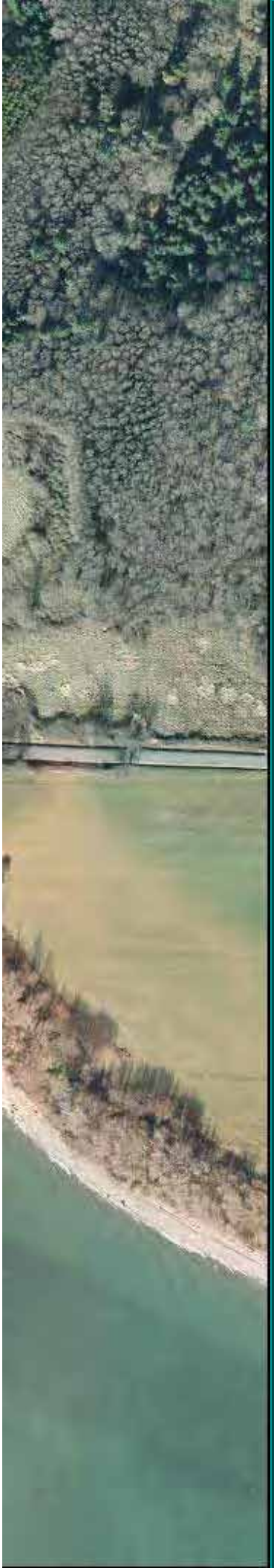

Wetland Determination and Delineation
Gateway Pacific Terminal Property
Whatcom County, WA

Submitted to:

Pacific International Terminals
1131 SW Klickitat Way
Seattle, Washington 98134

Submitted by:

AMEC Earth & Environmental, Inc.
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington 98034

February 22, 2008

February 21, 2008

Randel Perry, Project Manager
Regulatory Branch
U.S. Army Corps of Engineers – Seattle District
P.O. Box 3755
Seattle, Washington 98124

Subject: **Request for jurisdictional determination and boundary confirmation of potential wetland areas located at the Gateway Pacific Terminal Property, Whatcom County, Washington.**

Dear Mr. Perry:

AMEC Earth & Environmental, Inc. is pleased to submit this report describing our wetland determination and delineation on the approximately 1,100 acre undeveloped parcel in Whatcom County, WA on behalf of Pacific International Terminals, Inc (PIT).

We request your attention for a jurisdictional determination and confirmation of delineated wetland boundaries. This request for jurisdictional determination and boundary concurrence is one of a series of actions that are a part of the baseline environmental studies and surveys necessary to complete permitting for the proposed project. In addition to the wetland study presented here, a number of previous wetland reconnaissance studies have been conducted on the property, beginning in 1991.

The property is slated to be developed by PIT into a marine cargo shipping facility known as the Gateway Pacific Terminal (GPT). The design is being finalized but will include a marine wharf, an access trestle connecting the wharf to the shore, upland cargo storage buildings, rail loop track, internal facility roads, parking area for employees, equipment storage, and administrative areas.

At this time we are submitting this report of wetland conditions explicitly for a jurisdictional determination and boundary confirmation from the USACE and will coordinate with the other agencies at an appropriate time in the future.

We look forward to scheduling a time at your convenience when we may discuss this and other information together in detail.

Sincerely,

Kristie Dunkin, Ph.D., PMP
Senior Scientists
AMEC Earth & Environmental, Inc.

Attachments

cc: Skip Sahlin, Pacific International Terminals

AMEC Earth & Environmental, Inc.
11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034
(425) 820-4669 Phone
(425) 821-3914 Facsimile
www.amec.com

February 20, 2008

Regulatory Branch
Seattle District Corps of Engineers
P.O. Box 3755
Seattle, Washington 98124-3755

Attention: Mr. Randel Perry, Project Manager

Subject: Request for Jurisdictional Determination, Agent Authorization

Dear Mr. Perry:

This letter authorizes Kristie Duncan, AMEC Earth and Environmental, to act on the behalf of Pacific International Terminals (PIT) to modify and negotiate, in consultation with PIT, with the Department of the Army on a jurisdictional determination and boundary confirmation of potential wetland areas located on the Gateway Pacific Terminal Property, Whatcom County, Washington.

Sincerely,

Skip Sahlin

Pacific International Terminals

cc: Kristie Duncan

AMEC Earth & Environmental, Inc.
11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034
(425) 820-4669 Phone
(425) 821-3914 Facsimile
www.amec.com

WETLAND DETERMINATION AND DELINEATION
GATEWAY PACIFIC TERMINAL PROPERTY
WHATCOM COUNTY, WASHINGTON

Submitted to:

Pacific International Terminals
1131 SW Klickitat Way
Seattle, Washington 98134

Submitted by:

AMEC Earth & Environmental, Inc.
11335 N.E. 122nd Way, Suite 100
Kirkland, Washington 98034

February 18, 2008

AMEC Project No. 5-91M-15338-0

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Appendix E Wetland Rating Forms

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LIST OF ACRONYMS

AMEC	AMEC Earth & Environmental, Inc.
County	Whatcom County
Ecology	Washington Department of Ecology
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GPT	Gateway Pacific Terminal
HCA	Habitat Conservation Area
HGM	Hydrogeomorphic Classification
I-5	Interstate 5
OBL	Obligate
OHW	Ordinary High Water
PIT	Pacific International Terminal
NRCS	Natural Resource Conservation Service
UGA	Urban Growth Area
UPL	Upland
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
WDFW	Washington State Department of Fish and Wildlife

1. INTRODUCTION

1.1 Purpose of this Report

AMEC Earth & Environmental, Inc. (AMEC) has conducted a wetland determination and delineation at the request of Pacific International Terminals, Inc. (PIT) on 1,092 acres of heavy-impact industrial zoned land in the vicinity of Cherry Point in Whatcom County, Washington. This comprehensive evaluation of wetland vegetation, hydrologic conditions, and soils was conducted over two 3-week periods of intensive field effort and several additional visits to the area. This report summarizes the findings of the field effort; provides field data to support the delineated wetland boundaries; characterizes wetland areas and waters of the U.S.; and assesses the value and functions of the delineated wetlands. A 22 by 34 inch map of the study area showing wetland boundaries and other study area details is included as Appendix A. The information in this report is provided to support jurisdictional determination under the Clean Water Act and boundary concurrence from the U.S. Army Corps of Engineers (USACE).

Pacific International Terminals is proposing to develop a deep-sea cargo shipping facility on a portion of the study area. The project is known as Gateway Pacific Terminal (GPT or Project). Gateway Pacific Terminal would service transoceanic ships entering the Strait of Georgia through the Strait of Juan de Fuca. Of the 1,092-acre study area evaluated in this effort, approximately 120 acres would be used for terminal storage facilities and 120 acres would be used for a railroad track to accommodate trains transporting commodities. The Project site has been identified by Whatcom County and the State of Washington for this purpose because of its proximity to the shipping lanes, the depth of the water near to the shore, close proximity to an existing railway, and nearness of Interstate 5 (I-5) for terrestrial shipment of cargo and the heavy impact industrial zoning.

1.2 Project History

In 1997, PIT received a Shoreline Substantial Development Permit from Whatcom County, Washington, to construct the GPT. A consortium including Washington State Department of Ecology (Ecology), Washington Department of Fish and Wildlife (WDFW), and a coalition of five environmental groups appealed the permit to the State Shoreline Hearings Board on the basis that potential environmental impacts from the project were not satisfactorily addressed or mitigated. The appeal led to a Settlement Agreement (SA) among all the parties in the consortium executed in 1999 (Shoreline Substantial Development Permit SHS 92-0020 and SHB Appeals 97-22 and 97-23).

Subsequently, PIT commenced implementation of the SA conditions. These actions included baseline environmental studies and surveys; conceptual and order-of-magnitude designs; financial studies; and contractual arrangements. Also taken were actions to acquire the additional permits required for the project.

Prior to the wetland determination and delineation reported here, wetlands and other aquatic habitats onsite and in the vicinity were previously evaluated. In summary, between the period of 1991 and 2001, the following studies were conducted:

- *Cherry Point Wetland Analysis* conducted by Parametrix, Inc., 1991, prepared for Environmental and Energy Services Company;
- *Jurisdictional Wetland Determination for Cherry Point Project* conducted by Shapiro and Associates, 1992, prepared for Pacific International Terminals;
- *Wetland Report of Gateway Pacific Terminal,* conducted by Aqua-Terr Systems, Inc., 1995, prepared for Gateway Pacific Terminal; and
- Miscellaneous site reconnaissance visits from 1999 through 2001 conducted by Mr. Jim Wiggins.

The early reconnaissance and delineation efforts identified substantial areas of wetland within the study area. A letter of concurrence was issued by the USACE in December 1992 for the wetland boundaries delineated earlier that year, which expired in 1995. Efforts conducted in 1995 and additional reconnaissance investigation conducted in 1999, 2001, and 2005 indicated that many wetland boundary locations and wetland conditions have changed from those reported in earlier studies.

1.3 Agency Coordination

PIT engaged the USACE soon after execution of the SA and permit applications were filed. PIT continued to work and cooperate with USACE regarding project permits. Specifically regarding the wetland component of the GPT project, PIT met with USACE on numerous occasions to discuss jurisdictional determination. PIT has remained in communication with USACE to clarify USACE position regarding their NEPA process, as well as the effect of the US Supreme Count's 2007 decision and the subsequence USACE/EPA Rapanos Guidance Document. Additionally, Mr. Matt Bennett and Mr. Randal Perry of the Seattle District USACE met with AMEC biologists on site to review portions of the study area. A field, that was plowed and seeded in April 2006, was examined for wetland conditions during that site review.

PIT also worked with USACE on other aspects of project. Those issues included agency coordination, project schedule, wetland jurisdictional determinations, and cultural and geotechnical issues.

1.4 Wetland Regulatory Environment

The USEPA and the USACE regulate wetlands and other water of the U.S., including wetlands, under the Clean Water Act. The 2006 Rapanos Supreme Court decision held that EPA and USACE maintain jurisdiction over traditional navigable waters (TNW), wetlands adjacent to or abutting TNW, non-navigable tributaries of TNW that are relatively permanent (RPW), and wetlands that abut such tributaries. For those wetlands associated with non-navigable tributaries that are not relatively permanent, the agencies will assert jurisdiction where they are found to have a significant nexus to a TNW.

The Washington State Department of Ecology provides regulation of wetlands under Section 401 of the Clean Water Act and under the State's Growth Management Act. Wetlands are regulated by Whatcom County under the County's Critical Areas Ordinance.

Wetlands are defined by the County and state and federal agencies as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions" (Federal Register 1982, Federal Register 1985, the State Shoreline Management Act [RCW 90.58], and the State Growth Management Act [RCW 36.70A]). Under normal circumstances, wetlands support this type of vegetation.

1.5 Study Area Description

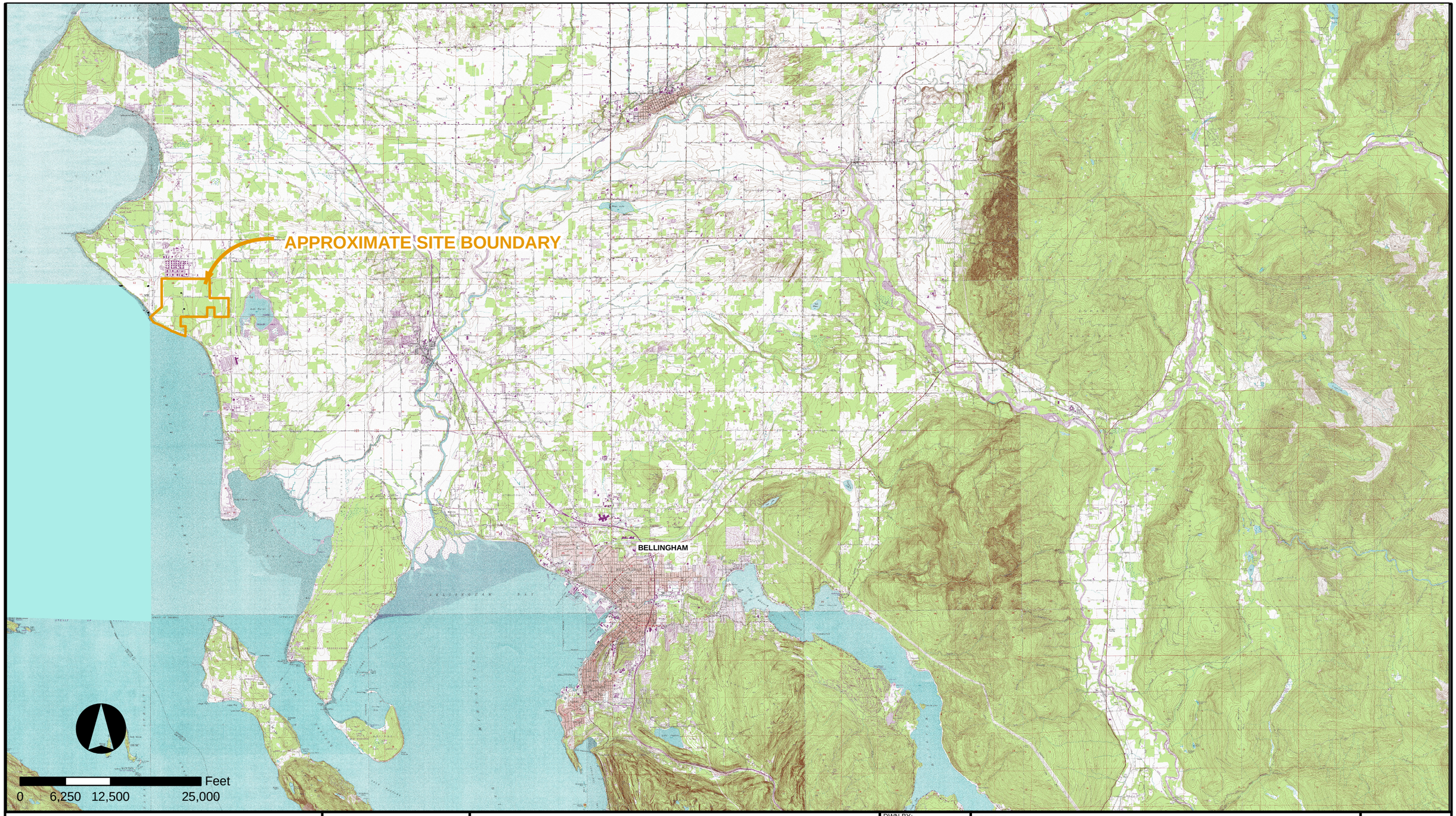
The study area is located 18 miles northwest of Bellingham and 10 miles west of Ferndale (Figure 1). The study area is considerably larger than the proposed GPT development area and includes all the lands owned by PIT in the vicinity.

The study area covers portions of Sections 17, 18, and 19 of Township 39 North, Range 1 East, all in unincorporated Whatcom County. The study area is accessible from I-5 via Highway 548 (Grandview Road) west, and left on Kickerville Road.

Roughly rectangular in shape, the study area is bounded by roads and industrial operations to the north, east, and south, and by the Strait of Georgia to the southwest:

- BP's Cherry Point refinery property is adjacent to the north and west;
- 70 acres owned by BP lie to the northwest;
- Kickerville Road, populated by private residences on approximately 5 acre plats, lies to the east;
- pastures and a small industrial area lie to the south; and
- DNR lands lie to the southeast and northeast (Figure 2).

Cherry Point, a small promontory of land south of Point Whitehorn, forms the southwest corner of the study area. Roads, pipelines, power line corridors, railroads, and other heavy industrial utilities further define the study area. Gulf Road (formerly Powder Plant Road) and a BNSF railway line run north-south in the eastern portion of the site, and Lonseth Road bisects the study area east-west. A BPA transmission-line corridor runs north-south through the eastern study area. An area measuring approximately 28 acres between Henry Road and Lonseth Road, west of the BNSF railway line is under separate ownership and was excluded from the study area (called the "exclusion area" for this report).



CLIENT: GATEWAY PACIFIC TERMINALS

AMEC Earth & Environmental
7376 SW Durham Road
Portland, OR, U.S.A. 97224

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CHK'D BY: MG
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 12,500 fee

PROJECT: WETLAND DELINEATION

TITLE: VICINITY MAP

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
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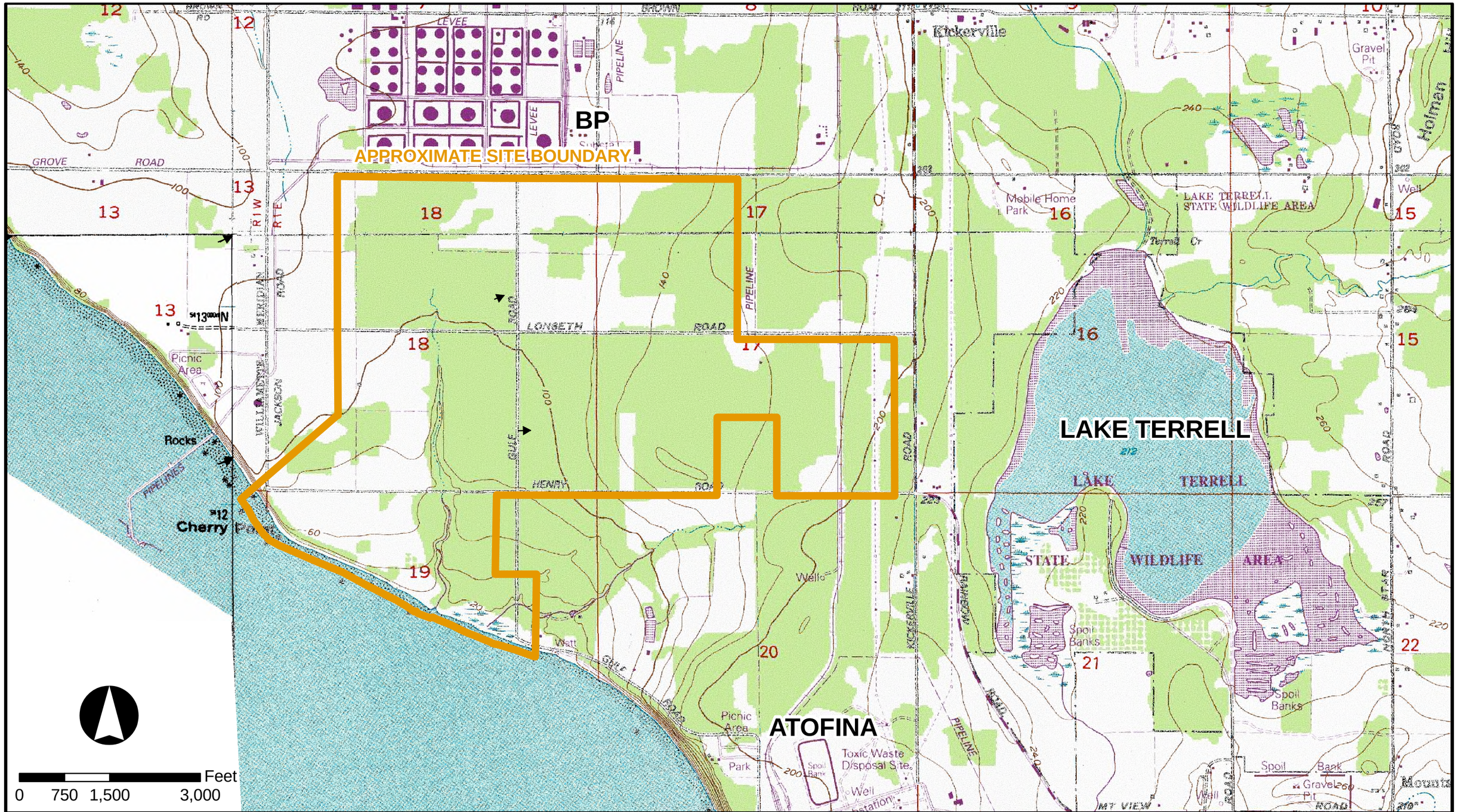

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			DATUM: NAD83	TITLE: MAP SHOWING LOCATION OF STUDY AREA	REV. NO.: 1	
		AMEC Earth & Environmental 7376 SW Durham Road Portland, OR, U.S.A. 97224	PROJECTION: WA SP North, Ft.		FIGURE NO.: FIGURE 2	
			SCALE: 1 inch equals 1,500 feet			

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The study area is situated within the Urban Growth Area (UGA) of unincorporated Whatcom County (UGA-9), and is zoned for heavy industrial/port growth (Whatcom County, 2006).

2. METHODS

The following section provides information on the methods used during field surveys, data collection, and analysis regarding vegetation, soils, hydrology, and precipitation patterns, and methods used to classify and rate wetlands and other waters of the U.S.

2.1 Site Investigation

Comprehensive site investigations were used to identify and delineate the wetlands reported herein. The results of previous field investigations conducted from 1991 to 2005 were used as reference to expedite the present effort. The field effort occurred in two, three-week field surveys: May 30 through June 16, 2006 and from January 22 through February 7, 2007. Several follow-up visits were made throughout 2007 and early 2008.

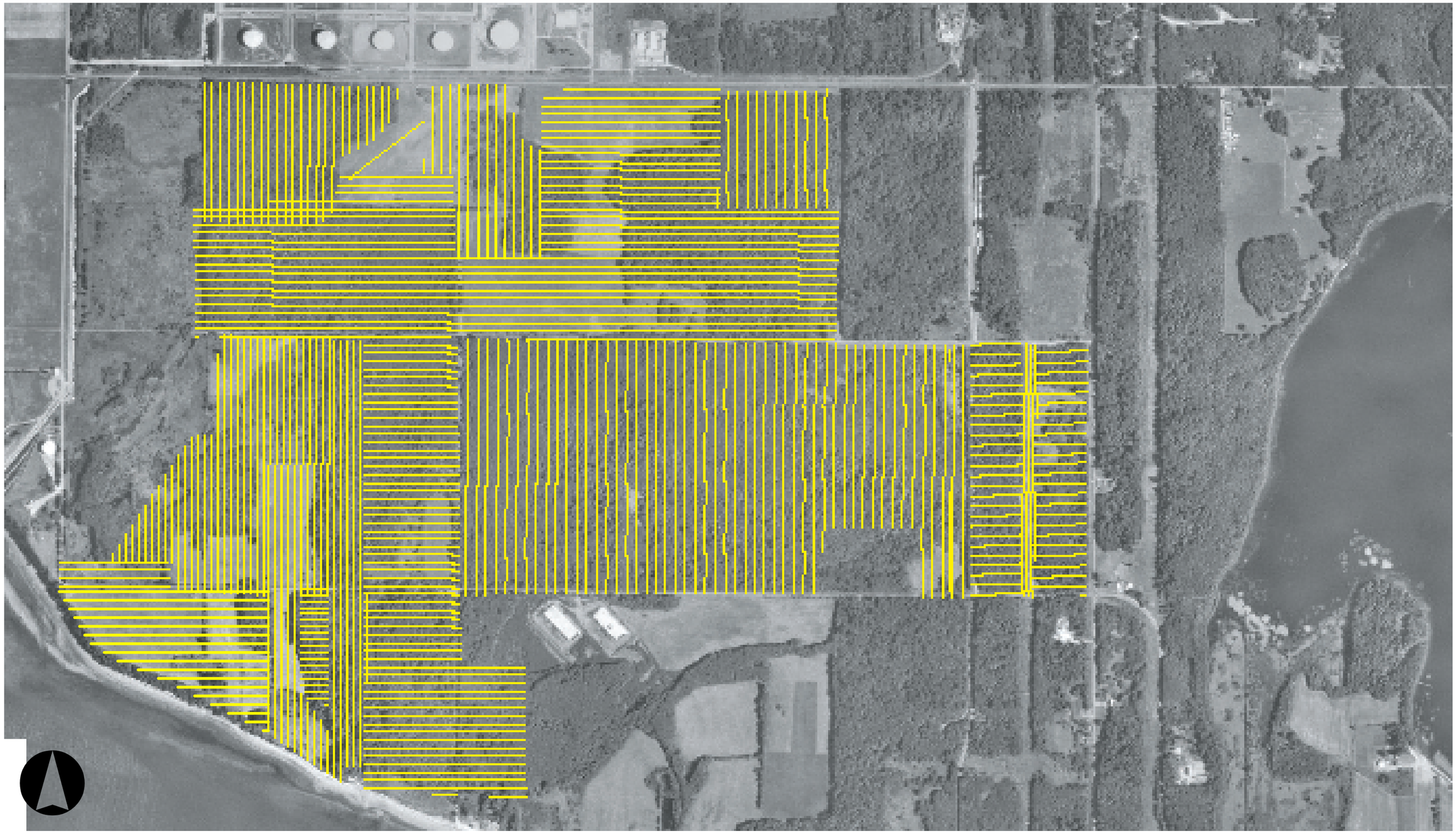
To verify that the study area was thoroughly investigated, roughly parallel transects approximately 25-feet apart and perpendicular to a pre-established baseline were established. Transects were walked to examine vegetation, soil, and hydrologic conditions. During the June 2006 field investigation, transect locations were documented by descriptions in field notebooks. During the January-February 2007 field investigation, transect locations were again documented in field notebooks and the starting and ending points marked on roadside vegetation with flagging to be surveyed. Unfortunately, before the transect flags could be surveyed, they were mowed by Whatcom County brush-control maintenance crews. Figure 3 shows the approximate location of transects based on field notes.

2.1.1 Wetland Determination and Delineation

Potential wetland areas were evaluated in the field using the methods outlined in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Washington State Wetlands Identification and Delineation Manual* (Ecology 1997). According to these manuals, hydrophytic (wetland) vegetation, hydric (wetland) soils, and wetland hydrology must be present for a significant duration during the growing season for an area to be considered a wetland.

Data used to evaluate these parameters were collected from plots representative of typical conditions in each wetland. Additional data collected in areas adjacent to wetlands documented upland conditions. Appendix B provides plant species information including scientific names. Wetland data sheets documenting field conditions are included as Appendix C.

Wetland and upland data plots were coded to include the field team's designation (e.g. A, B, or Z), the nearest wetland boundary name (L##), and a sequential number in upland and wetland areas with U## for upland data plots and W## for wetlands data plots. Sample plot locations were those areas most representative of the plant community and having a hydrologic regime typical of the area.



CLIENT:
GATEWAY PACIFIC TERMINALS

AMEC Earth & Environmental
7376 SW Durham Road
Portland, OR, U.S.A. 97224

DWN BY: PM
CHK'D BY: MG
DATUM: -
PROJECTION: -
SCALE: -

PROJECT:
WETLAND DELINEATION

TITLE:
APPROXIMATE TRANSECT LOCATION

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
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Once an area was determined to meet the definition of a wetland, the boundary of the area was delineated. Wetland boundaries were marked with consecutively numbered survey flagging. Wetlands names were assigned by consecutively numbering wetland assessment units.

Boundaries and data plot locations were professionally surveyed using conventional survey and high-resolution GPS methods during the period from September 2006 through early June 2007.

2.1.2 Vegetation

Wetlands are defined by having a hydrophytic plant community (wetland vegetation). The probability of a plant species occurring in a wetland within a geographic area has been estimated, and an indicator status had been assigned based on that probability. Accordingly, plants are identified as having one of the following wetland indicator status: obligate (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), or upland (UPL; Table 1). Plant species with an indicator status of OBL, FACW, or FAC are considered adapted for life in saturated or anaerobic soil conditions (Reed, Jr. 1988; Reed, Jr., et al. 1993). By definition, if greater than 50 percent of the dominant plant species in a community have wetland indictor status of OBL, FACW, or FAC (but not FAC-), then the plant community is hydrophytic.

Table 1. Definitions of Indicator Status

Indicator Symbol	Definition
OBL	Obligate. Species that almost always occur in wetlands (estimated probability >99%) under natural conditions.
FACW	Facultative wetland. Species that usually occur in wetlands (estimated probability 67% to 99%), but occasionally are found in uplands.
FAC	Facultative. Species that are equally likely to occur in wetlands or uplands (estimated probability 34 to 66%).
FACU	Facultative upland. Species that usually occur in uplands (estimated probability 67% to 99%), but occasionally are found in wetlands.
UPL	Upland. Species that almost always occur in uplands under normal conditions (estimated probability >99%).
NL	Not listed. Species was not included in evaluation and does not have an indicator status. More often occurs with plant species that would be categorized as UPL if they had been included in the evaluation.
NI	No indicator. Species for which insufficient information was available to determine an indicator status.

Sources: Reed, Jr. 1988; Reed, Jr., et al. 1993

Vegetation data at each sample plot, trees within a 20-foot radius, shrubs within a 15-foot radius, and non-woody herbaceous plants—including forbs, grasses, sedges and rushes within a 5-foot radius of plot center—were identified and recorded on wetland field data forms. The dominant plant species for each stratum were defined as those that provide 20 percent or more areal leaf cover.

Scientific nomenclature of plant species follows that of the PLANTS database (NRCS 2007b) and Hitchcock and Cronquist (1976). Common plant names are given in the following text. The scientific nomenclature for all plants recorded on the site is presented in Appendix B.

2.1.3 Hydric Soils Definition and Field Examination

Hydric soils are defined as soils formed under saturated, flooding, or ponding conditions for a duration during the growing season long enough to develop anaerobic conditions in the upper part of the soil (Environmental Laboratory 1987). Hydric soils exhibit certain characteristics that can be observed in the field such as high organic contents, accumulation of sulfidic material, greenish or bluish-gray color (gley formation), and development of redoximorphic (redox) features including redox accumulations, redox depletions, and a depleted soil matrix.

