.00 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

_____ Stream, Lake, or Tide Gauge

_____ Aerial Photographs

_____ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____ Inundated

_____ Saturated in Upper 12 inches

_____ Water Marks

_____ Drift Lines

_____ Sediment Deposits

_____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches

_____ Water-Stained Leaves

_____ Local Soil Survey Data

X FAC-Neutral Test

_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-12		5Y5/2			
12-14		5Y5/2		Few/Prominent	7.5YR4/4

Hydric Soil Indicators:

_____Histosol
_____Histic Epipedon
_____Sulfidic Odor
_____Aquic Moisture Regime
_____Reducing Conditions
_____Gleyed or Low-Chroma Colors

_____ Concretions
_____ High Organic Content in Surface Layer in Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on Local Hydric Soils List
_____ Listed on National Hydric Soils List
_____ Organic Pan
_____Other (Explain in Remarks)

NRCS Field Indicators: ___
___
___

WETLAND DETERMINATION

Yes Hydrophytic Vegetation Present?
No Wetland Hydrology Present?
No Hydric Soils Present?

No Is this Sampling Point Within a Wetland?
No Is this Sampling Point a Waters of the US?
No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
Yes	Yes	1	Species Richness
X No	X No	2.00	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 12	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:
Yes Do Normal Circumstances exist on the site?		Datum: NAD83
No Is the site significantly disturbed (Atypical Situation)?	North:	
No Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	100.00	Yes

Total Number of Species: 1 Total Dominants: 1
Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00
Prevalence Index: 2.00 FAC Neutral: Yes

HYDROLOGY

Recorded Data:
_____ Stream, Lake, or Tide Gauge
_____ Aerial Photographs
_____ Other
X No Recorded Data Available

Field Observations:
Depth of Surface Water: _____ (in.)
Depth to Free Water in Pit: _____ (in.)
Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water Marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
X FAC-Neutral Test
_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-10		2.5Y4/2			
10-14		2.5Y4/2		Few/Prominent	7.5YR4/6

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ___
___
___

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- No Wetland Hydrology Present?
- Yes Hydric Soils Present?
- No Is this Sampling Point Within a Wetland?
- No Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
____ Yes	____ Yes	1	Species Richness
X No	X No	2.00	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 13	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:
Yes Do Normal Circumstances exist on the site?		Datum: NAD83
No Is the site significantly disturbed (Atypical Situation)?	North:	
No Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	100.00	Yes

Total Number of Species: 1 Total Dominants: 1
Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00
Prevalence Index: 2.00 FAC Neutral: Yes

HYDROLOGY

Recorded Data:
_____ Stream, Lake, or Tide Gauge
_____ Aerial Photographs
_____ Other
X No Recorded Data Available

Field Observations:
Depth of Surface Water: _____ (in.)
Depth to Free Water in Pit: _____ (in.)
Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:
Primary Indicators:
_____ Inundated
_____ Saturated in Upper 12 inches
_____ Water Marks
_____ Drift Lines
_____ Sediment Deposits
_____ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
_____ Oxidized Root Channels in Upper 12 inches
_____ Water-Stained Leaves
_____ Local Soil Survey Data
X FAC-Neutral Test
_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-12		10YR4/2			
12-14		10YR4/2			2.5YR3/3

Hydric Soil Indicators:

_____Histosol
_____Histic Epipedon
_____Sulfidic Odor
_____Aquic Moisture Regime
_____Reducing Conditions
_____Gleyed or Low-Chroma Colors

_____ Concretions
_____ High Organic Content in Surface Layer in Sandy Soils
_____ Organic Streaking in Sandy Soils
_____ Listed on Local Hydric Soils List
_____ Listed on National Hydric Soils List
_____ Organic Pan
_____Other (Explain in Remarks)

NRCS Field Indicators: ___
___
___

WETLAND DETERMINATION

Yes Hydrophytic Vegetation Present?
No Wetland Hydrology Present?
No Hydric Soils Present?

No Is this Sampling Point Within a Wetland?
No Is this Sampling Point a Waters of the US?
No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
Yes	Yes	1	Species Richness
X No	X No	2.00	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 14	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	JUNCUS EFFUSUS	Herb	FACW	80.00	Yes
2	PHALARIS ARUNDINACEA	Herb	FACW	20.00	Yes

Total Number of Species: 2 Total Dominants: 2

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.00 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

_____ Stream, Lake, or Tide Gauge

_____ Aerial Photographs

_____ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____ Inundated

_____ Saturated in Upper 12 inches

_____ Water Marks

_____ Drift Lines

_____ Sediment Deposits

_____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches

_____ Water-Stained Leaves

_____ Local Soil Survey Data

X FAC-Neutral Test

_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-8		5Y4/2			
8-14		5YR4/2		Few/Prominent	2.5Y3/3

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ___
___
___

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- No Wetland Hydrology Present?
- Yes Hydric Soils Present?
- No Is this Sampling Point Within a Wetland?
- No Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
____ Yes	____ Yes	2	Species Richness
X No	X No	2.00	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 15	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	JUNCUS EFFUSUS	Herb	FACW	45.00	Yes
2	PHALARIS ARUNDINACEA	Herb	FACW	50.00	Yes

Total Number of Species: 2 Total Dominants: 2

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.00 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

- Depth of Surface Water: ____ (in.)
- Depth to Free Water in Pit: 8<10 (in.)
- Depth to Saturated Soil: 3<4 (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-8		10YR4/2			
8-14		10Y4/1		Common/Prominent	5YR3/4

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____ ____ ____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- Yes Wetland Hydrology Present?
- Yes Hydric Soils Present?
- Yes Is this Sampling Point Within a Wetland?
- Yes Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
X Yes	X Yes	2	Species Richness
____ No	____ No	2.00	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 16	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	80.00	Yes
2	LOTUS CORNICULATUS	Herb	FAC	15.00	No
3	RANUNCULUS REPENS	Herb	FACW	5.00	No

Total Number of Species: 3 Total Dominants: 1

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.15 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

_____ Stream, Lake, or Tide Gauge

_____ Aerial Photographs

_____ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____ Inundated

_____ Saturated in Upper 12 inches

_____ Water Marks

_____ Drift Lines

_____ Sediment Deposits

_____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches

_____ Water-Stained Leaves

_____ Local Soil Survey Data

X FAC-Neutral Test

_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-8		10YR4/2			
8-16		5Y4/2		Few/Prominent	2.5Y3/6

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____ ____ ____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- No Wetland Hydrology Present?
- Yes Hydric Soils Present?
- No Is this Sampling Point Within a Wetland?
- No Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
____ Yes	____ Yes	3	Species Richness
X No	X No	2.15	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 17	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	70.00	Yes
2	RANUNCULUS REPENS	Herb	FACW	5.00	No
3	LOTUS CORNICULATUS	Herb	FAC	5.00	No
4	AGROSTIS ALBA	Herb	FAC	20.00	Yes

Total Number of Species: 4 Total Dominants: 2

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.25 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

_____ Stream, Lake, or Tide Gauge

_____ Aerial Photographs

_____ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: 5<6 (in.)

Depth to Saturated Soil: 4<5 (in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____ Inundated

X Saturated in Upper 12 inches

_____ Water Marks

_____ Drift Lines

_____ Sediment Deposits

_____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches

_____ Water-Stained Leaves

_____ Local Soil Survey Data

X FAC-Neutral Test

_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-6		10YR4/2			
6-14		2.5Y4/1		Common/Prominent	5YR3/4

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____ ____ ____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- Yes Wetland Hydrology Present?
- Yes Hydric Soils Present?
- Yes Is this Sampling Point Within a Wetland?
- Yes Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
X Yes	X Yes	4	Species Richness
____ No	____ No	2.25	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 18	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	PHALARIS ARUNDINACEA	Herb	FACW	35.00	Yes
2	HOLCUS LANATUS	Herb	FAC	25.00	Yes
3	LOTUS CORNICULATUS	Herb	FAC	40.00	Yes

Total Number of Species: 3 Total Dominants: 3

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.65 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other
- X No Recorded Data Available

Field Observations:

- Depth of Surface Water: ____ (in.)
- Depth to Free Water in Pit: 12<18 (in.)
- Depth to Saturated Soil: 6<8 (in.)

Wetland Hydrology Indicators:

Primary Indicators:

- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

- ____ Oxidized Root Channels in Upper 12 inches
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-16		5Y5/1		Common/Prominent	7.5YR4/6

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- X Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ____ ____ ____

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- Yes Wetland Hydrology Present?
- Yes Hydric Soils Present?
- Yes Is this Sampling Point Within a Wetland?
- Yes Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
X Yes	X Yes	3	Species Richness
____ No	____ No	2.65	Prevalence Index

Project Name: Cedar Grove Wetlands SW1 - SW4	Date: 04/24/2007	Time:
Sample Point Number: 19	County: Snohomish	State: WA
Investigators: Shawn Mahugh, David Conlin, Kristin Sullivan	Roll No:	Photo No:

Yes	Do Normal Circumstances exist on the site?		Datum: NAD83
No	Is the site significantly disturbed (Atypical Situation)?	North:	
No	Is the site a potential Problem Area?	West:	

VEGETATION

No.	Scientific Name	Strata	Indicator Status	Percent Cover	Dominant Species
1	HOLCUS LANATUS	Herb	FAC	45.00	Yes
2	LOTUS CORNICULATUS	Herb	FAC	35.00	Yes
3	PHALARIS ARUNDINACEA	Herb	FACW	20.00	Yes

Total Number of Species: 3 Total Dominants: 3

Percent of Dominants that are Wetland Species: 50/20: 100.00 FAC(minus)- applied: 100.00

Prevalence Index: 2.80 FAC Neutral: Yes

HYDROLOGY

Recorded Data:

_____ Stream, Lake, or Tide Gauge

_____ Aerial Photographs

_____ Other

X No Recorded Data Available

Field Observations:

Depth of Surface Water: _____ (in.)

Depth to Free Water in Pit: _____ (in.)

Depth to Saturated Soil: _____ (in.)

Wetland Hydrology Indicators:

Primary Indicators:

_____ Inundated

_____ Saturated in Upper 12 inches

_____ Water Marks

_____ Drift Lines

_____ Sediment Deposits

_____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):

_____ Oxidized Root Channels in Upper 12 inches

_____ Water-Stained Leaves

_____ Local Soil Survey Data

X FAC-Neutral Test

_____ Other (Explain in Remarks)

SOILS

Map Unit Name: Puget Silty Clay Loam 55 Drainage Class:
(Series and Phase): Field Observations
Taxonomy (Subgroup): Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Hz	Matrix Color (Munsell Moist)	Texture, Concretions, Structure	Redox Feature Abundance/Contrast	Redox Color (Munsell Moist)
0-10		10YR3/2	Silty clay		
10-16		10YR4/2	Silty clay	Few	7.5YR5/8

Hydric Soil Indicators:

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- X Reducing Conditions
- ____ Gleyed or Low-Chroma Colors
- ____ Concretions
- ____ High Organic Content in Surface Layer in Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on Local Hydric Soils List
- ____ Listed on National Hydric Soils List
- ____ Organic Pan
- ____ Other (Explain in Remarks)

NRCS Field Indicators: ___
___
___

WETLAND DETERMINATION

- Yes Hydrophytic Vegetation Present?
- No Wetland Hydrology Present?
- Yes Hydric Soils Present?
- No Is this Sampling Point Within a Wetland?
- No Is this Sampling Point a Waters of the US?
- No Have the determination results been overridden by the user?

REMARKS

[Notes-] Site is utilized for agricultural production (haying). Soils are disced annually.

Wetland	**WoUS**		
____ Yes	____ Yes	3	Species Richness
X No	X No	2.80	Prevalence Index

GeoEngineers

Appendix B-4
Southeast Wetland Data Forms

APPENDIX B TABLE 1

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/ Buttercup	**Sample Plot #:**	SP1

Location: **SE Wetland 1**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes to either, explain: Site was recently disked, portions of vegetation disturbed		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	60	
Ranunculus repens	Creeping Buttercup	FAC	G	5	

% of dominant species that are OBL, FACW, and/or FAC: 1 out of 1 = 100%

Check other indicators (if necessary) that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks: FACW dominant vegetation

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 1 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes	No
Profile Description			Is the soil on the hydric soils list?	Yes	No
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-10”	10YR3/2	10YR3/4	Many, 2mm	Silty clay loam	
10-16”	10YR3/2			Silty clay loam	

Hydric soil indicators (check all that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma < 2	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks: chroma of 2 with mottles

HYDROLOGY

(Wetland delineation was performed on 5/12/05)

Is it in the growing season?	Yes	No	Check any that apply:	
Depth of inundation:			Aerial photograph	
Depth to free water in soil pit:	7”		Stream, lake or gage data	
Depth to saturated soil:	6”		Other	

Check all that indicators that apply:

Water marks:	Yes	No	Oxidized root channels:	Yes	No
Drift lines:	Yes	No	Water-stained leaves:	Yes	No
Sediment deposits:	Yes	No	FAC Neutral:	Yes	No
Drainage patterns:	Yes	No	Local soil survey:	Yes	No
Other indicator(s):	Yes	No			

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: saturated soil at 7” on May 12th

WETLAND DETERMINATION

Hydrophytic vegetation present?	Yes	No	Is the sampling point within a wetland?
Hydric soils present?	Yes	No	
Wetland hydrology present?	Yes	No	Yes No

Rationale/Remarks: all three criteria met

Table adopted from the 1987 Corps Wetland Delineation Manual

APPENDIX B TABLE 2

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/ Thistle	**Sample Plot #:**	SP2

Location: **SE Wetland 1**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes to either, explain: Site was recently disked		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canary Grass	FACW	G	60	
Cirsium arvense	Thistle	FAC	H	5	
Trifolium repens	White Clover	FAC	P	5	
Juncus effusus	Soft Rush	FAC	R	5	
Holcus lanatus	Velvet grass	FAC	G	10	

% of dominant species that are OBL, FACW, and/or FAC: 1 out of 1 = 100%

Check other indicators (if necessary) that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks: FACW dominant

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 2 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes	No
Profile Description			Is the soil on the hydric soils list?	Yes	No
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-8”	10YR3/2	10YR3/4	Few, 1mm	Silty clay loam	
8-16”	10YR3/2			Silty clay loam	

Hydric soil indicators (check all that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma < 2	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks: chroma 2 with mottles

HYDROLOGY

(Wetland delineation was performed on 5/12/05)

Is it in the growing season?	Yes	No	Check any that apply:	
Depth of inundation:			Aerial photograph	
Depth to free water in soil pit:	None		Stream, lake or gage data	
Depth to saturated soil:	None		Other	

Check all that indicators that apply:

Water marks:	Yes	No	Oxidized root channels:	Yes	No
Drift lines:	Yes	No	Water-stained leaves:	Yes	No
Sediment deposits:	Yes	No	FAC Neutral:	Yes	No
Drainage patterns:	Yes	No	Local soil survey:	Yes	No
Other indicator(s):	Yes	No			

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: no wetland hydrology indicators observed

WETLAND DETERMINATION

Hydrophytic vegetation present?	Yes	No	Is the sampling point within a wetland?	
Hydric soils present?	Yes	No		
Wetland hydrology present?	Yes	No	Yes	No

Rationale/Remarks: wetland hydrology criteria not met

Table adopted from the 1987 Corps Wetland Delineation Manual

APPENDIX B TABLE 3

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/ Silverweed	**Sample Plot #:**	SP3

Location: **SE Wetland 1**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes to either, explain: Site was recently disked, portions of vegetation disturbed		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	80	
Potentilla anserine ssp. pacifica	Silverweed	FACW	H	5	
Ranunculus repens	Creeping Buttercup	FAC	G	5	

% of dominant species that are OBL, FACW, and/or FAC: 1 out of 1 = 100%

Check other indicators (if necessary) that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks: FACW dominant veg

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 3 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes	No
Profile Description			Is the soil on the hydric soils list?	Yes	No
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-11”	10YR3/2	10YR3/4	Many, 1mm	Silty clay loam	
11-16”	10YR3/2			Silty clay loam	

Hydric soil indicators (check all that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma < 2	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks: chroma of 2 with mottles

HYDROLOGY

(Wetland delineation was performed on 5/12/05)

Is it in the growing season?	Yes	No	Check any that apply:	
Depth of inundation:			Aerial photograph	
Depth to free water in soil pit:	8”		Stream, lake or gage data	
Depth to saturated soil:	7”		Other	

Check all that indicators that apply:

Water marks:	Yes	No	Oxidized root channels:	Yes	No
Drift lines:	Yes	No	Water-stained leaves:	Yes	No
Sediment deposits:	Yes	No	FAC Neutral:	Yes	No
Drainage patterns:	Yes	No	Local soil survey:	Yes	No
Other indicator(s):	Yes	No			

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: saturated soils at 7” on May 12; strongly oxidized root zone

WETLAND DETERMINATION

Hydrophytic vegetation present?	Yes	No	Is the sampling point within a wetland?
Hydric soils present?	Yes	No	
Wetland hydrology present?	Yes	No	Yes No

Rationale/Remarks: all three criteria met

Table adopted from the 1987 Corps Wetland Delineation Manual

APPENDIX B TABLE 4

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/Rye/ Thistle	**Sample Plot #:**	SP4

Location: **SE Wetland 1**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes to either, explain: Site was recently disked		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	70	
Cirsium arvense	thistle	FAC	H	5	
Lolium perenne	Perennial Ryegrass	FACU	G	15	

% of dominant species that are OBL, FACW, and/or FAC: 1 out of 1 = 100%

Check other indicators (if necessary) that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks: FAWC is dominant plant community.