Soils were examined by digging a pit down to a depth of generally at least 18 inches. Soil samples were then examined for hydric indicators. Organic content was estimated visually and texturally. Sulfidic material was determined by the presence of sulfide gases (rotten-egg odor), and soil colors were evaluated against a Munsell® soil color chart (GretagMacbeth LLC 2004).

2.1.4 Wetland Hydrology Definition and Examination

Wetland hydrology is described in areas inundated and/or saturated to the surface for a consecutive number of days for more than 12.5 percent of the growing season, provided the soil and vegetation parameters are met. Areas inundated or saturated to the surface for less than 5 percent of the growing season are non-wetlands.

The presence of wetland hydrologic indicators was determined for each wetland and documented on data sheets. Primary indicators of wetland hydrology include soil saturation, inundation, and evidence of previous water inundation or saturation. (i.e., watermarks drift lines, sediment deposits, and wetland drainage patterns). Secondary indicators include oxidized root channels and water-stained leaves.

During the 3-week field effort in June 2006, primary indicators of wetland hydrology were present for most wetland areas over the first two weeks. However, due to lack of precipitation, primary indicators were mainly absent by the third week. During the field effort in January and February 2007, identified wetlands had primary indicators of wetland hydrology. Also during the 2007 effort, some areas determined to be uplands due to a lack of hydric soils and/or hydrophytic vegetation, displayed primary indicators of wetland hydrology because of heavy recent precipitation and surface water accumulation.

2.2 Evaluation of the Growing Season

The growing season is defined as “the portion of the year when soil temperatures at 19.7 inches below the soil surface are higher than biological zero (41 °F)” (Ecology 1997). The growing season can be approximated as the number of frost-free days from the last date in spring when air temperature drops to 28°F, to the first date in fall when it drops to 28°F. The beginning and

ending dates for growing season in the study area were estimated based on the median dates (50 percent probability) for the first and last 28°F days, based on long-term temperature data (NRCS 2006d).

The start and end dates for the growing season in the study area are March 24 to November 5, in any year, for a total of 227 days. Thus by definition, areas with wetland hydrologic conditions present for 28 consecutive days during the growing season are considered wetlands, and areas with 11 consecutive days of wetland hydrologic conditions might be defined as wetlands, depending on soil and plant community conditions. While the duration of wetlands hydrologic conditions was not measured in the field, the range of duration was noted and visually applied in field efforts.

2.3 Evaluation of Precipitation Patterns

Precipitation is generally considered normal when it falls between the 30th and 70th percentiles of the 50-year average monthly precipitation totals (Sprecher and Warne 2000). Precipitation patterns at the weather station in Blaine, Washington (2 miles north of the study area, 50 feet above sea level) were evaluated by comparing monthly precipitation data for the 2005–2006 water year and the early portion of the 2006–2007 water year to the monthly precipitation average from 1948 through 2006.

The vegetation and hydrologic condition observed in June 2006 was shaped primarily by the 2005–2006 water year, while the vegetation and hydrologic condition recorded in January/February 2007 was shaped by the 2006–2007 water year. An evaluation of normal conditions, in terms of monthly precipitation, was evaluated from October 2005 through March 2007.

To more accurately describe precipitation trends, the USACE developed a method to evaluate normal conditions by using a 30-day rolling total (Sprecher and Warne 2000). By analyzing daily precipitation values, the data are not “reset” on a monthly basis. Rather, the 30-day rolling total is generated by summing the rainfall daily over the past 30 days. By overlaying a plot of daily precipitation for the rain year in question with the rolling total for the 30-year average precipitation, it is possible to conduct a more thorough analysis of precipitation data. This method is especially useful when precipitation is not within the range of normal for a given month or year. Rolling totals were evaluated from January 2006 through January 1, 2007.

2.4 Wetland Classifications

2.4.1 Cowardin Classification

The Cowardin system was designed to apply a hierarchical classification system to wetlands with respect to their position in the landscape, habitat/vegetative form, hydrologic modifier and water quality modifiers (Cowardin et al. 1979). Five systems are defined as the highest level of the classification hierarchy—Marine, Estuarine, Riverine, Lacustrine, and Palustrine.

Wetlands in the study area are typically included in the Palustrine system, with three vegetative forms; Palustrine Emergent (PEM), dominated by emergent herbaceous angiosperms; Palustrine Scrub-Shrub (PSS), dominated by shrubs or small trees; and Forested (PFO), dominated by large trees.

2.4.2 Hydrogeomorphic Classification

Hydrogeomorphic (HGM) classification for wetlands clarifies the relationship between hydrology and geomorphology for a wetland system. The classification system is based on the wetlands' geomorphic setting, water source, and hydrodynamic patterns. These three aspects are responsible for maintaining many of the functional aspects of wetland ecosystems (Brinson 1993). Overall, six HGM classes are recognized: Depressional, Riverine, Lake-fringe, Slope, Flats, and Freshwater Tidal.

2.5 Wetland Ratings

Wetlands were rated using *The Washington State Wetlands Rating System for Western Washington* (Hruby 2004, revised), which evaluates wetlands based on rarity, sensitivity, and wetland function. The method uses the wetland's HGM classification to guide the evaluation. Wetlands are categorized as Category I, II, III, or IV, based on the results of the evaluation. Category I wetlands are characterized as highly functional, sensitive and rare, while Category IV wetlands are low functioning, disturbed, and relatively common in some settings.

Wetlands were rated to develop and apply standards for protecting and managing wetlands. Wetland rating will be used to assign wetland buffers and may be used to determine compensation ratios if wetlands are disturbed during the proposed development. Wetland Assessment Units used for Wetland Ratings were determined as directed in the *Washington State Wetland Rating System for Western Washington* (Hruby, revised 2004). Wetland Assessment Areas used in determining the ratings were mapped as shown in Appendix D and completed wetland rating forms are included as Appendix E.

2.6 Other Waters of the U.S.

2.6.1 Streams

Streams are defined as flowing, permanent, or intermittent aquatic systems having a bed and bank. The location of the ordinary high water on stream systems was determined in the field, marked with flagging, and professionally surveyed.

Stream classification follows the guidance of WAC 222-16-030, under the cooperation of WDFW, Ecology, and in consultation with tribal nations. Additionally, Whatcom County regulates streams as Habitat Conservation Areas (HCAs). The County provides guidance in classifying streams in the form of GIS maps. These maps were evaluated to assess classification of streams in the study area. Streams were classified according to the criteria briefly outlined in Tables 2 and 3.

Table 2. State of Washington Steam Types and Descriptions

Type	Description
Type I	All water areas of the state including reservoirs and associated shorelands and lands underlying them, waters designated Shorelines of the State specified as shorelines of statewide significance (90.58.030), shorelines of streams where the mean annual slow is 20 cfs or less, and shorelines on lakes less than 20 acres.
Type II	Streams with a defined channel 20 feet or greater in width between ordinary high water marks, and a gradient less than 4 percent, used by substantial numbers of anadromous or resident game fish for spawning, migration or rearing or; contain off channel habitat for salmonids or; connected to a stream bearing salmonids, and accessible during some period of the year, and the off-channel water must be accessible to juvenile salmonids through a drainage with less than a 5% gradient.
Type III	Streams with a moderate to slight fish, wildlife, and human use. They are natural waters that are periodically inundated and provide significant numbers of anadromous or resident game fish with habitat for spawning, rearing, or migration. This includes a defined channel of 2 feet or greater in width between the ordinary high-water marks, and a gradient of 16 percent or less. These parameters do not apply if the waters have confirmed, long term, naturally occurring water quality parameters incapable of supporting anadromous or resident game fish.
Type IV	Perennial or intermittent natural waters that are less than 2 feet in width between ordinary high-water marks.
Type V	Streams with or without well-defined channels, areas of perennial or intermittent seepage, ponds, natural sinks, and drainageways having short periods of spring or storm runoff.

Source: WAC 222-16-030

Table 3. Whatcom County Stream Types and Descriptions

Type	Description
HCA 1a	Shorelines of the state as defined by WAC 173-18-310 and designated in the Whatcom County Shoreline Master Programs (WCC Title 23).
HCA 1b	Other fish bearing streams that do not meet the definition of shorelines of the state but have known or potential use by anadromous or resident fish species.
HCA 1c	Non-fish bearing streams are those streams that have no known or potential use by anadromous or resident fish.

3. RESULTS

3.1 History of the Study Area

Archaeological studies indicate that portions of the study area have been used by a group of Salish Indians, known by the post-reservation name of Lummi, for at least 3,000 years (Grabert 1982). The Salish Indians at Cherry Point were noted for reef-netting and other fishing practices. According to homestead records, the earliest account of Euroamerican occupation of Cherry Point was documented in the 1870s (Jeffcott 1949). Between 1902 and 1934, European settlers used a portion of the study area as a camp for fishermen tending off-shore fish traps (Markham 1993). Two sites with potential archaeological significance are within the study area.

Beginning in the late 1800s, the site was logged and homesteaded for farming by European settlers. Several abandoned orchards and farmsteads remain throughout the study area (Grabert 1988). Farming included crops such as rye, potatoes, hay, dairy and chicken farms, and scattered woodlots for firewood and logging. Farming activities continued through the mid-1940s, when large portions of land in the vicinity of the study area were acquired for industrial use. The present condition of the study area, with open fields and wooded areas, appears to have been stable for at least the last 50 years.

The recent land use of the study area has included pastures, hay farming, and wood production. In general, the study area is a mix of forest, pastures, hayfields, and abandoned fields. The forested areas of the study area were logged as recently as 1999 for pulp and firewood. The pastures and hayfields still in use are occasionally tilled and reseeded.

3.2 Topography and Geology

The terrain throughout the study area is characterized as generally flat to gently rolling slopes. Elevations range from sea level to 210 feet. The highest portion of the study area occurs nearest the eastern property boundary, with site elevation gradually decreasing to the west and to the south. Moderate slopes and steep bluffs border the westernmost stretch of shoreline. A steep ravine lies in the south central portion of the study area.

The retreat of the Vashon-Stade glacier approximately 13,000 y BP left the study area at least partially submerged below sea level. Over time, waves reworked and re-deposited the upper geologic layers. Eventually the land rebounded from glacial compaction, while sea level dropped. The ice deposited glacial debris, gravel, sand, and rock, forming depositional units up to several hundreds of feet thick.

3.3 Soil Characteristics

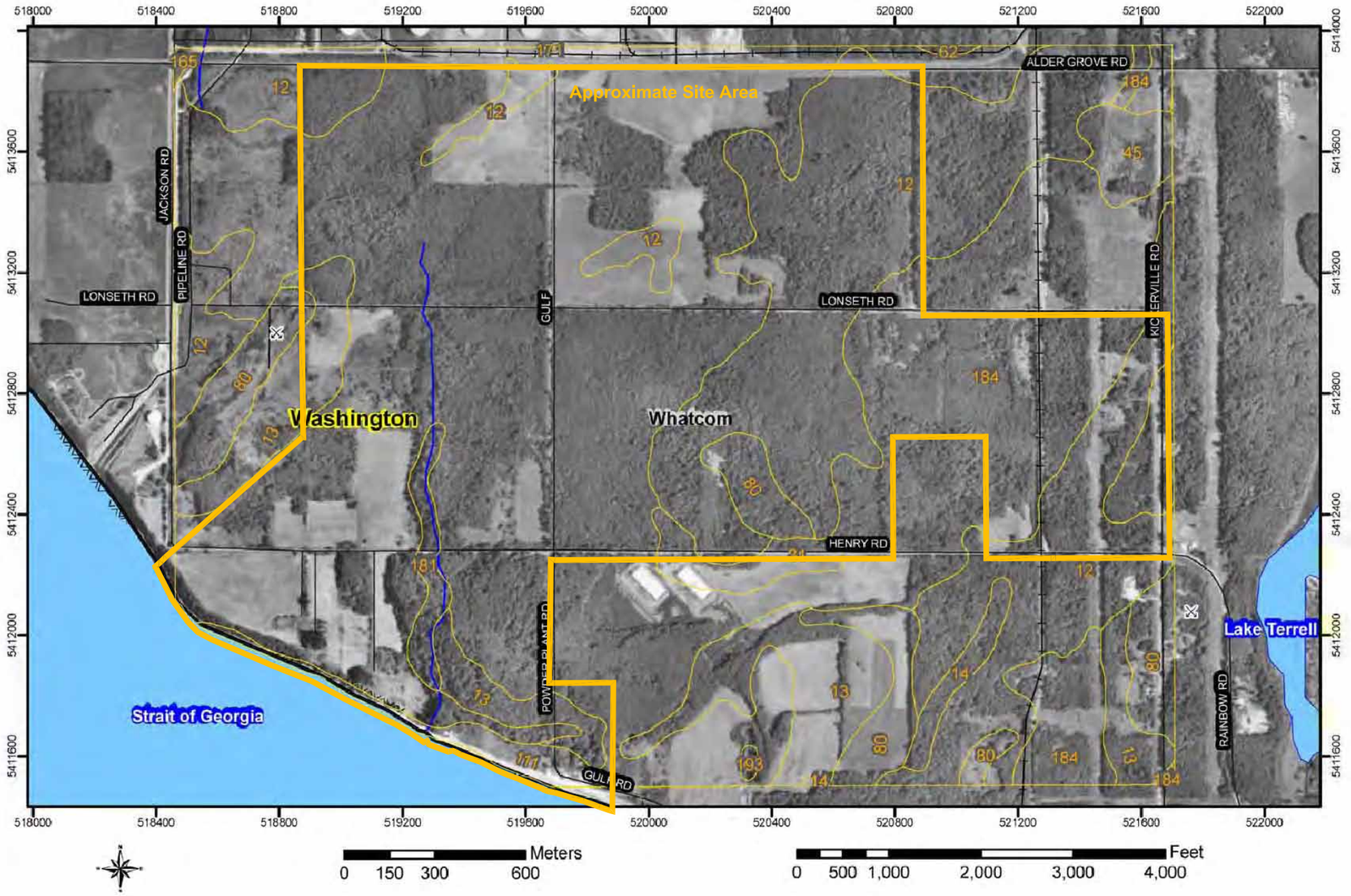
The NRCS mapped five unique soil series in the Study Area (Figures 4a and 4b), including Birchbay silt loam (0 to 3 percent slopes and 3 to 8 percent slopes), Clipper silt loam, Kickerville silt loam, Neptune very gravelly sandy loam, Whatcom silt loam, and Whitehorn silt loam (Table 4).

Table 4. Soils in the Study Area

Soil Series	Slope	Drainage Class	Parent Material	Landscape Position
Birchbay silt loam	0 to 3	Moderately well drained	Volcanic ash, loess, glaciofluvial deposits and glaciomarine drift	Glaciomarine drift plains
Birchbay silt loam	3 to 8	Moderately well drained	Volcanic ash, loess, glaciofluvial deposits and glaciomarine drift	Glaciomarine drift plains
Birchbay silt loam	8 to 15	Moderately well drained	Volcanic ash, loess, glaciofluvial deposits and glaciomarine drift	Terraces and plains
Edmonds-Woodlyn loam	0 to 2	Poorly drained	Volcanic ash, loess, and glacial outwash	Outwash terraces and outwash plains
Hale silt loam (hydric)	0 to 2	Poorly drained	Volcanic ash, loess, and glacial outwash	Outwash terraces
Kickerville silt loam	3 to 8	Well drained	Volcanic ash, loess, and glacial outwash	Outwash terraces
Neptune very gravelly sandy loam	0 to 3	Excessively drained	Coastal beach deposits	Marine ridges, spits, and terraces
Whatcom silt loam	30 to 60	Moderately well drained	Volcanic ash, loess, and glaciomarine drift	Glaciomarine drift plains
Whitehorn silt loam (hydric)	0 to 2	Poorly drained	Volcanic ash, loess, glaciofluvial deposits, and glaciomarine drift	Glaciomarine drift plains

SOIL SURVEY OF WHATCOM COUNTY AREA, WASHINGTON

GPT Soil Survey



USDA Natural Resources Conservation Service

Web Soil Survey 1.1
National Cooperative Soil Survey

2/28/2007
Page 1 of 3

MAP LEGEND

- Soil Map Units
- Cities
- Detailed Counties
- Detailed States
- Interstate Highways
- Roads
- Rails
- Water
- Hydrography
- Oceans
- Escarpment, bedrock
- Escarpment, non-bedrock
- Gulley
- Levee
- Slope
- **Approximate Site Area**
- Blowout
- Borrow Pit
- Clay Spot
- Depression, closed
- Eroded Spot
- Gravel Pit
- Gravelly Spot
- Gulley
- Lava Flow
- Landfill
- Marsh or Swamp
- Miscellaneous Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Slide or Slip
- Sinkhole
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Perennial Water
- Wet Spot

MAP INFORMATION

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov

Coordinate System: UTM Zone 10

Soil Survey Area: Whatcom County Area, Washington
Spatial Version of Data: 1

Map comprised of aerial images photographed on these dates:
7/21/1998

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

CLIENT: GATEWAY PACIFIC TERMINALS

AMEC Earth & Environmental
11335 NE 122ND WAY, SUITE 100
KIRKLAND, WA USA 98034-6918

DWN BY:	LM/PM
CHK'D BY:	MG
DATUM:	
PROJECTION:	
SCALE:	AS SHOWN

PROJECT: WETLAND DELINEATION

TITLE: SOIL SURVEY OF WHATCOM COUNTY, WA
SOIL MAP

DATE:	FEBRUARY 2008
PROJECT NO:	5-91M-15338-0
REV. NO.:	2
FIGURE No.	FIGURE 4a

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Map Unit Legend Summary

Whatcom County Area, Washington

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
12	Birchbay silt loam, 0 to 3 percent slopes	463.5	23.2
13	Birchbay silt loam, 3 to 8 percent slopes	130.3	6.5
14	Birchbay silt loam, 8 to 15 percent slopes	12.7	0.6
31	Clipper silt loam, drained, 0 to 2 percent slopes	19.1	1.0
45	Edmonds-Woodlyn loams, 0 to 2 percent slopes	19.5	1.0
62	Hale silt loam, drained, 0 to 2 percent slopes	1.1	0.1
80	Kickerville silt loam, 3 to 8 percent slopes	89.4	4.5
111	Neptune very gravelly sandy loam, 0 to 3 percent slopes	19.4	1.0
165	Tromp loam, 0 to 2 percent slopes	1.6	0.1
171	Urban land	0.1	0.0
181	Whatcom silt loam, 30 to 60 percent slopes	15.0	0.7
184	Whitehorn silt loam, 0 to 2 percent slopes	1,140.2	57.0
193	Water	1.3	0.1

CLIENT: GATEWAY PACIFIC TERMINALS

DWN BY: LM/PM
CHK'D BY: MG
DATUM:
PROJECTION:
SCALE:

PROJECT: WETLAND DELINEATION

DATE: FEBRUARY 2008
PROJECT NO: 5-91M-15338-0
REV. NO.: 1
FIGURE No. FIGURE 4b

TITLE: SOIL SURVEY OF WHATCOM COUNTY, WA
SOIL MAP TABLE

AMEC Earth & Environmental
11335 NE 122ND WAY, SUITE 100
KIRKLAND, WA USA 98034-6918

K:\AMEC US OFFICES\KIRKLAND\15338-0\DWG\Figure_04_Soils.DWG – 4b table – Feb. 22, 2008 11:44am – patrick.mccarthy

2007). More than half of the study area is mapped as Whitehorn silt loam, and nearly one-third of the study area is mapped as a Birchbay silt loam (see Figure 4a and 4b).

Birchbay silt loam (0 to 3 percent slopes and 3 to 8 percent slopes) – This soil generally has moderate to very rapid permeability in the sandy surface layer, and slow in the loamy lower part. In general, the soil is moderately well drained. The native vegetation consists primarily of conifers and shrubs. The surface layers are dark brown silt loam to a depth of 12 inches, increasing in yellow and becoming more gravelly to 24 inches. Below 24 inches, soil is dark yellowish brown, and becomes increasingly rocky.

Kickerville silt loam (3 to 8 percent slopes) – This soil has formed along some of the shallow slopes, covering approximately 5 percent of the study area. The permeability of the soil is moderate in the upper part, while the substratum is well drained. In general, the available water-holding capacity is high, with little runoff and would be good at groundwater recharge. The native vegetation includes primarily conifers and shrubs. The soil profile includes a dark brown, silt loam surface layer to 9 inches deep. Below the surface layer, the soil is dark, yellowish brown, with a gravelly loam texture.

Neptune very gravelly sandy loam (0 to 3 percent slopes) – This soil type is found along the marine shoreline. The marine shoreline consists of approximately 1 percent of the study area, and is characterized by very deep, well-drained soil with coastal beach deposits and marine shell debris. The surface layer is black and very gravelly, the 17 inches below the surface layer a very dark brown color. Below 17 inches, soil is variegated and very gravelly, with some areas of cementing in the substratum.

Whatcom silt loam (30 to 60 percent slopes) – This moderately well-drained soil is found on steep slopes. Permeability is moderate in the upper part of the soil and slow in the lower part, with a relatively high available water capacity. The native vegetation may include conifers and shrubs. The surface layer is a dark brown silt loam to a depth of 5 inches. Below the surface, the soil is a yellowish-to-olive brown, mottled loam. This soil occurs predominantly along the cliffs adjacent to Stream 1.

Whitehorn silt loam (0 to 2 percent slopes) – Whitehorn silt loam is listed as hydric and is mapped over 60 percent of the study area. The permeability of the soil is low. Due to the high water table generally associated with the soil, rooting depth is limited. Native vegetation includes trees and shrubs, with red alder the dominant woodland species. The surface layer is typically very dark brown loam to a depth of 10 inches. Below 10 inches, the subsoil is generally a slightly lighter brown/grayish brown, mottled loam and very fine sandy loam.

3.4 Vegetation of the Study Area

The current wetland and upland plant communities in the study area are a result of historical land use, soil characteristics, and geomorphic and hydrologic conditions. Vegetation in pastures that are occasionally seeded and hayed annually consists of thick grasses including red fescue, bentgrass, sweet vernalgrass, velvetgrass, and plantain. In less extensively managed pastures,

dominant grass species include red fescue, foxtail, Canadian thistle, bentgrass, quackgrass, and orchardgrass1.

Vegetation in forested areas is predominantly red alder along with black cottonwood (deciduous forest) and with relatively small extents of western red cedar and Douglas-fir (coniferous forest). Understory species include vine maple, common snowberry, salmonberry, English holly, clustered rose, bracken fern, and red elderberry. Appendix B provides a summary of all plant species (common and scientific names) identified in the study area.

3.5 Hydrologic Conditions during the Field Efforts

As described previously, the field investigation was conducted during two concentrated field efforts: one in June 2006 and the second in January and February 2007. The hydrologic conditions are discussed in the following for each event.

3.5.1 2006 Field Investigation

Precipitation from the period of October 2005 through February 2007 fluctuated between times of relatively normal precipitation and deviations from normal (Figure 5). During the 2005–2006 water year (October through April), precipitation exceeded normal at the beginning of October 2005 through the middle of November, and at the end of January 2006 through the beginning of February 2006. Precipitation was slightly below normal in August 2005, at the end of September 2005, during the beginning of December 2005, the month of March 2006, and the end of May 2006.

The June 2006 field investigation followed a period of over 20 days of below-normal precipitation that presaged a below-normal rainfall for the upcoming summer months. During the investigation, primary indicators of wetland hydrologic conditions (inundation and saturation) were present in most areas, declining rapidly over the first two weeks and almost completely absent by the final week. Summer conditions, characterized by full plant leaf-out and absence of wetland hydrologic indicators, were present by the end of the 2006 field investigation.

3.5.2 2007 Field Investigation

The January 2007 field investigation effort followed the month of December where precipitation was at the low end of normal, and by the beginning of January, just above normal. Thirty-day average rolling totals show that precipitation on average was decreasing in frequency throughout the end of November and beginning of December (Figure 6). As the rain year continued, precipitation levels were average in February and substantially above average in March. The 2006–2007 rain year was also characterized by more snow than usual (data not shown).

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1 Scientific names are given in Appendix B

During the 2007 field effort, inundation around 3 to 6 inches was present across more than 50 percent of areas determined to be wetlands, with the depths up to 12 to 18 inches at the deepest locations. The remaining portions of the wetlands had soil saturated to the surface, or slight ponding.

Many upland areas also had saturated soils and areas of slight ponding subsequent to recent precipitation. These areas were distinguished from wetlands by an absence of hydric soil and wetland plants. Additional verifications of boundaries for some suspect areas were made during field visits in April and June 2006 when high water levels had receded.

Figure 5. Summary of Precipitation from October 2005 through December 2006

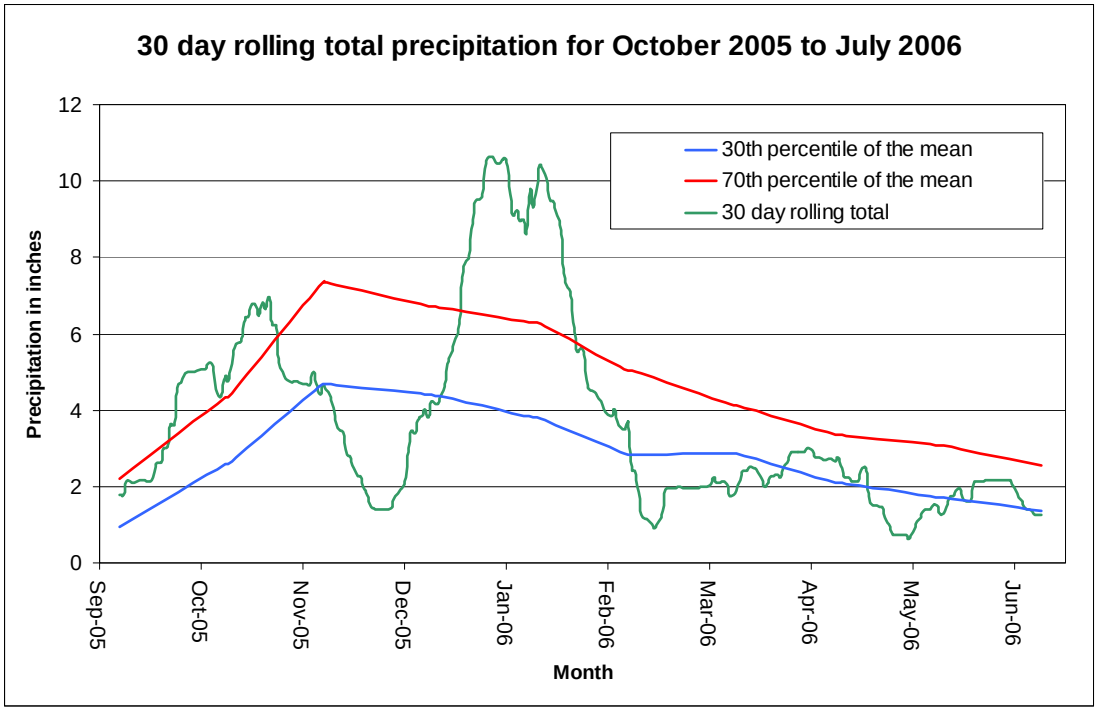
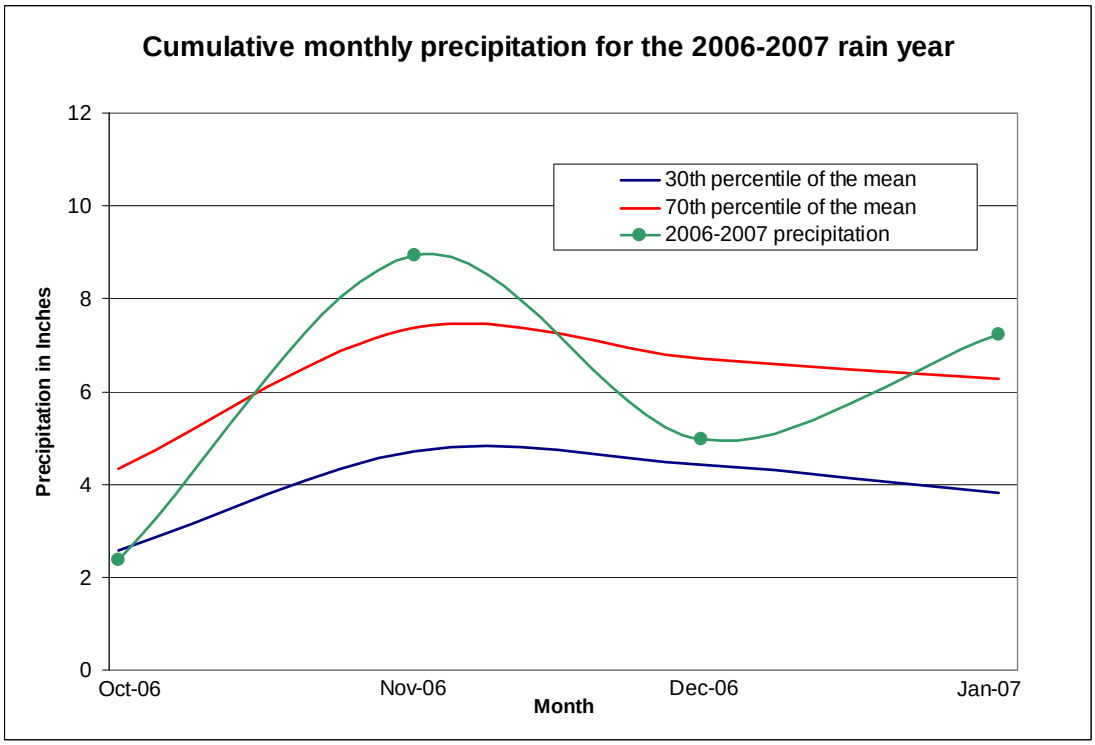


Figure 6. Summary of Precipitation from January 2006 through April 2007



3.6 Regional Hydrology

3.6.1 Watershed Characteristics

The greater part of the site is contained within a single sub-basin that drains to a first-order stream (Stream 1) located in the western portion of the site. Stream 1 drains approximately 800 acres, approximately 90 percent of which is contained within the study area. Two other sub-basins are present within the site, which drain water to the northwest and to the southwest to a second unnamed stream (Stream 2) that flows from the eastern portion of the site.

3.6.2 Strait of Georgia and the Marine Shoreline

The marine shoreline that abuts the study area at the Strait of Georgia has a wide cobble beach, with an Ordinary High Water (OHW) line characterized by driftwood, decomposing kelp masses, and eelgrass that have washed ashore.

At the shoreline and east of Stream 1 lies a tidally influenced coastal lagoon characterized by emergent and salt marsh vegetation. The lagoon appears to receive seasonal surface flow from the upward slopes and overflow from Stream 1 and Stream 2 during periods of heavy rainfall.

3.7 Streams and Drainages

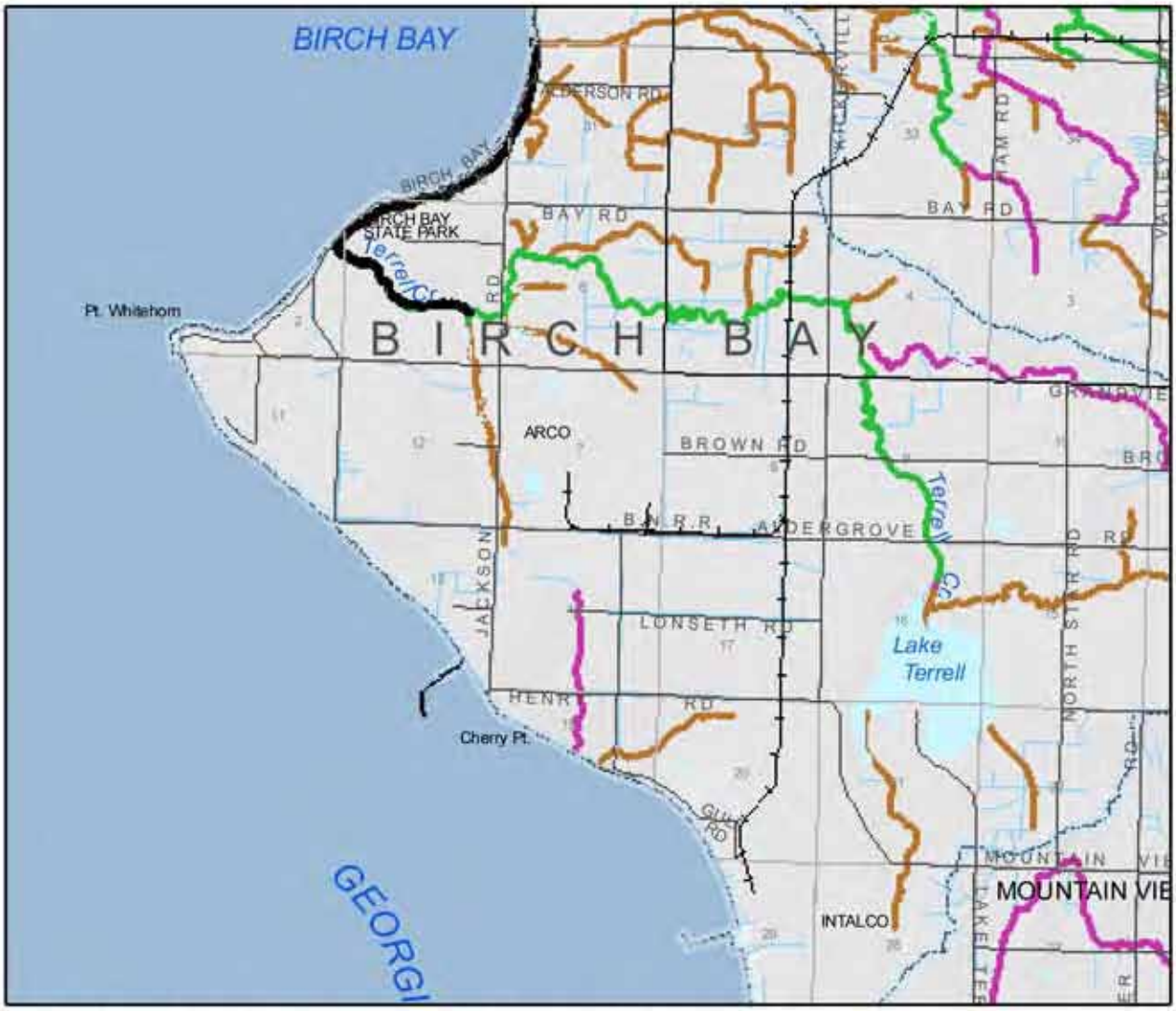
All drainages identified within the study site ultimately drain to the Strait of Georgia. Drainages include 2 unnamed streams (Stream 1 and 2), 5 roadside ditches identified as streams (Streams 3 through 7) by Whatcom County, and 6 roadside ditches that have not been identified as streams by Whatcom County (Table 5 and Figures 7 and 8).

Streams 1 through 7 ultimately drain to the Strait of Georgia, a traditional navigable water (TNW) of the U.S. Streams 1 through 7 have continuous flow for at least three months out of the year, and are therefore considered to be relatively permanent (RPW) tributaries to a TNW (see Figure 8 for locations). Other RPW tributaries on the site include roadside ditches adjacent to the south side of Lonseth Road, the south side of Henry road west of Gulf Road, and the west side of Gulf Road. All other drainages within the study area are considered to be non-RPW tributaries.

Characteristics of drainages including length, width, flow characteristics, and proximity to jurisdictional waters are presented in Appendix F.

Table 5. Summary of Streams Mapped in the Study Area

Stream ID	State of Washington Stream Type	Whatcom County Stream Type	Water Flow Characteristic	Location
Stream 1	3	HCA 1b	Relatively Permanent Water	Primary drainage that runs mainly south through the study area.
Stream 2	4	HCA 1b	Relatively Permanent Water	Natural drainage that runs southwest.
Stream 3	5	HCA 1c	Relatively Permanent Water	Drainage ditch on the south side of Aldergrove Road
Stream 4	5	HCA 1c	Relatively Permanent Water	Drainage ditch on the north side of Lonseth Road
Stream 5	5	HCA 1c	Relatively Permanent Water	Drainage ditch on the north side of Henry Road
Stream 6	5	HCA 1c	Relatively Permanent Water	Drainage ditch on the east side of Gulf Rd
Stream 7	5	HCA 1c	Relatively Permanent Water	Drainage ditch located between Henry Rd. and Lonseth Rd. along the west side of the BNSF railroad embankment.



Article VII - Fish Habitat Conservation Areas

SHORELINE MASTER PROGRAM STREAMS

HCA 1a - Streams - (150 ft Buffer Not Shown)

Streams (WADNR 2004)

HCA 1c - No Salmonid Fish Presence - (50 ft Buffer Not Shown)

Fish Distribution (WRIA 1 WMP 2004)

HCA 1b - Other fish bearing streams (100 ft Buffer Not Shown)

Current known distribution

Current presumed distribution

Presumed Potential/Historic distribution

Source: Whatcom County Critical Areas Ordinance, Article VII - Fish Habitat Conservation Areas

N

0 1 2 Miles

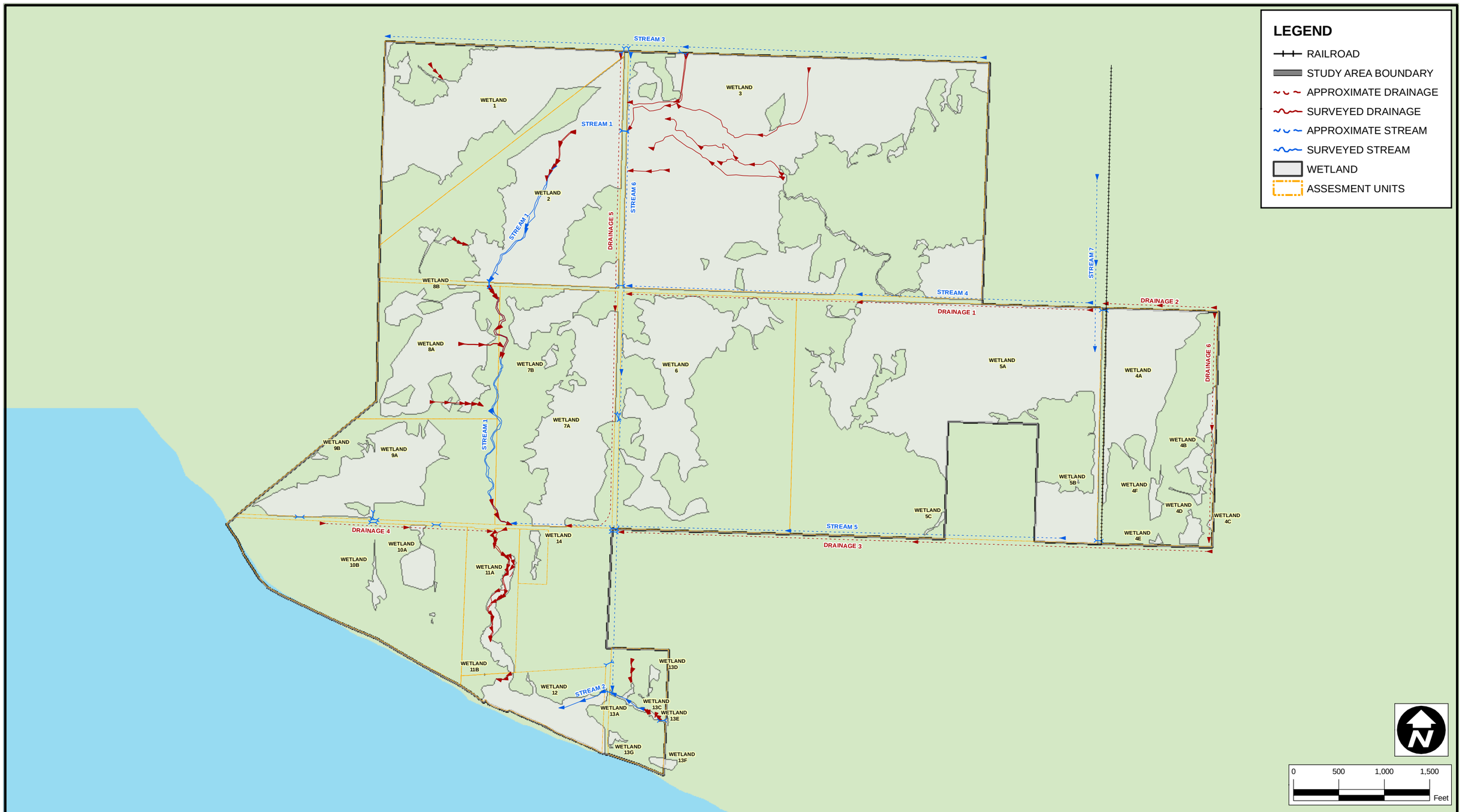
0 1.25 2.5 Kilometers

FIGURE 7

Water Courses classified as streams in the Study Area

591M15338

amec



	CLIENT LOGO	CLIENT: GATEWAY PACIFIC TERMINALS	DWN BY: PM	PROJECT: WETLAND DELINEATION	DATE: FEBRUARY 2008	
			CHK'D BY: MG		PROJECT NO.: 5-91M-15338-0	
			DATUM: NAD83	TITLE: STREAMS AND DRAINAGE	REV. NO.: X	
		AMEC Earth & Environmental 7376 SW Durham Road Portland, OR, U.S.A. 97224	PROJECTION: WA SP North, Ft.		FIGURE NO.: FIGURE 8	
			SCALE: 1 inch equals 1,000 feet			

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3.7.1 Stream 1

The primary drainage (WRIA number 01.0100), referred to as Stream 1, is fed by surface flow through excavated roadside ditches, isolated channels within wetlands, groundwater that seeps, and in some places, by surface sheet flow. Stream 1 is approximately 1.25-miles long (USGS NHD database), and drains a total of approximately 800 acres, approximately 90 percent of which is contained within the study area.

Stream 1 provides moderate habitat for terrestrial and aquatic species. The stream has its headwaters in the northeast portion of the study area, where flow is loosely channelized. The stream becomes more channelized as it approaches Gulf Road, then passes under Gulf Road through a culvert. The stream emerges from the culvert in the open field, where it continues south through surface flow, into a ravine lined by an alder forest. In this area, the stream is again culverted at Lonseth Road. This segment of the stream provides little habitat quality. The vegetation composition includes primarily alder, with little variation in the canopy. The channel is generally narrow with an unvegetated bed, and no wetlands are associated with it. It is separated from the lower reach of the stream by a third culvert at Henry Road.

The lower portion of the stream from Henry Road to the stream mouth has a canopy layer limited to alder forest, with areas characterized by an understory including willows and a lower shrub layer of twinberry. Portions of the stream contain wetlands banks, with obligate species of skunk cabbage and water parsley. Along with the vegetation, the lower section of the stream contains a large amount of trash and man-made debris dumped into it and surrounding ditches. The stream winds through the ravine and is braided in segments. The stream exits the forest canopy to the coastal lagoon through a thicket of Nootka rose. In the lagoon, the stream meanders to its outlet in the Strait of Georgia.

According to the WDFW classification system, Stream 1 would be likely classified as a Type III and/or IV stream, although no official stream rating exists. Whatcom County categorizes Stream 1 as a HCA-1b stream.

3.7.2 Stream 2

Stream 2 drains the eastern portion of the study area, and is approximately 1-mile long (USGS NHD database). At a location, approximately 400 feet east of Gulf Road, a tributary flowing from the north converges with the primary drainage. The two tributaries continue to flow west, through a culvert under Gulf Road, and leave the site through the eastern portion of the same coastal lagoon as Stream 1.

The habitat value of Stream 2 is relatively low. It is an intermittent stream, with an inconsistent and relatively sparse forest canopy of alder. The stream bank is lined with wetland areas including several obligate species. The band of wetland generally becomes larger and more consistent as the stream approaches Gulf Road.

No official rating of Stream 2 exists. However, based on the bank width and other criteria defined in Table 2, the stream would likely be classified as a Type IV stream.

According to the Whatcom County CAO (Whatcom County 2005), this stream is categorized as HCA-1b (see Table 3).

3.7.3 Stream 3 through 7

Whatcom County identifies five other streams on the site that function as tributaries to Stream 1 and/or Stream 2 (see Figure 8). Streams 3 through 6 flow in excavated and maintained roadside ditches that flow seasonally for at least three months yearly. Stream 3 is located on the south side of Aldergrove Rd; Stream 4 is located on the north side of Lonseth Road; Stream 5 is located on the north side of Henry Road, west of the BNSF railroad tracks; and Stream 6 is located on the east side of Gulf Road. Stream 7 is located between Henry Road and Lonseth Road, along the west side of the BNSF railroad berm.

Except for Stream 7, drainages are partially or wholly vegetated with primarily hydrophytic species including lady fern, common cattail, reed canarygrass, salmonberry, Cooley's hedge-nettle, field horsetail, birds-foot trefoil, and small-fruited bulrush.

Deposits of gravel and cobble are generally present, and substrate particle sizes increase as drainages approach Stream 1 on Lonseth and Henry roads. Ditches are mowed annually and excavated approximately once every three years, according to a utility worker maintaining the ditches during a follow-up field visit (pers. comm. July 16, 2007). Streams 3 through 7 provide little habitat for aquatic or terrestrial species. They have little to no overstory cover, are of relatively constant width (3 to 5 feet), and the stream bank is steep and compacted. Unidentified aquatic insects and tadpoles were observed during field visits.

Based on stream characteristics, Streams 3 through 7 would likely be classified by WDFW as Type V streams. Whatcom County categorizes Streams 3 through 7 as a HCA-1c stream, as there are no fish present and no suitable fish habitat.

3.7.4 Other Drainages

Six other drainages were identified within the study area. These drainages are excavated and maintained roadside ditches that function as tributaries to Streams 1 through 6. RPW tributaries include the roadside ditch along the south side of Lonseth Road, the roadside ditch on the south side of Henry Road, and the roadside ditch along the west side of Gulf Road Non-RPW tributaries include the roadside ditch on the north side of Henry Road east of the railroad tracks, the roadside ditch on the south side of Henry Road east of Gulf Road, and the roadside ditch on the west side of Kickerville Road.

3.8 Wetlands

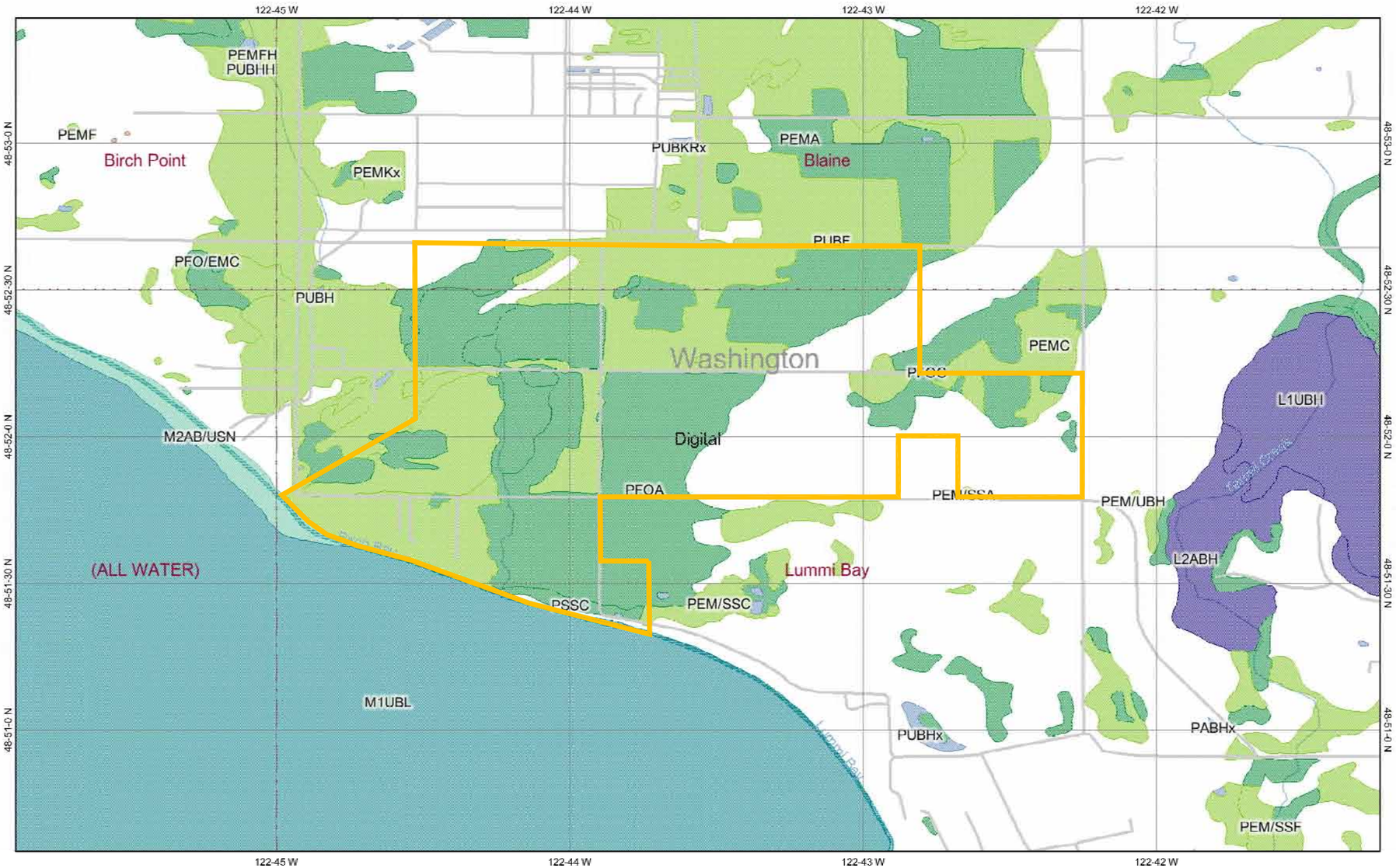
3.8.1 National Wetlands Inventory and Critical Areas Maps

The National Wetland Inventory (USFWS 2007, Figure 9) and the Whatcom County Critical Areas Maps (Whatcom County 2006) show that the study area supports a combination of palustrine forested and shrub wetlands.

Wetlands and other waters of the U.S. were identified in the study area. Wetlands comprised approximately 521 acres of the study area (Table 6 and see Appendices A through E for additional maps and details). Wetlands were classified as riverine, slope, and depressional HGM classes.

Palustrine forested (PFO) wetlands were most common, followed by wet pastures and hayfields (PEM), and a small amount of scrub-shrub wetlands (PSS). One wetland was identified as an estuarine emergent system (Wetland 12).

National Wetlands Inventory- GPT Project Site



Legend

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- 0
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Interstate
Major Roads
- Other Road
- Interstate
- State highway
- US highway

Roads
Cities
USGS Quad Index 24K
Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

Lower 48 Available Wetland Data
- Non-Digital
- Digital
- No Data
- Scan

NHD Streams
Counties 100K
Urban Areas 300K
States 100K
South America
North America
Approximate Site Area

Map center: 48° 52' 0" N, 122° 43' 34" W

1:38,500
Scale is approximate

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

CLIENT: GATEWAY PACIFIC TERMINALS		DWN BY: LM/PM	PROJECT: WETLAND DELINEATION	DATE: FEBRUARY 2008	
		CHK'D BY: MG		PROJECT NO: 5-91M-15338-0	
AMEC Earth & Environmental 11335 NE 122ND WAY, SUITE 100 KIRKLAND, WA USA 98034-6918		DATUM:	TITLE: NATIONAL WETLANDLANDS INVENTORY MAP	REV. NO.: 2	
		PROJECTION:		FIGURE No. FIGURE 9	
		SCALE: AS SHOWN			

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Table 6. Summary of Wetlands Identified in the Study Area

Wetland Name	Hydro-geomorphic Class	Area by Cowardin Classification			Total Area (acres)
		Palustrine Scrub-shrub (acres)	Palustrine Emergent (acres)	Palustrine Forested (acres)	
1	Flats/Depressional	1.29	5.10	37.82	44.21
2	Slope	4.97	11.29	32.67	48.94
3	Slope	15.15	72.31	63.22	150.68
4A	Slope	2.17	5.00	19.46	26.62
4B	Depressional	0.69	0.00	3.66	4.36
4C	Depressional	0.06	0.00	0.09	0.15
4D	Slope	0.00	0.00	1.31	1.31
4E	Slope	0.00	0.17	0.00	0.17
4F	Slope	0.29	0.78	0.00	1.07
5A	Slope	8.65	3.20	83.39	95.24
5B	Depressional	0.00	0.00	0.13	0.13
5C	Slope	0.00	0.00	0.22	0.22
6	Slope	0.00	0.00	36.93	36.93
7A	Slope	2.08	3.48	34.50	40.06
7B	Depressional	0.00	0.00	0.59	0.59
8A	Slope	9.78	5.91	9.01	24.69
9A	Slope	6.87	6.44	11.50	24.81
9B	Depressional	0.00	0.00	0.18	0.18
10A	Slope	0.47	0.19	3.07	3.73
10B	Depressional	0.56	0.26	0.27	1.09
11A	Riverine	0.00	0.00	3.54	3.54
11B	Depressional	0.00	0.00	0.00	0.00
12A	Depressional[1]	4.73	0.67	5.78	11.171
13A	Riverine	0.00	0.00	0.63	0.63
13C	Depressional	0.00	0.00	0.02	0.02

Table 6. Summary of Wetlands Identified in the Study Area (Continued).

Wetland Name	Hydro-geomorphic Class	Area by Cowardin Classification			Total Area (acres)
		Palustrine Scrub-shrub (acres)	Palustrine Emergent (acres)	Palustrine Forested (acres)	
13D	Slope	0.00	0.00	0.42	0.42
13E	Riverine	0.00	0.00	0.06	0.06
13F	Depressional	0.00	0.00	0.62	0.62
13G	Depressional	0.00	0.00	0.37	0.37
14	Depressional	0.00	0.00	0.67	0.67

[1] Estuarine, not Palustrine

3.8.2 Wetland Vegetation Communities

Table 7 provides the typical plant community compositions for forested wetlands, shrub communities, and wet pastures.

3.8.2.1 *Forest Vegetation*

Forest vegetation throughout the study area is largely homogeneous, with very little variation in stand age or community composition. Palustrine forested wetlands are dominated by a 50-75 foot overstory of red alder, with black cottonwood abundant and western paper birch interspersed. Abundant standing or fallen dead trees (mainly smaller diameter red alder) and very few light gaps characterize the forests. Coniferous species are relatively rare—usually only one or two trees of western red cedar per acre, some of which appear to be much older than the surrounding red alder forest.

The 4-to-8-foot-high forest understory consists of a dense mosaic of stands of twinberry, salmonberry, and red-osier dogwood. Small areas of Pacific and Sitka willow are common in some wetter locations. Dense thickets of Nootka rose and Himalayan blackberry are common along forest edges.

3.8.2.2 *Shrub Vegetation*

Palustrine scrub-shrub wetlands are present in discontinuous patches around the study area. Wetland shrub areas are commonly comprised of Nootka rose, Douglas spirea, and Himalayan blackberry.

3.8.2.3 *Emergent Vegetation (Wet Pastures)*

There are few areas of perennial ponding on the site; thus, obligate and aquatic emergent wetland vegetation is not common. Vegetation in palustrine emergent systems mainly consists of pasture grass species. Wet pastures (located north of Lonseth Road) are dominated by a mixture of non-native pasture grasses including bentgrass, meadow foxtail, and sweet vernalgrass. In some grazed portions and in areas no longer grazed, extensive stands of reed canarygrass exist.

Table 7. Typical Plant Communities in Forested, Shrub and Wet Pasture Wetlands.

Red Alder Wetland Forest Community		
Common Name	***Scientific Name***	**Wetland Indicator Status**
Red alder	*Alnus rubra*	FAC
Black cottonwood	*Populus trichocarpa*	FAC
Western red cedar	*Thuja plicata*	FAC
Twinberry	*Lonicera involucrata*	FAC
Salmonberry	*Rubus spectabilis*	FAC
Red-osier dogwood	*Cornus stolonifera*	FACW
Pacific willow	*Salix lucida*	FACW+
Sitka willow	*Salix sitchensis*	FACW
Wetland Shrub Community		
Common Name	***Scientific Name***	**Wetland Indicator Status**
Nootka rose	*Rosa nutkana*	FAC
Douglas spirea	*Spiraea douglasii*	FACW
Himalayan blackberry	*Rubus armeniacus*	FACU-
Salmonberry	*Rubus spectabilis*	FAC
Lady fern	*Athyrium filix-femina*	FACW
Slough sedge	*Carex obnupta*	OBL
Pacific silverweed	*Potentilla pacifica*	OBL
Stinging nettle	*Urtica dioica*	FAC+
Wet Pasture Community		
Common Name	***Scientific Name***	**Wetland Indicator Status**
Bentgrass	*Agrostis* sp.	FACW-FACU
Meadow foxtail	*Alopecurus pratensis*	FACW
Sweet vernal grass	*Anthoxanthum odoratum*	FACU
Tall buttercup	*Ranunculus acris*	FACW-

In the following discussion, wetlands are grouped and described according to their HGM classification. Appendix A provides a large map of the entire study area and Appendix D provides a set of larger scale maps (Map D1, D2, etc.) showing wetlands mapped by

Assessment Area. Appendix F provides a table of wetlands and descriptions of their associated drainage.

3.8.3 Depressional Wetlands

Wetlands 1, 4B, 5B, 7B, 8B, 9B, 10B, 11B, 11C, 12A, 13C, 13G and 14A were classified as depressional HGM class, although most have at least one other HGM class present. By definition, HGM depressional wetlands are formed at low points in the landscape. The shape of the low point in the landscape may vary, but the flow of subsurface water is toward the lowest point in the depression. Wetlands of this system class may or may not have an outlet; however, if an outlet exists, it is somewhere within the wetland boundary.

None of the wetlands described as depressional in the study area have the defined outlet typical of this class, and some do not have easily recognized depression-shaped topography. These areas generally have undefined outlets more typical of slope wetlands. However, these wetlands have very low topographic gradients, they detain water, and therefore they function more like depressional systems than slope wetland systems.

3.8.3.1 *Wetland 1*

PFO and PEM
Category III
Abuts Stream 3
Continues off-site and appears to infiltrate to groundwater north of Lonseth Road.

Wetland 1 is a 44.27-acre shallow-depressional area (within the study area) that abuts Stream 3 in the northwestern most portion of the study area (Map D1). The wetland is bounded by a ridge of higher topography along the east and south, Aldergrove Road on the north, and it includes the roadside ditch along the south side of Aldergrove Road. To the west, the wetland extends off-site onto adjacent BP property. The red alder community typical of the area is present across most of the wetland. Heavily grazed wet meadows in the northeastern extent are vegetated with the study area's typical pasture mixture (see Table 7).