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 4 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes	No
Profile Description			Is the soil on the hydric soils list?	Yes	No
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-10”	10YR3/2	10YR3/4	Few, 1mm	Silty clay loam	
10-16”	10YR3/2			Silty clay loam	

Hydric soil indicators (check all that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma < 2	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks: chroma of 2 with mottles

HYDROLOGY

(Wetland delineation was performed on 5/12/05)

Is it in the growing season?	Yes	No	Check any that apply:	
Depth of inundation:			Aerial photograph	
Depth to free water in soil pit:	None		Stream, lake or gage data	
Depth to saturated soil:	None		Other	

Check all that indicators that apply:

Water marks:	Yes	No	Oxidized root channels:	Yes	No
Drift lines:	Yes	No	Water-stained leaves:	Yes	No
Sediment deposits:	Yes	No	FAC Neutral:	Yes	No
Drainage patterns:	Yes	No	Local soil survey:	Yes	No
Other indicator(s):	Yes	No			

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: no wetland hydrology indicators were observed

WETLAND DETERMINATION

Hydrophytic vegetation present?	Yes	No	Is the sampling point within a wetland?	
Hydric soils present?	Yes	No		
Wetland hydrology present?	Yes	No	Yes	No

Rationale/Remarks: wetland hydrology indicators not observed

Table adopted from the 1987 Corps Wetland Delineation Manual

APPENDIX B TABLE 5

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/ Buttercup/Silverweed	**Sample Plot #:**	SP5

Location: **SE Wetland 2**

Do normal environmental conditions exist on site? Yes No

If No explain:

Is the site recently significantly disturbed (atypical situation)? Yes No

If yes to either, explain: Site was recently disked, portions of vegetation disturbed

Is the area a potential Problem Area? Yes No

If yes, explain:

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	80	
Ranunculus repens	Creeping Buttercup	FAC	G	5	
Potentilla anserine ssp. pacifica	Silverweed	FACW	G	5	

% of dominant species that are OBL, FACW, and/or FAC: 1 out of 1 = 100%

Check other indicators (if necessary) that apply:

- Regional knowledge of plant communities
- Wetland plant list (Nat'l or Regional)
- Physiological/reproductive adaptations
- Morphological adaptations
- Technical literature
- Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks: FACW dominant vegetation

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 5 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes	No
Profile Description			Is the soil on the hydric soils list?	Yes	No
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-10”	10YR3/2	10YR3/4	Many, 2mm	Silty clay loam	

Hydric soil indicators (check all that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma < 2	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks: chroma of 2 with mottles

HYDROLOGY

(Wetland delineation was performed on 5/12/05)

Is it in the growing season?	Yes	No	Check any that apply:	
Depth of inundation:			Aerial photograph	
Depth to free water in soil pit:	5”		Stream, lake or gage data	
Depth to saturated soil:	4”		Other	

Check all that indicators that apply:

Water marks:	Yes	No	Oxidized root channels:	Yes	No
Drift lines:	Yes	No	Water-stained leaves:	Yes	No
Sediment deposits:	Yes	No	FAC Neutral:	Yes	No
Drainage patterns:	Yes	No	Local soil survey:	Yes	No
Other indicator(s):	Yes	No			

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: saturated soil at 4” on May 12th

WETLAND DETERMINATION

Hydrophytic vegetation present?	Yes	No	Is the sampling point within a wetland?	
Hydric soils present?	Yes	No		
Wetland hydrology present?	Yes	No	Yes	No

Rationale/Remarks: all three criteria met

Table adopted from the 1987 Corps Wetland Delineation Manual

APPENDIX B TABLE 6

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/thistle	**Sample Plot #:**	SP8

Location: **SE Wetland 2**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes to either, explain: Site was recently disked		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	**Common name**	**Indicator***	**Stratum**	**% Cover**	**Dom.**
Phalaris arundinacea,	Reed Canarygrass	FACW	G	60	
Cirsium arvense	thistle	FAC	H	5	

% of dominant species that are OBL, FACW, and/or FAC: 1 out of 1 = 100%

Check other indicators (if necessary) that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks: FACW is dominant plant community.

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 6 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes	No
Profile Description			Is the soil on the hydric soils list?	Yes	No
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-11”	10YR3/2	10YR3/4	Faint, 1mm	Silty clay loam	
11-18”	Gley1 3/10x			Silty clay loam	

Hydric soil indicators (check all that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma < 2	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks: gleyed, chroma of 2 with mottles

HYDROLOGY

(Wetland delineation was performed on 5/12/05)

Is it in the growing season?	Yes	No	Check any that apply:	
Depth of inundation:			Aerial photograph	
Depth to free water in soil pit:	None		Stream, lake or gage data	
Depth to saturated soil:	None		Other	

Check all that indicators that apply:

Water marks:	Yes	No	Oxidized root channels:	Yes	No
Drift lines:	Yes	No	Water-stained leaves:	Yes	No
Sediment deposits:	Yes	No	FAC Neutral:	Yes	No
Drainage patterns:	Yes	No	Local soil survey:	Yes	No
Other indicator(s):	Yes	No			

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: no wetland hydrology indicators were observed

WETLAND DETERMINATION

Hydrophytic vegetation present?	Yes	No	Is the sampling point within a wetland?	
Hydric soils present?	Yes	No		
Wetland hydrology present?	Yes	No	Yes	No

Rationale/Remarks: wetland hydrology indicators not observed

Table adopted from the 1987 Corps Wetland Delineation Manual

APPENDIX B TABLE 7

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/ Silverweed	**Sample Plot #:**	SP7

Location: **SE Wetland 2**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes to either, explain: Site was recently disked, portions of vegetation disturbed		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	**Common name**	**Indicator***	**Stratum**	**% Cover**	**Dom.**
Phalaris arundinacea,	Reed Canarygrass	FACW	G	80	
Potentilla anserine ssp. pacifica	Silverweed	FACW	G	5	

% of dominant species that are OBL, FACW, and/or FAC: 1 out of 1 = 100%

Check other indicators (if necessary) that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks: FACW dominant vegetation

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 7 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes	No
Profile Description			Is the soil on the hydric soils list?	Yes	No
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-11”	10YR3/2	10YR3/4	Many, 2mm	Silty clay loam	

Hydric soil indicators (check all that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma < 2	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks: chroma of 2 with mottles

HYDROLOGY

(Wetland delineation was performed on 5/12/05)

Is it in the growing season?	Yes	No	Check any that apply:	
Depth of inundation:			Aerial photograph	
Depth to free water in soil pit:	6”		Stream, lake or gage data	
Depth to saturated soil:	5”		Other	

Check all that indicators that apply:

Water marks:	Yes	No	Oxidized root channels:	Yes	No
Drift lines:	Yes	No	Water-stained leaves:	Yes	No
Sediment deposits:	Yes	No	FAC Neutral:	Yes	No
Drainage patterns:	Yes	No	Local soil survey:	Yes	No
Other indicator(s):	Yes	No			

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: saturated soil at 5” on May 12th

WETLAND DETERMINATION

Hydrophytic vegetation present?	Yes	No	Is the sampling point within a wetland?	
Hydric soils present?	Yes	No		
Wetland hydrology present?	Yes	No	Yes	No

Rationale/Remarks: all three criteria met

Table adopted from the 1987 Corps Wetland Delineation Manual

APPENDIX B TABLE 8

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM

Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/thisle	**Sample Plot #:**	SP8

Location: **SE Wetland 2**

Do normal environmental conditions exist on site?	Yes	No
If No explain:		
Is the site recently significantly disturbed (atypical situation)?	Yes	No
If yes to either, explain: Site was recently disked		
Is the area a potential Problem Area?	Yes	No
If yes, explain:		

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	60	
Cirsium arvense	thistle	FAC	H	5	

% of dominant species that are OBL, FACW, and/or FAC: 1 out of 1 = 100%

Check other indicators (if necessary) that apply:

Regional knowledge of plant communities	Wetland plant list (Nat'l or Regional)
Physiological/reproductive adaptations	Morphological adaptations
Technical literature	Other

Is the hydrophytic vegetation criterion met? Yes No

Rationale/Remarks: FACW is dominant plant community.

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 8 (Continued)

SOILS

Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes	No
Profile Description			Is the soil on the hydric soils list?	Yes	No
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-12”	10YR3/2	10YR3/4	Faint, 1mm	Silty clay loam	
12-18”	Gley1 3/10x			Silty clay loam	

Hydric soil indicators (check all that apply):

Histosol	Matrix chroma of 2 with mottles
Histic Epipedon	Concretions
Sulfidic Odor	Mg or Fe Concretions
Aquic Moisture Regime	High Organic Content (sandy soil)
Reducing Conditions	Organic Streaking (sandy soil)
Gleyed or Low Chroma < 2	Other

Is the hydric soil criterion met? Yes No

Rationale/Remarks: gleyed, chroma of 2 with mottles

HYDROLOGY

(Wetland delineation was performed on 5/12/05)

Is it in the growing season?	Yes	No	Check any that apply:	
Depth of inundation:			Aerial photograph	
Depth to free water in soil pit:	None		Stream, lake or gage data	
Depth to saturated soil:	None		Other	

Check all that indicators that apply:

Water marks:	Yes	No	Oxidized root channels:	Yes	No
Drift lines:	Yes	No	Water-stained leaves:	Yes	No
Sediment deposits:	Yes	No	FAC Neutral:	Yes	No
Drainage patterns:	Yes	No	Local soil survey:	Yes	No
Other indicator(s):	Yes	No			

Is the wetland hydrology criterion met? Yes No

Rationale/Remarks: no wetland hydrology indicators were observed

WETLAND DETERMINATION

Hydrophytic vegetation present?	Yes	No	Is the sampling point within a wetland?	
Hydric soils present?	Yes	No		
Wetland hydrology present?	Yes	No	Yes	No

Rationale/Remarks: wetland hydrology indicators not observed

Table adopted from the 1987 Corps Wetland Delineation Manual

GeoEngineers

Appendix C
Site Photographs

Photograph 1. Wetland NE1 (Facing West)

Photograph 2. Test Pit SP6 in Wetland NE1 (April 24, 2007)

Photograph 3. Test Pit SP3 in Wetland NE1 (April 24, 2007)

Photograph 4. Upland Test Pit SP2 Near Wetland NE 1 (April 24, 2007)

Photograph 5. Southern Portion of Wetland SW1 (Facing West)

Photograph 6. Test Pit SP18 in Wetland SW1 (April 23, 2007)

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Photograph 7. Wetland SW2 (Facing South)

Photograph 8. Test Pit SP17 in Wetland SW2 (April 23, 2007)

Photograph 9. Wetland SW3 (Facing Northeast)

Photograph 10. Test Pit SP6 in Wetland SW3 (April 23, 2007)

Photograph 11. Photograph Showing Ditch along South Edge of Access Road with Wetland SW1 in Foreground and Wetland SW4 in Background

Photograph 12. Test Pit SP2 in Wetland SW4 (April 23, 2007)

Photograph 13. Wetland SW5 (Facing North)

Photograph 14. Test Pit SP7 in Wetland SW5 (April 13, 2007)

Photograph 15. Wetland SW6 (Facing West)

Photograph 16. Test Pit SP11 in Wetland SW6 (April 13, 2007)

Photograph 17. Typical Upland Test Pit in Southwestern Portion of Study Area (April 13, 2007)

Photograph 18. Wetland SE1 (Facing Northwest)

Photograph 19. Wetland NW1 (Facing North)

Photograph 20. Location of Test Pit SP2 in Wetland NW2 (Facing East)

Photograph 21. Parking Lot with Wetland NW3 in Background (Facing North)

Photograph 22. Ditch in Northeast Portion of Study Area (Facing North)

Photograph 23. Inboard Side of Tide Gate at Northeast Portion of Study Area

Photograph 24. Tide Gate Discharge into Union Slough

GeoEngineers

Appendix D
Ecology Wetland Rating Forms

Wetland name or number NE-1

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): NE-1 Date of site visit: 4/24/07

Rated by SHAWN MAHUGH Trained by Ecology? Yes__ No ✓ Date of training —

SEC: 5 TWNSHP: 29N RNGE: 5E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 7 Estimated size 2.25 ac.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III ✓ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	12
Score for Hydrologic Functions	10
Score for Habitat Functions	13
TOTAL score for Functions	35

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✓
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Wetland name or number NE-1

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	✓	

CITY OF EVERETT IDENTIFIES WETLAND TO HAVE HIGH TIDAL MARSH RESTORATION POTENTIAL.

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number NE-1

Classification of Wetland Units in Western Washington

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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
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 <3ft diameter and less than 1 foot deep).*
NO – go to 5 **YES** – The wetland class is **Slope**

Wetland name or number NE-1

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 two years.

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

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

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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 NE-1

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 → Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 → NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 → Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* → 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 Map of Hydroperiods	Figure ___ 4
D	**Total for D 1** *Add the points in the boxes above*	6
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland ✓ Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ → **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	12

Wetland name or number NE-1

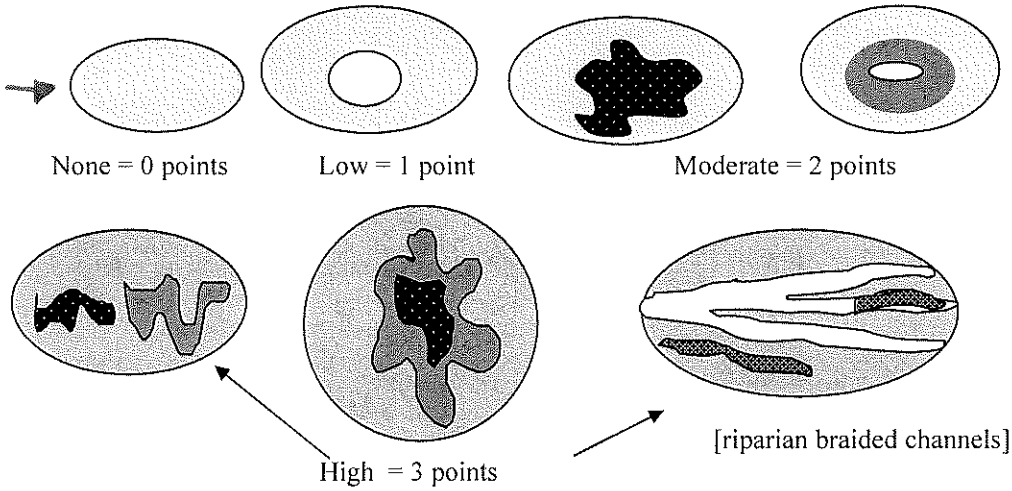
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 → Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 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 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	3
D	D 3.3 Contribution of wetland unit 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 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 unit is in the FLATS class points = 5	5
D	**Total for D 3** *Add the points in the boxes above*	10
D	**D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** (NO) multiplier is **1**	*(see p. 49)* multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	10

Wetland name or number NE-1

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓ Emergent plants ____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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 → 1 structure — points = 0 Map of Cowardin vegetation classes	**Figure ___** 0
H 1.2. Hydroperiods ***(see p. 73)*** *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 acre to count. (see text for descriptions of hydroperiods)* ✓ Permanently flooded or inundated — → 4 or more types present — points = 3 ✓ Seasonally flooded or inundated — 3 types present — points = 2 ✓ Occasionally flooded or inundated — 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland* = 2 points** ____ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	**Figure ___** 3
H 1.3. Richness of Plant Species ***(see p. 75)*** 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)* *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 *List species below if you want to:*	1

Total for page 4

Wetland name or number NE-1

	Figure ___
H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ✓ At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	1
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	5

Comments

Wetland name or number NE-1

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** ✓ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure ___ 0
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 1

Wetland name or number NE-1

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* *These are DFW definitions. Check with your local DFW biologist if there are any questions.* ✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Old-growth 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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. ____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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. ____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ✓ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ✓ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ✓ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). → If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	4

Wetland name or number NE-1

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 → There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	8
TOTAL for H 1 from page 14	5
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	13

Wetland name or number NE-1

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

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 *(see p. 86)* Does the wetland unit 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 ✓	
SC 1.1 Is the wetland unit 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 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number NE-1

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No) - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 (No) Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No ✓ Is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** 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 surface 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 meets 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 invasive plant species (see list of invasive species on p. 74). — 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 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	N/A

Wetland name or number NW-1

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): NW-1 Date of site visit: 8/9/06

Rated by SHAWN MAHUGH Trained by Ecology? Yes__ No ✓ Date of training –

SEC: 5 TWNSHP: 29N RNGE: 5E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 7 Estimated size 3.61

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III ✓ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	12
Score for Hydrologic Functions	10
Score for Habitat Functions	11
TOTAL score for Functions	33

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✓
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Wetland name or number NW-1

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	✓	

WETLAND IDENTIFIED IN EVERETT SMP

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number NW-1

Classification of Wetland Units in Western Washington

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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
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 <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES** – The wetland class is **Slope**

Wetland name or number NW-1

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 two years.

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

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

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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 NW-1

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 → Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 → NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 → Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* → 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 Map of Hydroperiods	Figure ___ 4
D	**Total for D 1** *Add the points in the boxes above*	6
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland ✓ Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ (YES) multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	12

Wetland name or number NW-1

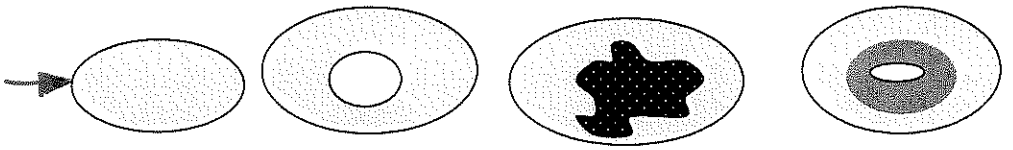
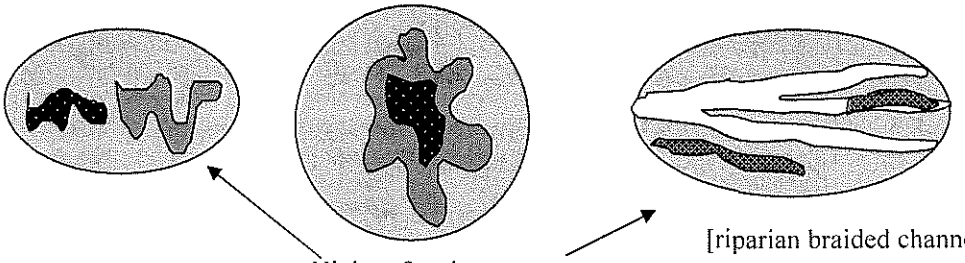
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 → Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 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 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	3
D	D 3.3 Contribution of wetland unit 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 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 unit is in the FLATS class points = 5	5
D	**Total for D 3** *Add the points in the boxes above*	10
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** (NO) multiplier is **1**	*(see p. 49)* multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	10

Wetland name or number NW-1

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed __✓__Emergent plants ____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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 → 1 structure — points = 0 Map of Cowardin vegetation classes	**Figure ___** Ø
H 1.2. Hydroperiods ***(see p. 73)*** *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 acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 __✓__Seasonally flooded or inundated — → 3 types present — points = 2 __✓__Occasionally flooded or inundated — 2 types present — point = 1 __✓__Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland* = 2 points** ____ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	**Figure ___** 2
H 1.3. Richness of Plant Species ***(see p. 75)*** 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)* *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 *List species below if you want to:* → 5 - 19 species — points = 1 < 5 species — points = 0	1

Total for page 3

Wetland name or number NW-1

	Figure ___
H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points  High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

Comments

Wetland name or number NW-1

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** ✓ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure ___ Ø
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 1

Wetland name or number NW-1

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* *These are DFW definitions. Check with your local DFW biologist if there are any questions.* ✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Old-growth 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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. ____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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. ____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ✓ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ✓ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ✓ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). → If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	4

Wetland name or number NW-1

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 → There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	8
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	11

Wetland name or number NW-1

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

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 *(see p. 86)* Does the wetland unit 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 ✓	
SC 1.1 Is the wetland unit 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 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number NW-1

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No) - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 (No) - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No ✓ Is not a bog for purpose of rating	– No **Cat. I**

Wetland name or number NW-1

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** 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 surface 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 meets 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 invasive plant species (see list of invasive species on p. 74). — 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 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number NW-1

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	NA

Wetland name or number NW-2

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): NW-2 Date of site visit: 8/9/06

Rated by SHAWN MAHUGH Trained by Ecology? Yes__ No ✓ Date of training —

SEC: 5 TWNSHP: 29N RNGE: 5E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 7 Estimated size 2.89

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III ✓ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	12
Score for Hydrologic Functions	10
Score for Habitat Functions	11
TOTAL score for Functions	33

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		Depressional	✓
Natural Heritage Wetland		Riverine	
Bog		Lake-fringe	
Mature Forest		Slope	
Old Growth Forest		Flats	
Coastal Lagoon		Freshwater Tidal	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Wetland name or number NW-2

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	✓	

WETLAND IDENTIFIED IN EVERETT SMP.