This wetland is hydrologically separated from the rest of the study area by a watershed boundary that occurs along a northeast-southwest trending ridgeline that lies southeast of the wetland. This is the only wetland within the study area that does not drain southward via a stream located within the study area. The wetland continues southwest onto the adjacent property, where it appears to infiltrate to groundwater north of Lonseth Road.

The wetland is flat, with a topographic gradient of less than 1 percent over most of the study area. While this area could be classified as a slope, the hydrodynamics are more similar to the conditions found in a depressional system. During high flows, a 6-inch culvert beneath Aldergrove Road conveys surface flow from the ditch on the north side of the road into the wetland. However, this inflow does not generate well-defined drainage channels. It appears that wetland hydrologic conditions exist primarily due to a seasonally high ground water table and local precipitation.

Soils are mapped as the hydric Whitehorn series with 0-to-2-percent slopes. As stated earlier, this soil has slow permeability. Observations indicate that soils generally meet the description for Whitehorn soils.

Wetland 1 occupies a large portion of its drainage basin, and may potentially function to improve water quality by processing nutrients. Wetland 1 could also provide wildlife habitat due to the presence of multiple Cowardin classes, hydroperiods, and relatively high habitat interspersion.

3.8.3.2 *Wetland 4B*

PFO and PEM
Category III
Abuts non-RPW tributary on the west side of Kickerville Road
Drains north in a roadside ditch to the roadside ditch at Lonseth Road, then to Stream 1 and ultimately to the Strait of Georgia.

Wetland 4B is a 4.36-acre depressional area that abuts the roadside ditch on the west side of Kickerville Road (Map D4). The wetland includes forested vegetation and mowed grasses along a pipeline right-of-way that runs parallel to Kickerville Road. The dominant vegetation in the wetland includes an overstory of red alder and an understory of Douglas spirea, reed canarygrass, and slough sedge. Soils in this area are mapped as the Whitehorn Series. Field observations are generally consistent with the mapped soil type. Based on existing topographic gradients and field observations, water from Wetland 4B drains to the roadside ditch along Kickerville Road.

Wetland 4B has a relatively constricted outlet, dense persistent vegetation, and multiple Cowardin classes and hydroperiods. Functions provided by Wetland 4B may slightly improve flood attenuation and erosion control; nutrient and sediment removal; and limited production of organic matter and terrestrial invertebrates.

3.8.3.3 *Wetland 4C*

PFO and PEM
Category III
Abuts non-RPW tributary on the west side of Kickerville Road.
Drains to the roadside ditch along Kickerville Road, then north to the RPW on the south side of Lonseth Road, to Stream 6, to Stream 5, to Stream 1, to the Strait of Georgia.

Wetland 4C is a small depressional area (0.15 acres) that abuts the roadside ditch on the west side of Kickerville Road (Map D4). The area includes a portion of the pipeline corridor that runs parallel to Kickerville Road, and extends slightly into a PSS area to the west.

The vegetation in Wetland 4C is a monotypic stand of reed canarygrass, with shrubs including Douglas' spirea near its western boundary. The soils in the wetland have more clay content and

are slightly darker than the description for the mapped soil type (Whitehorn silt loam). During the January field visit, the wetland was inundated, with surface water three inches deep.

Wetland 4C has a relatively unconstricted outlet, dense persistent vegetation, and multiple Cowardin classes and hydroperiods. Functions provided by Wetland 4C are likely to be minimal. Functions may include slight flood attenuation and erosion control; nutrient, and sediment removal; and production of organic matter and terrestrial invertebrates.

3.8.3.4 *Wetland 5B*

PFO and PSS
Category III
Isolated
No apparent outlet – infiltrates to groundwater that likely drains to the RPW on the south side of Lonseth Road, and ultimately to the Strait of Georgia.

Wetland 5B is a small, isolated wetland (0.13 acres) located in Assessment Area 5 (Map D4). The vegetation in Wetland 5B is typical of forested wetlands in the study area with hydrophytic emergent species. The soils are mapped as Whitehorn silt loam, and field observations are generally consistent with the mapped description. The wetland was inundated during the January field visit.

The wetland is a depression in the landscape without an apparent surface outlet. It is likely that Wetland 5B is connected to Wetland 5A by shallow interflow and/or groundwater. Drainage patterns were assumed based on topographic gradients and field observations.

Wetland 5B has a relatively constricted outlet, and consists of dense, persistent vegetation, multiple Cowardin classes, hydroperiods including areas of occasional ponding greater than 0.5 feet, and diverse plant species. Functions provided by Wetland 5B include slight flood attenuation and erosion control; some nutrient and sediment removal; and minimal production of organic matter and terrestrial invertebrates.

3.8.3.5 *Wetland 7B*

PFO
Category III
Isolated
No apparent outlet — likely infiltrates to groundwater, which drains southwest to Stream 1 and ultimately to the Strait of Georgia.

Wetland 7B is a small, isolated wetland (0.59 acres) situated west of Wetland 7A (Map D6). Vegetation consists mainly of the area's typical forest community, with a canopy dominated by red alder over a sparse shrub understory. The mapped soil type is a Whitehorn silt loam, and field observations were generally consistent with the description of the soil type. Indicators of wetland hydrology in the wetland include oxidized root channels and saturated soils.

Wetland 7B has a relatively constricted outlet, dense, persistent vegetation, multiple Cowardin classes and hydroperiods, including areas of occasional ponding greater than 0.5 feet, and diverse plant species. Minimal functions provided by Wetland 7B may include: slight flood attenuation and erosion control; some nutrient and sediment removal; and production of organic matter and terrestrial invertebrates.

3.8.3.6 *Wetland 8B*

PSS
Category III
Abuts RPW on the south side of Lonseth Road
Drains to the roadside ditch on the south side of Lonseth Road, then to Stream 1, and ultimately to the Strait of Georgia.

Wetland 8B is a small depressional wetland (0.15 acre) that abuts the south side of Lonseth Road (Map D7). Vegetation consists of emergent shrubs and herbaceous species, supported by the road side drainage. The dominant species include willows and red-osier dogwood. Soils in this vicinity are mapped as the Whitehorn series, and field observations were generally consistent with the soil type.

Wetland 8B has dense, persistent vegetation, and marks of ponding greater than 0.5 ft. Wetland 8B may function to improve the quality of water flowing downstream by removing nutrients and sediment, and may help prevent downstream scour and erosion through flood attenuation. High-level plant diversity and multiple hydroperiods contribute to the habitat value of Wetland 8B.

3.8.3.7 *Wetland 9B*

PFO
Category III
Isolated
No surface outlet – wetland likely infiltrates to groundwater, which drains southeast to Wetland 9A, then to the Strait of Georgia via Stream 1.

Wetland 9B is a small wetland (0.18 acre) located adjacent to the southwestern boundary of the study area (Map D8). This small, forested wetland has a red alder canopy with an understory that includes slough sedge, and a mixture of grasses that could not be identified in January due to a lack of seed heads and general field conditions. The dominant shrub in the wetland is salmonberry. Patches of open water and bare ground are typical of the wetland. Soils in the vicinity are mapped as the Whitehorn series. Field observations were generally consistent with the mapped soil type.

Wetland 9B has a relatively constricted outlet, dense, persistent vegetation, multiple Cowardin classes, and hydroperiods. Portions of Wetland 9B include areas of occasional ponding to a depth greater than 0.5 foot, and diverse plant species. Functions provided by Wetland 9B may include flood attenuation and erosion control; nutrient and sediment removal, and production of organic matter and terrestrial invertebrates.

3.8.3.8 *Wetland 10B*

PSS, PEM
Category III
Isolated
No surface outlet – wetland likely infiltrates to groundwater and drains to the Strait of Georgia.

Wetland 10B is a small, isolated wetland (0.04 acres) that extends south from Henry Road in an un-maintained roadside ditch in the western portion of the site (Map D9). The area opens up into an abandoned homestead site with a sparse forest canopy near its southern boundary. The vegetation is typical of the area's PSS community. The dominant species include grasses such as bentgrass, red clover, and soft rush in the understory, with shrubs including Douglas' spirea and Himalayan blackberry. The soil is mapped as Whitehorn series. Field observations were generally consistent with the mapped soil type.

Wetland 10B has dense, persistent vegetation, a constricted outlet, areas of seasonal ponding, and multiple Cowardin classes and hydroperiods. Functions provided by Wetland 10B may include slight flood attenuation and erosion control; some nutrient and sediment removal; and production of organic matter and terrestrial invertebrates.

3.8.3.9 *Wetland 11B*

PAB
Category III
Isolated
No surface outlet — likely drains to groundwater, then to the Strait of Georgia.

Wetland 11B is a small, isolated pond (0.003 acres) in an upland field, near the base of a slope that drops off a cliff to the shoreline (Map D10). The area is very sparsely vegetated with some duckweed in the aquatic bed. The pond provides some habitat for amphibians, but offers little habitat diversity. The majority of Wetland 11B is seasonally ponded.

Wetland 11B provides some limited functions, possibly including sediment removal, nutrient removal, and the attenuation of flooding and erosion. However, because of its small size, these functions are limited.

3.8.3.10 *Wetland 13C*

PFO
Category III
Isolated
No surface outlet — infiltrates to groundwater, which likely drains to Stream 2 and the Strait of Georgia.

Wetland 13C is a small, isolated wetland (0.02 acres) located near Stream 2 (Map D11). Water pools in Wetland 13C during the wet season, and there is no defined surface water outlet. The

vegetation in Wetland 13C is typical of a forested community in the study area, with an understory of salmonberry and reed canarygrass. The soil is mapped as a Whitehorn silt loam. Field observations are generally consistent with the mapped soil type.

Wetland 13C has dense, persistent vegetation, seasonal ponding to 2 feet, and multiple Cowardin classes and hydroperiods. Functions provided by Wetland 13C include some flood attenuation and erosion control; nutrient and sediment removal; and production of organic matter and terrestrial invertebrates.

A significant nexus with jurisdictional waters likely exists due to the wetland's water quality, biologic, and hydrologic functions, and likely groundwater connection to Stream 2.

3.8.3.11 *Wetland 13F*

PAB
Category III
Abuts Strait of Georgia
Drains directly to the Strait of Georgia via a culvert under Gulf Road.

Wetland 13F is located in the southern portion of the site, abutting the Strait of Georgia (Map D11). The wetland is separated from the coast by a culvert under the road. The on-site portion of the wetland measures approximately 0.62 acres. The culvert does not appear to be fully functional, as driftwood is swept ashore and typically blocks the opening.

The wetland is an aquatic bed that holds up to three feet of water during the winter. Water was observed flowing into the wetland as sheetflow from east of the study area. East of the study area, a pond was observed flooding its banks, with water flowing down slope into the wetland. The source of this water is east of Stream 2, and feeds into Stream 2.

The wetland is highly degraded, with a dense stand of Himalayan blackberry surrounding much of its perimeter. Other species present included Pacific willow, twinberry, and Nootka rose. The soil is mapped as Neptune—very gravelly sandy loam.

Wetland 13F has a highly constricted outlet and large areas of seasonal ponding. Functions provided by Wetland 13F may include slight nutrient and sediment removal, the production of terrestrial invertebrates, and the attenuation of shoreline erosion. The presence of multiple hydroperiods and special wildlife habitat features contribute to the habitat value of Wetland 13F.

3.8.3.12 *Wetland 13G*

PFO
Category III
Isolated
No surface outlet — infiltrates to groundwater which likely drains to the Strait of Georgia.

Wetland 13G is a small depression (0.37 acres) at the base of the slope located near the southwest corner of Gulf Road as the road turns to the east (Map D12). The wetland is separated from the Strait of Georgia Gulf Road to the south and from Wetland 12 by Gulf Road to the east. Vegetation is typical of the area's forested communities. Dominant species include an overstory of red alder and black cottonwood, shrubs including Pacific willow and Nootka rose, and an emergent community that includes slough sedge. Soils are mapped as a Neptune—very gravelly sandy loam. Field observations generally confirm the mapped soil type.

The major part of Wetland 13G is seasonally ponded. Plant diversity in Wetland 13G is high, and multiple Cowardin classes and hydroperiods are present. Additional wildlife habitat features include large woody debris and standing snags. Functions provided by Wetland 13G may include flood attenuation and erosion control; some nutrient and sediment removal; and production of organic matter and terrestrial invertebrates.

3.8.3.13 *Wetland 14*

PFO
Category III
Adjacent to but not abutting the RPW on the south side of Henry Road
No surface outlet — infiltrates to groundwater and likely flows down-slope to Stream 1 and ultimately to the Strait of Georgia.

Wetland 14 is a 0.67-acre forested wetland that lies adjacent to the roadside ditch on the south side of Henry Road, in the western portion of the study area (Map D9). The area may have been a logging haul or skid road at one time. The wetland is separated from the ditch by a high berm, and it is unlikely that the wetland receives water from overbank flooding at any time during the year.

Vegetation consists of the area's typical red alder forest community. Beneath the canopy, the shrub community includes salmonberry, and the emergent community is composed of slough sedge and bigflower tellima. During the January field visit, the wetland was inundated with water. The soil in the wetland is mapped as the Whitehorn Series. Field observations generally concur with the described soil type.

Wetland 14 has dense, persistent vegetation, seasonal ponding to 2 feet, and multiple Cowardin classes and hydroperiods. Functions provided by Wetland 14 may include flood attenuation and erosion control; some nutrient and sediment removal; and production of organic matter and terrestrial invertebrates.

3.8.4 Slope Wetlands

Wetlands 2, 3, 4A and 4D through F, 5A, 6, 7A, 8A, 9A were classified as slope wetlands. Slope wetlands occur where groundwater becomes exposed and begins to drain, either along the surface or immediately below the soil surface. In this HGM class, water flows in one direction (down the slope), and typically the gradient is steep enough that the water does not become impounded. By definition, a defined outlet is not usually present.

For most of the slope wetlands in the study area, there are no defined outlets present. Typically, water drains across a broad, low-gradient landscape until it is intercepted by roadside or other ditches that lie generally perpendicular to the direction of drainage and at the down gradient edge of the wetland. These roadside drainages flow to one of the streams.

3.8.4.1 *Wetland 2*

PFO and PEM
Category III
Abuts Streams 1 and 4
Drains to Streams 1 and 4, then to the Strait of Georgia.

Wetland 2 is a large (49.0-acre), mostly-forested slope wetland located north of Lonseth Road, south of Aldergrove and west of Gulf Road (Map D1). Wetland 2 abuts Streams 1 and 4, and a culvert beneath Gulf Road connects Wetland 2 with Wetland 3 via Stream 1.

Stream 1 flows west in a constructed ditch located in a pasture and then south in a natural drainage through a forested area. The stream gradient is very low and the channel is poorly defined for most of the area. Water collects in Wetland 2 as a result of a seasonally high groundwater table, precipitation, and some contribution of overbank flooding. The area was saturated during the first field effort in June 2006, and almost completely inundated in winter 2007, with depths of 2 to 8 inches in most portions.

The forested portion is vegetated by the young alder forest community typical of the forested wetlands in the study area (Table 7). The northern-most extent is heavily grazed wet pasture. Small thickets of rose, snowberry, and Himalayan Blackberry are common along the transition from forest to pasture and along the roadway. Reed canarygrass dominates the area surrounding Stream 1 in the pasture.

Soils are mapped as Whitehorn silt loam. Soils are black (10 YR 2/1) loam and silt loam in the top approximate 6 inches. The surface of soil near Stream 1 is high in organic content. The upper part of the subsoil varies by location and is loam or clay loam with redox features present, generally starting at approximately 6 inches. Pasture areas have some locations of compacted surface soils and extensive areas with much less organic matter than in adjacent forested areas.

Wetland 2 has a relatively shallow slope, dense, woody vegetation, and very few surface depressions. Functions provided by Wetland 2 may include the attenuation of overland flow

velocity, thereby decreasing erosion and sediment deposition in areas downslope. Multiple Cowardin classes, hydroperiods, habitat features, and interspersion contribute to the habitat value of Wetland 2.

3.8.4.2 *Wetland 3*

PFO, PSS, and PEM.
Category III
Abuts Streams 1, 3, 4, and 6
Drains to Streams 1, 3, 4, and 6, then to the Strait of Georgia.

Wetland 3 is a large (143.44 acres) wetland located north of Lonseth Road, south of Aldergrove Road, and east of Gulf Road (Map D3). Stream 1 originates in Wetland 3 through the confluence of many small, undefined drainages into one constructed, well-defined stream just prior to flowing out of the wetland on the east side of Gulf Road. A constructed roadside ditch drains the northwestern part of the wetland on the south side of Aldergrove Road (Stream 3). A long, shallow swale connects two portions of the wetland. This swale appears meandering and stream-like on maps; however, no bed or bank is present and the swale is well vegetated for its full extent.

The area is actively-grazed pasture in the western half and forested wetland in the eastern half. The pasture vegetation is the typical mixed grass community found in the study area. The forested wetland has the red alder community typical of the study area. The slightly wetter conditions in the vicinity of the outlet at Gulf Road support a willow shrub community interspersed with small, open water areas with cattail, rushes, and sedges.

Soils are mapped as Whitehorn silt loam for most of the area in the western and central portions. Soils on the eastern most extent are mapped as Birchbay Silt loams on 0 to 3 percent slopes. Soils are a compact, very dark brown (10 YR 2/2) clay loam in the top approximate 6 inches. Below 6 inches, soils are a dark brown silt loam with redox features.

Wetland 3 has a relatively shallow gradient, very little dense or rigid vegetation, and surface depressions are present throughout. Wetland 3 provides some attenuation of overland flow due to its ability to retain a limited amount of water. Multiple Cowardin classes and hydroperiods, plant diversity and habitat interspersion contribute to the habitat value of Wetland 3.

3.8.4.3 *Wetland 4A*

PFO and PEM
Category III
Abuts the RPW on the south side of Lonseth Road
Drains to roadside ditch on south side of Lonseth Road, then to Stream 1 and ultimately to the Strait of Georgia.

Wetland 4A is a 26.6-acre forested and emergent wetland located near Kickerville Road in the eastern study area (Map D4). The wetland is bounded on the north by Lonseth Road and includes the roadside drainage (a RPW). The BNSF rail embankment forms the western

boundary. A BPA transmission line easement with mowed vegetation cuts north-south through the eastern portion of the wetland.

Vegetation in the wetland consists of mowed vegetation along the north-south linear transmission line easement and forested vegetation outside of the easement. The dominant species include red alder trees in the overstory with a shrub community composed of Himalayan blackberry, trailing blackberry, salmonberry, and red alder saplings. The herbaceous community is dominated by reed canarygrass. Soils are mapped as Birch Bay silt loam. Field observations were generally consistent with the soil description.

Wetland 4A has dense, woody vegetation and small depressions throughout. Functions provided by Wetland 4A may include the attenuation of overland flow velocity, thereby decreasing erosion and sediment deposition in areas downslope, and the removal of some nutrients, and sediments. Multiple Cowardin classes and hydroperiods, special habitat features, plant diversity and habitat interspersion contribute to the habitat value of Wetland 4A.

3.8.4.4 *Wetland 4D through 4F*

PFO, PEM, and PSS
Category III and IV
Adjacent to but not abutting (4D and 4E) the non-RPW on the north side of Henry Road, or isolated (4F)
No surface outlets — water appears to infiltrate to groundwater and connect to adjacent wetlands through shallow interflow, where the wetlands collectively drain to the RPW on the south side of Lonseth Road, then to Stream 1, and ultimately to the Strait of Georgia.

These small, slope wetlands (less than 5 acres) are located adjacent to each other in the eastern portion of the study area just west of Kickerville Road (Map D4). A road-level berm separates Wetlands 4D and 4E from the adjacent roadside ditch, and the wetlands are not likely to receive water from ditch overflow. Vegetation varies within the wetlands, but generally consists of the area's typical PEM, PSS, and PFO communities. Soils in this area are mapped as Whitehorn silt loam on the flats, with Birch Bay silt loam in areas where the slope increases slightly.

Wetland 4D has patches of dense, rigid vegetation, multiple Cowardin classes and hyrdoperiods, and surface depressions throughout. Functions provided by Wetland 4D may include organic-matter and terrestrial invertebrate production; flood attenuation and erosion control; and a minimal amount of sediment and nutrient removal.

Wetland 4E has a relatively unconstricted outlet, multiple hydroperiods with areas of ponding to 0.5 feet, and dense, persistent vegetation with multiple Cowardin classes. Functions provided by Wetland 4E may include: flood attenuation; erosion control and sediment removal; and production of organic matter and terrestrial invertebrates.

Wetland 4F has minimal rigid or uncut vegetation, low diversity of plant species, multiple Cowardin classes and hydroperiods, and surface depressions throughout. Functions provided by Wetland 4F may include production of organic matter and terrestrial invertebrates; a minimal amount of flood attenuation and erosion control; and a minimal amount sediment and nutrient removal.

3.8.4.5 *Wetland 5A and 5C*

PFO and PEM
Category III
Wetland 5A abuts RPW tributary on the south side of Lonseth Road
Water in the northern portion of the wetland drains north to the roadside ditch on the south side of Lonseth Road, then to Stream 6 and ultimately to the Strait of Georgia. Water in the southern portion of the wetland appears to infiltrate to groundwater, then flow south to Stream 5, then to Stream 1 and ultimately to the Strait of Georgia.

Wetland 5A is a large (95.3-acre), primarily forested slope wetland that abuts the roadside ditch on the south side of Lonseth Road to the north, and lies adjacent to Stream 5 to the south (Map D4-5). The wetland is bounded on the north by Lonseth Road, on the south and west by forested uplands on slopes, and is separated from Wetland 4A to the east by the BNSF rail embankment. Old logging roads and skid trails are common, and result in linear areas of ponding throughout the area. Wetland 5A receives some water from the roadside ditch on the north side of Henry, which empties into the wetland via a culvert under the railroad tracks.

Vegetation is the typical forest community for almost all of the area. A 100-foot-wide easement adjacent to the rail embankment, vegetated mainly with reed canarygrass, is mowed annually. Soils are mapped as Whitehorn silt loam. Soils were very dark brown (10 Y/R 2/2) or black (10 YR 2/1) in the upper 5 to 6 inches. In some areas, depth below 6 inches had a depleted matrix (10 YR 4/1) with distinct redox features. Most areas had redox features within 6 inches of the surface, and some small depressional features showed increased organic matter at the surface.

Reconnaissance investigation of the exclusion area (in assessment unit 5) revealed that Wetland 5C is likely a finger that extends west from the southern portion of Wetland 5A. Much of the central portion of Wetlands 5A and 5C has very low gradient topography with slightly steeper slopes on the south (north aspects) and east (west aspects) perimeters.

Wetland 5A, located on a shallow slope, has dense, rigid vegetation throughout most of its area, and many small surface depressions that can trap water. Wetland 5A may function to improve downstream water quality by trapping nutrients and sediments, and to decrease downstream erosion by attenuating overland flow velocity. Multiple Cowardin classes and hydroperiods, plant diversity, and habitat interspersion and features contribute to the habitat value of Wetland 5A.

3.8.4.6 *Wetland 6*

PFO
Category III
Abuts Stream 6 and the RPW tributary on the south side of Lonseth Road
Drains to Stream 6, then Stream 5 and ultimately the Strait of Georgia.

Wetland 6 is a large (36.93-acre), forested, slope wetland that abuts Stream 6 and the roadside ditch on the south side of Lonseth Road (Map D6). Gulf Road borders the area on the west and Lonseth Road on the north. Upland forests border the south and eastern portions. Old logging roads and skid trails are common and result in linear areas of ponding throughout the area.

Vegetation is the area's typical forest community. The overstory consists of red alder and black cottonwood, with a shrub community that includes salmonberry, Douglas spirea and twinberry. The emergent community includes slough sedge and Hood's sedge. Soils are mapped as Whitehorn silt loam. Field observations are generally consistent with the mapped soil type.

Wetland 6, located on a shallow slope, has dense, rigid vegetation throughout most of its area, and many small surface depressions that can trap water. Wetland 6 functions to improve downstream water quality by trapping nutrients and sediments, and to decrease downstream erosion by attenuating overland flow velocity. Multiple Cowardin classes and hydroperiods, plant diversity and habitat features contribute to the habitat value of Wetland 6.

3.8.4.7 *Wetland 7A*

PFO, PSS, and PEM.
Category III
Abuts Stream 5 and other RPW tributaries on Gulf and Lonseth roads
Drains to Stream 5, then to Stream 1, and to the Strait of Georgia. Water may also infiltrate and drain towards the Stream 1 ravine, ultimately to be expressed as base flow for Stream 1.

Wetland 7A, a 40.06-acre slope wetland, abuts Stream 5, the roadside ditch on the east side of Gulf Road, and the roadside ditch on the south side of Lonseth Road (Map D6). Upland forests are present between the western edge of Wetland 7A and the Stream 1 ravine. Water in the roadside ditch on the south side of Lonseth Road was observed to overflow into this wetland in January 2007.

Vegetation in the wetland consists of the area's typical forest and shrub communities. The overstory includes a canopy of red alder, with an understory shrub community of Douglas' spirea, and twinberry and emergent slough sedge. Indicators of wetland hydrology include water-stained leaves observed during the June survey and observations of inundation in January 2007. The soils are mapped as Whitehorn silt loam. Field observations indicate that the soils have higher clay content and the matrix is darker than the mapped type. Redoxymorphic features were observed below 8 inches.

Wetland 7A, located on a shallow slope, has dense, woody vegetation throughout most of its area, and many small surface depressions that trap water. Wetland 7A may function to improve downstream water quality by trapping nutrients and sediments, decreasing downstream erosion by attenuating overland flow velocity. Multiple Cowardin classes and hydroperiods, plant diversity, and habitat interspersion contribute to the habitat value of Wetland 7A.

3.8.4.8 *Wetland 8A*

PFO, PSS, and PEM
Category III
Abuts Stream 1
Drains southeast to Stream 1 via constructed drainages, then to the Strait of Georgia.

Wetland 8A is a 24.69-acre forest, shrub, and emergent complex slope wetland abutting Stream 1, and currently vegetation for most of the area is succeeding from old field to forest and shrub communities (Map D7). Some parts in the northern extent were hayed and one area was scraped in the summer of 2006.

Vegetation in the forested portions is typical of the study area. Emergent portions have a mixed grass community with some of the lower portions and ditches supporting thick stands of sedge, reed, and rushes. Some small portions show pure stands of reed canarygrass. Indicators of wetland hydrology include water within 2.5 inches of the surface and saturated soil throughout the soil profile. Soils in the wetland are mapped as a Whitehorn silt loam. Field observations indicate that the soil profile was homogenous throughout a 16-inch sample hole, with no redoxymorphic features. The texture of the soil is a silt loam or loam.

Wetland 8A is located on a shallow slope with patchy vegetation and many surface depressions that can retain water. Wetland 8A may function to improve the water quality in Stream 1 by removing some nutrients and sediments. The wetland may also attenuate downstream flooding, scouring, and erosion by retaining a small amount of water. Multiple Cowardin classes and hydroperiods, high levels of plant diversity and habitat interspersion, habitat features, and relatively undisturbed buffers contribute to the habitat value of Wetland 8A.

3.8.4.9 *Wetland 9A*

PFO, PSS, and PEM.
Category III
Abuts Stream 5
Drains south to Stream 5, then to Stream 1 via and ultimately to the Strait of Georgia.

Wetland 9A (25.69 acres) is a forest, shrub, and pasture area that abuts Stream 5 in the western portion of the study area (Map D9). It is bounded on the east by a large hayfield, on the south by Henry Road, and on the north and west by upland forests and shrub areas on slopes that extend offsite.

During the 2006 investigation, a portion the southern extent had recently been moldboard-plowed while the adjacent field was likely turned and reseeded the previous year. The area was seeded in spring 2006. Vegetation in the plowed area was sparse and young during our 2007 field investigation, and consisted of weedy annuals, reed canarygrass, and Himalayan blackberry. The remaining portions of the wetland are forested with the typical red alder forest community.

Soil in the vicinity is mapped as Whitehorn silt loam. During the field investigation, soils were hard and compacted. The plowed area was inundated with up to 10 inches of water during our 2007 field investigation. Most of the wetland was inundated with up to 6 inches of water during the 2007 investigation.

Wetland 9A has a shallow slope, patches of dense, woody vegetation, and surface depressions throughout that trap water. Wetland 9A may function to improve water quality downstream by removing nutrients and sediments, and by attenuating overland flow velocity. Wetland 9A also provides organic matter and terrestrial invertebrates to downstream communities. Multiple Cowardin classes and hydroperiods, high levels of plant diversity and habitat interspersion, special habitat features, and relatively undisturbed buffers contribute to the habitat value of Wetland 9A.

3.8.4.10 *Wetland 10A*

PFO, PSS, and PEM.
Category III
Abuts RPW tributary on the south side of Henry Road
No apparent outlet; likely drains to Strait of Georgia downslope via groundwater.

Wetland 10A is a 3.73 acre forested wetland that abuts the roadside ditch on the south side of Henry Road (Map D10). The wetland may receive water from the ditch during high flows. The wetland appears to be the site of a former homestead or residence. A small fruit orchard and concrete foundation are situated in the southern portion of the wetland.

The dominant vegetation in Wetland 10A consists of wetland species including slough sedge and common rush, as well as facultative species typical of forested communities in the study area. Indicators of wetland hydrology include saturated soil in the upper 12 inches, and free water in the sampling pit. The soil is mapped as Whitehorn silt loam, and field observations generally confirm the mapped soil type.

Wetland 10A has a shallow slope, dense, woody vegetation, and surface depressions throughout that can trap water. Wetland 10A functions to improve water quality downstream by removing nutrients and sediments, and attenuating overland flow velocity. Wetland 10A also provides organic matter and terrestrial invertebrates to downstream communities. Multiple hydroperiods, a high degree of habitat interspersion, special habitat features, and relatively undisturbed buffers contribute to the habitat value of Wetland 10A.

3.8.4.11 *Wetland 13D*

PFO
Category III
Adjacent to but does not abut Stream 2
No apparent outlet — likely drains to groundwater flowing downslope to Stream 2 and ultimately the Strait of Georgia.

Wetland 13D (0.37 acres) lies adjacent to, but does not abut, Stream 2 (Map D11). The area consists of a forested community situated on a relatively distinct slope. The dominant vegetation consists of skunk cabbage, an obligate wetland species, as well as reed mannagrass and the saxifrage, slender boykina. The soil was saturated to the surface during the January field visit, and the soils are low chroma. The soils in the wetland are mapped as Whitehorn silt loam, 0 to 2 percent slopes. Field observations of the soil are generally consistent with the soil description for a Whitehorn silt loam.

Wetland 13D is located on a relatively steep slope, and has no surface depressions that can trap water. Wetland 13D has dense, rigid and herbaceous vegetation, multiple Cowardin classes and hydroperiods, and a diverse plant community. Wetland 13D may function to improve water quality downstream by attenuating overland flooding and erosion, thereby decreasing sediment inputs. Other biologic functions of Wetland 13D may include production of organic matter and terrestrial invertebrates.

3.8.5 Riverine Wetlands

Riverine wetlands in the study area, associated with one of three stream channels, are generally inundated by the mid-rainy season and high-intensity storms. These wetlands may present some features of slope and depressional wetlands, including groundwater discharge and limited areas of impounding.

3.8.5.1 *Wetland 11A*

PFO
Category I
Abuts Stream 1
Drains to Stream 1 then to Strait of Georgia.

Wetland 11A is a forested riverine system that abuts Steam 1. The wetland lies in the ravine south of Henry Road (Map D11). Stream 1 flows south through the wetland. The wetland is bounded by upland forest to the east and west and by Henry Road on the north. Wetland 12A (coastal lagoon) forms the southern boundary.

Vegetation in Wetland 11A consists of a mixture of western red cedar and deciduous trees, primarily red alder and black cottonwood. Soil is mapped as Whatcom silt loam on 30 to 60 percent slopes. Soil in the wetland is a mixture of sorted colluvium and mucky areas as a result of water movement and the accumulation of organic matter.

Wetland 11A has dense, woody vegetation, surface depressions that trap water, and a large capacity for storage of overbank flooding. Wetland 11A may function to improve water quality in Stream 1 and the Strait of Georgia by decreasing scouring and erosion, and to a lesser extent, removing nutrients and sediments. Multiple Cowardin classes and hydroperiods, habitat interspersion, special habitat features, and relatively undisturbed buffers contribute to the overall habitat value of Wetland 11A.

3.8.6 Wetland 13A

PFO
Category I
Abuts Stream 2
Drains to Stream 2 and Wetland 12A, then to the Strait of Georgia

Wetland 13A is a narrow forested riverine system in the south central study area that abuts Stream 2 and its tributary (Map D11). The on-site portion of the wetland is approximately 5.50 acres. Stream 2 arises off-site to the east and flows through the wetland in the study area. A tributary to Stream 2 flows south to confluence with Stream 2 and lies entirely within the study area. The wetland is bounded by upland forest to the north and south except for at Gulf Road at the west, where the wetland drains through a culvert to Wetland 12A (coastal lagoon). The wetland continues to the east along the stream corridor beyond the project area an old earthen dam is encountered that blocks stream flow and floods the ravine above it.

Vegetation is dominated by the typical red alder forest community, with an understory of wetland obligate species adjacent to the stream. The dominant species include skunk cabbage and red stem dogwood. Portions of this area are directly adjacent to recently abandoned home sites on fill that have disturbed and invasive vegetation. Soils are mapped as Whitehorn silt loam and Birch Bay silt loam; however, soils in the wetland are a mixture of depositional bars comprised of sorted alluvium and shallow swales with muck and silts.

Wetland 13A has dense, woody vegetation, surface depressions that can trap water, and a large capacity for storage of overbank flooding. Wetland 13A functions to improve water quality in Stream 2 and the Strait of Georgia by decreasing scouring and erosion, and to a lesser extent, removing nutrients and sediments. Multiple Cowardin classes and hydroperiods, habitat interspersion, habitat features, and relatively undisturbed buffers contribute to the overall habitat value of Wetland 13A.

3.8.6.1 *Wetland 13E*

PFO
Category I
Abuts Stream 2
Receives water from and drains to Stream 2, then to the Strait of Georgia.

Wetland 13E connects to Wetland 13A through a degraded 12-inch culvert, and is nearly contiguous with Wetland 13A (Map D11).

Vegetation in Wetland 13E is dominated by the typical red alder forest community. Soils are mapped as Whitehorn silt loam and Birch Bay silt loam; however, soils are a mixture of depositional layers comprised of sorted alluvium and shallow swales with muck and silts.

Wetland 13E has dense, woody vegetation, and surface depressions that can trap water. Wetland 13E functions to improve water quality in Stream 1 and the Strait of Georgia by decreasing scouring and erosion, thereby decreasing sediment deposition downstream. Multiple Cowardin classes and hydroperiods, habitat interspersion, habitat features, and relatively undisturbed buffers contribute to the overall habitat value of Wetland 13E.

3.8.6.2 *Wetland 12 (Coastal Lagoon)*

Estuarine Emergent, Palustrine Forested
Category I
Abuts Strait of Georgia
Drains to Strait of Georgia.

Wetland 12 is a 12.11-acre coastal lagoon that abuts the shoreline west of Gulf Road (Map D12). The wetland lies between the marine shoreline and upland slopes and riparian communities. The lagoon, a shallow depression, is separated from the sea by a barrier beach with two well-defined outlets. Both Stream 1 and Stream 2 supply fresh water to this area. The lagoon also receives inputs of saltwater through the porous sediments of the beach and over the beach during severe storm events.

Stream 1 enters the depression from the north along the western extent and divides, forming two forks, both of which drain to the Strait of Georgia. Stream 2 flows through a culvert beneath Gulf Road and meanders westward through the wetland to converge with the eastern-most fork of Stream 1. The wetland was classified as depressional because freshwater entering the area is detained, water levels in the wetland are not controlled by tides, and the wetland has a defined outlet.

Vegetation includes emergent vegetation adapted to brackish conditions including fat-hen saltbush, saltgrass, pickleweed, salt marsh dodder, arrowgrass, and Pacific silverweed. Other species present include Sitka spruce, Douglas spirea, and Nootka rose. Soil in Wetland 12 is mapped as Neptune very gravelly, sandy loam. While the shape of the mapped landform appears to have been effectively characterized by the soil survey, the soil series is probably not correct because Neptune series is a well-drained gravelly soil. The coastal lagoon has salt-affected, organic-rich soils grading to soils that appear similar to Whitehorn silt loam and Whatcom silt loam.

This wetland is classified as a Category 1 due to the unique functions it provides as an estuarine wetland system.

4. Conclusions and Limitation of Information Provided

This report summarized the findings of the wetland determination and delineation conducted in June 2006 and January 2007. This report provides data to support the delineated wetland boundaries, characterizes wetland areas and waters of the U.S., and assesses the value and functions of the delineated wetlands. The information in this report is provided to support jurisdictional determination and boundary concurrence by the USACE.

4.1 Summary of Waters of the U.S. and Wetlands

Wetlands and other waters of the U.S. were identified in the study area. Wetlands comprise a total of approximately 521 acres of the study area. The wetlands were classified as riverine, slope, and depressional HGM classes. Palustrine forested (PFO) wetlands were most common, followed by wet pastures and hayfields (PEM), and a small amount of scrub-shrub wetland (PSS). One wetland was identified as an estuarine emergent system (Wetland 12).

Two streams flowing through natural ravines were identified within the study area. An extensive network of roadside ditches was also present, five of which convey streams as identified by Whatcom County. All drainages identified within the study site ultimately drain to the Strait of Georgia.

4.2 Limitations of this Study

The wetland boundaries, classification, and ratings, and the potential for jurisdiction described herein, are the professional opinion of AMEC staff based on the circumstances and site conditions at the time of this study. Local, state, and federal jurisdictions make final determinations of wetland boundaries and classifications.

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APPENDIX A

Large Map of Wetland Boundaries and Site Topography
(fold out map)

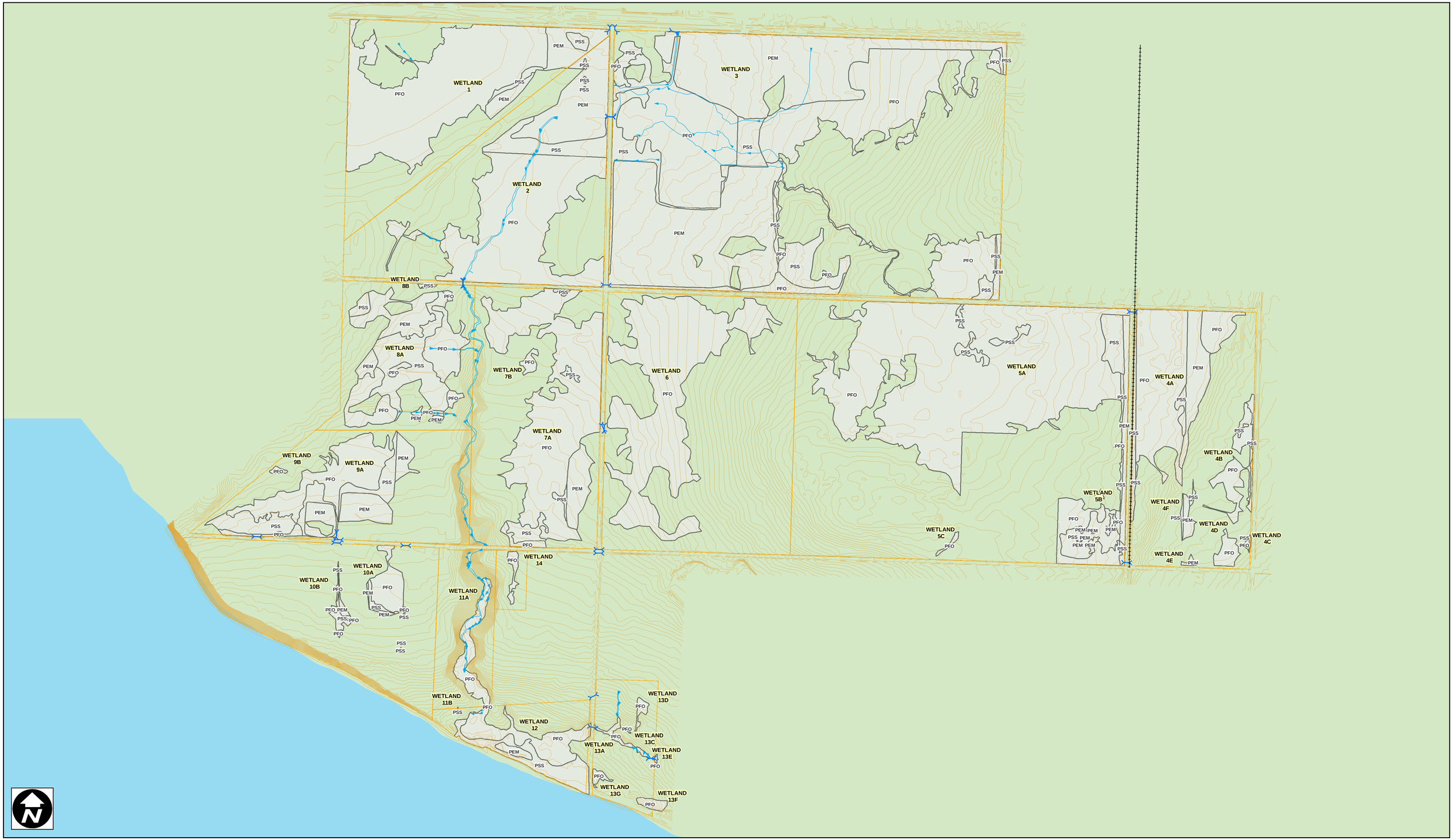

FIGURE X

GATEWAY PACIFIC TERMINALS

SITE AREA TOPOGRAPHY

amec

7376 SW Durham Road
Portland, OR, U.S.A. 97224

W.O.	5-91M-15338-0
DESIGN	-
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DATE	FEBRUARY 2008

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APPENDIX B

Plant Species List

Table B1 Plant Species in the Study Area

Common Name	Family	Genus	Species	Indicator
Grasses and Forbs				
American mannagrass	Poaceae	*Glyceria*	*grandis*	OBL
American skunk cabbage	Araceae	*Lysichiton*	*americanum*	OBL
American speedwell	Scrophulariaceae	*Veronica*	*americana*	OBL
American speedwell	Scrophulariaceae	*Veronica*	*americana*	OBL
American vetch	Fabaceae	*Vicia*	*americana*	FAC
annual bluegrass	Poaceae	*Poa*	*Annua*	FAC
bentgrass	Poaceae	*Agrostis*	Sp.	NI
bigflower tellima	Saxifragaceae	*Tellima*	*glandiflora*	UPL
bird's-foot trefoil	Fabaceae	*Lotus*	*corniculatus*	FAC
black medic	Fabaceae	*Medicago*	*lupulina*	FAC
bleeding heart	Fumariaceae	*Dicentra*	*formosa*	FACU
Bluegrass (species unid'd)	Poaceae	*Poa*	*sp.*	NI
bracken fern	Dennstaedtiaceae	*Pteridium*	*aquilinum*	FACU
Canadian thistle	Asteraceae	*Cirsium*	*arvense*	FACU+
cleavers bedstraw	Rubiaceae	*Galium*	*aparine*	FACU
clover	Fabaceae	*Trifolium*		NI
coastal brookfoam	Saxifragaceae	*Boykinia*	*elata*	FAC
colonial bentgrass	Poaceae	*Agrostis*	*capillaris (tenuis)*	FAC
common cattail	Typhaceae	*Typha*	*latifolia*	OBL
common dandelion	Asteraceae	*Taraxacum*	*officinale*	FACU
common plantain	Plantaginaceae	*Plantago*	*major*	NI
common rush	Juncaceae	*Juncus*	*effusus*	FACW
common spikerush	Cyperaceae	*Eleocharis*	*palustris*	OBL
common velvetgrass	Poaceae	*Holcus*	*lanatus*	FAC
common vetch	Fabaceae	*Vicia*	*sativa*	UPL
Cooley's hedgenettle	Lamiaceae	*Stachys*	*Cooleyae*	FACW
creeping buttercup	Ranunculaceae	*Ranunculus*	*repens*	FACW
crested dogstail grass	Poaceae	*Cynosurus*	*cristatus*	UPL
curly dock	Polygonaceae	*Rumex*	*crispus*	FAC+
cutleaf blackberry	Rosaceae	*Rubus*	*laciniatus*	FACU+
Dewey's sedge	Cyperaceae	*Carex*	*deweyana*	FAC+
false lily-of-the-valley	Liliaceae	*Maianthemum*	*dilatatum*	FAC
field horsetail	Equisetaceae	*Equisetum*	*arvense*	FAC
fireweed	Onagraceae	*Epilobium*	*angustifolium*	FACU+
foothill sedge	Cyperaceae	*Carex*	*tumulicola*	FACU
fowl bluegrass	Poaceae	*Poa*	*palustris*	FAC
Foxtail (species unid'd)	Poaceae	*Alopecurus*	sp.	NI
fringecup	Saxifragaceae	*Tellima*	*grandiflora*	FAC
giant horsetail	Equisetaceae	*Equisetum*	*telmateia*	FACW
hairy catsear	Asteraceae	*Hypochaeris*	*radicata*	FACU
Hawkbit (species unid'd)	Asteraceae	*Leontodon*	sp.	NI

Common Name	Family	Genus	Species	Indicator
lady fern	Dryopteridaceae	*Athyrium*	*filix-femina*	FAC
largeleaf avens	Rosaceae	*Geum*	*macrophyllum*	FACW-
meadow foxtail	Poaceae	*Alopecurus*	*pratensis*	FACW
narrowleaf plantain	Plantaginaceae	*Plantago*	*lanceolata*	FAC
orchard grass	Poaceae	*Dactylis*	*glomerata*	FACU
Pacific bleeding heart	Fumariaceae	*Dicenta*	*Formosa*	FACU
Pacific silverweed	Rosaceae	*Potentilla*	*anserina*	OBL
panicled bulrush	Cyperaceae	*Scirpus*	*microcarpus*	OBL
pig-a-back	Saxifragaceae	*Tolmiea*	*menziesii*	FAC
plantain	Plantaginaceae	*Plantago*		NI
quackgrass	Poaceae	*Agropyron*	*repens*	FAC-
red clover	Fabaceae	*Trifolium*	*pratense*	FACU
red clover	Fabaceae	*Trifolium*	*repens*	FACU+
red fescue	Poaceae	*Festuca*	*rubra*	FAC+
reed canarygrass	Poaceae	*Phalaris*	*arundinacea*	FACW
rock dandelion	Asteraceae	*Taraxacum*	*laevigatum*	UPL
ryegrass	Poaceae	*Lolium*		NI
saltgrass	Poaceae	*Distichlis*	*spicata*	FACW
sheep sorrel	Polygonaceae	*Rumex*	*acetosella*	FACU
skunk cabbage	Araceae	*Lysichiton*	*americanus*	OBL
slough sedge	Cyperaceae	*Carex*	*obnupta*	OBL
soft rush	Juncaceae	*Juncus*	*effuses*	FACW
small-fruited bulrush	Cyperaceae	*scirpus*	*microcarpus*	OBL
springbeauty	Portulacaceae	*Claytonia (Montia)*		NI
stinging nettle	Urticaceae	*Urtica*	*dioica*	FAC+
stinging nettle	Urticaceae	*Utrica*	*dioica*	
sweet vernalgrass	Poaceae	*Anthoxanthum*	*odoratum*	FACU
sword fern	Dryopteridaceae	*Polystichum*	*munitum*	FACU
swordleaf rush	Juncaceae	*Juncus*	*ensifolius*	FACW
tall buttercup	Ranunculaceae	*Ranunculus*	*acris*	FACW-
tall fescue	Poaceae	*Festuca*	*arundinacea*	FACU-
tall fescue	Poaceae	*Shedenorus (Festuca)*	*phoenix (arundinacea)*	FAC-
thick-head sedge	Cyperaceae	*Carex*	*pacheystachya*	FAC
true forget-me-not	Boraginaceae	*Myosotis*	*scorpioides*	FACW
vetch	Fabaceae	*Vicia*		NI
water parsley	Apiaceae	*Oenanthe*	*sarmentosa*	OBL
western sword fern	Dryopteridaceae	*Polystichum*	*munitum*	FACU
white clover	Fabaceae	*Trifolium*	*repens*	FAC
wood fern	Dryopteridaceae	*Dryopteris*	*expansa*	UPL
youth on age	Saxifragaceae	*Tolmiea*	*menziesii*	FAC

Shrubs, Vines, and Small Trees				
Common Name	**Family**	**Genus**	**Species**	**Indicator**
American black nightshade	Solanaceae	*Solanum*	*americanum*	FAC-
black hawthorne	Rosaceae	*Crataegus*	*douglasii*	FAC
cascara buckthorn	Rhamnaceae	*Frangula (Rhamnus)*	*purshiana*	FAC-
cluster rose	Rosaceae	*Rosa*	*pisocarpa*	FAC
common snowberry	Caprifoliaceae	*Symphoricarpos*	*albus*	FACU
currant	Grossulariaceae	*Ribes*		NI
Douglas spirea	Rosaceae	*Spirea*	*douglasii*	FACW
English holly	Aquifoliaceae	*Ilex*	*aquifolium*	FACU
evergreen blackberry	Rosaceae	*Rubus*	*laciniatus*	FACU+
Himalayan blackberry	Rosaceae	*Rubus*	*armeniacus (discolor)*	FACU
Indian plum	Rosaceae	*Oemleria*	*cerasiformis*	FACU
nootka Rose	Rosaceae	*Rosa*	*nutkana*	FAC
ocean spray	Rosaceae	*Holodiscus*	*discolor*	UPL
Pacific willow	Salicaceae	*Salix*	*lucida*	FACW+
prickly current	Grossulariaceae	*Ribes*	*lacustre*	FAC+
red alder	Betulaceae	*Alnus*	*rubra*	FAC
red elderberry	Caprifoliaceae	*Sambucus*	*racemosa*	FACU
red-osier dogwood	Cornaceae	*Cornus*	*sericea (stolonifera)*	FACW
rose spirea	Rosaceae	*Spiraea*	*douglasii*	FACW
salmonberry	Rosaceae	*Rubus*	*spectabilis*	FAC+
Scouler willow	Salicaceae	*Salix*	*scoulerana*	FAC
Serviceberry	Rosaceae	*Amelanchier*	*alnifolia*	FACU
Sitka willow	Salicaceae	*Salix*	*sitchensis*	FACW
straggly gooseberry	Grossulariaceae	*Ribes*		FAC
thimbleberry	Rosaceae	*Rubus*	*parviflorus*	FAC-
trailing blackberry	Rosaceae	*Rubus*	*ursinus*	FACU
twinberry	Caprifoliaceae	*Lonicera*	*invoucrata*	FAC+
vine maple	Aceraceae	*Acer*	*circinatum*	FAC-
western crabapple	Rosaceae	*Pyrus*	*fusca*	FAC
willow	Salicaceae	*Salix*	Spp.	NI
Trees				
Common Name	**Family**	**Genus**	**Species**	**Indicator**
big leaf maple	Aceraceae	*Acer*	*macrophyllum*	FACU
black cottonwood	Salicaceae	*Populus*	*balsamifera*	FAC
Douglas fir	Pinaceae	*Pseudotsuga*	*menziesii*	FACU
grand fir	Pinaceae	*Abies*	*grandis*	FAC-
pacific ninebark	Rosaceae	*Physocarpus*	*capitatus*	FACW-
quaking aspen	Salicaceae	*Populus*	*tremuloides*	FAC+
Common Name	**Family**	**Genus**	**Species**	**Indicator**

Trees (Continued)				
red alder	Betulaceae	*Alnus*	*rubra*	FAC
Rocky Mountain maple	Aceraceae	*Acer*	*glabrum*	FAC
Western hemlock	Pinaceae	*Tsuga*	*heterophylla*	FACU-
western paper birch	Betulaceae	*Betula*	*papyrifera*	FAC
Western red cedar	Cupressaceae	Thuja	plicata	FAC

APPENDIX C

Field Data Sheets

Table C1. Summary of Data Point Information

		Wetland Indicators Present			Wetland Deter-mination	
Plot ID	**Date**	**Veg**	**Hydro -logy**	**Hydric Soils**		**Additional Comments**
AL-04-UP9	14-Jun-06	Yes	No	Yes	No	The sampling point is located near the middle of Assessment Area 3, slightly northeast of the open field at the intersection of Lonseth and Gulf Road.
A-L04-WP08	14-Jun-06	Yes	Yes	Yes	Yes	The sampling point is situated in Assessment Area 3, near the middle of the Assessment Area, northwest of the open field at the corner of Lonseth and Gulf Road. The sampling point was not located by surveyors. Location on map is approximate.
A-L05-UP-10	23-Jan-07	No	No	No	No	The sampling point is situated near the wetland at the corner of Lonseth and Gulf in Assessment Area 9B.
A-L05-WP-12	23-Jan-07	Yes	Yes	Yes		The sampling point is situated in the wetland near the corner of Lonseth and Gulf near Assessment Area 2.
A-L06-UP-01	24-Jan-07	Yes	No	No	No	The sampling point is situated in the upland area at the southwest corner of the study area near Assessment Area 9B.
A-L06-UP-02	24-Jan-07	No	Yes	No	No	The sampling point is situated in the upland area at the southwest corner of the study area near Assessment Area 9B.
A-L06-W-02	24-Jan-07	Yes	Yes	No	Yes	The sampling point is situated in the wetland at the southwest corner of the study area near Assessment Area 9B.
A-L06-WP-01	24-Jan-07	Yes	Yes	Yes	Yes	The sampling point is situated in the wetland area at the southwest corner of the study area near Assessment Area 9B.
A-L08-UP-01	26-Jan-07	Yes	No	Yes	No	The sampling point is situated near the edge of a drainage and a wetland near the western property boundary south of Lonseth Road west of Assessment Area 8A. The sample point was not located by surveyors, so the location on the map was approximated from f

		Wetland Indicators Present			Wetland Deter-mination	
Plot ID	**Date**	**Veg**	**Hydro -logy**	**Hydric Soils**		**Additional Comments**
A-L08-WP-01	26-Jan-07	Yes	Yes	Yes	Yes	The sampling point is situated south of Henry in the wetland nearest the western property boundary near Assessment Area 10B.
A-L11-UP-01	27-Jan-07	No	No	No	No	The sampling point is situated south of Lonseth Road, slightly west of the creek in an upland field near Assessment Area 8A.
A-L11-WP-01	27-Jan-07	Yes	Yes	No	Yes	The sampling point is situated south of Henry in the wetland nearest the western property boundary in Assessment Areas 8B.
A-L12-UP-01	29-Jan-07	No	No	No	No	The sampling point is located in the northwest corner of Assessment Area 3. The sampling point was not found by surveyors. The location on the map is approximate.
A-L19-UP-01	30-Jan-07	No	No	Yes	No	The sampling point is located near an elevated portion of a field south of Aldergrove, near a small forested area east of Gulf Road in Assessment Area 3.
A-L19-WP-01	29-Jan-07	Yes	Yes	Yes	Yes	The sampling point is located in an elevated portion of a field south of Aldergrove, near a small forested area east of Gulf Road in Assessment Area 3.
A-L20-WP-01	31-Jan-07		Yes	Yes	Yes	Plot is in a grazed pasture near an elevated portion of a field south of Aldergrove, near a small forested area, west of Gulf Road in Assessment Area 3.
A-L24-UP-001	05-Feb-07	No	No	No	No	The sampling point is situated near the power line corridor, north of Lonseth Road in Grid P-6 of Assessment Unit 4.
A-L24-WP01	05-Feb-07	Yes		Yes		The sampling point is situated near the power line corridor, north of Lonseth Road in Grid P-6 of Assessment Unit 4.
A-L25-UP-001	06-Feb-07	No	No	No	No	The sampling point is located south of Lonseth Road, west of Gulf, in Assessment Area 8.

		Wetland Indicators Present			Wetland Deter-mination	
Plot ID	**Date**	**Veg**	**Hydro -logy**	**Hydric Soils**		**Additional Comments**
A-L25-WP-01	06-Feb-07	Yes	Yes	Yes	Yes	The sampling point is in the wetland south of Lonseth, west of Gulf in Assessment Area 8.
A-L26-UP-01	05-Feb-07	Yes	No	No	No	The sampling point is located in upland near the wetland B-L26. No herbaceous vegetation occurs below the forest canopy. The plot is located north of Henry road, just west of the boundary with the portion of the study area that is excluded from the prope
A-L27-UP-01	06-Feb-07	No	No	No	No	The sampling point is situated near the wetland that begins on the northeast portion of the exclusion area, south of Lonseth Road, just west of the Railroad tracks in Assessment Area 5B.
A-L27-WP-01	06-Feb-07	Yes	Yes	Yes	Yes	The sampling point is located in Assessment Area 5A.
A-L27-WP-02	06-Feb-07	Yes	Yes	Yes	Yes	The sampling point is situated in the wetland that begins on the northeast portion of the exclusion area, south of Lonseth Road, just west of the Railroad tracks in Assessment Area 5A.
A-L7-UP-01	24-Jan-07	No	No	No	No	The sampling point is located near the western boundary of the project area, along the diagonal property boundary north of Henry Road, near Assessment Area 9B.
A-L7-WP-01	24-Jan-07	Yes	Yes	No	Yes	The sampling point is located near the western boundary of the project area, along the diagonal property boundary north of Henry Road, near Assessment Area 9B.
A-L-WP-10	23-Jan-07	Yes	Yes	No	Yes	The sampling point is situated in the wetland, near the corner of Lonseth and Gulf in Assessment Area 9.
A-UP-07	12-Jun-06	No	No	Yes	No	The sampling point is located west of A-L03-F10. It is situated in the northeast corner of Assessment Area 3, and is representative of wetland communities in that area.

		Wetland Indicators Present			Wetland Deter-mination	
Plot ID	**Date**	**Veg**	**Hydro -logy**	**Hydric Soils**		**Additional Comments**
A-UP-P5	12-Jun-06	No	No	No	No	The sampling point is in Assessment area 2, near the eastern boundary of the unit. The sampling point is representative of other upland areas in the Assessment Area.
A-WP-04	12-Jun-06	Yes	Yes	Yes	Yes	Plot is located close to Lonseth at the northwest corner of Lonseth and Gulf, in Assessment Area 2.
A-WP06	12-Jun-06	Yes	Yes	Yes	Yes	Sampling point is located just east of A-L03-F10 in northeast corner of Assessment Area 3.
B-L02-PU-06	14-Jun-07	Yes	No	No	No	Plot is located east of the wetland in Assessment Area 7A. The data plot was not located by surveyors, so the location of the data plot was estimated on maps.
B-L02-PW-05	14-Jun-06	Yes	No	Yes	Yes	Sampling point is located approximately 150 feet northwest of B-L02-F157 in Assessment Area 7A. The sampling point was not located by surveyors, so the location of the sampling point was estimated on maps.
B-L03-4U	12-Jun-07	No	No	No	No	Sampling point is located near B-L03-F160 (or F60) in Assessment Area 1. The sampling point was not located by surveyors and is estimated on maps. It is representative of the upland area near the northwestern property boundary.
B-L04-1W	10-Jun-06	Yes	Yes	Yes	Yes	The sampling point is located between Lonseth and Aldergrove, west of Gulf, and southwest of B-L03-B125 in Assessment Area 1, at the north end of the parcel near the western property boundary.
B-L04-PU-02	10-Jun-06	Yes	No	No	No	Sampling point is located southeast of B-L04-F02, near the western property boundary, in Assessment Area 1.