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number NW-2

Classification of Wetland Units in Western Washington

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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
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 <3ft diameter and less than 1 foot deep).*
NO – go to 5 **YES** – The wetland class is **Slope**

Wetland name or number NW-2

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 two years.

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

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

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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 NW-2

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 → Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 → NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 → Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* → 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 Map of Hydroperiods	Figure ___ 4
D	**Total for D 1** *Add the points in the boxes above*	6
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland ✓ Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ (YES) multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	12

Wetland name or number NW-2

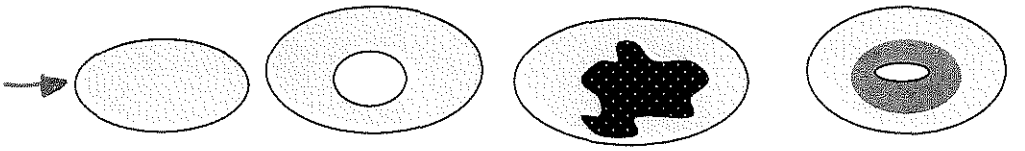
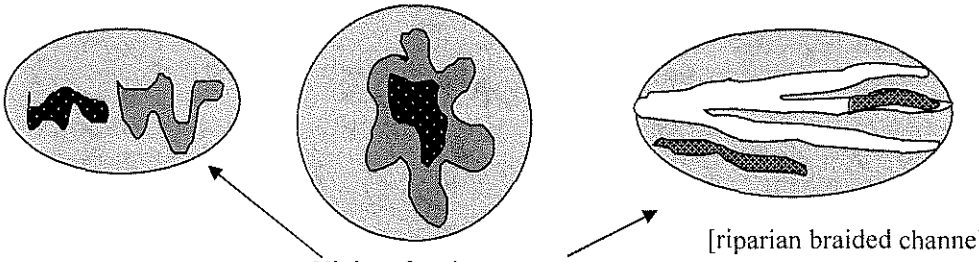
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 → Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 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 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	3
D	D 3.3 Contribution of wetland unit 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 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 unit is in the FLATS class points = 5	5
D	**Total for D 3** *Add the points in the boxes above*	10
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** (**NO**) multiplier is **1**	*(see p. 49)* multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	10

Wetland name or number NW-2

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓ Emergent plants ____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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 → 1 structure — points = 0 Map of Cowardin vegetation classes	Figure ___ 0
H 1.2. Hydroperiods ***(see p. 73)*** *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 acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ✓ Seasonally flooded or inundated — → 3 types present — points = 2 ✓ Occasionally flooded or inundated — 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland*** **= 2 points** ____***Freshwater tidal wetland*** **= 2 points** Map of hydroperiods	Figure ___ 2
H 1.3. Richness of Plant Species ***(see p. 75)*** 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)* *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 *List species below if you want to:*	1

Total for page 3

Wetland name or number NW-2

	Figure ___
H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points  High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

Comments

Wetland name or number NW-2

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** ✓ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure ___** 0
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 1

Wetland name or number NW-2

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* *These are DFW definitions. Check with your local DFW biologist if there are any questions.* ✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Old-growth 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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. ____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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. ____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ✓ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ✓ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ✓ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). → If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	4

Wetland name or number NW-2

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 → There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	8
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	11

Wetland name or number NW-2

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

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 *(see p. 86)* Does the wetland unit 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 ✓	
SC 1.1 Is the wetland unit 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 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number NW-2

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs ***(see p. 87)*** Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No) - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 (No) - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No ✓ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number NW-2

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** 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 surface 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 meets 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 invasive plant species (see list of invasive species on p. 74). — 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 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number NW-2

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	NA

Wetland name or number NW-3

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): NW-3 Date of site visit: 8/9/06

Rated by SHAWN MAHUGH Trained by Ecology? Yes__ No ✓ Date of training —

SEC: 5 TWNSHP: 29N RNGE: 5E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 7 Estimated size .08 ac.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III ✓ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	12
Score for Hydrologic Functions	7
Score for Habitat Functions	11
TOTAL score for Functions	30

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✓
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Wetland name or number NW-3

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	✓	

WETLAND IS LISTED IN EVERETT SMP.

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number NW-3

Classification of Wetland Units in Western Washington

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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
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 <3ft diameter and less than 1 foot deep).*
NO – go to 5 **YES** – The wetland class is **Slope**

Wetland name or number MW-3

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 two years.

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

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

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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 NW-3

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 →Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 →NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 →Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* →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 Map of Hydroperiods	Figure ___ 4
D	**Total for D 1** *Add the points in the boxes above*	6
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland ✓ Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ (YES) multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	12

Wetland name or number NW-3

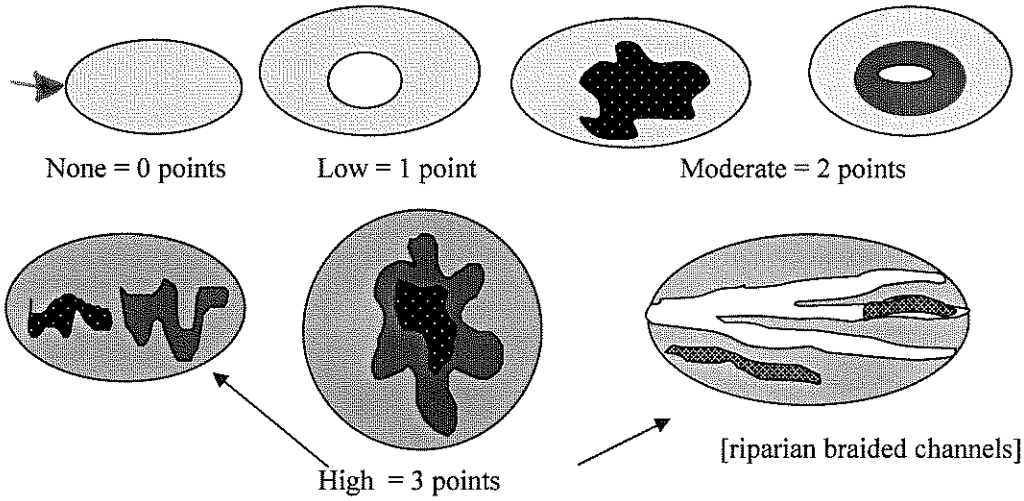
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 → Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 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 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 → Marks of ponding less than 0.5 ft points = 0	0
D	D 3.3 Contribution of wetland unit 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 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 unit is in the FLATS class points = 5	5
D	**Total for D 3** *Add the points in the boxes above*	7
D	**D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** (**NO**) multiplier is **1**	*(see p. 49)* multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	7

Wetland name or number NW-3

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓ Emergent plants ____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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 → 1 structure — points = 0 Map of Cowardin vegetation classes	**Figure ___** 0
H 1.2. Hydroperiods ***(see p. 73)*** *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 acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ✓ Seasonally flooded or inundated — → 3 types present — points = 2 ✓ Occasionally flooded or inundated — 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland*** **= 2 points** ____ ***Freshwater tidal wetland*** **= 2 points** Map of hydroperiods	**Figure ___** 2
H 1.3. Richness of Plant Species ***(see p. 75)*** 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)* *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 *List species below if you want to:*	1

Total for page 3

Wetland name or number NW-3

	Figure ___
H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

Comments

Wetland name or number NW-3

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** ✓ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure ___ 0
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? *(dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor).* YES = **4 points** *(go to H 2.3)* NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** *(go to H 2.3)* NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 1

Wetland name or number NW-3

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* *These are DFW definitions. Check with your local DFW biologist if there are any questions.* ✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Old-growth 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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. ____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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. ____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ✓ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ✓ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ✓ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). → If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	4

Wetland name or number NW-3

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 → There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	8
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	11

Wetland name or number NW-3

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

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 *(see p. 86)* Does the wetland unit 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 ✓	
SC 1.1 Is the wetland unit 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 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number NW-3

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs ***(see p. 87)*** Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No) - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 (No) - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No ✓ Is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** 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 surface 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 meets 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 invasive plant species (see list of invasive species on p. 74). — 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 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number NW-3

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	NA

Wetland name or number SE-1

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): SE-1 Date of site visit: 5/12/05

Rated by SHAWN MAHUGH Trained by Ecology? Yes__ No ✓ Date of training —

SEC: 5 TWNSHP: 29N RNGE: 5E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 7 Estimated size 0.25 ac.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV ✓

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	6
Score for Hydrologic Functions	9
Score for Habitat Functions	8
TOTAL score for Functions	23

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✓
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Wetland name or number SE-1

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	✓	

WETLAND IDENTIFIED IN EVERETT SMP.

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number SE-1

Classification of Wetland Units in Western Washington

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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
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 <3ft diameter and less than 1 foot deep).*
NO – go to 5 **YES** – The wetland class is **Slope**

Wetland name or number SE-1

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 two years.

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

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

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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 SE-1

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: → Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 3
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 → NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 → Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* 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 Map of Hydroperiods	Figure ___ 0
D	**Total for D 1** *Add the points in the boxes above*	3
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland ✓ Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ (YES) multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	6

Wetland name or number SE-1

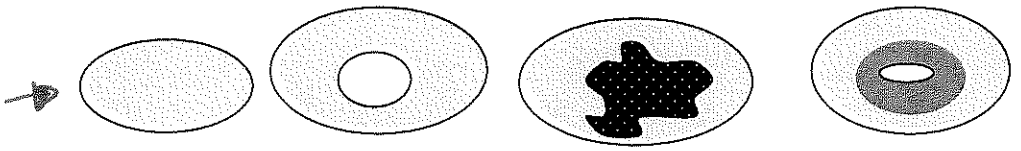
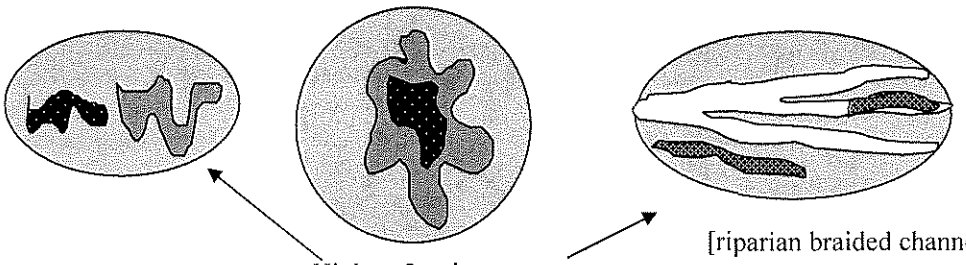
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit → Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* points = 0	4
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 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 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 → Marks of ponding less than 0.5 ft points = 0	0
D	D 3.3 Contribution of wetland unit 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 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 unit is in the FLATS class points = 5	5
D	**Total for D 3** *Add the points in the boxes above*	9
D	**D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ **YES** multiplier is **2** (**NO**) multiplier is **1**	*(see p. 49)* multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	9

Wetland name or number SE-1

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓ Emergent plants ____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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 1 structure — points = 0 Map of Cowardin vegetation classes	**Figure ___** 0
H 1.2. Hydroperiods ***(see p. 73)*** *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 acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ✓ Seasonally flooded or inundated — 3 types present — points = 2 ✓ Occasionally flooded or inundated — 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland* = 2 points** ____ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	**Figure ___** 2
H 1.3. Richness of Plant Species ***(see p. 75)*** 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)* *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 *List species below if you want to:* 5 - 19 species — points = 1 < 5 species — points = 0	1

Total for page 3

Wetland name or number SE-1

H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points  High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	Figure ___ 0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

Comments

Wetland name or number SE-1

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** ✓ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure ___** 0
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*) YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 1

Wetland name or number SE-1

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)* Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* *These are DFW definitions. Check with your local DFW biologist if there are any questions.* ____**Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Old-growth 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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. ____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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. ____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ✓ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	1

Wetland name or number SE-1

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 → There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	5
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	8

Wetland name or number SE-1

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

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 ***(see p. 86)*** Does the wetland unit 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 ✓	
SC 1.1 Is the wetland unit 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 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number SE-1

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No) - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 (No) - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No ✓ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number SE-1

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** 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 surface 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 meets 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 invasive plant species (see list of invasive species on p. 74). — 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 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number SE-1

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	NA

Wetland name or number SE-2

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): SE-2 Date of site visit: 5/12/05

Rated by SHAWN MAHUGH Trained by Ecology? Yes__ No ✓ Date of training —

SEC: 5 TWNSHP: 29N RNGE: 5 E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 7 Estimated size 0.5 ac.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV ✓

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	6
Score for Hydrologic Functions	9
Score for Habitat Functions	11
TOTAL score for Functions	26

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✓
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Wetland name or number SE-2

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	✓	

WETLAND IDENTIFIED IN EVERETT SMP.

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number SE-2

Classification of Wetland Units in Western Washington

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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
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 <3ft diameter and less than 1 foot deep).*
NO – go to 5 **YES** – The wetland class is **Slope**

Wetland name or number SE-2

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 two years.

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

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

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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 SE-2

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: →Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 3
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 →NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 →Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* 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 Map of Hydroperiods	Figure ___ 0
D	**Total for D 1** *Add the points in the boxes above*	3
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland ✓ Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ (YES) multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	6

Wetland name or number SE-2

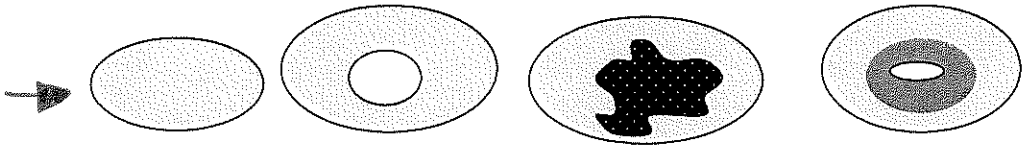
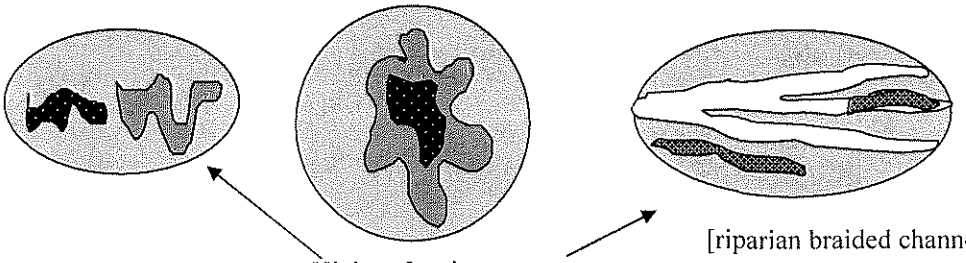
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit →Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* points = 0	4
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 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 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 →Marks of ponding less than 0.5 ft points = 0	0
D	D 3.3 Contribution of wetland unit 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 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 unit is in the FLATS class points = 5	5
D	**Total for D 3** *Add the points in the boxes above*	9
D	**D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 49)* multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	9

Wetland name or number SE-2

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓ Emergent plants ____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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 → 1 structure — points = 0 Map of Cowardin vegetation classes	**Figure ___** 0
H 1.2. Hydroperiods ***(see p. 73)*** *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 acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ✓ Seasonally flooded or inundated — → 3 types present — points = 2 ✓ Occasionally flooded or inundated — 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland* = 2 points** ____ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	**Figure ___** 2
H 1.3. Richness of Plant Species ***(see p. 75)*** 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)* *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 *List species below if you want to:*	1

Total for page 3

Wetland name or number SE-2

	Figure ___
H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points  High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

Comments

Wetland name or number SE-2

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** ✓ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure ___** 0
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	2

Total for page 2

Wetland name or number SE-2

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* *These are DFW definitions. Check with your local DFW biologist if there are any questions.* ✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Old-growth 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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. ____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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. ____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ✓ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). If wetland has **3 or more** priority habitats = **4 points** → If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	3

Wetland name or number SE-2

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 → There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	8
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	11

Wetland name or number SE-2

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

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 *(see p. 86)* Does the wetland unit 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 ✓	
SC 1.1 Is the wetland unit 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 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number SE-2

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 No - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 No - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No ✓ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number SE-2

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** 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 surface 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 meets 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 invasive plant species (see list of invasive species on p. 74). — 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 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	NA

Wetland name or number SW-1

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): SW-1 Date of site visit: 4/24/07

Rated by SHAWN MAHUGH Trained by Ecology? Yes__ No ✓ Date of training —

SEC: 5 TWNSHP: 29N RNGE: 5E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 7 Estimated size 3.5 ac.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III ✓ IV___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	12
Score for Hydrologic Functions	10
Score for Habitat Functions	10
TOTAL score for Functions	32

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✓
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Wetland name or number SW-1

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	✓	

WETLAND IDENTIFIED IN EVERETT SMP.

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number SW-1

Classification of Wetland Units in Western Washington

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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
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 <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES** – The wetland class is **Slope**

Wetland name or number SW-1

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 two years.