		Wetland Indicators Present			Wetland Deter-mination	
Plot ID	**Date**	**Veg**	**Hydro -logy**	**Hydric Soils**		**Additional Comments**
B-L05-PW-07	14-Jun-06	Yes	Yes	Yes	Yes	The sampling point is located between Aldergrove and Loneseth, west of the pipeline, and 25 feet south of B-L05-F23 in Assessment Area 3. The sampling point is near the historic drainage where it opens up into a larger wetland area.
B-L06-PW8	13-Jun-06	Yes	Yes	Yes	Yes	Sampling point is between B-L06-F56 and B-L05-F112 in the historic drainage associated with Assessment Area 3.
B-L-06-UP-11	15-Jun-06	Yes	No	No	No	Sampling point is located approximately 15 feet south of A-L06-F4 in Assessment Area 3.
B-N-PW-12	16-Jun-06	Yes	No	Yes	Yes	The sampling point is in the westernmost field in Assessment Area 9A. The sample point was not located by surveyors, so the location was approximated from field notes.
B-PU-15	17-Jun-06	Yes	No	No	No	Sampling point is located north of the beach, approximately 50 feet north of the treeline and 150 feet from Gulf Road, in Assessment Area 12.
B-PU-20	30-Jan-07	No	No	No	No	The sampling point is located in Assessment Area 3, slightly west of the historic drainage.
B-PU-23	01-Feb-07	Yes	No	No	No	Ilex aquifolium and Polystichum munitum, among other species, are present further upland. The ground is covered with dead leaves and little vegetation is present. Soil pit was dug on the bank of the pond, approximately 15 feet from water's edge. Sampling
B-PU-25	01-Feb-07	Yes	No	NA	No	The sampling point is located within the cluster of small wetlands located along the drainage north of the beach and east of Gulf Road, towards the northern property boundary, in Assessment Area 13D. It is east of sampling point B-PW26.

		Wetland Indicators Present			Wetland Deter-mination	
Plot ID	**Date**	**Veg**	**Hydro -logy**	**Hydric Soils**		**Additional Comments**
B-PW-14	17-Jun-06	Yes	Yes	Yes	Yes	The sampling point Is located approximately 25 feet south of the shrub line and 100 feet east of Gulf Road, in the Coastal Lagoon, Assessment Area 12.
B-PW-16	17-Jun-06	Yes	Yes	Yes	Yes	The sampling point is located approximately 50 feet west of Gulf Road and 150 feet north of the tree line and is flagged from the road in Assessment Area 12.
B-PW-17	30-Jan-07	Yes	Yes	Yes	Yes	Sampling point connects to creek, loop A L06. The sampling point is in Assessment Area 13.
B-PW-22	01-Feb-07	Yes	Yes	Yes	Yes	Soil pit was dug approximately 2 feet from a pond. Roots and rocks in soil horizons and the B-horizon had redox features. The sampling point is in Assessment Area 13.
B-PW23	01-Feb-07	Yes	Yes	Yes	Yes	Soil pit was dug at the confluence of two drainage channels in Assessment Area 13A.
PW-18	30-Jan-07	Yes	Yes	Yes	Yes	The sampling point is in Assessment Area 3.
PW-26	01-Feb-07	Yes	Yes			The sampling point is in Assessment Area 13.
WP-AD-01	16-Jul-07	Yes	No			
WP-AD-02	16-Jul-07	Yes	No	Yes	Yes	
Z-L01-P-03	09-Jun-06	No	No	No	No	The sampling point is representative of the upland community in the southwest portion of Assessment Aea 2.
Z-L01-PU-01	09-Jun-06	No	No	No	No	Sampling point is located on the west side of the "old road" and just north of Lonseth, on the west side of the creek in Assessment Areas 2.
Z-L01-PW01	13-Jun-06	Yes	No	Yes	Yes	Sampling point is located at the south end of Assessment Area 2.
Z-L02-PW-01	13-Jun-06	Yes	No	Yes	Yes	Sampling point is located on the west side of the "old road" and just north of Lonseth, on the west side of the creek in Assessment Area 2.

		Wetland Indicators Present			Wetland Deter-mination	
Plot ID	**Date**	**Veg**	**Hydro -logy**	**Hydric Soils**		**Additional Comments**
Z-L02-PW-02	13-Jun-06	Yes	No	Yes	Yes	Sampling point is located on the west side of the "old road" and just north of Lonseth, on the west side of the creek in Assessment Area 2.
Z-L04-WP-01	15-Jun-06	Yes	No	Yes	Yes	The sampling point is in Assessment Area 11, South of Henry Road along the unnamed creek.
Z-L06-WP-01	15-Jun-06	Yes	Yes	Yes	Yes	Sampling point is west of F7 in Assessment Area 11, South of Henry Road along the unnamed creek.
Z-L08-UP-01	16-Jun-06	No	No	No	No	Sampling point is in Assessment Area 11, South of Henry Road on the east side of the unnamed creek.
Z-L13-UP-01	03-Feb-07	Yes	No	No	No	The sampling point is situated in the upland area west of the unnamed creek in Assessment Area 12.
Z-L13-UP02	23-Jan-07		No	No		The sampling point is situated in the upland area west of the unnamed creek in Assessment Area 12.
Z-L13-UP-03	23-Jan-07	No	No	No	No	The sampling point is located just west of the wetland associated with the southernmost portion of the creek in Assessment Area 12.
Z-L14-WP-01	23-Jan-07	Yes	No	No	Yes	The sampling point is located south of the small forested area south of Henry road, near the west end of the study area in Assessment Area 10A.
Z-L15-UP-02	24-Jan-07	No	No	No	No	Area is regularly hayed. Grasses are 6-10 inches tall. The sampling point is located west of the small forested parch south of Henry Road in Assessment Area 10A.
Z-L15-UP-03	24-Jan-07	No	No	No	No	Area is regularly hayed. Grasses were 6-10 inches tall, 2-3 feet tall in May. The sampling point is located west of the small forested parch south of Henry Road in Assessment Area 10A.
Z-L19-UP-01	24-Jan-07	No	No	No	No	Sampling point is located in one of two well-drained fields south of Henry Road in Assessment Area 10A.

		Wetland Indicators Present			Wetland Deter-mination	
Plot ID	**Date**	**Veg**	**Hydro -logy**	**Hydric Soils**		**Additional Comments**
Z-L19-UP-02	24-Jan-07	No	No	No	No	Sampling point is located in one of two well-drained fields south of Henry Road in Assessment Area 10A.
Z-L19-UP-03	24-Jan-07	No	No	No	No	Sampling point is located in one of two well-drained fields south of Henry Road in Assessment Area 10A.
Z-L19-WP-01	24-Jan-07	No	Yes	Yes	Yes	Sampling point is located between two well-drained fields south of Henry Road in Assessment Area 10B.
Z-L21-UP-01	06-Feb-07	No	Yes	No	No	Wetland vegetation and hydric soils are not present in the sampling point. Wetland hydrology is present, however, the presence of wetland hydrology is due primarily to recent, heavy rainfall.
Z-L21-WP-01	24-Jan-07	Yes	Yes	Yes	Yes	The presence of hydrophytic vegetation and wetland hydrology indicate that the sampling point is within a wetland.
Z-L22-UP01	06-Feb-07	No	No	No	No	The plot is in the field to the west of the wetland.
Z-L22-UP-01	24-Jan-07	No	No	No	No	The sampling point is situated south of Henry Road in a well drained field in Assessment Aea 10A.
Z-L22-UP-03	24-Jan-07	No	No	No	No	The sampling point is located in a mowed field south of Henry Road in Assessment Area 10A.
Z-L22-UP-04	24-Jan-07	No	No	No	No	The sampling point is situated in the open fields south of Henry Road in Assessment Area 10A.
Z-L22-UP-06	24-Jan-07	No	Yes	No	No	Soils are wet due to recent rain. Plot located in pasture, commonly plowed or tilled, just east of Z-L22-UP-04 in Assessment Area 10A.
Z-L22-WP01	27-Jan-07	Yes	Yes	No	Yes	The sampling point is situated in a drainage ditch at the edge of a gravel road. It appears that there are inclusions of gravel fill in the sampling point.
Z-L25-UP-01	25-Jan-07	No	No	No	No	The sampling point is located in an open field south of Henry Road that as recently been mowed and seeded in Assessment Area 9A.

		Wetland Indicators Present			Wetland Deter-mination	
Plot ID	**Date**	**Veg**	**Hydro -logy**	**Hydric Soils**		**Additional Comments**
Z-L25-WP-01	25-Jan-07	No	Yes	Yes	Yes	The sampling point is located in the wetland in the open fields north of Henry Road in Assessment Area 9A.
Z-L26-UP-02	25-Jan-07	No	No	No	No	The sampling point is located in the long field west of the creek, north of Henry Road in Assessment Area 9A.
Z-L26-UP-03	25-Jan-07	Yes	No	No	No	The sampling point is situated in the sloped field south of Henry Road in Assessment Area 9A.
Z-L26-WP-01	25-Jan-07	Yes	Yes	No	Yes	The sampling point is located in the wetland that extends through the two westernmost open fields, north of Henry Road in Assessment Area 9A.
Z-L27-UP-01	26-Jan-07	No	No	No	No	The sampling point is located east of the creek and south of Henry Road in Assessment Area 14.
Z-L27-WP-01	26-Jan-07	Yes	Yes	Yes	Yes	The sampling point is located just east of the creek, south of Henry Road in Assessment Area 14.
Z-L29-UP-01	30-Jan-07	No	?	No	No	The sample plot is located in the forested area near wetland Z-L29, just north of Henry Road near Gulf Road in Assessment Area 6.
Z-L29-UP-02	02-Feb-07	Yes	No	No	No	The sample plot is located in the forested area near wetland Z-L29, just north of Henry Road near Gulf Road in Assessment Area 6.
Z-L29-WP-01	02-Feb-07	Yes	Yes	Yes	Yes	The sample plot is located in the forested area near wetland Z-L29, just north of Henry Road near Gulf Road in Assessment Area 6.
Z-L30-UP-01	30-Jan-07	No	No	No	No	The sample plot is located in Assessment Area 13E
Z-L30-WP-01	31-Jan-07	Yes	Yes	?	Yes	The sample plot is located in Assessment Area 13E
Z-L31-WP-01	03-Feb-07	Yes	Yes	Yes	Yes	The sample plot is located in Assessment Area 4B
Z-L33-UP-01	03-Feb-07	Yes	No	No	No	Plot is located approximately 50 feet west of Kickerville Rd in Assessment Area 4B.

		Wetland Indicators Present			Wetland Deter-mination	
Plot ID	**Date**	**Veg**	**Hydro -logy**	**Hydric Soils**		**Additional Comments**
Z-L34-WP-01	06-Feb-07	Yes	Yes	Yes	Yes	Plot is located in Assessment Area 4D.
Z-L34-WP-02	06-Feb-07	Yes	Yes	Yes	Yes	Plot is located in Assessment Area 4D.
Z-L37-UP-01	06-Feb-07	No	Yes	No	No	Plot is within mowed powerline corridor in Assessment Area 4A.
Z-L37-UP-02	06-Feb-07	No	No	No	No	Plot is within mowed powerline corridor in Assessment Area 4A.
Z-L37-WP-01	06-Feb-07	Yes	Yes	Yes	Yes	Plot is located within a powerline corridor in Assessment Area 4A.
Z-L37-WP-02	06-Feb-07	Yes	Yes		Yes	Plot is located within a powerline corridor in Assessment Area 4A.
Z-L37-WP-03	06-Feb-07	Yes	Yes	Yes	Yes	Plot is located within a powerline corridor in Assessment Area 4A.
Z-L37-WP-04	03-Feb-07	Yes	Yes	Yes	Yes	The sampling point is situated near the corner of Kickerville and Lonseth Road in Assessment Area 4A.
Z-L38-UP-01	06-Feb-07	No	No	Yes	No	Plot is located in pipeline corridor near Assessment Area 4E .
Z-L43-UP-01	07-Feb-07	No	No	No	No	Sampling point located between Gulf Road and plowed field, just north of Henry Road, in Assessment Area 7B.
Z-L43-WP-01	07-Feb-07	Yes	Yes	Yes		The sampling point is located in a plowed field just north of Henry Road, in Assessment Area 7B.
Z-L47-UP-01	20-Mar-07			No		The plot is located in a mowed field.
Z-L47-UP-02	20-Mar-07			No		The plot is located in a mowed field.
Z-L47-UP-05	20-Mar-07	No	Yes	No	No	The sampling point is located in a routinely mowed field.
Z-L47-UP-08	20-Mar-07					The sampling point is located in a routinely mowed field.
Z-L47-UP-09	20-Mar-07			Yes		The sampling point is located in a routinely mowed field.
Z-L4-PU-01	15-Jun-06	No	No	No	No	Sampling point is SE of F38 in Assessment Area 7B.
Z-L5-PW-01	16-Jun-06	Yes	Yes	No	Yes	Sampling point is SE of F38 in Assessment Area 7B.

		Wetland Indicators Present			Wetland Deter-mination	
Plot ID	**Date**	**Veg**	**Hydro -logy**	**Hydric Soils**		**Additional Comments**
Z-L9-UP-01	*06-Sep-06*	*No*	*No*	No	No	Sampling point is SE of F38 in Assessment Area 2.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, M. Villarreal

Date: 17-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Shrub
Transect ID:
Plot ID: B-PU-15

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Maianthemum dilatatum	Herb	FAC	80
2. Polystichum munitum	Herb	FACU	10
3. Oemleria cerasiformis	Herb	FACU	20
4. Rubus spectabilis	Shrub	FAC+	50
5. Pseudotsuga menziesii	Tree	FACU	10
6. Acer glabrum	Tree	FAC	30
7. Alnus rubra	Tree	FAC	20
8.			

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 80%

Remarks: 80% of the dominant species are FAC. Hydrophytic vegetation is present but one dominant species is FACU and two other FACU species are present at 10%. A lot of vine maple (Acer circinatum), snowberry (Symphoricarpos albus), and Pacific bleedingheart (Dicentra formosa) are present throughout the upland area. Thimbleberry (Rubus parviflorus) noted along the roadside and just inside the wooded area.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: B-PU-15

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aqualpic haplorthods

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10YR 2/2	None	/ None	Sandy Silt
8-12	B	7.5YR 3/4	None	/ None	Sandy Silt
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located north of the beach, approximately 50 feet north of the treeline and 150 feet from Gulf Road, in assessment area 12.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 23-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: A-L05
Plot ID: A-L05-UP-010

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Rubus armeniacus	Shrub	FACU	4
2. Anthoxanthum odoratum	Herb	FACU	95
3. Dactylis glomerata	Herb	FACU	1
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0%

Remarks: The data plot was visited in January and again in March when the vegetation was in bloom to confirm species identification.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: No indicators of wetland hydrology are present.

SOILS

Plot ID: A-L05-UP-010

Map Unit Name (Series and Phase): Birchbay silt loam, 3 to 8 percent slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10YR 3/2	None	/ None	Sandy Loam
8-10	B	10YR 3/4	None	/ None	Sand
10-16	C	10YR 3/2	None	/ None	Sandy Loam
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: The soil matrix is relatively low chroma, but since redoxymorphic features are not present, it does not appear that the soils are hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Wetland indicators including vegetation, hydrology and soils are not present in the sampling point. The sampling point is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated near the wetland at the corner of Lonseth and Gulf in assessment area 9B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 23-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PEM
Transect ID: A-L05
Plot ID: A-L05-WP-12

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Agrostis capillaris	Herb	FAC	25
2. Phalaris arundinacea	Herb	FACW	25
3. Carex obnupta	Herb	OBL	25
4. Juncus effusus	Herb	FACW	25
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75%

Remarks: Most of the dominant species in the sampling point are hydrophytic. One species of dominant vegetation in the sampling point is an unidentified species of Agrostis.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

- Depth of Surface Water: None (in.)
- Depth to Free Water in Pit: 4 (in.)
- Depth to Saturated Soil: Surface (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)

Remarks: The sampling point is saturated to the surface and the depth to free water in the pit indicates that wetland hydrology is present in the sampling point.

SOILS

Plot ID: A-L05-WP-12

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR 3/1	None	/ None	Sandy Loam
5-10	A2	10YR 3/1	10YR 5/6	5% / Distinct	Sandy Loam
10-16	B	10YR 3/1	5YR 2.5/1	25% / Faint	Sandy Loam
			5YR 4/6	5% / Faint	Sandy Loam
16		10YR 4/4	None	/ None	Sand/Gravel

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma colors and redoxymorphic features in the surface layer indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland?

Remarks: The presence of hydrophytic vegetation, wetland hydrology, and hydric soils indcate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated in the wetland near the corner of Lonseth and Gulf near assessment area 2.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: A-L06
Plot ID: **A-L06-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Populus balsamifera	Tree	FAC	50
2. Alnus rubra	Tree	FAC	8
3. Acer circinatum	Tree	FAC-	5
4. Rubus spectabilis	Shrub	FAC+	45
5. Rubus armeniacus	Shrub	FACU	5
6. Athyrium filix-femina	Herb	FAC	2
7. Polystichum munitum	Herb	FACU	1
8. Ilex aquifolium	Shrub	FACU	1
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: The vegetation in the sample plot is primarily facultative, with one dominant FAC species and one dominant FAC+ species. The presence of three FACU species and one FAC- species (Acer circinatum), is generally indicative of an upland forest in the study area.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: >12 (in.)
Depth to Saturated Soil: >12 (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)

Remarks: No indicators of wetland hydrology are present.

SOILS

Plot ID: A-L06-UP-01

Map Unit Name (Series and Phase): Birchbay silt loam, 3 to 8 percent slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 3/6	None	/ None	Sandy Loam
6-12	A2	10YR 4/4	None	/ None	Sandy Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Organics present in the A Soil Horizon. Hydric soils are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Facultative vegetation is present, suggesting that the sampling point could be in a wetland, However, wetland hydrology and soils are not present in the sampling point. The sampling point is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated in the upland area at the southwest corner of the study area near assessment area 9B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: A-L06
Plot ID: A-L06-UP-02

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	60
2. Acer circinatum	Tree	FAC-	5
3. Thuja plicata	Tree	FAC	5
4. Rosa pisocarpa	Herb	FAC	3
5. Rubus armeniacus	Shrub	FACU	10
6. Polystichum munitum	Herb	FACU	3
7. Rubus ursinus	Shrub	FACU	15
8. Rubus spectabilis	Shrub	FAC+	30

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9. Ilex aquifolium	Shrub	FACU	1
10. Symphoricarpos albus	Shrub	FACU	5
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: The vegetation in the sample plot is facultative, with one dominant FAC species and one dominant FAC+ species. The presence of five FACU species and one FAC- species (Acer circinatum), is generally indicative of an upland forest in the study area.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

- Depth of Surface Water: None (in.)
- Depth to Free Water in Pit: >15 (in.)
- Depth to Saturated Soil: 10 (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)

Remarks: Although one primary iindicator of wetland hydrology is present, the data were collected following substantial rainfall in January.

SOILS

Plot ID: A-L06-UP-02

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	7.5YR 3/3	None	/ None	Silt Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: No indicators of hydric soils are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? Yes

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: The lack of hydrophytic vegetation and hydric soils indicate that the sampling point is not within a wetland. Although indicators of wetland hydrology are present, the data were collected following substantial rainfall in January. As a result, hydrology is not a strong wetland indicator.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated in the upland area at the southwest corner of the study area near assessment area 9B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: A-L06
Plot ID: A-L06-W-02

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	5
2. Rubus armeniacus	Shrub	FACU	5
3. Rubus ursinus	Shrub	FACU	5
4. Rubus spectabilis	Shrub	FAC+	5
5. Poa annua	Herb	FAC	75
6. Phalaris arundinacea	Herb	FACW	3
7. Carex obnupta	Herb	OBL	5
8. Juncus effusus	Herb	FACW	1

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: The indicator of the only dominant species is FAC. Non dominant psecies are primarily OBL, FACW or FAC. Wetland vegetation is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 3 (in.)
Depth to Saturated Soil: Surface (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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is saturated to the surface and the depth to free water in the pit indicates that wetland hydrology is present in the sampling point.

Plot ID: A-L06-W-02

SOILS

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 3/2	None	/ None	Silty Sandy Clay Loam
				/	
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Although the soils are slightly low chroma (chroma value = 2), no redoxymoprhic features are present. Therefore, the soil does not appear to be hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? Yes

Remarks: Vegetation was not a useful wetland indicator. However, because wetland hydrology was present, and the soils were questionable, it was determined that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated in the wetland at the southwest corner of the study area near assessment area 9B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: A-L06
Plot ID: A-L06-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Populus balsamifera	Tree	FAC	70
2. Alnus rubra	Tree	FAC	5
3. Rubus spectabilis	Shrub	FAC+	5
4. Polystichum munitum	Herb	FACU	1
5. Ranunculus repens	Herb	FACW	1
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: It appears that wetland vegetation is present in the sampling point. Ground cover consists of moss and leaves.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water:	0.05 (in.)
Depth to Free Water in Pit:	Surface (in.)
Depth to Saturated Soil:	Surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- [x] 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
- [x] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is inundated, saturated in the upper 12 inches, and contains water-stained leaves. Wetland hydrology is present.

SOILS

Plot ID: A-L06-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 2/1	None	/ None	
6-12	A2	10YR 3/1	None	/ None	
12-16	B	10YR 3/2	10YR 5/4	5% / Distinct	Clay Loam
			10YR 5/6	/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Although no redoximorphic features are present in the upper 10 inches of the soil matrix, the soil is low chroma which is an indicator of hydric soil.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Indicators of wetland vegetation, hydrology and soils are present. The sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated in the wetland area at the southwest corner of the study area near assessment area 9B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 26-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: A-L08
Plot ID: A-L08-UP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	40
2. Crataegus douglasii	Tree	FAC	20
3. Rubus ursinus	Shrub	FACU	40
4. Phalaris arundinacea	Herb	FACW	15
5. Rubus armeniacus	Shrub	FACU	1
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75%

Remarks: The dominant vegetation in the plot is facultative and FACU, suggestive of an upland forest. While 75% of the dominant vegetation is FAC or FACW, the species present are not typical of wetlands in the study area.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: >16 (in.)
Depth to Saturated Soil: >16 (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)

Remarks: No wetland hydrology indicators are present.

SOILS

Plot ID: A-L08-UP-01

Map Unit Name (Series and Phase): Birchbay silt loam, 3 to 8 percent slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR 3/2	None	/ None	Clay Loam
5-16	A2	10YR 3/2	7.5YR 4/6	25% / Distinct	Clay Loam
			7.5YR 5/8	5% / Distinct	
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: Redoxymorphic features in the upper 12 inches suggest that hydric soils are present in the sampling point. Moss and leaf litter cover 45% of the area of the sampling point.

WETLAND DETERMINATION

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

Is this Sampling Point Within a Wetland? No

Remarks: Whereas hydrophytic vegetation is present, the species are primarily FAC and not typical of wetland species in the study area. Wetland hydrology is not present. The soils show redox features in the upper 10 inches, but no other indicators of hydric soils are present. The sampling point is situated near the wetland line, but the sampling point is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated near the edge of a drainage and a wetland near the western property boundary south of Lonseth Road west of assessment area 8A. The sample point was not located by surveyors, so the location on the map was approximated from field notes.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 26-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: A-L08
Plot ID: **A-L08-WP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	50
2. Rubus armeniacus	Shrub	FACU	5
3. Poa annua	Herb	FAC	30
4. Carex obnupta	Herb	OBL	20
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75%

Remarks: The presence of a dominant obligate species and that 75% of the species in the plot are OBL, FACW or FAC indicate that wetland vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

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

Depth to Saturated Soil: Surface (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)

Remarks: The sampling point is saturated to the surface and the depth to free water in the pit indicates that wetland hydrology is present in the sampling point. Moss is present throughout.

SOILS

Plot ID: A-L08-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 3/2	None	/ None	Silty Sandy Loam
10-16	B	10YR 3/2	7.5YR 4/6	5% / Distinct	Silty Sandy Loam
				/	
				/	-
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Low chroma colors and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point. Pea-sized gravel is present throughout soil profile.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes
Wetland Hydrology Present? Yes
Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation, wetland hydrology and hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated south of Henry in the wetland nearest the western property boundary near assessment area 108.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 27-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: A-L11
Plot ID: A-L11-UP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Anthoxanthum odoratum	Herb	FACU	45
2. Lolium sp.	Herb	NI	25
3. Poa sp.	Herb	NI	25
4. Cirsium arvense	Herb	FACU+	2
5. Taraxacum officinale	Herb	FACU	1
6. Trifolium repens	Herb	FAC	1
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 0%

Remarks: None of the identified vegetation is OBL, FACW, or, FAC. Wetland vegetation is not dominant.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water:	None (in.)
Depth to Free Water in Pit:	>16 (in.)
Depth to Saturated Soil:	>16 (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: A-L11-UP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 3/3	None	/ None	Sandy Loam
10-16	B	10YR 4/4	None	/ None	Sandy Loam
				/	
				/	-
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present. Small gravel is present throughout the soil profile. Larger cobbles are present at 10 inches and deeper.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: While facultative species were present, much of the vegetation could not be identified to species because the field was recently mowed. The vegetation was not used as a wetland indicator. No indicators of wetland hydrology or hydric soils were present. The sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated south of Lonseth Road, slightly west of the creek in an upland field near assessment area 8A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 27-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PEM
Transect ID: A-L11
Plot ID: A-L11-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Juncus effusus	Herb	FACW	70
2. Carex obnupta	Herb	OBL	30
3. Holcus lanatus	Herb	FAC	15
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: 100% of the dominant species are OBL or FACW. Hydrophytic vegetaton is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 2.5 (in.)

Depth to Saturated Soil: Surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- [x] 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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is saturated to the surface and the shallow depth to free water in the pit indicates that wetland hydrology is present in the sampling point.

SOILS

Plot ID: A-L11-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 2/2	None	/ None	Sandy Silt Loam
				/	
				/	
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: The soil profile was homogenous throughout the 16 inch soil pit in the sampling plot. No indicators of hydric soil were apparent.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? Yes

Remarks: Wetland vegetation and hydrology are present. Although indicators of hydric soils are not present, it appears that the sampling point is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated south of Henry in the wetland nearest the western property boundary in assessment areas 8B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 29-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: A-L12
Plot ID: A-L12-UP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Rubus armeniacus	Shrub	FACU	30
2. Phalaris arundinacea	Herb	FACW	40
3. Cirsium arvense	Herb	FACU+	1
4. Symphoricarpos albus	Shrub	FACU	1
5. Unid'd grasses	Herb	NI	40
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50%

Remarks: The grass species were not identified due to the season and lack of seed heads. Of the identified vegetation, only 50 percent were FAC, FACW. Not obligate species were present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: >16 (in.)

Depth to Saturated Soil: >16 (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)

Remarks: No indicators of wetland hydrology are present.

Plot ID: A-L12-UP-01

SOILS

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-7	A	10YR 3/4	None	/ None	Silty Clay Loam
7-16	A2	10YR 4/6	None	/ None	Clay Loam
				/	
				/	-
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: One FACW species was dominant (Phalaris arunidinacea), but other species present in the sampling plot (including one dominant) were FACU. One species of dominant vegetation in the sampling point is an unidentified grass species that is likely an upland species, but remains unconfirmed due to the absence of seed heads during the January sampling. Wetland hydrology and hydric soils were not present in the sampling plot. Therefore, the sampling point is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located in the northwest corner of assessment area 3. The sampling point was not found by surveyors. The location on the map is approximate.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard

Date: 30-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: A-L19
Plot ID: A-L19-UP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Poa sp.	Herb	NI	25
2. Trifolium repens	Herb	FAC	5
3. Cirsium arvense	Herb	FACU+	5
4. Phalaris arundinacea	Herb	FACW	25
5. Juncus effusus	Herb	FACW	25
6. Dactylis glomerata	Herb	FACU	25
7. Taraxacum officinale	Herb	FACU	25
8. Rubus armeniacus	Shrub	FACU	25
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 33%

Remarks: It is highly probable that the unidientified species of Poa is an upland species. Two FACW species and three FACU species were also dominant. Hydrophytic vegetation is not dominant in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water:	None (in.)
Depth to Free Water in Pit:	>16 (in.)
Depth to Saturated Soil:	>16 (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)

Remarks: No indicators of wetland hydrology are present.

SOILS

Plot ID: A-L19-UP-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR 3/3	7.5YR 3/4	5% / Distinct	Silty Clay Loam
12-16	A2	10YR 5/4	7.5YR 4/4	25% / Distinct	Silt Loam
			10YR 6/6	25% / Distinct	
				/	-
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Few, distinct redoxymorphic features occurred in the upper 12 inches. The soil matrix is lighter than most hydric soils in the study area.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? No

Remarks: The area appears to be a small upland patch in a large wetland mosaic system. The patch of upland is large enough, that it should not be considered a part of the wetland mosaic.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located near an elevated portion of a field south of Aldergrove, near a small forested area east of Gulf Road in assessment area 3.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 29-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PEM
Transect ID: A-L19
Plot ID: A-L19-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	50
2. Unid'd grasses			40
3. Juncus effusus	Herb	FACW	5
4. Carex obnupta	Herb	OBL	5
5. Poa sp.	Herb	NI	5
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). ~100%

Remarks: The grass species were not identified due to the season and lack of seed heads. No obligate species were present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water:	Surface (in.)
Depth to Free Water in Pit:	5 (in.)
Depth to Saturated Soil:	Surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- [x] Inundated
- [x] Saturated in Upper 12 Inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patterns in Wetlands

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

Remarks: The presence of primary and secondary indicators of wetland hydrology (site is inundated, saturated in the upper 12 inches, and oxidized root channels in the upper 12 inches) suggest that wetland hydrology is present in the sampling point.

SOILS

Plot ID: A-L19-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR 2/2	None	/ None	Silty Clay
5-16	A2	10YR 2/2	7.5YR 3/4	5% / Distinct	Loam
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [x] 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
- [ ] Other (Explain in Remarks)

Remarks: Relatively low chroma colors, sulfidic odor, and redoxymorphic features in the upper 10 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Although the vegetation was not identified to species, the presence of wetland hydrology and hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located in an elevated portion of a field south of Aldergrove, near a small forested area east of Gulf Road in assessment area 3.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Kinard, J. Rock	Date: 31-Jan-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: PEM Transect ID: A-L20 Plot ID: **A-L20-WP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Ranunculus acriformis	Herb	FACW-	25
2. Juncus effusus	Herb	FACW	10
3. Festuca rubra	Herb	FAC+	25
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: The grass species were not identified due to the season and lack of seed heads.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

- Depth of Surface Water: None (in.)
- Depth to Free Water in Pit: 10 (in.)
- Depth to Saturated Soil: 5 (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)

Remarks: The presence of primary and secondary indicators of wetland hydrology (saturated in the upper 12 inches, and oxidized root channels in the upper 12 inches) suggest that wetland hydrology is present in the sampling point.

SOILS

Plot ID: A-L20-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR 3/2	7.5YR 4/6	5% / Distinct	Silt Loam
12-16	A2		10YR 5/8	25% / Distinct	Sandy Loam
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [x] Gleyed or Low-Chroma Colors
- [x] 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
- [ ] Other (Explain in Remarks)

Remarks: The generally low chroma matrix, concretions, and redoxymorphic features in the upper 10 inches indicate that hydric soils are present in the sampling point. Concretions are present in A2 soil Horizon.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?
Wetland Hydrology Present? Yes
Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Although the vegetation was not identified to species, the presence of wetland hydrology and hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is in a grazed pasture near an elevated portion of a field south of Aldergrove, near a small forested area, west of Gulf Road in assessment area 3.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Kinard, N. Tursich	Date: 05-Feb-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Upland Forest Transect ID: Plot ID: A-L24-UP-001

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1.		FAC	40
2. Alnus rubra	Shrub	FAC	2
3. Sambucus racemosa			5
4. Rubus spectabilis	Shrub	FAC+	25
5. Acer circinatum	Tree	FAC-	25
6. Betula occidentalis	Tree	FACW	10
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 66%

Remarks: Most of the vegetation in the sample plot is facultative, with one FACW species and one FAC+ species. The presence of the upland species (Sambucus) and FAC- species (Acer circinatum), is generally indicative of an upland community in the study area. As could be expected, little herbaceous vegetation occurs below the alder forest canopy.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water:	None (in.)
Depth to Free Water in Pit:	>16 (in.)
Depth to Saturated Soil:	>16 (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)

Remarks: No indicators of wetland hydrology are present, even during the rainy season.

SOILS

Plot ID: A-L24-UP-001

Map Unit Name (Series and Phase): Birchbay silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 3/3	None	/ None	Silt Loam
10-16	A2	10YR 3/3	7.5YR 4/4	15% / Faint	Silt Loam
				/	
				/	–
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Few, faint redoxymorphic features occurred below 10 inches of depth. The soil matrix is lighter than most hydric soils in the study area.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: No indicators of hydrophytic vegetation, wetland hydrology or hydric soils are present. The sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated near the power line corridor, north of Lonseth Road in Grid P-6 of Assessment Unit 4.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich, J. Rock

Date: 05-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID:
Transect ID: A-L24
Plot ID: A-L24-WP01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	75
2. Alnus rubra	Shrub	FAC	30
3. Rubus procerus	Shrub	FACU	1
4. Phalaris arundinacea	Herb	FACW	90
5. Rubus spectabilis	Shrub	FAC+	10
6. Rubus ursinus	Shrub	FACU	10
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: 100% of the dominant species are FAC or FACW. FACU species are also present in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water:	None (in.)
Depth to Free Water in Pit:	>14 (in.)
Depth to Saturated Soil:	>14 (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)

Remarks: One primary indicator (drainage patterns) is present in the sampling point.

Plot ID: A-L24-WP01

SOILS

Map Unit Name (Series and Phase): Birch bay silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	3/2	None	/ None	Silt Loam
10-14	A2	3/2	10YR 4/6	25% / Distinct	Silt Loam
			10YR 6/4	5% / Distinct	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present?

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland?

Remarks:

Approved by HQUSACE 3/92

Additional Comments:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich, J. Rock

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID:
Plot ID: A-L25-UP-001

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1.		FAC	15
2. Acer circinatum	Tree	FAC-	5
3. Symphoricarpos albus			25
4. Rubus spectabilis	Shrub	FAC+	10
5. Polystichum munitum	Herb	FACU	2
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0%

Remarks: Wetland vegetation is not dominant in the sampling point.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: No indicators of wetland hydrology are present, even during the rainy season.

SOILS

Plot ID: A-L25-UP-001

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	7.5YR 4/4	None	/ None	Silt Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soils are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: No indicators of wetland vegetation, hydrology or soils are present. The sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located south of Lonseth Road, west of Gulf, in assessment area 8.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich, J. Rock

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID:
Plot ID: A-L25-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1.		FAC	80
2. Rubus spectabilis	Shrub	FAC+	50
3. Carex obnupta			70
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: The plot is dominated by hydrophytic vegetation, including an obligate species.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

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

Wetland Hydrology Indicators:

Primary Indicators:
- [x] 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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is inundated with water. Wetland hydrology is present in February, and likely remains throughout the growing season.

SOILS

Plot ID: A-L25-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 3/1	None	/ None	Silty Clay Loam
				/	
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Although no redoximorphic features are present, the soil is low chroma which is an indicator of hydric soil.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Indicators of wetland vegetation, hydrology and soils are present. The sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is in the wetland south of Lonseth, west of Gulf in assessment area 8.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, J. Rock

Date: 05-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site? Yes
Is the site significantly disturbed (Atypical Situation)? No
Is the area a potential Problem Area? No
(If needed, explain on reverse.)

Community ID: Upland Forest
Transect ID:
Plot ID: A-L26-UP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1.			
2. Alnus rubra	Tree	FACW	45
3. Rubus spectabilis		FAC	10
4. Rubus armeniacus	Shrub	FACU	45
5.			5
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Species in the sampling point were primarily facultative. One FACW Species was dominant, but in general, hydrophytic vegetation is not dominant in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: None (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)

Remarks: No indicators of wetland hydrology are present, even during the rainy season.

SOILS

Plot ID: A-L26-UP-01

Map Unit Name (Series and Phase): Kickerville silt loam

Drainage Class: well drained

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-2	O		None	/ None	
2-4	A	10YR 3/1	None	/ None	Silt Loam
4-10	A2	7.5YR 4/4	None	/ None	Silt Loam
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: No indicators of hydric soils are present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: No indicators of hydrophytic vegetation, wetland hydrology or hydric soils are present. The sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located in upland near the wetland B-L26. No herbaceous vegetation occurs below the forest canopy. The plot is located north of Henry road, just west of the boundary with the portion of the study area that is excluded from the property in assessment area 5A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich, J. Rock

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: A-L27
Plot ID: A-L27-UP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Acer macrophyllum	Tree	FACU	45
2. Acer circinatum	Tree	FAC-	30
3. Alnus rubra	Tree	FAC	30
4. Betula papyrifera	Tree	FAC	10
5. Rubus spectabilis	Shrub	FAC+	25
6. Ribes lacustre	Shrub	FAC+	1
7. Ribes sp.	Shrub	NI	5
8. Polystichum munitum	Herb	FACU	5
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 10%

Remarks: The plot consists of 95% bare ground. Only 10% of the species identified are hydrophytic. Wetland vegetation is not present in the sampling point.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: >10 (in.)
Depth to Saturated Soil: 12 (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)

Remarks: The soil is not saturated to the surface, even during the month of February. The free water in the pit is primariliy the result of surface flow. The depth of the free water in pit is greater than 10 inches. Wetland hydrology is not present in the sampling point.

SOILS

Plot ID: A-L27-UP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	O		None	/ None	
3-5	A	10YR 2/1	None	/ None	
5-16	B	7.5YR 4/2	None	/ None	Sandy Clay Loam
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: No redoxymorphic features were present in the soil pit. A narrow horizon of low chroma colors was present (A), however, it does not appear that the soils are hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Wetland vegetation, hydrology and soils are not present. The sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated near the wetland that begins on the northeast portion of the exclusion area, south of Lonseth Road, just west of the Railroad tracks in assessment area 5B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich, J. Rock

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PEM
Transect ID:
Plot ID: A-L27-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	30
2. Unid'd grasses	Herb	NI	70
3.			
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 50%

Remarks: Vegetation in the sampling point was difficult to identify to species because it was recently mowed. It appears that wetland vegetation may be present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

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

Wetland Hydrology Indicators:

Primary Indicators:
- [x] Inundated
- [x] Saturated in Upper 12 Inches
- [ ] Water Marks
- [x] Drift Lines
- [x] 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)

Remarks: Primary indicators of wetland hydrology (site is inundated, saturated in the upper 12 inches, drift lines and sediment deposits) suggest that wetland hydrology is present in the sampling point.

SOILS

Plot ID: A-L27-WP-01

Map Unit Name (Series and Phase): Kickerville silt loam

Drainage Class: well drained

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	O		None	/ None	
6-16	A	10YR 2/2	10YR 4/6	30% / Distinct	Silt Loam
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [x] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: A six inch layer of organic material was apparent at the surface. Below 6 inches, the matrix was low chroma, and mottles were comman and distinct.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation, wetland hydrology, and hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located in Assesment area 5A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich, J. Rock

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID:
Plot ID: A-L27-WP-02

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1.		FAC	80
2. Acer circinatum	Tree	FAC-	30
3. Rubus spectabilis			30
4. Carex obnupta	Herb	OBL	90
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75%

Remarks: The plot is dominated by hydrophytic vegetation, including an obligate species.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: 2 (in.)

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

Depth to Saturated Soil: Surface (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)

Remarks: The sampling point is inundated. Wetland hydrology is present.

SOILS

Plot ID: A-L27-WP-02

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 3/1	None	/ None	Silt Loam
6-16	A2	10YR	10YR 4/6	/ Distinct	Sandy Loam
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [x] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: The soil contains a sulfidic odor, low-chroma colors andd distinct mottles, indicating that the soil is hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The sampling point contains wetland vegetation, wetland hydrology and hydric soils. Therefore, the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated in the wetland that begins on the northeast portion of the exclusion area, south of Lonseth Road, just west of the Railroad tracks in Assesment area 5A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: A-L07
Plot ID: A-L7-UP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	70
2. Thuja plicata	Tree	FAC	5
3. Rubus spectabilis	Shrub	FAC+	60
4. Rosa gymnocarpa	Shrub	FACU	3
5. Rubus armeniacus	Shrub	FACU	15
6. Crataegus douglasii	Tree	FAC	5
7. Polystichum munitum	Herb	FACU	5
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: The vegetation in the sample plot is primarily facultative, with one dominant FAC species and one dominant FAC+ species. The presence of three FACU species is generally indicative of an upland forest in the study area.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: >16 (in.)
Depth to Saturated Soil: >16 (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)

Remarks: No indicators of wetland hydrology are present.

SOILS

Plot ID: A-L7-UP-01

Map Unit Name (Series and Phase): Birchbay silt loam, 3 to 8% slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	7.5YR 3/2	None	/ None	Sandy Loam
10-16	A2	7.5YR 3/3	None	/ None	Sandy Clay Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil matrix is relatively low chroma in the upper 10 inches, but since redoxymorphic features are not present, it does not appear that they soils are hydric. The soils appear to have high organics in the A horizon, however the texture is sandy and no odor was detected.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: No indicators of hydrophytic vegetation, wetland hydrology or hydric soils were present in the sampling point. The sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located near the western boundary of the project area, along the diagonal property boundary north of Henry Road, near assessment area 98.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site? Yes
Is the site significantly disturbed (Atypical Situation)? No
Is the area a potential Problem Area? No
(If needed, explain on reverse.)

Community ID: PFO
Transect ID: A-L07
Plot ID: A-L7-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	70
2. Thuja plicata	Herb	FAC	1
3. Ilex aquifolium	Shrub	FACU	3
4. Polystichum munitum	Herb	FACU	1
5. Carex obnupta	Herb	OBL	1
6. Rubus spectabilis	Shrub	FAC+	60
7. Symphoricarpos albus	Shrub	FACU	10
8. Rubus armeniacus	Shrub	FACU	5

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9. Rosa pisocarpa	Shrub	FAC	1
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: The dominance of a FAC and FAC+ species and the presence of an OBL species (Carex obnupta) indicate that wetland vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 2 (in.)

Depth to Saturated Soil: Surface (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)

Remarks: The sampling point is saturated to the surface and the depth to free water in the pit indicates that wetland hydrology is present in the sampling point.

SOILS

Plot ID: A-L7-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	7.5YR 3/2	None	/ None	
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Although the soils are somewhat low chroma (chroma value = 2), no redoxymoprhic features are present. Therefore, the soil noes not appear to be hydric.

WETLAND DETERMINATION

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

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation and hydrology indcate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located near the western boundary of the project area, along the diagonal property boundary north of Henry Road, near assessment area 9B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, N. Tursich

Date: 23-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PSS
Transect ID: A-L05
Plot ID: A-L-WP-10

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Rubus armeniacus	Shrub	FACU	100
2. Alnus rubra	Tree	FAC	100
3.			
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50%

Remarks: It appears that wetland vegetation is present in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

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

Depth to Saturated Soil: Surface (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)

Remarks: The soil is saturated in the upper 12 inches and the depth of free water in pit is 5 inches. It appears that wetland hydrology is present in the sampling point.

SOILS

Plot ID: A-L-WP-10

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 3/2	None	/ None	Sandy Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Although the soils are slightly low chroma (chroma value = 2), no redoxymoprhic features are present. Therefore, the soil does not appear to be hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation and hydrology may indcate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated in the wetland, near the corner of Lonseth and Gulf in assessment area 9.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, V. Mead

Date: 12-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PSS
Transect ID: L-03
Plot ID: A-UP-07

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Acer macrophyllum	Tree	FACU	60
2. Populus tremuloides	Tree	FAC+	15
3. Acer circinatum	Tree	FAC-	30
4. Rubus spectabilis	Shrub	FAC+	10
5. Polystichum munitum	Herb	FACU	10
6. Rubus parviflorus	Shrub	FAC-	20
7. Athyrium filix-femina	Herb	FAC	10
- Bare ground			80

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 29%

Remarks: Fewer than 50% of the dominant species are OBL, FACW, or FAC

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: none (in.)

Depth to Free Water in Pit: none (in.)

Depth to Saturated Soil: none (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)

Remarks:

SOILS

Plot ID: A-UP-07

Map Unit Name (Series and Phase): Birchbay silt loam, 0 to 3% slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	A	7.5YR 2.5/2	None	/ None	Loam
3-18	B	10YR 3/2	10YR 5/2	3% / Faint	Sandy Loam
			7.5YR 5/8	25% / Distinct	Sandy Loam
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: The presence of redox features in the upper 12 inches indicate that hydric soils are present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? No

Remarks: The lack of hydrophytic vegetation or wetland hydrology indicate that the sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located west of A-L03-F10. It is situated in the northeast corner of assessment area 3, and is representative of wetland communities in that area.

SOILS

Plot ID: A-UP-P5

Map Unit Name (Series and Phase):

Drainage Class:

Taxonomy (Subgroup):

Field Observations Confirm Mapped Type?

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A1	10YR 3/2	None	/ None	Silt Loam
10-12	A2	10YR 2/2	None	/ None	Silt Loam
12-18	B	10YR 4/2	10YR 2/2	40% / Faint	Silt Loam
			10YR 4/4	3% / Distinct	Silt Loam
			10YR 4/6	3% / Faint	Silt Loam

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
- ☐ Other (Explain in Remarks)

Remarks: There are no indicators of hydric soils in the upper 12 inches of the soil profile. The surface layer contains approximately 1 inch of organic leaf on top of soil.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: No indicators of wetland vegetaion, wetland hydrology or hydric soils are present. The sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is in Assessment area 2, near the eastern boundary of the unit. The sampling point is representative of other upland areas in the the assessment aresa.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Kinard, M. Villarreal

Date: 12-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: L-02
Plot ID: A-WP-04

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	90
2. Rubus spectabilis	Shrub	FAC+	25
3. Spiraea douglasii	Shrub	FACW	40
4. Geum macrophyllum	Herb	FACW-	20
5. Ranunculus repens	Herb	FACW	20
6. Veronica americana	Herb	OBL	20
7. Carex obnupta	Herb	OBL	20
8. Poa annua	Herb	FAC	80

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Oemleria cerasiformis (FACU) is also present in the sampling plot at less than 20%. 100% of the dominant species are FAC, FACW, or OBL. Hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: 10 (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)

Remarks: The sampling point is saturated in the upper 12 inches, indicating that wetland hydrology is present in the sampling point.

SOILS

Plot ID: A-WP-04

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	A	10YR 3/2	None	/ None	
3-18	A2	2.5YR 3/2	10YR 5/6	35% /	Silt Loam
			10YR 4/6	5% /	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [x] Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is located close to Lonseth at the northwest corner of Lonseth and Gulf, in assessment area 2.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, V. Mead

Date: 12-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: L03
Plot ID: A-WP06

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	60
2. Populus balsamifera	Tree	FAC	20
3. Thuja plicata	Tree	FAC	20
4. Acer circinatum	Tree	FAC-	10
5. Rubus spectabilis	Shrub	FAC+	10
6. Lonicera involucrata	Shrub	FAC+	10
7. Cornus sericea	Shrub	FACW	20
8. Spiraea douglasii	Shrub	FACW	10

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9. Polystichum munitum	Herb	FACU	10
10. Glyceria elata	Herb	FACW+	60
11. Phalaris arundinacea	Herb	FACW	10
12. Carex obnupta	Herb	OBL	10
13. Ranunculus acris	Herb	FACW-	10
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: 100% of the dominant species are FAC or FACW. Hydrophytic vegetation is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water:	None (in.)
Depth to Free Water in Pit:	3 (in.)
Depth to Saturated Soil:	Surface (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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is saturated to the surface and contains free water in the pit. Wetland hydrology is present in the sampling point.

SOILS

Plot ID: A-WP06

Map Unit Name (Series and Phase): Birchbay Silt Loam, 0 to 3 percent slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthodslopes

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	A	10YR 2/1	None	/ None	Silt
3-12	B	10YR 4/1	10YR 6/6	3% /	Silty Clay
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located just east of A-L03-F10 in northeast corner of assessment area 3.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: E. Hale, M. Villarreal	Date: 14-Jun-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Upland Forest Transect ID: B-L02 Plot ID: B-L02-PU-06

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	40
2. Populus balsamifera	Tree	FAC	20
3. Rubus spectabilis	Shrub	FAC+	40
4. Rubus parviflorus	Shrub	FAC-	10
5. Rubus discolor	Shrub	FACU	10
6. Oemleria cerasiformis	Herb	FACU	10
7. Symphoricarpos albus	Shrub	FACU	10
8. Rubus ursinus	Shrub	FACU	20
9. Polystichum munitum	Herb	FACU	15
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75%

Remarks: 75% of the dominant species are FAC or FAC+. Hydrophytic vegetation is present but no FACW or OBL species are present. One FACU species (Rubus ursinus) is dominant with many other FACU species present at 10% to 15%.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: B-L02-PU-06

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-13	A	7.5YR 3/2	None	/ none	Silt Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is located east of the wetland in assessment area 7A. The data plot was not located by surveyors, so the location of the data plot was estimated.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, M. Villarreal

Date: 14-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PSS
Transect ID: B-L02
Plot ID: B-L02-PW-05

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	75
2. Spiraea douglasii	Shrub	FACW	40
3. Lonicera involucrata	Shrub	FAC+	20
4. Symphoricarpos albus	Shrub	FACU	15
5. Carex obnupta	Herb	OBL	90
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: 100% of the dominant species are FAC, FACW, or OBL. Hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: None (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)

Remarks: Only one secondary indicator of wetland hydrology is present but sampling point was observed in mid-June. This area may show additional indicators of wetland hydrology during the growing season.

SOILS

Plot ID: B-L02-PW-05

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10YR 2/1	None	/ None	Clay Loam
8-12	B	10YR 4/1	10YR 7/8	5% / Faint	Clay Loam
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

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

Is this Sampling Point Within a Wetland? Yes

Remarks: Wetland hydrology is not present due to seasonal dryness. Area is assumed to be in a wetland due to presence of hydrophytic vegetation and hydric soils.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located approximately 150 feet northwest of B-L02-F157 in assessment area 7A. The sampling point was not located by surveyors, so the location of the sampling point was estimated.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale

Date: 12-Jun-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Shrub
Transect ID: B-L03
Plot ID: **B-L03-4U**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Maianthemum dilatatum	Herb	FAC	70
2. Rubus spectabilis	Shrub	FAC+	20
3. Sorbus aucuparia	Tree	UPL	20
4. Sambucus racemosa	Shrub	FACU	20
5. Rubus parviflorus	Shrub	FAC-	20
6. Acer circinatum	Tree	FAC-	20
7. Alnus rubra	Tree	FAC	75
8. Dryopteris expansa	Herb	UPL	25

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9. Polystichum munitum	Herb	FACU	
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 38%

Remarks: Also present nearby is holly (Ilex aquifolia), sword fern (Polystichum munitum), and snowberry (Symphoricarpos albus). Only 38% of the dominant species are FAC or FAC+. Other dominant vegetation includes FAC-, FACU, and UPL species. Wetland vegetation does not appear to be dominant in this sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: B-L03-4U

Map Unit Name (Series and Phase): Birchbay silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-14	A	10YR 2/2	None	/ None	Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Samping point is located near B-L03-F160 (or F60) in assessment area 1. The sampling point was not located by surveyors, but it is representative of the upland area near the northwestern property boundary.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, M. Villarreal

Date: 10-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: B-L04
Plot ID: B-L04-1W

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Ranunculus acris	Herb	FACW-	20
2. Rubus spectabilis	Shrub	FAC+	20
3. Phalaris arundinacea	Herb	FACW	20
4. Carex sp.	Herb	NI	20
5. Carex obnupta	Herb	OBL	20
6. Urtica dioica	Herb	FAC+	20
7. Populus tremuloides	Tree	FAC+	20
8. Alnus rubra	Tree	FAC	75

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9. Populus balsamifera	Tree	FAC	20
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 89%

Remarks: Lady fern (Athyrium filix-femina), Indian plum (Oemleria cersiformis), and red elderberry (Sambucus racemosa) are also presen, along with moss at the bottom of the trees. 89% of the dominant species are FAC, FACW, or OBL. Hydrophytic vegetation is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: None (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [ ] Saturated in Upper 12 Inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [x] Drainage Patterns in Wetlands

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

Remarks: The sampling point is located within 25 feet of standing water. Indicators present include drainage patterns (indicated by old road beds) and water-stained leaves. The sampling point was observed in mid-June and may show additional indicators of wetland hydrology during earlier parts of the growing season.

SOILS

Plot ID: B-L04-1W

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 3/1	None	/ None	Silt Loam
6-13	B	10YR 4/2	7.5YR 4/6	30% /	Silt
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation, wetland hydroogy and hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located between Lonseth and Aldergrove, west of Gulf, and southwest of B-L03-B125 in assessment area 1, at the north end of the parcel near the western property boundary.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: E. Hale, M. Villarreal	Date: 10-Jun-06 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Upland Forest Transect ID: B-L04 Plot ID: B-L04-PU-02

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	75
2. Sorbus aucuparia	Tree	UPL	20
3. Rubus spectabilis	Shrub	FAC+	20
4. Sambucus racemosa	Shrub	FACU	20
5. Symphoricarpos albus	Shrub	FACU	20
6. Maianthemum dilatatum	Herb	FAC	75
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50%

Remarks: Black twinberry (Lonicera involucrata, FAC+), is also present in the area. 50% of the dominant species are FAC or FAC+. The other dominant species are FACU and UPL.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: B-L04-PU-02

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	7.5YR 2.5/3	None	/ None	Silt Loam
8-16	A	7.5YR 2.5/3	7.5YR 4/6	50% / Prominent	Silt Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Redoximorphic features are present in the upper 12 inches, but the soils do not exhibit low chroma color, indicating that hydric soils are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located southeast of B-L04-F02, near the western property boundary, in assesment area 1.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, M. Villarreal

Date: 14-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: B-L05
Plot ID: B-L05-PW-07

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	50
2. Populus balsamifera	Tree	FAC	10
3. Lonicera involucrata	Shrub	FAC+	20
4. Rubus spectabilis	Shrub	FAC+	20
5. Acer circinatum	Tree	FAC-	10
6. Rosa nutkana	Shrub	FAC	10
7. Carex obnupta	Herb	OBL	30
8. Phalaris arundinacea	Herb	FACW	10

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9. Carex sp.	Herb	NI	30
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 80%

Remarks: 80% of the dominant species are FAC, FACW, or OBL. Hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: Surface (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)

Remarks: Wetland hydrology indicators are present.

SOILS

Plot ID: B-L05-PW-07

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	7.5YR 3/1	7.5YR 6/6	15% / Faint	Clay Loam
6-12	B	10YR 5/2	10YR 6/8	40% /	Silt Loam
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 10 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes
Wetland Hydrology Present? Yes
Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located between Aldergrove and Loneseth, west of the pipeline, and 25 feet south of B-L05-F23 in assessment area 3. The sampling point is near the historic drainage where it opens up into a larger wetland area.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, M. Villarreal

Date: 13-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: B-L06
Plot ID: B-L06-PW8

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	55
2. Rubus spectabilis	Shrub	FAC+	30
3. Lysichiton americanum	Herb	OBL	40
4. Athyrium filix-femina	Herb	FAC	30
5. Oemleria cerasiformis	Herb	FACU	20
6. Polystichum munitum	Herb	FACU	20
7. Acer circinatum	Tree	FAC-	20
8. Ranunculus acris	Herb	FACW-	40

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9. Veronica americana	Herb	OBL	50
10. Claytonia lanceolata	Herb	FAC-	20
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 60%

Remarks: 60% of the dominant species are FAC, FACW, or OBL. Hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: 1 (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)

Remarks: The historic drainage is 3 to 4 feet wide on average and banks are 6 inches high. Wetland hydrology indicators are present.

SOILS

Plot ID: B-L06-PW8

Map Unit Name (Series and Phase): Birchbay silt loam, 0 to 3 percent slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12	A	7.5YR 2.5/1	None	/ None	Silt Loam
				/	
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Pebbles were observed throughout the soil profile. Low chroma color indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is between B-L06-F56 and B-L05-F112 in the historic drainage associated with assessment area 3.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, M. Villarreal

Date: 15-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: B-L06
Plot ID: B-L-06-UP-11

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	75
2. Ilex aquifolium	Shrub	NI	10
3. Acer circinatum	Tree	FAC-	10
4. Holodiscus discolor	Shrub	UPL	10
5. Rubus spectabilis	Shrub	FAC+	40
6. Symphoricarpos albus	Shrub	FACU	10
7. Polystichum munitum	Herb	FACU	10
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: 100% of dominant species are FAC or FAC+. Hydrophytic vegetation is present. Other species present (all at 10%) are FAC-, FACU, and UPL.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: B-L-06-UP-11

Map Unit Name (Series and Phase): Birchbay silt loam, 0 to 3 percent slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-9	A	10YR 3/2	None	/ None	Loam
9-14	A2	10YR 5/3	None	/ None	Sandy Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located approximately 15 feet south of A-L06-F4 in assessment area 3.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, K. Dunkin

Date: 16-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PEM
Transect ID: Field "N"
Plot ID: B-N-PW-12

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Carex obnupta	Herb	OBL	30
2. Juncus ensifolius	Herb	FACW	30
3. Juncus effusus	Herb	FACW	20
4. Alopecurus pratensis	Herb	FACW	10
5. Cirsium arvense	Herb	FACU+	15
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: 100% of the dominant species are FACW or OBL. Hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: 14 (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)

Remarks: Soils were moist to the surface but only saturated up to 14 inches. The sampling point was observed in mid-June and may show additional indicators of wetland hydrology during earlier parts of the growing season.