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

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

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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 SW-1

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 → Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 → NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 → Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* → 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 Map of Hydroperiods	Figure ___ 4
D	**Total for D 1** *Add the points in the boxes above*	6
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland ✓ Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ (YES) multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	12

Wetland name or number SW-1

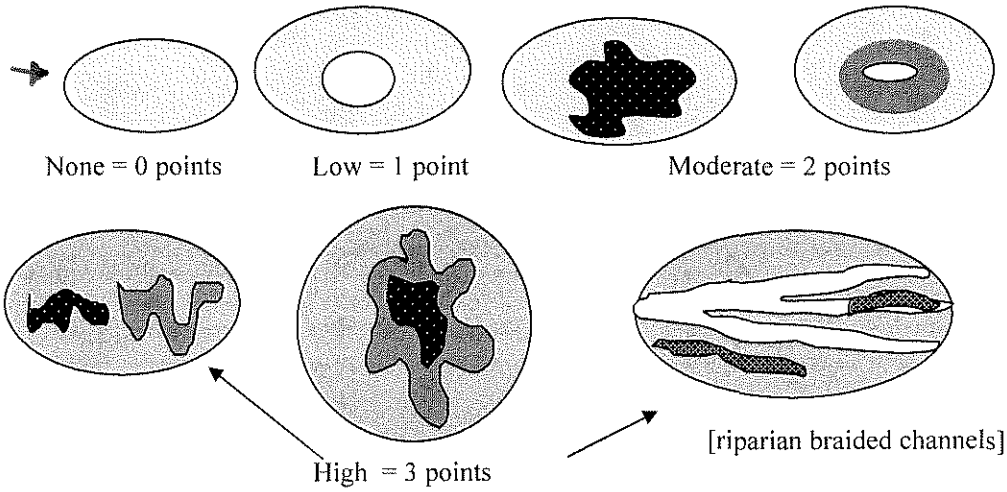
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 → Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 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 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft points = 0	3
D	D 3.3 Contribution of wetland unit 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 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 unit is in the FLATS class points = 5	5
D	**Total for D 3** *Add the points in the boxes above*	10
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ **YES** multiplier is **2** (NO) multiplier is **1**	*(see p. 49)* multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	10

Wetland name or number SW-1

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓Emergent plants ____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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 → 1 structure — points = 0 Map of Cowardin vegetation classes	**Figure ___** 0
H 1.2. Hydroperiods *(see p. 73)* *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 acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ✓Seasonally flooded or inundated — → 3 types present — points = 2 ✓Occasionally flooded or inundated — 2 types present — point = 1 ✓Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** Map of hydroperiods	**Figure ___** 2
H 1.3. Richness of Plant Species *(see p. 75)* 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)* *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 *List species below if you want to:*	1

Total for page 3

Wetland name or number SW-1

	Figure ___
H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

Comments

Wetland name or number SW-1

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** ✓ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure ___ 0
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 1

Wetland name or number SW-1

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* *These are DFW definitions. Check with your local DFW biologist if there are any questions.* ✓ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ____ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____ **Old-growth 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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. ____ **Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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. ____ **Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community. ____ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages ____ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ✓ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ____ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ____ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). If wetland has **3 or more** priority habitats = **4 points** → If wetland has **2** priority habitats = **3 points** If wetland has **1** priority habitat = **1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	3

Wetland name or number SW-1

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 → There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	7
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	10

Wetland name or number SW-1

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

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 *(see p. 86)* Does the wetland unit 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 ✓	
SC 1.1 Is the wetland unit 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 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number SW-1

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No) - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 (No) - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No ✓ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number SW-1

SC 4.0 Forested Wetlands *(see p. 90)* Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)* 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 surface 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 meets 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 invasive plant species (see list of invasive species on p. 74). — 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 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number SW-1

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	N/A

Wetland name or number SW-2

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): SW-2 Date of site visit: 4/24/07

Rated by SHAWN MAHUGH Trained by Ecology? Yes__ No ✓ Date of training —

SEC: 5 TWNSHP: 29N RNGE: 5E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 7 Estimated size .03 ac.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV ✓

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	14
Score for Hydrologic Functions	7
Score for Habitat Functions	8
TOTAL score for Functions	29

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✓
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Wetland name or number SW-2

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	✓	

WETLAND IDENTIFIED IN EVERETT SMP.

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number SW-2

Classification of Wetland Units in Western Washington

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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
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 <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES** – The wetland class is **Slope**

Wetland name or number SW-2

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 two years.

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

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

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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 SW-2

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: → Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 3
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 → NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 → Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* → 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 Map of Hydroperiods	Figure ___ 4
D	**Total for D 1** *Add the points in the boxes above*	7
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland ✓ Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ → **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	14

Wetland name or number SW-2

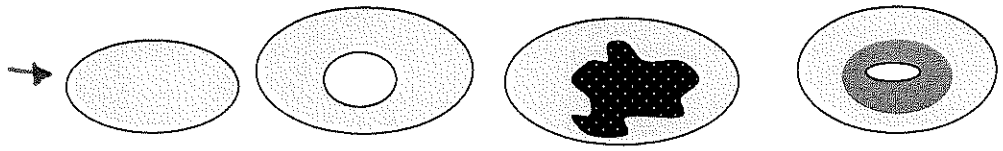
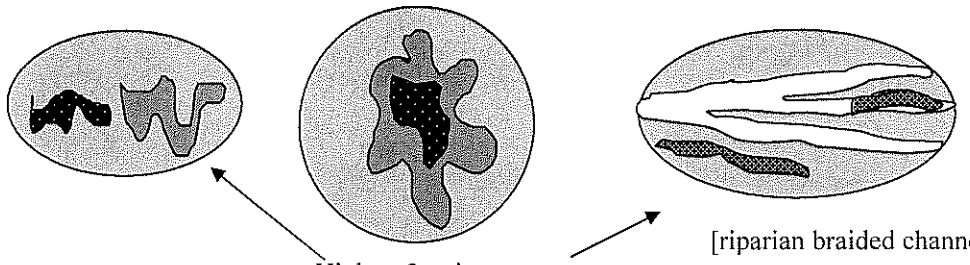
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit → Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* points = 0	4
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 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 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 → Marks of ponding less than 0.5 ft points = 0	0
D	D 3.3 Contribution of wetland unit 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 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 unit is in the FLATS class points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	7
D	**D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other_____ **YES** multiplier is **2** (NO) multiplier is **1**	*(see p. 49)* multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	7

Wetland name or number SW-2

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓ Emergent plants ____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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 → 1 structure — points = 0 Map of Cowardin vegetation classes	**Figure ___** 0
H 1.2. Hydroperiods ***(see p. 73)*** *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 acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ✓ Seasonally flooded or inundated — → 3 types present — points = 2 ✓ Occasionally flooded or inundated — 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland* = 2 points** ____ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	**Figure ___** 2
H 1.3. Richness of Plant Species ***(see p. 75)*** 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)* *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 *List species below if you want to:*	1

Total for page 3

Wetland name or number SW-2

H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points  High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	Figure ___ 0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

Comments

Wetland name or number SW-2

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** ✓ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure ___** 0
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 1

Wetland name or number SW-2

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)* Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* *These are DFW definitions. Check with your local DFW biologist if there are any questions.* ____**Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Old-growth 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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. ____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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. ____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ✓ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** → If wetland has **1** priority habitat = **1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	

Wetland name or number SW-2

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	5
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	8

Wetland name or number SW-2

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

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 *(see p. 86)* Does the wetland unit 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 ✓	
SC 1.1 Is the wetland unit 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 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number SW-2

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No) - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 (No) - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No ✓ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number SW-2

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** 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 surface 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 meets 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 invasive plant species (see list of invasive species on p. 74). — 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 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number SW-2

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	N/A

Wetland name or number SW-3

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): SW-3 Date of site visit: 4/24/07

Rated by SHAWN MAHUGH Trained by Ecology? Yes__ No ✓ Date of training —

SEC: 5 TWNSHP: 29N RNGE: 5E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 7 Estimated size 0.25 ac.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV ✓

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	10
Score for Hydrologic Functions	9
Score for Habitat Functions	8
TOTAL score for Functions	27

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✓
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Wetland name or number SW-3

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	✓	

WETLAND IS IDENTIFIED IN EVERETT SMP.

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number SW-3

Classification of Wetland Units in Western Washington

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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
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 <3ft diameter and less than 1 foot deep).*
NO - go to 5 **YES** – The wetland class is **Slope**

Wetland name or number SW-3

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 two years.

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

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

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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 SW-3

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: → Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 3
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 → NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 → Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* 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 Map of Hydroperiods	Figure ___ 2
D	**Total for D 1** *Add the points in the boxes above*	5
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland ✓ Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ → **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	10

Wetland name or number SW-3

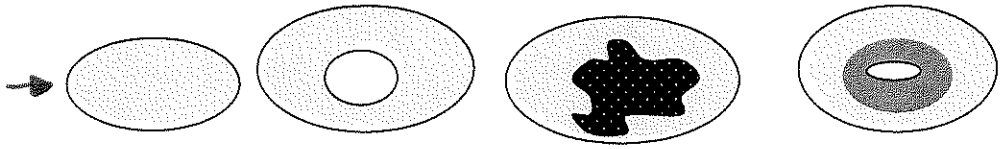
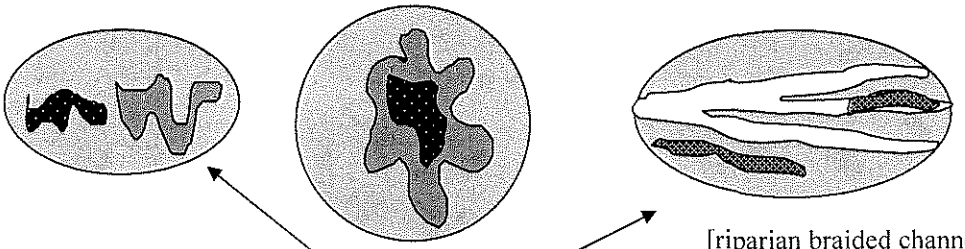
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit → Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet *(permanently flowing)* points = 0	4
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 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 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 → Marks of ponding less than 0.5 ft points = 0	0
D	D 3.3 Contribution of wetland unit 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 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 unit is in the FLATS class points = 5	5
D	**Total for D 3** *Add the points in the boxes above*	9
D	**D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ **YES** multiplier is **2** (**NO**) multiplier is **1**	*(see p. 49)* multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	9

Wetland name or number SW-3

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓ Emergent plants ____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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 → 1 structure — points = 0 Map of Cowardin vegetation classes	**Figure ___** 0
H 1.2. Hydroperiods ***(see p. 73)*** *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 acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ✓ Seasonally flooded or inundated — → 3 types present — points = 2 ✓ Occasionally flooded or inundated — 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland*** **= 2 points** ____ ***Freshwater tidal wetland*** **= 2 points** Map of hydroperiods	**Figure ___** 2
H 1.3. Richness of Plant Species ***(see p. 75)*** 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)* *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 *List species below if you want to:*	1

Total for page 3

Wetland name or number SW-3

	Figure ___
H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points  High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

Comments

Wetland name or number SW-3

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** ✓ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure ___** 0
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 1

Wetland name or number SW-3

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)* Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* *These are DFW definitions. Check with your local DFW biologist if there are any questions.* ____**Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Old-growth 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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. ____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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. ____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ✓ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** → If wetland has **1** priority habitat = **1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	1

Wetland name or number _____

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 → There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	5
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	8

Wetland name or number SW-3

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

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 *(see p. 86)* Does the wetland unit 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 ✓	
SC 1.1 Is the wetland unit 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 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number SW-3

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No) - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 (No) - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No ✓ Is not a bog for purpose of rating	**Cat. I**

SC 4.0 Forested Wetlands *(see p. 90)* Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)* 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 surface 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 meets 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 invasive plant species (see list of invasive species on p. 74). — 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 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number SW-3

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	N/A

Wetland name or number SW-4

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): SW-4 Date of site visit: 4/24/07

Rated by SHAWN MAHUGH Trained by Ecology? Yes__ No ✓ Date of training —

SEC: 5 TWNSHP: 29N RNGE: 5E Is S/T/R in Appendix D? Yes___ No ✓

Map of wetland unit: Figure 7 Estimated size 0.15 ac.

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV ✓

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	8
Score for Hydrologic Functions	7
Score for Habitat Functions	8
TOTAL score for Functions	23

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

Final Category (choose the "highest" category from above) IV

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✓
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✓	Check if unit has multiple HGM classes present	

Wetland name or number SW-4

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered* ***animal or plant*** *species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✓
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered* ***animal*** *species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✓
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✓
SP4. *Does the wetland unit have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	✓	

WETLAND IS IDENTIFIED IN EVERETT SMP.

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number SW-4

Classification of Wetland Units in Western Washington

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 (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe NO – Saltwater Tidal Fringe (Estuarine)**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for ***Riverine*** *wetlands. If it is Saltwater Tidal Fringe it is rated as an* ***Estuarine*** *wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

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 both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (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**?
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 <3ft diameter and less than 1 foot deep).*
NO – go to 5 **YES** – The wetland class is **Slope**

Wetland name or number SW-4

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 two years.

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

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

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 clases. 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 your wetland. 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 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	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

If you are unable still 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 SW-4

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 → Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES points = 4 → NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 → Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 0
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* 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 Map of Hydroperiods	Figure ___ 2
D	**Total for D 1** *Add the points in the boxes above*	4
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland ✓ Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ (YES) multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	8

Wetland name or number SW-4

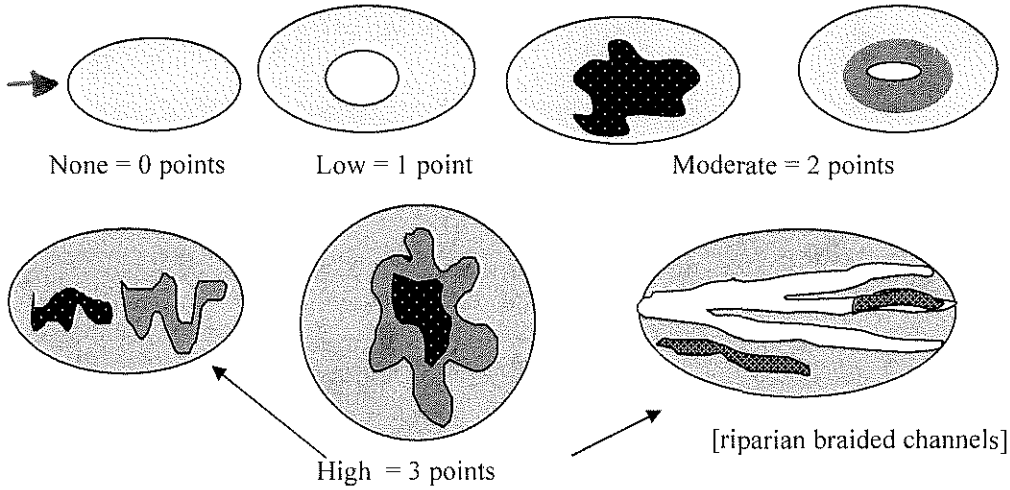
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 →Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 The wetland is a "headwater" wetland" points = 5 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 Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 →Marks of ponding less than 0.5 ft points = 0	0
D	D 3.3 Contribution of wetland unit 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 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 unit is in the FLATS class points = 5	5
D	**Total for D 3** *Add the points in the boxes above*	7
D	**D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* — Wetland is in a headwater of a river or stream that has flooding problems — Wetland drains to a river or stream that has flooding problems — Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems — Other _____ **YES** multiplier is **2** (**NO**) multiplier is **1**	*(see p. 49)* multiplier 1
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	7

Wetland name or number SW-4

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure ***(see p. 72)*** *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ✓ Emergent plants ____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 *Add the number of vegetation structures that qualify. If you have:* 4 structures or more — points = 4 3 structures — points = 2 2 structures — points = 1 → 1 structure — points = 0 Map of Cowardin vegetation classes	**Figure ___** 0
H 1.2. Hydroperiods ***(see p. 73)*** *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 acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated — 4 or more types present — points = 3 ✓ Seasonally flooded or inundated — → 3 types present — points = 2 ✓ Occasionally flooded or inundated — 2 types present — point = 1 ✓ Saturated only — 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland*** **= 2 points** ____ ***Freshwater tidal wetland*** **= 2 points** Map of hydroperiods	**Figure ___** 2
H 1.3. Richness of Plant Species ***(see p. 75)*** 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)* *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 *List species below if you want to:*	1

Total for page 3

Wetland name or number SW-4

	Figure ___
H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	0
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation 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 each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	0
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

Comments

Wetland name or number SW-4

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers *(see p. 80)* *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** — 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** — 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** — 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** — No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** — Heavy grazing in buffer. **Points = 1** ✓ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure ___** 0
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*) YES = **4 points** (*go to H 2.3*) NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 1

Wetland name or number SW-4

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)* Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* *These are DFW definitions. Check with your local DFW biologist if there are any questions.* ____**Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ____**Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ____**Old-growth 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 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. ____**Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 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. ____**Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community. ____**Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ____**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages ____**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%. ✓ **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development. ____**Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons. ____**Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control). If wetland has **3 or more** priority habitats = **4 points** If wetland has **2** priority habitats = **3 points** → If wetland has **1** priority habitat = **1 point** No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	1

Wetland name or number SW-4

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 → There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	5
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	8

Wetland name or number SW-4

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

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 *(see p. 86)* Does the wetland unit 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 ✓	
SC 1.1 Is the wetland unit 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 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — 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 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number SW-4

SC 2.0 Natural Heritage Wetlands *(see p. 87)* Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species. SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)* S/T/R information from Appendix D ✓ or accessed from WNHP/DNR web site ___ YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ✓ SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species? YES = Category I NO ✓ not a Heritage Wetland	**Cat. I**
SC 3.0 Bogs *(see p. 87)* Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.*** 1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No) - go to Q. 2 2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? Yes - go to Q. 3 (No) - Is not a bog for purpose of rating 3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? Yes – Is a bog for purpose of rating No - go to Q. 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" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog. *1.* Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?* 2. YES = Category I No ✓ Is not a bog for purpose of rating	**Cat. I**

Wetland name or number SW-4

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the 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/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I NO ✓ not a forested wetland with special characteristics	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** 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 surface 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 meets 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 invasive plant species (see list of invasive species on p. 74). — 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 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

Wetland name or number SW-4

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 NO ✓ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its 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 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	N/A

GeoEngineers

Appendix E

Proposed Concrete Batch Plant Wetland Delineation report, Everett, Washington (Prepared by GeoEngineers, Inc. dated July 7, 2005)

PROPOSED CONCRETE BATCH PLANT
WETLAND DELINEATION
EVERETT, WASHINGTON

JULY 7, 2005

FOR

CEDAR GROVE COMPOSTING

GEOENGINEERS

File No. 10625-001-07

GeoEngineers

July 7, 2005

Cedar Grove Composting
9010 East Marginal Way South, Suite 200
Seattle, Washington 98108

Attention: Jerry Bartlett

We are pleased to submit our report entitled "Proposed Concrete Batch Plant Wetland Delineation, Everett, Washington." This report is focused toward the southeast portion of Cedar Grove's Smith Island property that is planned for a concrete batch plant and aggregate storage and retail facility

We appreciate the opportunity to be of service to Cedar Grove on this phase of the project and look forward to the next phase of work. Please contact us if you have questions, or require clarification regarding the information presented in this report.

Respectfully submitted,

GeoEngineers, Inc.

Wayne S. Wright, PWS
Principal

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Attachments

cc: Mark Wolken

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600 Stewart Street
Suite 1700
Seattle, WA 98101

telephone 206.728.2674
facsimile 206.728.2732
website www.geoengineers.com

Proposed Concrete Batch Plant
Wetland Delineation
File No. 10625-001-07

July 7, 2005

Prepared for:

Cedar Grove Composting
9010 East Marginal Way South, Suite 200
Seattle, Washington 98108

Attention: Jerry Bartlett

Prepared by:

GeoEngineers, Inc.
Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, Washington 98101
(206) 728-2674

GeoEngineers, Inc.

Jonathan M. Ambrose
Senior Hydrologist

Wayne S. Wright, PWS
Principal

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PROPOSED CONCRETE BATCH PLANT WETLAND DELINEATION
EVERETT, WASHINGTON
FOR
CEDAR GROVE COMPOSTING

1.0 INTRODUCTION

GeoEngineers, Inc. (GeoEngineers) is pleased to provide this wetland delineation report for a proposed concrete batch plant for your property on Smith Island in Everett, Washington. We understand the effort for this phase of the work will focus on approximately 15 acres located within tax parcel 29050500400200 (approximately 18 acres).

1.1 PROJECT LOCATION

GeoEngineers was contracted by Cedar Grove Composting to perform wetland investigation and delineation on property located on the north end of Smith Island in Everett, Washington. The subject property lies west of State Route 529 and the BNSF railroad tracks within Section 5, Township 29N, and Range 5E in the state of Washington. The local jurisdiction is the City of Everett. A Vicinity Map (Figure 1) illustrates the location of the subject property.

1.2 SCOPE

The scope of this investigation focused on the following:

- Identify wetlands and delineate boundaries within the subject property with reference to historic site alteration and disturbance.
- Identify any off-site wetlands or wetland buffer areas within 75 feet of the project area.
- Assess potential impacts to wetlands from proposed project activities.

1.3 GENERAL SITE DESCRIPTION

The 15 acre development parcel is located within an approximately 18-acre tax parcel located on Smith Island in the Snohomish River delta area south of Steamboat. The site is bordered to the north by an access road, to the west by the Burlington Northern Santa Fe Railroad (BNSF) right of way, and to the east by an abandoned railroad grade. The southwest border of the site is adjacent to a blind, tidal slough. The slough drains upland areas of Smith Island to Steamboat Slough through a one-way tide gate during low tide and has been classified as a Category 3 stream previously. The tide gate prohibits any upstream migration of tidal waters to Smith Island. The proposed project site generally drains toward the south to the blind tidal slough. Evidence of former drainage ditches along the old railroad grade and remnant agricultural ditches were observed on the site.

The current topography of the site is generally level. The majority of the project area has in the past been used first for agricultural purposes (1960's), primarily for cattle grazing activities. See historical photos in Appendix A. Elevations within the project area range from approximately 5 feet (ft) to 7 ft. (NAVD 1988).

2.0 METHODS

2.1 PAPER INVENTORY

To prepare for the field delineation effort, a search for pertinent and applicable literature and digital data was conducted. The Washington State Department of Ecology (1989) recommends a thorough review of existing information regarding a particular site prior to conducting the fieldwork. Data sources that were reviewed for this wetland delineation included digital USGS topographic quadrangle map, the 1987 National Wetlands Inventory (NWI) Marysville quadrangle 1:24,000 map, 1999 NWI digital data from U.S Fish and Wildlife Service (USFWS), the *Soil Survey of Snohomish County Area, Washington* (USDA 1983), and 1999 digital data from Natural Resource Conservation Service (NRCS).

During initial site reconnaissance it was determined the site had a high degree of disturbance from past land use activities including agriculture. Background information on the history of the site was collected from literature and official sources at the Army Corps of Engineers, the City of Everett, Snohomish County and the Port of Everett. Support documents include the *Snohomish Estuary Wetland Integration Plan* (City of Everett 1997), and the *Salmon Overlay to the Snohomish Estuary Wetland Integration Plan* (City of Everett and Pentec Environmental 2001), among others. Additionally, GeoEngineers sought to obtain specific information about the creation of the dike, any fill related activity, and the use of the site for dredge spoil disposal.

2.2 AERIAL PHOTOGRAPH ANALYSIS

Historic conditions of the site were evaluated using a series of aerial photographs dating back to 1965. Photographs dated 1965, 1969, 1978, 1983, 1987, 1991, 1996, were obtained from the Washington Department of Natural Resources (DNR). Photographs were scanned and specific site features were then digitized from each photograph for further analysis in Arc GIS software. Site features from each year were grouped and overlaid on the 2001 aerial photograph to compare historic conditions to current observations.

2.3 FIELD DELINEATION

The delineation methods for this project followed those outlined in the *Washington State Wetlands Identification and Delineation Manual* (1997) which is consistent with the 1987 *Corps of Engineers Wetland Delineation Manual*. The delineation methods used and the results given in this report are valid for both manuals. Vegetation, soil and hydrology information was gathered at plots located in the wetland and surrounding upland areas. The wetland boundaries were staked and flagged. The staked wetland boundary and flagged sample plot locations were subsequently professionally surveyed by David Evans and Associates (DEA) Wetland boundaries and buffers are presented in Figure 5.

During the wetland delineation, plant species were identified and percent coverage per species was estimated in 5 percent increments for overstory, understory and herbaceous strata within representative non-random, 5-meter-radius sample plots located in both wetland and upland habitats. Standard wetland delineation forms used to record the information collected at established sample plots are included in Appendix B of this report. The *National List of Plant Species that Occur in Wetlands: Northwest (Region 9)* (Reed 1988) and *Supplement to the National List of Plant Species that Occur in Wetlands: Northwest (Region 9)* (Reed et al 1993) were referenced to classify identified plants using the following categories: obligate wetland (OBL); facultative wetland (FACW); facultative (FAC); facultative upland (FACU); or obligate upland (UPL). Prevalence of hydrophytic vegetation was determined by calculating the percent of dominant plant species within a sample plot that were OBL, FACW or FAC. All wetland

vegetation communities present within the project site were classified according to the USFWS wetland classification system (Cowardin et al. 1979).

In addition to vegetation data, information on soils and hydrology was also collected during formal wetland delineation at the established sample plots. Soils were inspected at each sample plot and along the delineated wetland boundaries in hand-dug soil pits 15 to 20 inches deep. At each formal sample plot, soil texture, soil matrix color, presence or absence of mottles or gleying and depth of soil saturation, if present, were recorded. Soil matrix and mottle colors were determined using a *Munsell Soil Color Chart* (Kollmorgen Corporation 1998). Additionally, wetland hydrology indicators, including drainage patterns, presence of surface water, depth of groundwater within hand-dug pits and evidence of inundation (i.e., drift lines, water marks, oxidized root zones, etc.) were also noted at each sample plot. Soil and hydrology information collected during the field efforts is also presented on the standard wetland delineation data sheets (Appendix B).

The dike along the northern and western boundaries of Smith Island was constructed circa 1870 (pers. comm. 2003 Mark Wolken, project consultant). The island was used primarily for agricultural purposes after dike construction. Much of the project area investigated during the May 2005 wetland delineation survey had recently been disked. As this area has been used for agricultural purposes since the late 1800's, this activity is considered to be part of normal agricultural activities. Hydrologic conditions on the site are influenced by the dike, tide gates and adjacent existing and abandoned railroad grades that have all been in place prior to the 1950's. Therefore, site conditions were determined to be normal for purposes of the wetland delineation survey. However, the recent disking activities resulted in turned sod to be present across most of the study area. This made it somewhat difficult to observe the soil profile and vegetation composition. Surface hydrology adjacent to the project site was also disturbed by the disking operation. Although, this resulted in an atypical situation (positive wetland indicators not found due to recent human activity) within portions of the site at the time of the delineation survey, it was still possible to conduct a 'routine' delineation method as it was possible to observe hydrologic conditions across the study site. Additional evaluation was undertaken which included the retrospective photograph analysis of historic conditions. and analysis of precipitation records.

The field delineation was performed on May 12 and 25, 2005 by a team of scientists from GeoEngineers. Field delineation work included a thorough investigation to identify areas within the project boundary having characteristics consistent with wetland conditions. Scientists established plots to sample vegetation, soil and hydrology conditions to determine the wetland boundary limits. Each sample location was staked and labeled. Sample plot data collected in the field was transcribed onto data forms modified from the Washington Department of Ecology (DOE) (Appendix B).

3.0 RESULTS

3.1 PAPER INVENTORY

The USGS topographic map and NWI maps are tools used to assist with the overall site investigation. The NWI map for this site does not indicate the presence of wetlands within the project area (Figure 2). However wetland areas located west and south of the project area are identified on the NWI map. The stream/slough channel adjacent to the southern boundary of the site is classified as riverine, lower perennial, open water, permanently flooded, excavated (R2OWHx). Three small areas of palustrine, emergent, temporarily flooded (PEMA) are mapped west of the project area. Beyond the project area to the east and south other wetland features mapped on the NWI map include palustrine, scrub-shrub, seasonal (PSSC); palustrine, emergent, seasonal (PEMC); palustrine, emergent, seasonal, excavated

(PEMCx). NWI maps, produced from interpretation of aerial photographs and topographic maps, are limited to the time frame in which they are produced.

Figure 3 is the current soil survey digital coverage from the NRCS. Soils data excerpted from the *Soil Survey of Snohomish County Area, Washington* (USDA 1983) identify three soil units mapped within the project area. The largest soil unit mapped within the project area is Puget silty clay loam (Map Unit 55), a mesic Typic Fluvaquent. This soil is listed as hydric in the *Hydric Soils of the State of Washington* (USDA 1991). This soil is described as a very deep, artificially drained soil formed in alluvium found on depressional areas in flood plains from sea level to 650 feet. Slopes are generally 0 to 2 percent. The top layer is dark grayish brown silty clay loam about 9 inches thick. Beneath the surface layer is an olive gray or gray silty clay loam about 60 inches thick or more. A seasonal water table is at a depth of 24 to 48 inches. Permeability is low and available water capacity is high with 60 inches or more of effective rooting depth.

Other soil units mapped in and adjacent to the project area are classified as urban land (Map Unit 78) and Xerorthents, level (Map Unit 82). Urban land units are areas that have been developed and covered by streets, buildings, parking lots and other structures that obscure or alter the soils. Xerorthents, level units are found on till plains ranging from 5 to 1,000 feet in elevation. These units consists of nearly level areas where the surface layer, subsoil and substratum have been greatly disturbed, removed or replaced by other soil material. These areas include unpaved parking lots, mobile home parks, athletic fields and other urban uses. Included in the classifications are small areas of Alderwood, Everett, Tokul and Indianola soils. Also included are areas of debris such as wood chips from lumber mills (USDA 1983).

3.1.1 Precipitation

Mean monthly precipitation at Everett Junior College Station 442675 (Western Regional Climate Center 2005) during April is 2.65 inches. Measured monthly precipitation from the same station during April 2005 was 5.69 inches, greater than the average showing a departure from normal of + 3.04 inches. Total precipitation for May 2005 at the Everett station was measured at 2.46 inches, which is 0.10 inches greater than the long term May average of 2.36 inches.

3.2 AERIAL PHOTOGRAPH ANALYSIS

Aerial photographs obtained from DNR include photos taken in 2001, 1996, 1991, 1987, 1983, 1978, 1969 and 1965. These photos have been digitally reproduced and are presented in Appendix A. Since 1965 the site has been primarily used for agriculture with the site actively grazed as recently as fall 2004. The railroad grade was constructed in 1895 and was in use until 1901 (based on historical records). A barn was located within the northwest portion of the project area. The blind slough located south of the project area extended to nearly the southeast portion of the property in 1965 (Appendix A; Figure A-1). There were some localized drainage areas in the property that drained toward the slough.

In the 1969 photograph (Appendix A; Figure A-2), the majority of the site was cleared and graded. Vegetation was confined to narrow areas adjacent to the railroad grade west of the project area. It seems probable the site was used for dredge spoils disposal, although the documents to support this have not been discovered. The wholesale clearing and leveling of the site would support this use. Soils samples taken during a 2003 study had layers that appeared to be consistent with dredge spoil, however so much fill and alteration has occurred on the site in the past three decades that subsurface layers are difficult to discern.

By 1978 (Appendix A; Figure A-3), the previous cleared area had revegetated and back in agricultural use. This condition is consistent with that interpreted in the mid and late 1980's (Appendix A; Figure D-4; Appendix A, Figure A-5).

By 1991, a localized area of filling had recently been completed in the northeast portion of the project area (Appendix A, Figure A-6). The southern portion of the site showed a greater diversity in vegetation, with shrub vegetation becoming established on a portion of the site.

The 1996 and 2001 photographs (Appendix A; Figures A-7) show vegetation reestablished on the fill area observed in the 1991 air photo. The photos also show the southern portion of the project area with an irregular network of trails for apparent cattle grazing or localized agricultural uses.

3.3 FIELD DELINEATION

The project site was investigated by a thorough field review of the entire project site. Numerous areas in the project area were sampled for the presence of wetland indicators. See Figure 4 for Sample Plot Locations. Topographic positioning, presence of hydrophytic vegetation and evidence of near surface soil saturation and/or standing water indicated potential wetland areas. Further investigation confirmed the presence of all three wetland parameters in one area within the project site and within two areas adjacent to the project site.

4.0 EXISTING CONDITIONS

4.1 EXISTING SITE CONDITIONS

The project area is located on Smith Island west of SR 529. This portion of Smith Island is bisected by an unnamed, east-west oriented blind slough. Smith Island is bound on the north by Union and Steamboat Sloughs and to the South by the Snohomish River. Past land use practices on Smith Island include diking and draining areas for cropland and pasture (USDA 1983) and logging yard operations and storage. The project site is generally level and dominated by grasses.

4.1.1 Site Vegetation Characteristics

The site had recently been disked at the time of the wetland survey. However, it was possible to determine that site was vegetated by grasses dominated by perennial rye grass (*Lolium perenne*, UPLAND) and velvet grass (*Holcus lanatus*, FAC) with reed canarygrass (*Phalaris arundinacea*, FACW), soft rush (*Juncus effusus*, FACW), thistle (*Cirsium arvense*, FAC), silverweed (*Potentilla anserine*, FACW) and buttercup (*Ranunculus repens*, FAC) commonly observed in the wetland areas. A small patch of Himalayan blackberry (*Rubus discolor*, UPLAND) was observed in the south central portion of the site and along the abandoned railroad grade.

4.1.2 Site Wildlife Observations

Wildlife observed during the delineation consisted of passerine bird species raptors. Several great blue herons (*Ardea herodias*) and osprey (*Pandion haliaetus*) were also observed flying over the area. Coyote scat was also observed.

4.1.3 Slough And Other Historical Water Features

The NWI map identified the east-west blind slough along the southern border of the site as a perennial drainage. This slough is a Category 3 stream that is isolated from tidal inflow by a tide gate. The tide gate completely eliminates any tidal contribution to the channel. This slough is mostly ground water fed

fluctuating with the seasonal water table. Overland runoff from surrounding land also provides some hydrology. Ground water appears to be relatively unmodified within the project area. However, evidence of dredging to clear and maintain the channel in the past is present. Currently the channel is entrenched. It seems unlikely that high water events would overtop the slough channel banks. The upstream reaches of the slough have been highly modified. Where it encounters the north-south BNSF right-of-way, it serves primarily as a linear drainage ditch for surface run-off. A north–south ditch is located west to the project site along the abandoned railbed. This ditch feature is a remnant of past agricultural use. Recent maintenance of this ditch has reconnected the ditch with the east-west slough

4.2 WETLANDS

Two jurisdictional wetlands were identified on the subject property during the field delineation on May 12, 2005 as shown in Figure 5. One wetland was also identified immediately south of the project area and is also presented on Figure 5. Also, a larger wetland area was identified to the west of the batch plant site but was not fully delineated as it lies at least 75 feet outside of the project area

Wetland 1 is a palustrine emergent wetland located along the eastern perimeter of the project site. Soils in the wetland are very dark grayish brown (10YR 3/2) silty clay loams with many dark yellowish brown (10YR ¾) mottles present in the upper 10 to 11 inches (see data plots SP1 and SP3, Appendix B). Soils were saturated approximately 6 to 7 inches below the ground surface with free standing water observed at 7 to 18 inches below the ground surface in the hand-dug pits. Reed canarygrass dominated the vegetation in Wetland 1 with creeping buttercup and Pacific silverweed also occurring in the wetland. Wetland 1 is a small depressional wetland that is hydrologically isolated. Wetland 1 is approximately 0.25 acres (~10,000 square feet). The wetland in the project area is characterized as a Category 4 wetland (EMC Title 19 Chapter 37.090) which is assigned a 25-foot buffer (EMC Title 19 Chapter 37.100). This small emergent wetland and associated buffer are located within an actively maintained and grazed agricultural area and are dominated by non-native grass. Wetland 1 provides low habitat functions due to its low vegetative and structural diversity. Due to the small size and isolated nature of the wetland, Wetland 1 provides little stormwater control, water quality improvement or groundwater support benefits.

Wetland 2 is a palustrine emergent wetland located along the southeastern perimeter of the project site. Soils in the wetland are very dark grayish brown (10YR 3/2) silty clay loams with many dark yellowish brown (10YR ¾) mottles present in the upper 10 to 12 inches (see data plots SP5 and SP7, Appendix B). Soils were saturated approximately 6 to 7 inches below the ground surface with free standing water observed at 5 to 18 inches below the ground surface in the hand-dug pits. Reed canarygrass dominated the vegetation in Wetland 2 with creeping buttercup and Pacific silverweed also occurring in the wetland. Wetland 2 is a small depressional wetland that is hydrologically isolated. Wetland 2 is approximately 0.25 acres (~10,000 square feet) in the project area and extends south and off-site for a total approximate area of 0.5 acres (~20,000 square feet). The wetland in the project area is characterized as a Category 4 wetland (EMC Title 19 Chapter 37.090) which is assigned a 25-foot buffer (EMC Title 19 Chapter 37.100). This small emergent wetland and associated buffer are located within an actively maintained and grazed agricultural area and are dominated by non-native grass. Wetland 2 provides low habitat functions due to its low vegetative and structural diversity. Due to the small size and isolated nature of the wetland, Wetland 2 provides little stormwater control, water quality improvement or groundwater support benefits.

The slough south of the project site is mapped as a perennial lower riverine feature on the NWI map (Figure 2). Although the slough is a natural feature, a tide gate downstream excludes tidal influence and the upstream reaches are highly altered. It now functions as a drainage for seasonal surface water run-off and a conduit for a seasonal water table. During low tide, any freshwater in the slough drains into the

estuary through the one-way tide gate. The City of Everett classifies this water feature as a Category 2 stream (Gerry Ervine, pers, comm. June 2003) that requires a 50-foot buffer designated from the top of bank.

4.3 Surface And Subsurface Hydrology

The seasonal water table was encountered at 7 to 18 inches below the surface in Wetland 1 with seasonal standing water several inches deep observed in portions of Wetland 2 and 3 during the May field investigation. The water table for the site is noted as seasonally high at a depth of 24 to 48 inches (USDA 1983). Direct precipitation sporadically and temporarily ponds in the compacted and disturbed areas within the agricultural/pasture operation. As stated in Section 3.1.1, precipitation in Everett, Washington in April 2005 was greater than the average of 2.65 inches, reported from the Everett Junior College Station 442675 (Western Regional Climate Center 2003), showing a departure from normal of + 3.04 inches for the month of April. The month of May 2005 measured precipitation at 2.46 inches, a departure of + 0.10 inches from the long term mean.

4.4 Off-Site Wetlands

Wetland 3 is a palustrine emergent wetland located south and adjacent to the project site. Soils in the wetland are very dark grayish brown (10YR 3/2) silty clay loams with many dark yellowish brown (10YR ¾) mottles present in the upper 10 to 11 inches (see data plots SP9 and SP11, Appendix B). Soils were saturated approximately 6 to 7 inches below the ground surface with free standing water observed at 6 to 18 inches below the ground surface in the hand-dug pits. Reed canarygrass dominated the vegetation in Wetland 3. Wetland 3 is a small depressional wetland that is hydrologically isolated. Wetland 3 is approximately 0.20acres (~8,700 square feet) in the project vicinity. The wetland is characterized as a Category 4 wetland (EMC Title 19 Chapter 37.090) which is assigned a 25-foot buffer (EMC Title 19 Chapter 37.100). This small emergent wetland and associated buffer are located within an actively maintained and grazed agricultural area and are dominated by non-native grass. Wetland 3 provides low habitat functions due to its low vegetative and structural diversity. Wetland 3 and its associated buffer are not within the project site.

Wetland SW-1 is a palustrine emergent wetland located to the west of the project, beyond the old railroad grade. Soils in the wetland are very dark grayish brown (10YR 3/2) silty clay loams with many dark yellowish brown (10YR ¾) mottles present in the upper 10 to 11 inches (see data plots SP9 and SP11, Appendix B). Reed canarygrass dominated the vegetation in Wetland SW-1. The full wetland was not delineated, but the eastern boundary of the wetland was surveyed to determine the extent of potential impact from the proposed action. The wetland is characterized as a Category 3 wetland (EMC Title 19 Chapter 37.090) which is assigned a 50-foot buffer (EMC Title 19 Chapter 37.100). The old railroad grade acts as a barrier between the project area and Wetland SW-1.

4.5 Impacts Of The Proposal

This wetland delineation has been performed in conjunction with the preparation of the permitting documents associated with the proposed Cedar Grove Concrete Batch site. The site plan for the batch plant and aggregate storage facilities is presented in Figure 4. Construction and operation of the proposed concrete batch plant and aggregate storage facility will not directly impact any water resource or designated buffer. Erosion and sediment control (ESC) BMPs will be in place during construction to prevent sediment from leaving the site and entering adjacent waterways that discharge into Steamboat Slough. These will include dust control and sweeping of adjacent roadways as well as standard ESC construction control techniques, such as silt fences and temporary settling ponds, to contain exposed soils on the site. In addition, the following measures will be implemented during operation of the facility to

prevent cement dust and other fines from entering the local waterways: 1) use of a filter system that will control 99.99% of materials 1 micron particle size and larger; 2) routine inspection, cleaning and replacement of the filter system to maintain the system's effectiveness; 3) periodic sweeping and watering of the paved areas to prevent the buildup of material; and 4) use of water sprays in the aggregate storage areas and the conveyor assemblies to suppress or prevent dust dispersion.

Stormwater or wastewater from the proposed concrete bath plant and aggregate storage facility project site will be treated and disposed of according to the discharge standards required through the Sand and Gravel General Permit and the City of Everett Surface Water Ordinance and Stormwater Manual. Wastewater from the batch plant, including wash water from trucks, will be collected in a separate recovery system and treated. Process water (wastewater) and stormwater will be reused to the maximum extent practical in batch plant operations. Other beneficial reuses of treated wastewater and stormwater include dust control, yard maintenance and landscaping irrigation. Remaining treated water will be discharged first to a vegetated wet pond and then through a bioswale and into the drainage slough along the southern boundary of the parcel. Treated water discharged to the south slough will not impact water quality or water temperatures in the slough.

The wetlands and associated buffers located within the project area will be incorporated into the 20-foot native vegetation perimeter buffer south and east of the project site. The perimeter buffer will include plantings of native vegetation that should improve the habitat benefits of Wetlands 1 and 2. A native vegetation buffer of 50 feet will be planted along the western edge of the project area which will border the 50 foot buffer of wetland SW-1.

A State Environmental Protection Act (SEPA) checklist has been prepared for the proposed project as part of the Shoreline Substantial Development Permit Application (SSDPA).

4.6 SUMMARY

The subject property supports two, small jurisdictional wetlands. The wetlands and associated buffers will not be impacted under the proposed development. Also, off site wetlands, sloughs, and buffer areas adjacent to the project site will not be impacted.

5.0 LIMITATIONS

GeoEngineers has performed this Wetland Delineation for the proposed concrete batch in general accordance with the scope and limitations of our proposal. Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted practices for Wetland Delineation in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

This report has been prepared for the exclusive use of Cedar Grove Composting their authorized agents and regulatory agencies following the described methods and information available at the time of the work. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. The information contained herein should not be applied for any purpose or project except the one originally contemplated.

The applicant is advised to contact all appropriate regulatory agencies (local, state, and federal) prior to design or construction of any development to obtain necessary permits and approvals. Wetland boundaries, classifications and discussions are based on our understanding of the local, state, and federal regulations, and site conditions at the time of our work. The final wetland boundary determinations and wetland classification is to be made or verified by the appropriate jurisdictional agency. Any alteration,

deletion or editing of this document without explicit written permission from GeoEngineers, Inc. is strictly prohibited. Any other unauthorized use of this document is prohibited. This document is intended to be used in its entirety. If an excerpt is quoted or paraphrased, it must be properly referenced.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

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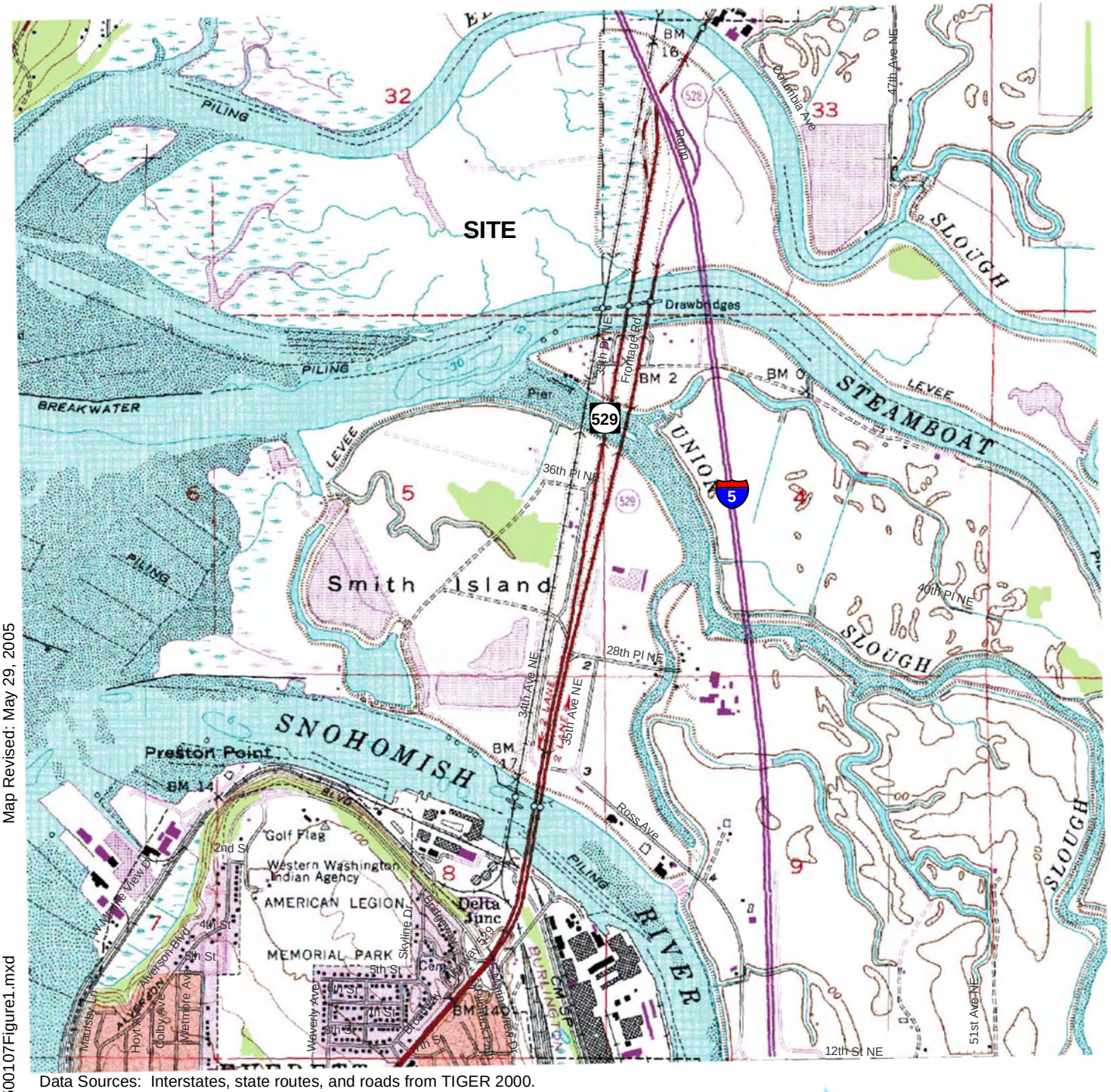


Map Revised: May 29, 2005

Path: P:\10\1062500107\GIS\1062500107Figure1.mxd

Office: SEA

Data Sources: Interstates, state routes, and roads from TIGER 2000.
County boundaries, cities, and waterbodies from Department of Ecology.
USGS quadrangle (4 meter resolution) from TerraServer (obtained April 2005).

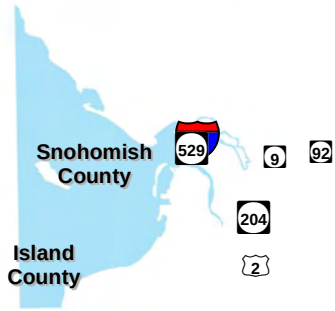
All locations are approximate.

Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

0 1,000 2,000
Feet

N

Roads
Rail Line
Interstates
State Routes
Soil_Pit



Note: This drawing is for informational purposes. It is intended to assist in showing features discussed in an attached document.

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GEOENGINEERS

CEDAR GROVE CONC. BATCH PLANT: VICINITY MAP

FIGURE 1

Data Sources: Interstates, state routes, and roads from TIGER 2000.
County boundaries, cities, and waterbodies from Department of Ecology.
USGS quadrangle (4 meter resolution) from TerraServer (obtained April 2005).
NWI data from United States Department of Fish and Wildlife.

All locations are approximate.

Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

0 1,000 2,000
Feet

N

Rail Line

Interstates

State Routes

Site Boundary

PEMA = Paulstrine, Emergent, Temporarily Flooded

PEM/SSC = Palustrine, Emergent, Scrub-Shrub, Seasonally Flooded

Note: This drawing is for informational purposes. It is intended to assist in showing features discussed in an attached document.

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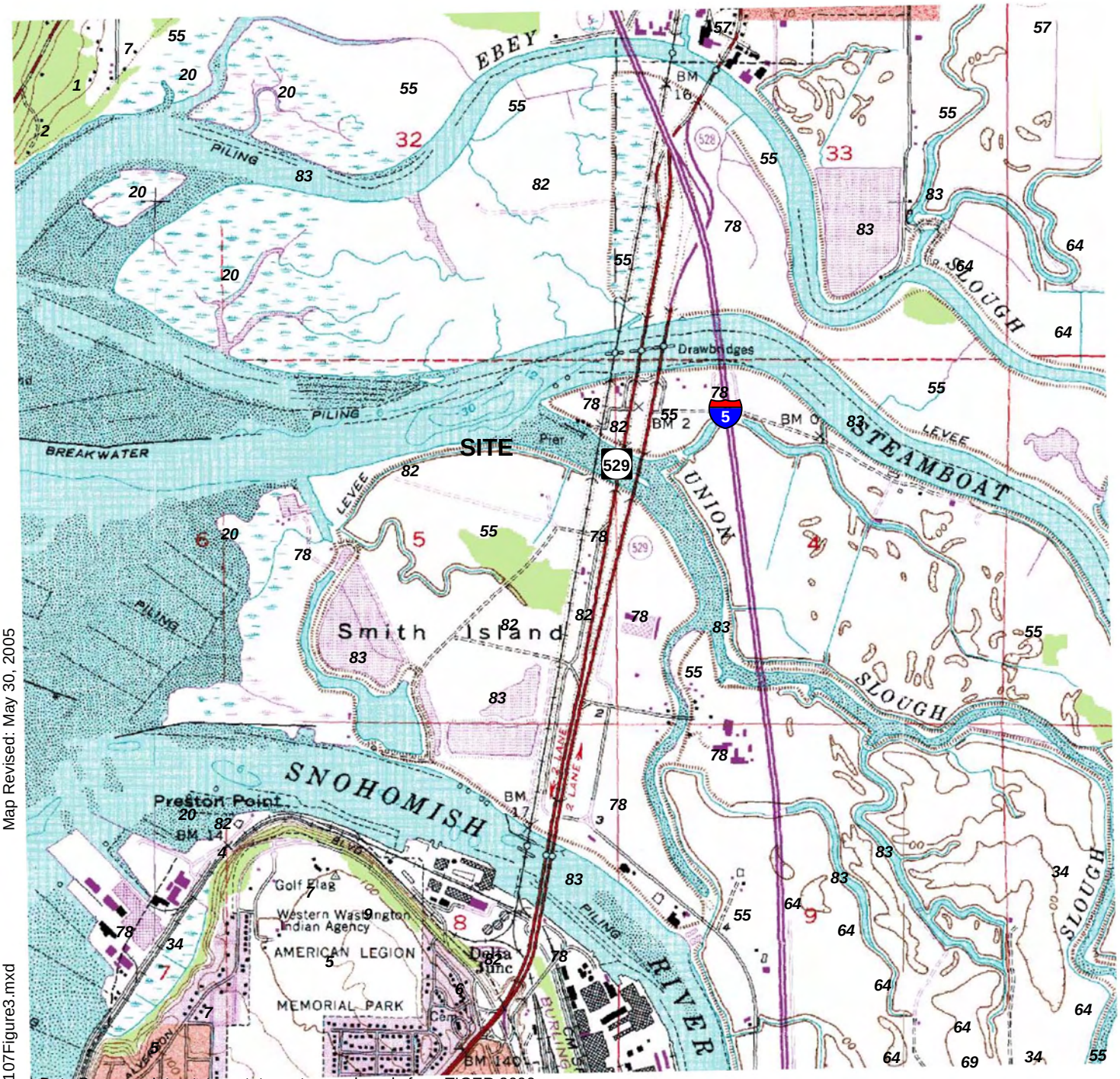
CEDAR GROVE CONC. BATCH PLANT: NATIONAL WETLAND INVENTORY MAP

FIGURE 2

Office: SEA Path: P:\10\1062500107\GIS\1062500107Figure2.mxd Map Revised: May 31, 2005



Data Sources: Interstates, state routes, and roads from TIGER 2000.
County boundaries, cities, and waterbodies from Department of Ecology.
USGS quadrangle (4 meter resolution) from TerraServer (obtained April 2005).
NRCS soils data from United States Department of Agriculture.

All locations are approximate.

Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

0 1,000 2,000
Feet

N

Rail Line
Interstates
State Routes
Site Boundary
Soil Boundary
55 = Puget Silty Clay Loam

Note: This drawing is for informational purposes. It is intended to assist in showing features discussed in an attached document.

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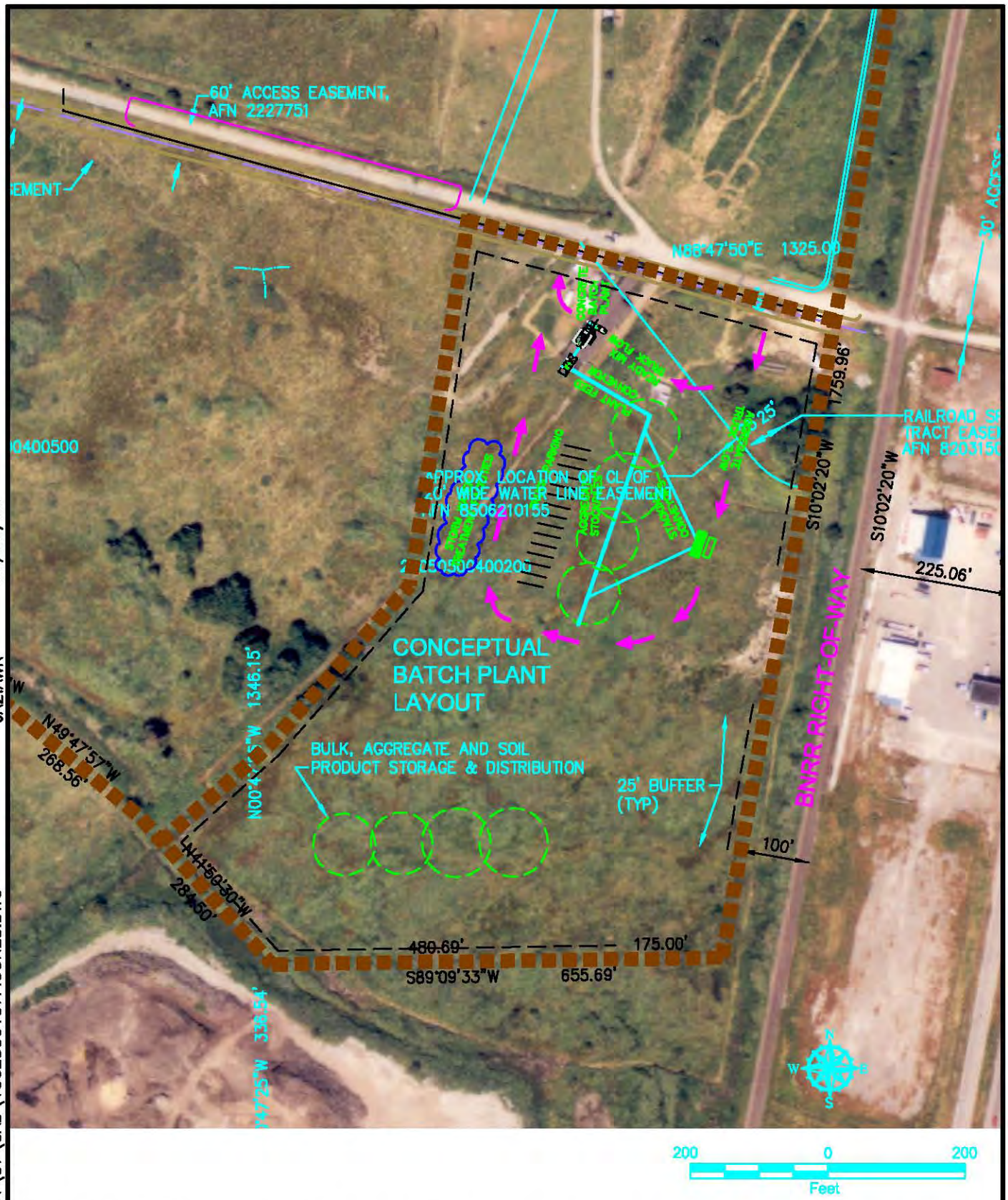
Office: SEA Path: P:\10\1062500107\GIS\1062500107Figure3.mxd Map Revised: May 30, 2005

GEOENGINEERS

CEDAR GROVE CONC. BATCH PLANT: SOIL SURVEY MAP

FIGURE 3



Notes: 1. The locations of all features shown are approximate.
2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Reference: 1. All existing survey data provided by David Evans and Associates
2. All other figures provided by GEI.

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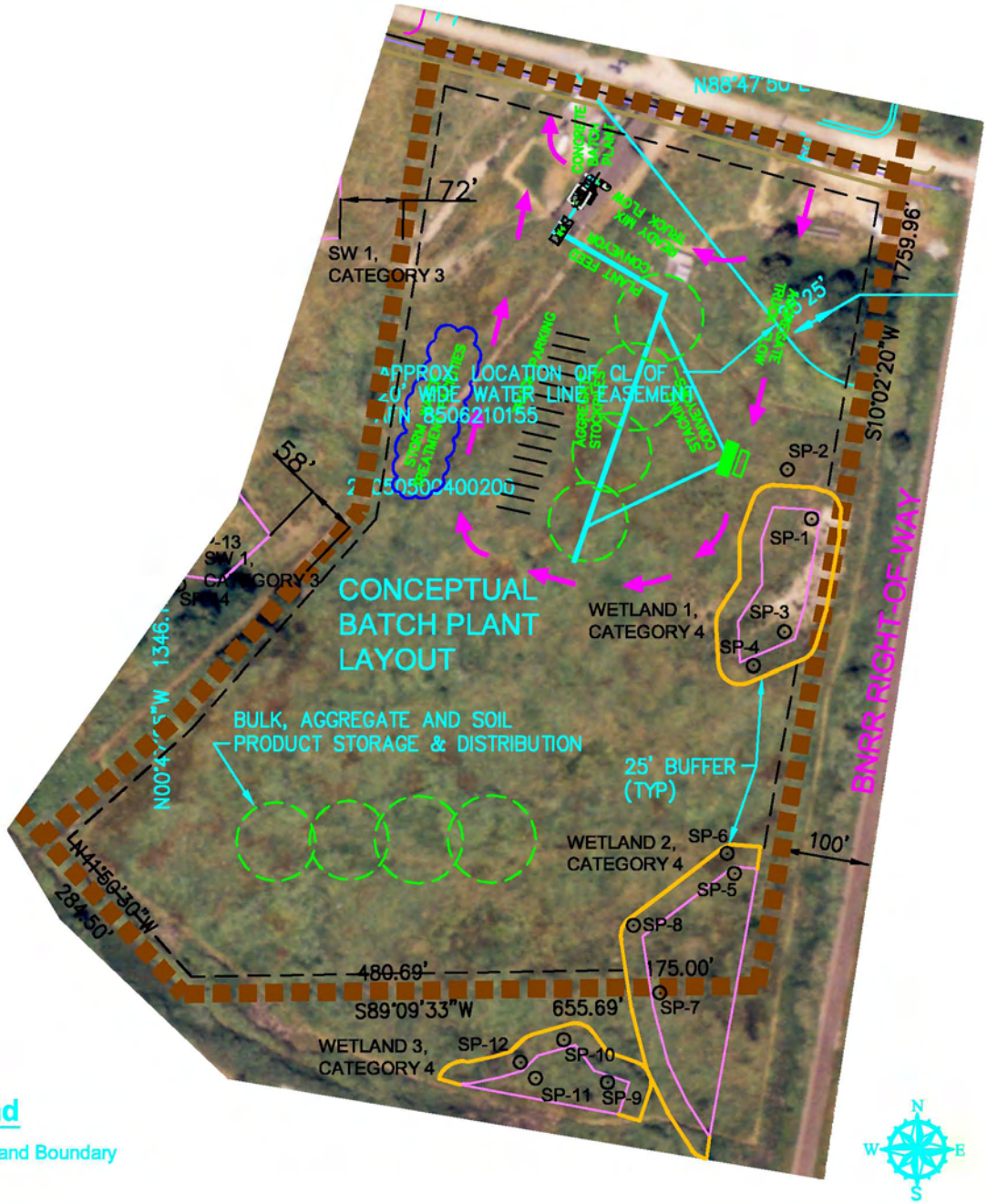
CEDAR GROVE CONC. BATCH PLANT
SITE PLAN

FIGURE 4

SEA:\P:\10\10625001\07\CAD\10625001 07FIGURES.DWG JA2:AWR 07/06/05



Legend

Wetland Boundary

25' Wetland Buffer

SP-13 Soil Pit

200 0 200
Feet

Notes: 1. The locations of all features shown are approximate.
2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The master hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.

Reference: 1. All existing survey data provided by David Evans and Associates
2. All other figures provided by GEI.

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CEDAR GROVE CONC. BATCH PLANT
WETLANDS ON SITE

FIGURE 5

SEA:\P:\10\10625001\07\CAD\10625001 07FIGURES.DWG JA2:AWR 07/07/05

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Appendix A
Aerial Photographs

Data Sources: Interstates, state routes, and roads from TIGER 2000.
County boundaries, cities, and waterbodies from Department of Ecology.
USGS quadrangle (4 meter resolution) from TerraServer (obtained April 2005).
NRCS soils data from United States Department of Agriculture.

All locations are approximate.

Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

0 50 100 200
Feet

N

Site Boundary

Rail Line

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1965 AIR PHOTO

APPENDIX FIGURE A-1

Office: SEA Path: P:\10\1062500107\GIS\1062500107Figure4.mxd Map Revised: May 30, 2005

Data Sources: Interstates, state routes, and roads from TIGER 2000.
County boundaries, cities, and waterbodies from Department of Ecology.
USGS quadrangle (4 meter resolution) from TerraServer (obtained April 2005).
NRCS soils data from United States Department of Agriculture.

All locations are approximate.

Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

0 50 100 200
Feet

N

Site Boundary

Rail Line

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1969 AIR PHOTO

APPENDIX FIGURE A-2

Office: SEA Path: P:\10\1062500107\GIS\1062500107Figure4.mxd Map Revised: May 30, 2005

Data Sources: Interstates, state routes, and roads from TIGER 2000.
County boundaries, cities, and waterbodies from Department of Ecology.
USGS quadrangle (4 meter resolution) from TerraServer (obtained April 2005).
NRCS soils data from United States Department of Agriculture.

All locations are approximate.

Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

0 50 100 200
Feet

N

Site Boundary

Rail Line

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1978 AIR PHOTO

APPENDIX FIGURE A-3

Office: SEA Path: P:\10\1062500107\GIS\1062500107Figure4.mxd Map Revised: May 30, 2005

Data Sources: Interstates, state routes, and roads from TIGER 2000.
County boundaries, cities, and waterbodies from Department of Ecology.
USGS quadrangle (4 meter resolution) from TerraServer (obtained April 2005).
NRCS soils data from United States Department of Agriculture.

All locations are approximate.

Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

0 50 100 200
Feet

N

Site Boundary

Rail Line

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1983 AIR PHOTO

APPENDIX FIGURE A-4

Office: SEA Path: P:\10\1062500107\GIS\1062500107Figure4.mxd Map Revised: May 30, 2005

Data Sources: Interstates, state routes, and roads from TIGER 2000.
County boundaries, cities, and waterbodies from Department of Ecology.
USGS quadrangle (4 meter resolution) from TerraServer (obtained April 2005).
NRCS soils data from United States Department of Agriculture.

All locations are approximate.

Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

0 50 100 200
Feet

N

Site Boundary

Rail Line

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GEOENGINEERS

1987 AIR PHOTO

APPENDIX FIGURE A-5

Office: SEA Path: P:\10\1062500107\GIS\1062500107Figure4.mxd Map Revised: May 30, 2005

Data Sources: Interstates, state routes, and roads from TIGER 2000.
County boundaries, cities, and waterbodies from Department of Ecology.
USGS quadrangle (4 meter resolution) from TerraServer (obtained April 2005).
NRCS soils data from United States Department of Agriculture.

All locations are approximate.

Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

0 50 100 200
Feet

N

Site Boundary

Rail Line

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GEOENGINEERS

1991 AIR PHOTO

APPENDIX FIGURE A-6

Map Revised: May 30, 2005

Path: P:\10\1062500107\GIS\1062500107Figure4.mxd

Office: SEA

Data Sources: Interstates, state routes, and roads from TIGER 2000.
County boundaries, cities, and waterbodies from Department of Ecology.
USGS quadrangle (4 meter resolution) from TerraServer (obtained April 2005).
NRCS soils data from United States Department of Agriculture.

All locations are approximate.

Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

0 50 100 200
Feet

N

Site Boundary

Rail Line

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GEOENGINEERS

1996 AIR PHOTO

APPENDIX FIGURE A-7

Office: SEA Path: P:\10\1062500107\GIS\1062500107Figure4.mxd Map Revised: May 30, 2005

Data Sources: Interstates, state routes, and roads from TIGER 2000.
County boundaries, cities, and waterbodies from Department of Ecology.
USGS quadrangle (4 meter resolution) from TerraServer (obtained April 2005).
NRCS soils data from United States Department of Agriculture.

All locations are approximate.

Lambert Conformal Conic
Washington State Plane North
North American Datum 1983

0 50 100 200
Feet

N

Site Boundary

Rail Line

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2001 AIR PHOTO

APPENDIX FIGURE A-8

Office: SEA Path: P:\10\1062500107\GIS\1062500107Figure4.mxd Map Revised: May 30, 2005

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Appendix B
Wetland Data Forms

APPENDIX B TABLE 1

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/ Buttercup	**Sample Plot #:**	SP1
Location: SE Wetland 1			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked, portions of vegetation disturbed			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	60	☒
Ranunculus repens	Creeping Buttercup	FAC	G	5	☐
					☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FACW dominant vegetation	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 1 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-10”	10YR3/2	10YR3/4	Many, 2mm	Silty clay loam	
10-16”	10YR3/2			Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☐	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: chroma of 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	7”	☐ Stream, lake or gage data	
Depth to saturated soil:	6”	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☒ No ☐
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☒	No ☐
Rationale/Remarks: saturated soil at 7” on May 12th			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☒ No ☐	Yes ☒ No ☐
Rationale/Remarks: all three criteria met		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 2

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/ Thistle	**Sample Plot #:**	SP2
Location: SE Wetland 1			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canary Grass	FACW	G	60	☒
Cirsium arvense	Thistle	FAC	H	5	☐
Trifolium repens	White Clover	FAC	P	5	☐
Juncus effusus	Soft Rush	FAC	R	5	☐
Holcus lanatus	Velvet grass	FAC	G	10	☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FACW dominant	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 2 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-8”	10YR3/2	10YR3/4	Few, 1mm	Silty clay loam	
8-16”	10YR3/2			Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☐	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: chroma 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	None	☐ Stream, lake or gage data	
Depth to saturated soil:	None	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☐ No ☒
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☐	No ☒
Rationale/Remarks: no wetland hydrology indicators observed			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☐ No ☒	Yes ☐ No ☒
Rationale/Remarks: wetland hydrology criteria not met		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 3

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/ Silverweed	**Sample Plot #:**	SP3
Location: SE Wetland 1			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked, portions of vegetation disturbed			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	80	☒
Potentilla anserine ssp. pacifica	Silverweed	FACW	H	5	☐
Ranunculus repens	Creeping Buttercup	FAC	G	5	☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FACW dominant veg	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 3 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-11”	10YR3/2	10YR3/4	Many, 1mm	Silty clay loam	
11-16”	10YR3/2			Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☐	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: chroma of 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	8”	☐ Stream, lake or gage data	
Depth to saturated soil:	7”	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☒ No ☐
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☒	No ☐
Rationale/Remarks: saturated soils at 7” on May 12; strongly oxidized root zone			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☒ No ☐	Yes ☒ No ☐
Rationale/Remarks: all three criteria met		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 4

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/Rye/ Thistle	**Sample Plot #:**	SP4
Location: SE Wetland 1			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	70	☒
Cirsium arvense	thistle	FAC	H	5	☐
Lolium perenne	Perennial Ryegrass	FACU	G	15	☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FAWC is dominant plant community.	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 4 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-10”	10YR3/2	10YR3/4	Few, 1mm	Silty clay loam	
10-16”	10YR3/2			Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☐	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: chroma of 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	None	☐ Stream, lake or gage data	
Depth to saturated soil:	None	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☐ No ☒
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☐	No ☒
Rationale/Remarks: no wetland hydrology indicators were observed			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☐ No ☒	Yes ☐ No ☒
Rationale/Remarks: wetland hydrology indicators not observed		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 5

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/ Buttercup/Silverweed	**Sample Plot #:**	SP5
Location: SE Wetland 2			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked, portions of vegetation disturbed			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	80	☒
Ranunculus repens	Creeping Buttercup	FAC	G	5	☐
Potentilla anserine ssp. pacifica	Silverweed	FACW	G	5	☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FACW dominant vegetation	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 5 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-10”	10YR3/2	10YR3/4	Many, 2mm	Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☐	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: chroma of 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	5”	☐ Stream, lake or gage data	
Depth to saturated soil:	4”	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☒ No ☐
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☒	No ☐
Rationale/Remarks: saturated soil at 4” on May 12th			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☒ No ☐	Yes ☒ No ☐
Rationale/Remarks: all three criteria met		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 6

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/thistle	**Sample Plot #:**	SP8
Location: SE Wetland 2			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	60	☒
Cirsium arvense	thistle	FAC	H	5	☐
					☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FACW is dominant plant community.	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 6 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-11”	10YR3/2	10YR3/4	Faint, 1mm	Silty clay loam	
11-18”	Gley1 3/10x			Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☒	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: gleyed, chroma of 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	None	☐ Stream, lake or gage data	
Depth to saturated soil:	None	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☐ No ☒
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☐	No ☒
Rationale/Remarks: no wetland hydrology indicators were observed			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☐ No ☒	Yes ☐ No ☒
Rationale/Remarks: wetland hydrology indicators not observed		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 7

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/ Silverweed	**Sample Plot #:**	SP7
Location: SE Wetland 2			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked, portions of vegetation disturbed			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	80	☒
Potentilla anserine ssp. pacifica	Silverweed	FACW	G	5	☐
					☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%

Check other indicators (if necessary) that apply:		
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)	
☐ Physiological/reproductive adaptations	☐ Morphological adaptations	
☐ Technical literature	☐ Other	
Is the hydrophytic vegetation criterion met?	Yes ☒	No ☐
Rationale/Remarks: FACW dominant vegetation		

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 7 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-11”	10YR3/2	10YR3/4	Many, 2mm	Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☐	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: chroma of 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	6”	☐ Stream, lake or gage data	
Depth to saturated soil:	5”	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☒ No ☐
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☒	No ☐
Rationale/Remarks: saturated soil at 5” on May 12th			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☒ No ☐	Yes ☒ No ☐
Rationale/Remarks: all three criteria met		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 8

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/thisle	**Sample Plot #:**	SP8
Location: SE Wetland 2			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	60	☒
Cirsium arvense	thistle	FAC	H	5	☐
					☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FACW is dominant plant community.	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 8 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-12”	10YR3/2	10YR3/4	Faint, 1mm	Silty clay loam	
12-18”	Gley1 3/10x			Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☒	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: gleyed, chroma of 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	None	☐ Stream, lake or gage data	
Depth to saturated soil:	None	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☐ No ☒
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☐	No ☒
Rationale/Remarks: no wetland hydrology indicators were observed			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☐ No ☒	Yes ☐ No ☒
Rationale/Remarks: wetland hydrology indicators not observed		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 9

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary	**Sample Plot #:**	SP9
Location: SE Wetland 3			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked, portions of vegetation disturbed			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	40	☒
					☐
					☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FACW dominant vegetation	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 9 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-12”	10YR3/2	10YR3/4	Many, 1mm	Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☐	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: chroma of 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	7”	☐ Stream, lake or gage data	
Depth to saturated soil:	6”	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☒ No ☐
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☒	No ☐
Rationale/Remarks: saturated soil at 6” on May 12th			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☒ No ☐	Yes ☒ No ☐
Rationale/Remarks: all three criteria met		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 10

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/Nightshade, European Bittersweet	**Sample Plot #:**	SP10
Location: SE Wetland 3			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	70	☒
Solanun dulcamara	European Bittersweet	FAC	H	5	☐
					☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FACW is dominant plant community.	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 10 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-10”	10YR3/2	10YR4/4	Faint, 1mm	Silty clay loam	
10-16”	10YR3/2			Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☐	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: chroma of 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	None	☐ Stream, lake or gage data	
Depth to saturated soil:	None	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☐ No ☒
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☐	No ☒
Rationale/Remarks: no wetland hydrology indicators were observed			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☐ No ☒	Yes ☐ No ☒
Rationale/Remarks: wetland hydrology indicators not observed		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 11

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary	**Sample Plot #:**	SP11
Location: SE Wetland 3			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked, portions of vegetation disturbed			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	40	☒
					☐
					☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FACW dominant vegetation	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 11 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-12”	10YR3/2	10YR3/4	Many, 1mm	Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☐	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: chroma of 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	7”	☐ Stream, lake or gage data	
Depth to saturated soil:	6”	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☒ No ☐
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☒	No ☐
Rationale/Remarks: saturated soil at 6” on May 12th			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☒ No ☐	Yes ☒ No ☐
Rationale/Remarks: all three criteria met		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 12

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed Canary/ Nightshade, European Bittersweet	**Sample Plot #:**	SP12
Location: SE Wetland 3			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	70	☒
Solanun dulcamara	European Bittersweet	FAC	H	5	☐
					☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FACW is dominant plant community.	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 12 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-10”	10YR3/2	10YR4/4	Faint, 1mm	Silty clay loam	
10-16”	10YR3/2	10YR4/4	Rare, 1mm	Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☒	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☐	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: chroma of 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	None	☐ Stream, lake or gage data	
Depth to saturated soil:	None	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☐ No ☒
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☐	No ☒
Rationale/Remarks: no wetland hydrology indicators were observed			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☐ No ☒	Yes ☐ No ☒
Rationale/Remarks: wetland hydrology indicators not observed		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 13

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Reed CanaryGrass/Buttercup	**Sample Plot #:**	SP13
Location: SW Wetland 1			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☒	No ☐
If yes to either, explain: Site was recently disked, portions of vegetation disturbed			
Is the area a potential Problem Area?		Yes ☐	No ☒
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Phalaris arundinacea,	Reed Canarygrass	FACW	G	40	☒
Ranunculus repens	Creeping Buttercup	FAC	G	5	☐
					☐
					☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%

Check other indicators (if necessary) that apply:

☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)	
☐ Physiological/reproductive adaptations	☐ Morphological adaptations	
☐ Technical literature	☐ Other	
Is the hydrophytic vegetation criterion met?	Yes ☒	No ☐

Rationale/Remarks: FACW dominant vegetation

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 13 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-10”	7.5YR3/1	7.5YR4/3	Occasional, 1mm	Silty clay loam	
10-18”	7.5 2/1	7.5 YR 4/2	Many, 1mm	Silty clay loam	

Hydric soil indicators (check all that apply):			
☐	Histosol	☐	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☒	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: chroma < 2 with mottles			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	11”	☐ Stream, lake or gage data	
Depth to saturated soil:	10”	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☒ No ☐
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☒	No ☐
Rationale/Remarks: saturated soil at 10” on May 12th			

WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☒ No ☐	Yes ☒ No ☐
Rationale/Remarks: all three criteria met		
Table adopted from the 1987 Corps Wetland Delineation Manual		

APPENDIX B TABLE 14

ROUTINE ON-SITE DETERMINATION METHOD DATA FORM			
Field Investigator(s):	ETB	Date:	5/12/05
Project/Site:	Cedar Grove Concrete Batch Plant	County:	Snohomish
Applicant/Owner:	Cedar Grove Composting	State:	WA
Plant Community Name:	Rye Grass/Red Alder/Nightshade/Thistle	**Sample Plot #:**	SP14
Location: SW Wetland 1			
Do normal environmental conditions exist on site?		Yes ☒	No ☐
If No explain:			
Is the site recently significantly disturbed (atypical situation)?		Yes ☐	No ☒
If yes to either, explain:			
Is the area a potential Problem Area?		Yes ☒	No ☐
If yes, explain:			

VEGETATION

Scientific name	Common name	Indicator*	Stratum	% Cover	Dom.
Alnus rubra	Red Alder	FAC	T	20	☒
Solanun dulcamara	European Bittersweet	FAC	H	5	☐
Lolium perenne	Perennial Ryegrass	FACU	G	40	☐
Cirsium arvense	thistle	FAC	H	10	☐
					☐
					☐
					☐
					☐
					☐

% of dominant species that are OBL, FACW, and/or FAC:	1 out of 1 = 100%
Check other indicators (if necessary) that apply:	
☐ Regional knowledge of plant communities	☐ Wetland plant list (Nat'l or Regional)
☐ Physiological/reproductive adaptations	☐ Morphological adaptations
☐ Technical literature	☐ Other
Is the hydrophytic vegetation criterion met?	Yes ☒ No ☐
Rationale/Remarks: FACW is dominant plant community.	

* Based on National List of Species that Occur in Wetlands (Reed 1998a), regional sublist for the northwest (Reed 1988b), and 1993 supplement to Region 9 list (Reed 1993).

APPENDIX B TABLE 14 (Continued)

SOILS					
Series/phase: Puget Silty Clay Loam (55)			Drainage class: Artificially		
Taxonomy:mesic Typic Fluvaquent			Field observations confirm mapped type?	Yes ☒	No ☐
Profile Description			Is the soil on the hydric soils list?	Yes ☒	No ☐
Depth (Inches)	Matrix Color	Mottle Colors	Mottle (abundance, size, contrast)	Texture, structure, etc.	
0-18”	10YR4/1		none	Silty clay loam	

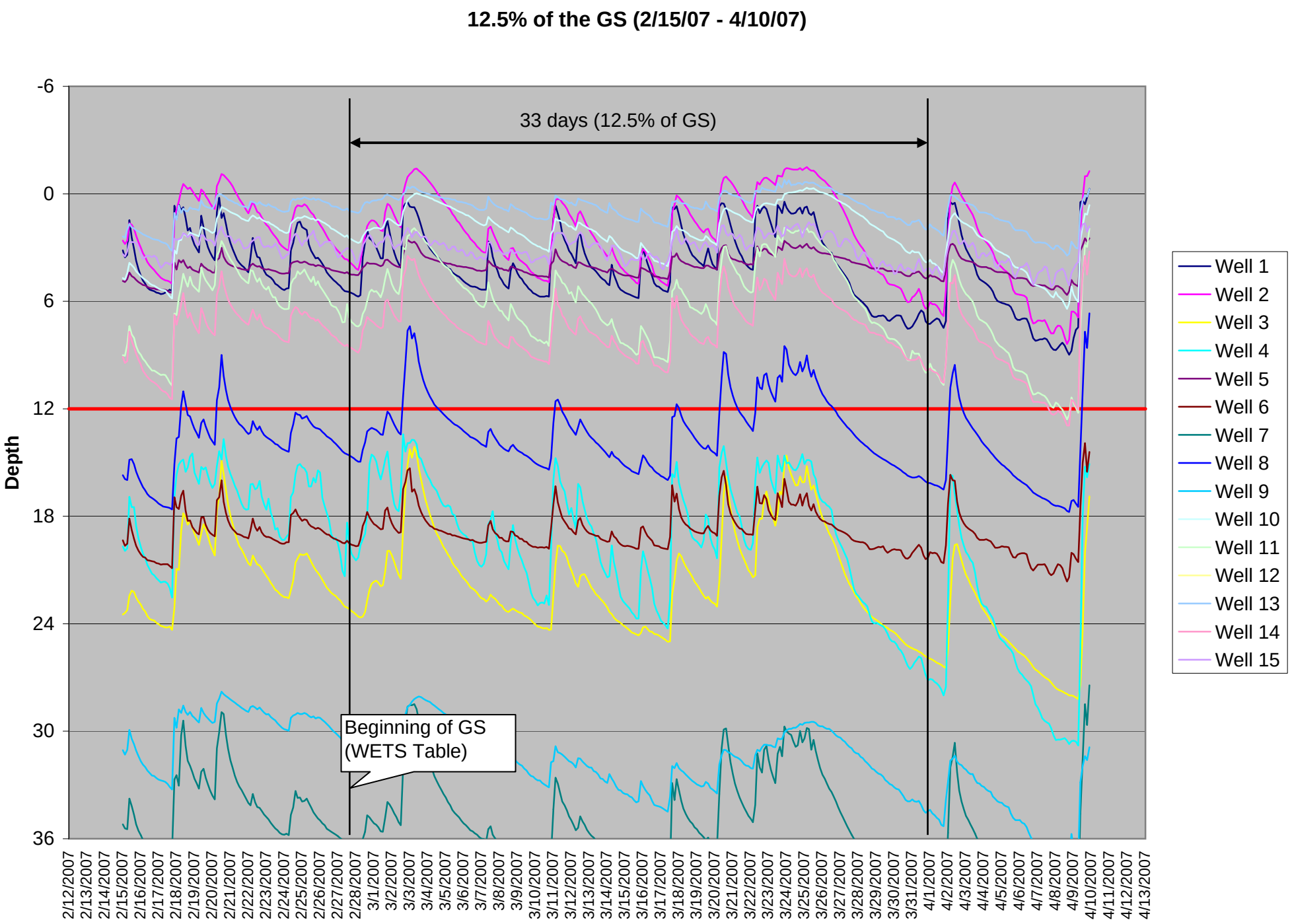
Hydric soil indicators (check all that apply):			
☐	Histosol	☐	Matrix chroma of 2 with mottles
☐	Histic Epipedon	☐	Concretions
☐	Sulfidic Odor	☐	Mg or Fe Concretions
☐	Aquic Moisture Regime	☐	High Organic Content (sandy soil)
☐	Reducing Conditions	☐	Organic Streaking (sandy soil)
☒	Gleyed or Low Chroma < 2	☐	Other
Is the hydric soil criterion met?		Yes ☒	No ☐
Rationale/Remarks: Chroma <2			

HYDROLOGY			
(Wetland delineation was performed on 5/12/05)			
Is it in the growing season?	Yes ☒ No ☐	Check any that apply:	
Depth of inundation:		☐ Aerial photograph	
Depth to free water in soil pit:	None	☐ Stream, lake or gage data	
Depth to saturated soil:	None	☐ Other	
Check all that indicators that apply:			
Water marks:	Yes ☐ No ☒	Oxidized root channels:	Yes ☐ No ☒
Drift lines:	Yes ☐ No ☒	Water-stained leaves:	Yes ☐ No ☒
Sediment deposits:	Yes ☐ No ☒	FAC Neutral:	Yes ☐ No ☒
Drainage patterns:	Yes ☐ No ☒	Local soil survey:	Yes ☐ No ☒
Other indicator(s):	Yes ☐ No ☒		
Is the wetland hydrology criterion met?		Yes ☐	No ☒
Rationale/Remarks: no wetland hydrology indicators were observed			

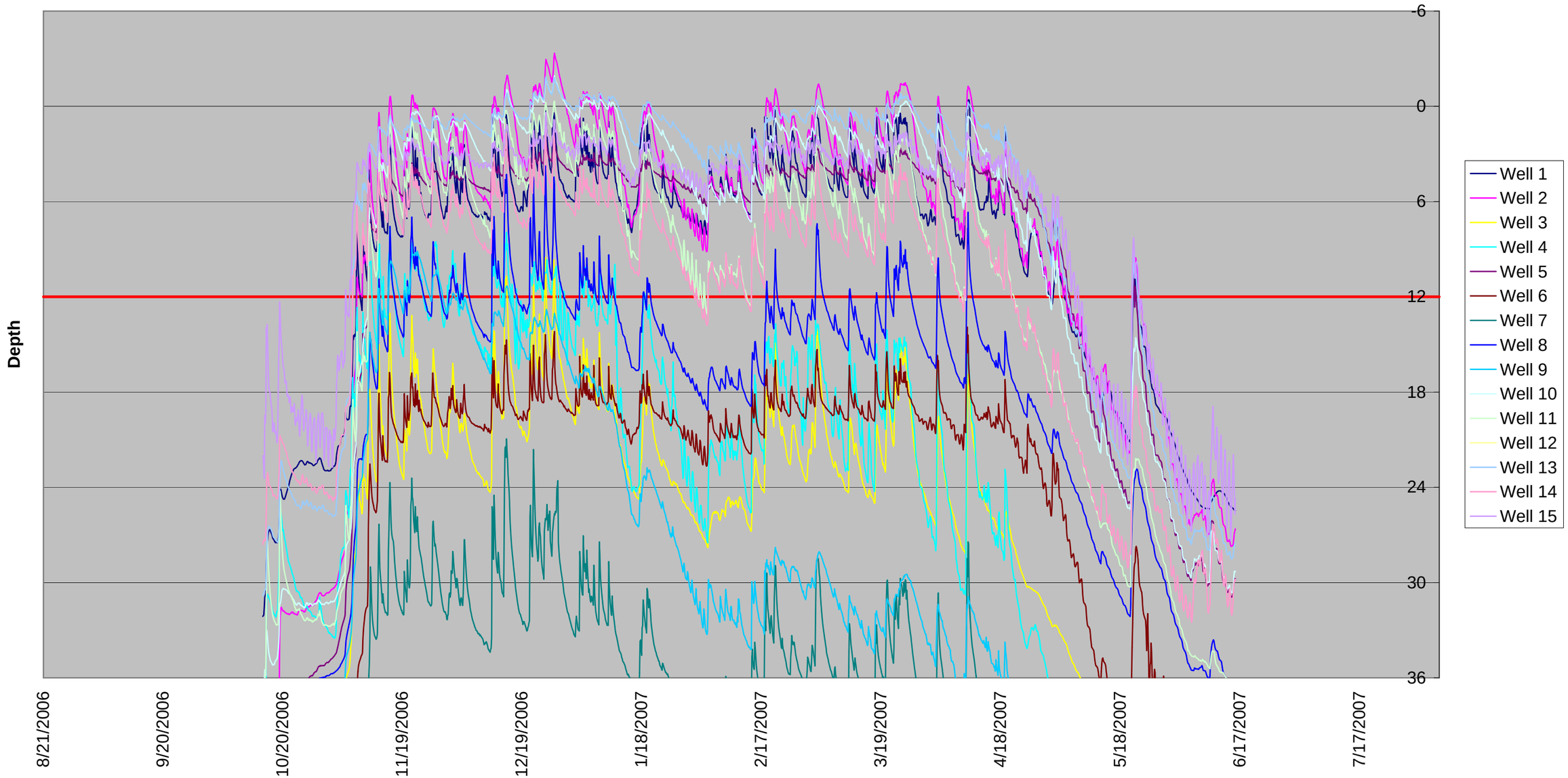
WETLAND DETERMINATION		
Hydrophytic vegetation present?	Yes ☒ No ☐	Is the sampling point within a wetland?
Hydric soils present?	Yes ☒ No ☐	
Wetland hydrology present?	Yes ☐ No ☒	Yes ☐ No ☒
Rationale/Remarks: wetland hydrology indicators not observed		
Table adopted from the 1987 Corps Wetland Delineation Manual		

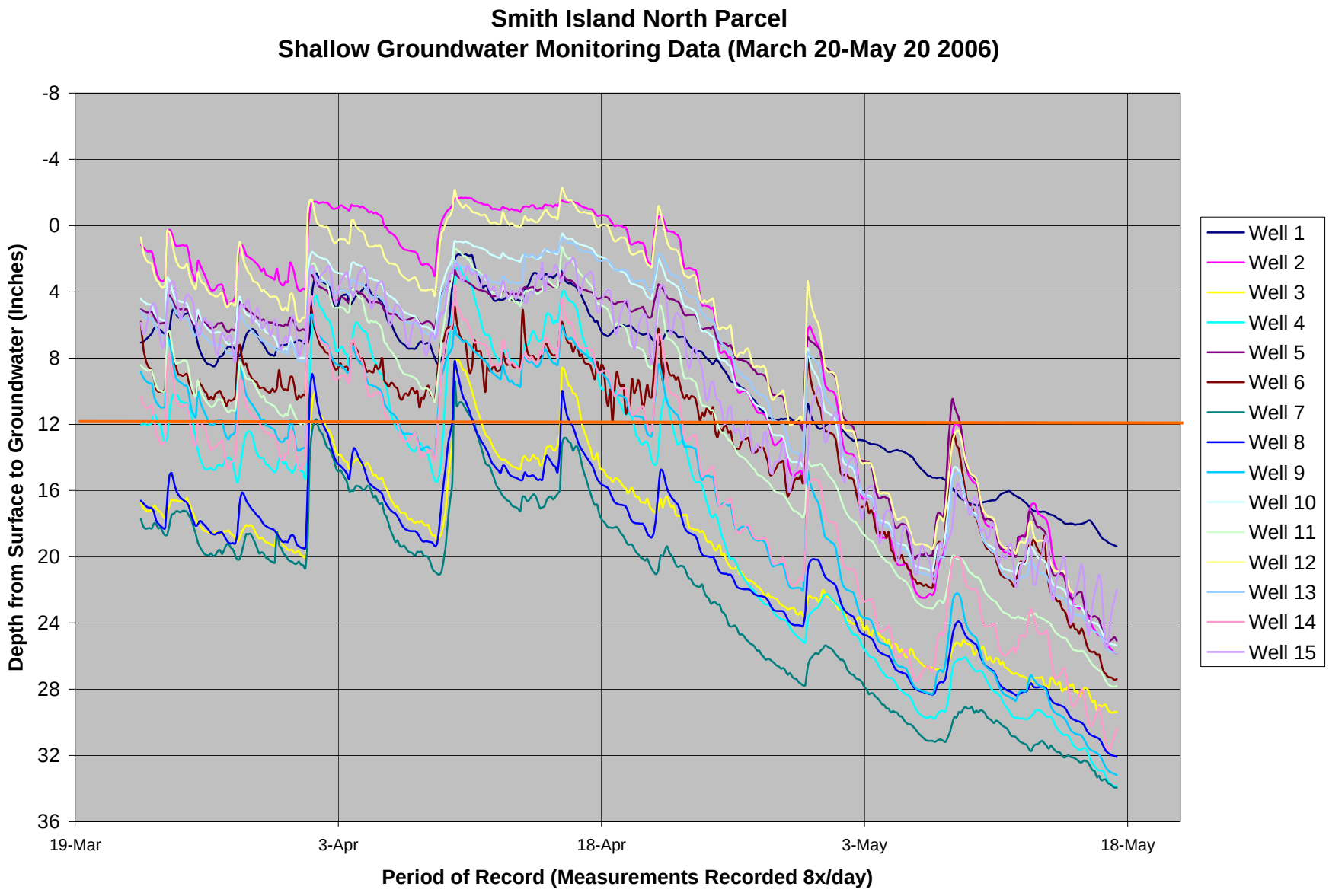
GeoEngineers

APPENDIX F
GROUNDWATER MONITORING DATA


12.5% of the GS (2/15/07 - 4/10/07)
33 days (12.5% of GS)
Beginning of GS
(WETS Table)
Depth
-6
0
6
12
18
24
30
36
2/12/2007
2/13/2007
2/14/2007
2/15/2007
2/16/2007
2/17/2007
2/18/2007
2/19/2007
2/20/2007
2/21/2007
2/22/2007
2/23/2007
2/24/2007
2/25/2007
2/26/2007
2/27/2007
2/28/2007
3/1/2007
3/2/2007
3/3/2007
3/4/2007
3/5/2007
3/6/2007
3/7/2007
3/8/2007
3/9/2007
3/10/2007
3/11/2007
3/12/2007
3/13/2007
3/14/2007
3/15/2007
3/16/2007
3/17/2007
3/18/2007
3/19/2007
3/20/2007
3/21/2007
3/22/2007
3/23/2007
3/24/2007
3/25/2007
3/26/2007
3/27/2007
3/28/2007
3/29/2007
3/30/2007
3/31/2007
4/1/2007
4/2/2007
4/3/2007
4/4/2007
4/5/2007
4/6/2007
4/7/2007
4/8/2007
4/9/2007
4/10/2007
4/11/2007
4/12/2007
4/13/2007
Well 1
Well 2
Well 3
Well 4
Well 5
Well 6
Well 7
Well 8
Well 9
Well 10
Well 11
Well 12
Well 13
Well 14
Well 15

Smith Island North Parcel
Corps Recommended Monitoring Period (10/2006 - 6/2007)




Smith Island North Parcel
Shallow Groundwater Monitoring Data (March 20-May 20 2006)
Depth from Surface to Groundwater (Inches)
-8
-4
0
4
8
12
16
20
24
28
32
36
19-Mar
3-Apr
18-Apr
3-May
18-May
Period of Record (Measurements Recorded 8x/day)
Well 1
Well 2
Well 3
Well 4
Well 5
Well 6
Well 7
Well 8
Well 9
Well 10
Well 11
Well 12
Well 13
Well 14
Well 15