SOILS

Plot ID: B-N-PW-12

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	2.5Y 2.5/1	None	/ None	Silt Loam
9-15	B	2.5Y 5/2	7.5Y 5/4	40% /	Silt Loam with fine gravels
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Fine roots present in the A Horizon and root channels in the B Horizon. Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

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

Is this Sampling Point Within a Wetland? Yes

Remarks: Hydrophytic vegetation and low chroma soils indicate that the sampling point is within a wetland. Wetland hydrology is not present due to seasonal dryness.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is in the westernmost field in assessment area 9A. The sample point was not located by surveyors, so the location was approximated from field notes.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, J. Rock

Date: 30-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: B-L08
Plot ID: B-PU-20

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Symphoricarpos albus	Shrub	FACU	15
2. Dactylis glomerata	Herb	FACU	40
3. Agrostis sp.	Herb	NI	10
4. Rubus ursinus	Shrub	FACU	5
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: One dominant species in the sampling point is an unidentified Agrostis that is likely upland, but remains unconfirmed due to the absence of seed heads during the January sampling. All other species, including the dominant species (Dactylis glomerata), are FACU. Hydrophytic vegetation is not present in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: B-PU-20

Map Unit Name (Series and Phase): Birchbay silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 3/4	10YR 5/8	3% / Faint	Sandy Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: High chroma color indicates non-hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: The lack of hydrophytic vegetation, wetland hydrology, and hydric soils indicate that the sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The samplint point is located in assessment area 3, slighlty west of the historic drainage.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, J. Rock, E. Christensen

Date: 01-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID:
Plot ID: B-PU-23

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Rubus discolor	Shrub	FACU	10
2. Rubus spectabilis	Shrub	FAC+	70
3. Alnus rubra	Tree	FAC	90
4.			
5.			
6.			
7.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: 100% of dominant vegetation is FAC or FAC+. Hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: B-PU-23

Map Unit Name (Series and Phase): Birchbay silt loam, 3 to 8 percent slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	O	10YR 2/1	None	/ None	
3-14	A	10YR 3/3	None	/ None	Silt Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of wetland hydrology and hydric soils, it is determined that this data plot is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Ilex aquifolium and Polystichum munitum, among other species, are present further upland. The ground is covered with dead leaves and little vegetation is present. Soil pit was dug on the bank of the pond, approximately 15 feet from water's edge. Sampling point is located in assessment area 13F.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, J. Rock

Date: 01-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: B-L24
Plot ID: **B-PU-25**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	65
2. Alnus rubra	Shrub	FAC	10
3. Rubus spectabilis	Shrub	FAC+	25
4. Polystichum munitum	Herb	FACU	5
5. Ilex aquifolium	Shrub	NI	1
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: 100% of the dominant species are FAC or FAC+. Hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: B-PU-25

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? N/A

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	O			/	
3-16	A			/	Sand
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil profile could not be completed due to heavy concentration of roots within the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? NA

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of wetland hydrology, it is determined that this data plot is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located within the cluster of small wetlands located along the drainage north of the beach and east of Gulf Road, towards the northern property boundary, in assessment area 13D. It is east of sampling point B-PW26.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, M. Villarreal

Date: 17-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PEM
Transect ID: Near Shore
Plot ID: B-PW-14

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Rosa pisocarpa	Shrub	FAC	20
2. Spiraea douglasii	Shrub	FACW	20
3. Typha latifolia	Herb	OBL	30
4. Scirpus microcarpus	Herb	OBL	20
5. Eleocharis palustris	Herb	OBL	20
6. Potentilla anserina	Herb	OBL	30
7. Carex obnuota	Herb	OBL	10
8. Distichlis spicata	Herb	FACW	20
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: 100% of dominant species are FAC, FACW, or OBL. Hyrophytic vegetation is dominant.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

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

Wetland Hydrology Indicators:

Primary Indicators:
- [x] Inundated
- [x] Saturated in Upper 12 Inches
- [ ] Water Marks
- [x] Drift Lines
- [x] Sediment Deposits
- [x] 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)

Remarks: Wetland hydrology indicators are present.

SOILS

Plot ID: B-PW-14

Map Unit Name (Series and Phase): Neptune very gravelly sandy loam, 0 to 3% slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Entic haploxerolls

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-14	O	7.5YR 2.5/3	None	/ None	Peat-like
				/	
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [x] 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
- [ ] Other (Explain in Remarks)

Remarks: Soil is highly organic humus and standing water is present. Hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point Is located approximately 25 feet south of the shrub line and 100 feet east of Gulf Road, in the Coastal Lagoon, assessment area 12.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, M. Villarreal

Date: 17-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID:
Plot ID: B-PW-16

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Lysichiton americanum	Herb	OBL	20
2. Maianthemum dilatatum	Herb	FAC	20
3. Equisetum telmateia	Herb	FACW	5
4. Athyrium filix-femina	Herb	FAC	10
5. Dicentra formosa	Herb	FACU	25
6. Cornus stolonifera	Herb	FACW	20
7. Rubus spectabilis	Shrub	FAC+	40
8. Alnus rubra	Tree	FAC	60
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 83%

Remarks: 83% of the dominant species are FAC, FACW, or OBL. Hydrophytic vegetation is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

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

Wetland Hydrology Indicators:

Primary Indicators:
- [x] Inundated
- [x] Saturated in Upper 12 Inches
- [ ] Water Marks
- [x] Drift Lines
- [ ] Sediment Deposits
- [x] 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)

Remarks: Wetland hydrology indicators are present.

SOILS

Plot ID: B-PW-16

Map Unit Name (Series and Phase): Birchbay silt loam, 3 to 8 percent slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	7.5YR 2.5/1	None	/ None	Silt
				/	
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [x] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color and the presence of a sulfidic odor indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes
Wetland Hydrology Present? Yes
Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located approximately 50 feet west of Gulf Road and 150 feet north of the tree line and is flagged from the road in assessment area 12.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, J. Rock

Date: 30-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PEM
Transect ID: B-L09
Plot ID: B-PW-17

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	90
2. Rubus armeniacus	Shrub	FACU	3
3.			
4.			
5.			
6.			
7.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: 100% of dominant vegetation is FACW. Hydrophytic vegetation is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 12 (in.)
Depth to Saturated Soil: 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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The point was sampled during a wet time of the year with recent heavy rainfall. The soils are not inundated nor saturated above 10 inches and may not meet wetland criteria during the growing season.

SOILS

Plot ID: B-PW-17

Map Unit Name (Series and Phase): Birchbay silt loam, 0 to 3 percent slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR 4/2	None	/ None	Silt Loam
4-16	A2	10YR 3/2	7.5YR 4/6	5% / Distinct	Silt Loam
				/	
				/	-
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [ ] Gleyed or Low-Chroma Colors
- [x] 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
- [ ] Other (Explain in Remarks)

Remarks: Relatively low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The combination of hydrophytic vegetation, soil saturation to the surface and inundation, and presence of hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point connects to creek, loop A L06. The sampling point is in assessment area 13.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, J. Rock, E. Christensen

Date: 01-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: B-L11
Plot ID: B-PW-22

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	40
2. Rubus spectabilis	Shrub	FAC+	75
3. Alnus rubra	Tree	FAC	90
4.			
5.			
6.			
7.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75%

Remarks: Indicators for Glyceria species occurring in the region are FACW+ or OBL. The indicator for Phalaris arundinacea is FACW. The other dominant species are FAC and FAC+. Hydrophytic vegetation is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

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

Depth to Saturated Soil: Surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [x] Saturated in Upper 12 Inches
- [x] 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)

Remarks: The sampling point is saturated to the surface and the depth to free water in the pit and the presence of water marks indicates that wetland hydrology is present in the sampling point.

SOILS

Plot ID: B-PW-22

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-2	O	10YR 2/1	None	/ None	
2-8	A	10YR 3/2	None	/ None	Loam
8-16	B	2.5Y 4/3	5YR 5/3	5% /	Clay Loam
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [x] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Hydric soil indicators are present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Soil pit was dug approximately 2 feet from a pond. Roots and rocks in soil horizons and the B-horizon had redox features. The sampling point is in assessment area 13.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: J. Rock, E. Christensen

Date: 01-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PEM
Transect ID: B-L18
Plot ID: B-PW23

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Glyceria elata	Herb	FACW+	75
2. Lysichiton americanum	Herb	OBL	10
3. Boykinia elata	Herb	FAC	15
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: Indicators for Glyceria species occurring in the region are FACW+ or OBL. The indicator for Phalaris arundinacea is FACW. Considering an obligate species (Lysichiton americanum) is present at 15%, hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

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

Depth to Saturated Soil: Surface (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)

Remarks: The sampling point is saturated to the surface and contains free water in the pit to the surface. Wetland hydrology is present in the sampling point.

SOILS

Plot ID: B-PW23

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR 3/1	None	/ None	Silt Loam
12-16	B	10YR 4/1	None	/ None	Sand
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes
Wetland Hydrology Present? Yes
Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Soil pit was dug at the confluence of two drainage channels in assessment area 13A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: E. Hale, J. Rock	Date: 30-Jan-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: PEM Transect ID: B-L05 Plot ID: PW-18

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	98
2. Carex obnupta	Herb	OBL	2
3.			
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: 100% of dominant vegetation is FACW and an obligate species is present. Hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: 1 (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)

Remarks: The sampling point inundated. Wetland hydrology is present.

SOILS

Plot ID: PW-18

Map Unit Name (Series and Phase): Birchbay silt loam, 0 to 3 percent slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 4/2	None	/ None	Organincs with Silt
6-16	B	10YR 4/2	7.5YR 4/6	5% /	Silt
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The combination of hydrophytic vegetation, inundation, and presence of hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is in assessment are 3.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Hale, J. Rock, E. Christensen

Date: 01-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: B-L24
Plot ID: PW-26

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	10
2. Oemleria cerasiformis	Herb	FACU	1
3. Rubus spectabilis	Shrub	FAC+	1
4. Carex obnupta	Herb	OBL	90
5. Polystichum munitum	Herb	FACU	2
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: 100% of the dominant species are OBL. Hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: 8 (in.)
Depth to Free Water in Pit: surface (in.)
Depth to Saturated Soil: surface (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)

Remarks: The sampling point is inundated with 8" of water. Wetland hydrology is present in the sampling point.

SOILS

Plot ID: PW-26

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
				/	
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil profile could not be completed due to complete inundation of the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present?

Is this Sampling Point Within a Wetland?

Remarks:

Approved by HQUSACE 3/92

Additional Comments: The sampling point is in assessnent area 13.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, J. Leach	Date: 16-Jul-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: PEM Transect ID: Plot ID: WP-AD-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	100
2.			
3.			
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks:

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: none (in.)

Depth to Free Water in Pit: none (in.)

Depth to Saturated Soil: none (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)

Remarks: No indicators of wetland hydrology

SOILS

Plot ID: WP-AD-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 3/1		/	Silt Loam
13-16	A	10YR 3/1	10YR 8/3	/	Silt Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Some charcoal was present in the soil taken from the sample pit. Additionally, there were a few areas where depletions were present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present?

Is this Sampling Point Within a Wetland?

Remarks:

Approved by HQUSACE 3/92

Additional Comments:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, J. Leach	Date: 16-Jul-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: PFO Transect ID: N/A Plot ID: WP-AD-02

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Equisetum arvense	Herb	FAC	25
2. Phalaris arundinacea	Herb	FACW	25
3. Rubus procerus	Shrub	FACU	
4. Alnus rubra	Tree	FAC	40
5. Agrostis - bent grass	Herb	FAC	45
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: Carex abrupta, an upland species, was also present outside of the sample plot.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☐ 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)

Remarks: The data was taken in July when no hydrology was present throughout the study area.

SOILS

Plot ID: WP-AD-02

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-11	A	10YR 3/2	None	/ None	Silt Loam
11-18	B	10YR 3/2	10YR 4/3	10% /	Silt Loam
			7.5YR 4/4	15% /	Silt Loam
			7.5YR 3/4	15% /	Silt Loam
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Soils are moist throughout the soil profile, but not saturated.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks:

Approved by HQUSACE 3/92

Additional Comments:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Chambers, M. Villarreal

Date: 09-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: L-01
Plot ID: Z-L01-P-03

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	60
2. Symphoricarpos albus	Shrub	FACU	60
3. Rubus spectabilis	Shrub	FAC+	40
4. Pteridium aquilinum	Herb	FACU	20
5. Dicentra formosa	Herb	FACU	20
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 40%

Remarks: Sword fern (Polystichum munitum) is also present close to sampling point. Only 40% of dominant species are FAC or FAC+. Hydrophytic vegetation is not dominant in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: Z-L01-P-03

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	O		None	/ None	
3-16	A	7.5YR 3/4	None	/ None	
				/	
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is representative of the upland community in the sothwest portion of assessment area 2.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Chambers, M. Villarreal

Date: 09-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: Z-L01
Plot ID: **Z-L01-PU-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	75
2. Sambucus racemosa	Shrub	FACU	25
3. Oemleria cerasiformis	Herb	FACU	25
4. Rubus spectabilis	Shrub	FAC+	25
5. Polystichum munitum	Herb	FACU	25
6. Dryopteris expansa	Herb	UPL	25
7. Maianthemum dilatatum	Herb	FAC	25
8. Symphoricarpos albus	Shrub	FACU	25

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 38%

Remarks: 38% of dominant species are FAC. All other dominant species are FACU or UPL. Wetland vegetation is not dominant in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: Z-L01-PU-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-15	A	7.5YR 3/2	None	/ None	Sandy Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located on the west side of the "old road" and just north of Lonseth, on the west side of the creek in Assessment areas 2.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Chambers, V. Mead

Date: 13-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: Z-L02
Plot ID: **Z-L01-PW01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Carex obnupta	Herb	OBL	20
2. Poa annua	Herb	FAC	10
3. Spiraea douglasii	Shrub	FACW	40
4. Lonicera involucrata	Shrub	FAC+	40
5. Ribes lacustre	Shrub	FAC+	20
6. Rubus spectabilis	Shrub	FAC+	60
7. Physocarpus capitatus	Shrub	FACW-	20
8. Rhamnus purshiana	Shrub	FAC-	20

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9. Alnus rubra	Tree	FAC	85
10. Cornus stolonifera	Shrub	FACW	20
11. Populus balsamifera	Tree	FAC	20
12. Betula papyrifera	Tree	FAC	10
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 90%

Remarks: Sword fern (Polystichum munitum) is present outside of the sampling point. 90% of dominant species are FAC, FACW, or OBL. Hydrophytic vegetation is dominant.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: No indicators of wetalnd hydrology are present in the sampling point.

SOILS

Plot ID: Z-L01-PW01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	7.5YR 3/1	None	/ None	
8-12	B	10YR 5/2	10YR 6/6	10% /	Silt
				/	
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

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

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation,and hydric soils, it is determined that this data plot is in a wetland. Wetland hydrology was not present due to the season.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located at the south end of assessment area 2.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Chambers, V. Mead	Date: 13-Jun-06 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: PFO Transect ID: Plot ID: Z-L02-PW-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1.		OBL	20
2. Poa annua	Herb	FAC	10
3. Spiraea douglasii	Shrub	FAC	40
4. Lonicera involucrata	Shrub	FAC+	40
5. Ribes lacustre	Shrub	FAC+	20
6. Rubus spectabilis	Shrub	FAC+	60
7. Physocarpus capitatus	Shrub	FACW-	20
8. Rhamnus purshiana	Shrub	FAC-	20

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9. Alnus rubra	Tree	FAC	85
10. Cornus stolonifera	Shrub	FACW	20
11. Populus balsamifera	Tree	FAC	20
12. Betula papyrifera	Tree	FAC	10
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 90%

Remarks: Sword fern (Polystichum munitum) is present outside of the sampling point. 90% of dominant species are FAC, FACW, or OBL. Hydrophytic vegetation is dominant.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: No indicators of wetalnd hydrology are present in the sampling point.

SOILS

Plot ID: Z-L02-PW-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	7.5YR 3/1	None	/ None	
8-12	B	10YR 5/2	10YR 6/6	10% /	Silt
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

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

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation,and hydric soils, it is determined that this data plot is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located on the west side of the "old road" and just north of Lonseth, on the west side of the creek in Assessment areas 2.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Chambers, V. Mead

Date: 13-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PSS
Transect ID: Z-L02
Plot ID: Z-L02-PW-02

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Lonicera involucrata	Shrub	FAC+	45
2. Athyrium filix-femina	Herb	FAC	25
3. Glyceria elata	Herb	FACW+	25
4. Oenanthe sarmentosa	Herb	OBL	45
5. Rubus spectabilis	Shrub	FAC+	70
6. Spiraea douglasii	Shrub	FACW	40
7. Maianthemum dilatatum	Herb	FAC	20
8. Symphoricarpos albus	Shrub	FACU	20
9. Rubus parviflorus	Shrub	FAC-	5
10. Ribes lacustre	Shrub	FAC+	25
11. Physocarpus capitatus	Shrub	FACW-	20
12. Unid'd sp.	Tree	NI	20
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 82%

Remarks: The unidentified species were not included in the total number of dominant species in the sampling point. 82% of dominant species were FAC, FACW, or OBL. Hydrophytic vegetation is dominant.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Primary and secondary indicators include water marks and water-stained leaves.

SOILS

Plot ID: Z-L02-PW-02

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 3/3	None	/ None	Silty Sand
6-12	B	10YR 4/4	7.5YR 4/4	50% /	Silty Sand
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point, but the soil matrix is lighter than most hydric soils in the study area.

WETLAND DETERMINATION

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

Is this Sampling Point Within a Wetland? Yes

Remarks: The vegetation and soils in the sampling point indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located on the west side of the "old road" and just north of Lonseth, on the west side of the creek in Assessment areas 2.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Chambers, V. Mead

Date: 15-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: Z-L04
Plot ID: **Z-L04-WP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	85
2. Rubus spectabilis	Shrub	FAC+	15
3. Ranunculus repens	Herb	FACW	25
4. Glyceria elata	Herb	FACW+	25
5. Veronica americana	Herb	OBL	15
6. Carex obnupta	Herb	OBL	25
7. Athyrium filix-femina	Herb	FAC	10
8. Phalaris arundinacea	Herb	FACW	10
9. Rubus armeniacus	Shrub	FACU	5
10. Juncus sp.	Herb	NI	5
11. Dactylis glomerata	Herb	FACU	5
12. Festuca arundinacea	Herb	FAC-	5
13. Spiraea douglasii	Shrub	FACW	15
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: Indian plum (Oemleria cerasiformis) and tufts of moss are present in vicinity of sampling point. The unidentified species were not included in the total number of dominant species in the sampling point. 82% of dominant species are FAC, FACW, or OBL. Hydrophytic vegetation is dominant.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: Z-L04-WP-01

Map Unit Name (Series and Phase): Whatcom silt loam, 30 to 60% slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Aqualpic haplorthods

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-5	A	7.5YR 3/2	7.5YR 4/4	20% /	Silt Loam
5-13	B	7.5YR 3/2	10YR 5/2	50% /	Silt Loam
			10YR 5/6	/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Relatively low chroma color and redoxymorphic features in the upper 5 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

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

Is this Sampling Point Within a Wetland? Yes

Remarks: The vegetation and soils in the sampling point indicate that the sampling point is within a wetland. No indicators of wetland hydrology due to late Spring sampling.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is in assessment area 11, South of Henry Road along the unnamed creek.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Chambers, V. Mead	Date: 15-Jun-06 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: PFO Transect ID: Z-L06 Plot ID: **Z-L06-WP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Lysichiton americanum	Herb	OBL	20
2. Equisetum arvense	Herb	FAC	40
3. Tellima grandiflora	Herb	UPL	20
4. Tolmiea menziesii	Herb	FAC	60
5. Rubus spectabilis	Shrub	FAC+	50
6. Athyrium filix-femina	Herb	FAC	50
7. Glyceria elata	Herb	FACW+	40
8. Alnus rubra	Tree	FAC	40

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9. Thuja plicata	Tree	FAC	20
10. Lonicera involucrata	Shrub	FAC+	20
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 89%

Remarks: The unidentified species were not included in the total number of dominant species in the sampling point. 89% of the dominant species are FAC, FACW, or OBL. Hydrophytic vegetation is dominant.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water:	None	(in.)
Depth to Free Water in Pit:	None	(in.)
Depth to Saturated Soil:	None	(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)

Remarks: Sampling point is near a drainage channel and standing water exist within the wetland. Primary and secondary indicators include water marks and water-stained leaves. Sampling point is within a wetland.

SOILS

Plot ID: Z-L06-WP-01

Map Unit Name (Series and Phase): Whatcom silt loam, 30 to 60% slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Aqualpic haplorthods

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 3/2	None	/ None	Sand
6-12	B	10YR 2/2	7.5YR 5/6	5% /	
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is west of F7 in assessment area 11, South of Henry Road along the unnamed creek.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Chambers, M. Kinard	Date: 16-Jun-06 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Upland Shrub Transect ID: Z-L08 Plot ID: **Z-L08-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Acer circinatum	Tree	FAC-	60
2. Oemleria cerasiformis	Herb	FACU	25
3. Polystichum munitum	Herb	FACU	40
4. Symphoricarpos albus	Shrub	FACU	20
5. Dicentra formosa	Herb	FACU	20
6. Montia sp.	Herb	NI	40
7. Alnus rubra	Tree	FAC	75
8. Tellima grandiflora	Herb	UPL	60
9. Carex tumulicola	Herb	FACU	25
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). <1%

Remarks: The unidentified species were not included in the total number of dominant species in the sampling point. Less than 1% of the dominant species are FAC. Hydrophytic vegetation is not dominant.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: Z-L08-UP-01

Map Unit Name (Series and Phase): Whatcom silt loam, 30 to 60 percent slopes

Drainage Class: moderately well

Taxonomy (Subgroup): Aqualpic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	A	10YR 3/3	None	/ None	Silty/Sandy Loam
3-9	B	7.5YR 3/3	10YR 4/6	5% / Faint	Silty/Sandy Loam
9-14	C	10YR 3/4	10YR 4/6	5% / Faint	Silty/Sandy Loam
14-18		10YR 6/2	10YR 3/3	40% / Distinct	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Mottling of colors is present starting at 3 inches and the matrix is not a chroma of 2 or less.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is in assessment area 11, South of Henry Road on the east side of the unnamed creek.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 03-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L13
Plot ID: **Z-L13-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca rubra	Herb	FAC+	90
2. Anthoxanthum odoratum	Herb	FACU	25
3. Ranunculus acriformis	Herb	FACW-	25
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: The vegetation in the plot was recently mowed, so it was not possible to identify the Fescue to species in January. The site was revisited in March to identify the dominant vegetation.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 14 (in.)

Depth to Saturated Soil: None (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)

Remarks: No indicators of wetland hydrology were present in the data plot.

SOILS

Plot ID: Z-L13-UP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 3/2	None	/ None	Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: No indicators of hydric soil were present in the data plot.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Hydric vegetation was dominant, but no obligate species were present. Wetland hydrology and hydric soils werenot present in the sampling point. The sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated in the upland area west of the unnamed creek in assessment area 12.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, E. Christensen	Date: 23-Jan-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Transect ID: Z-L13 Plot ID: Z-L13-UP02

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca rubra	Herb	FAC+	70
2. Anthoxanthum odoratum	Herb	FACU	25
3.			
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks:

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 14 (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)

Remarks: Free water in the pit is a result of heavy rainfall. No indicators of wetland hydrology are present in the sampling point.

SOILS

Plot ID: Z-L13-UP02

Map Unit Name (Series and Phase): Birch Bay Silt Loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 2/2	None	/ None	Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Soil is homogenous throughout pit to where standing water begins at 14 inches. Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland?

Remarks:

Approved by HQUSACE 3/92

Additional Comments:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, E. Christensen	Date: 23-Jan-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Upland Meadow Transect ID: Plot ID: Z-L13-UP-03

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1.		NI	65
2.			
3.			
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: The vegetation in the sampling point is an unidentified species of Fescue that is likely an upland species, but remains unconfirmed due to the absence of seed heads during the January sampling.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 2 (in.)

Depth to Saturated Soil: Surface (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)

Remarks: The soil was saturated to the surface in January, but the water appears to be surface flow and not necessarily indicative of wetland hydrology.

SOILS

Plot ID: Z-L13-UP-03

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 2/2	None	/ None	Loam
10-18	B	10YR 3/4	None	/ None	Sand
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: No indicators of hydric soils are present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: No indicators of wetland vegetation, hydrology or soils are present. The sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located just west of the wetland associated with the southernmost portion of the creek in assessment area 12.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 23-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes	Community ID: PEM
Is the site significantly disturbed (Atypical Situation)?	No	Transect ID: Z-L14
Is the area a potential Problem Area? (If needed, explain on reverse.)	No	Plot ID: Z-L14-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Carex obnupta	Herb	OBL	40
2. Juncus effusus	Herb	FACW	20
3. Festuca sp.	Herb	NI	15
4. Alnus rubra	Tree	FAC	20
5. Rosa nutkana	Shrub	FAC	25
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 60%

Remarks: The presence of obligate species and that 60% of the species in the plot are OBL, FACW or FAC indicate that wetland vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 14 (in.)

Depth to Saturated Soil: Surface (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)

Remarks: It appears that most of the water in the sampling point is coming from surface flow. The soil is saturated in the upper 12 inches, suggesting that wetland hydrology may be present.

SOILS

Plot ID: Z-L14-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 2/2	None	/ None	Loam
10-18	B	10YR 3/3	None	/ None	Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: No redoxymorphic features are present, the soil is not hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? Yes

Remarks: The vegetation is hydrophytic and wetland hydrology is present. The sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located south of the small forested area south of henry road, near the west end of the study area in assessment area 10A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: D. Halladay, K. Dunkin

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L15
Plot ID: **Z-L15-UP-02**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca rubra	Herb	FAC+	80
2. Anthoxanthum odoratum	Herb	FACU	30
3. Agrostis capillaris	Herb	FAC	10
4. Ranunculus repens	Herb	FACW	1
5. Trifolium arvense	Herb	UPL	5
6. Taraxacum officinale	Herb	FACU	1
7. Hypochaeris radicata	Herb	FACU	5
8. Phalaris arundinacea	Herb	FACW	1
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 50

Remarks: Dominant vegetation in the sampling point are an unidentified Poa and Fescue species that are likely upland species, but were unconfirmed in January. Species listed above reflect the species identified the following May. Half of the dominant species were OBL, FACW or FAC. The weedy species are primarily upland species.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

- Depth of Surface Water: None (in.)
- Depth to Free Water in Pit: 5 (in.)
- Depth to Saturated Soil: 5 (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)

Remarks: The point was sampled during a wet time of the year with recent heavy rainfall. The soils are not inundated nor saturated to the surface and would not likely meet wetland criteria during the growing season.

SOILS

Plot ID: Z-L15-UP-02

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12	A	2.5YR 3/1	None	/ None	Loam
12-14	A2	2.5YR 4/2	None	/ None	Loam
14-18	B	5YR 5/2	10YR 5/6	25% / Prominent	Sandy Clay Loam
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil is low chroma within the upper 12 inches but because redoxymorphic features are not present in the upper 12 inches, the soil is not hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Due to the dominance of possible upland species, the low likelihood of wetland hydrology during the growing season, and the lack of hydric soils, this sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Area is regularly hayed. Grasses are 6-10 inches tall. The sampling point is located west of the small forested parch south of Henry Road in asssessment area 10A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: D. Halladay, K. Dunkin

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L15
Plot ID: **Z-L15-UP-03**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca rubra	Herb	FAC+	75
2. Anthoxanthum odoratum	Herb	FACU	40
3. Trifolium arvense	Herb	UPL	5
4. Unid'd grass sp.	Herb	NI	5
5. Vicia sp.	Herb	NI	1
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: Dominant vegetation in the sampling point were unconfirmed during the January survey. The site was revisited in May to confirm vegetation while grasses were in bloom.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 12 (in.)
Depth to Saturated Soil: 8 (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)

Remarks: The point was sampled during a wet time of the year with recent heavy rainfall. The soils are not inundated nor saturated to the surface and would not likely meet wetland criteria during the growing season.

SOILS

Plot ID: Z-L15-UP-03

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 3/2	None	/ None	Loam
16-18	B	10YR 3/2	None	/ None	Silty Clay Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil matrix is relatively low chroma. But, redoxymorphic features are not present and it does not appear that the sampling point is in a wetland.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Due to the dominance of possible upland species, the low likelihood of wetland hydrology during the growing season, and the lack of hydric soils, this sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Area is regularly hayed. Grasses were 6-10 inches tall, 2-3 feet tall in May.The sampling point is located west of the small forested parch south of Henry Road in asssessment area 10A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: D. Halladay, K. Dunkin

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L19
Plot ID: **Z-L19-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Ranunculus acris	Herb	FACW-	1
2. Holcus lanatus	Herb	FAC	30
3. Festuca rubra	Herb	FAC+	10
4. Trifolium repens	Herb	FAC	5
5. Anthoxanthum odoratum	Herb	FACU	10
6. Alopecurus pratensis	Herb	FACW	10
7. Myosotis scorpioides	Herb	FACW	1
8. Cirsium arvense	Herb	FACU+	1
9. Medicago lupulina	Herb	FAC	1
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: The sampling plot was revisited on May 28, 2007 and the vegetation listed above represents species present in May. The January sampling event consisted of five unidentified species and a mixture of trace amounts of FACW and FACU species.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 11 (in.)
Depth to Saturated Soil: Surface (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)

Remarks: The sampling point was sampled during a wet time of the year with recent heavy rainfall and is located in a small deperession area. The sampling point would unlikely meet wetland hydrology criteria during the growing season.

SOILS

Plot ID: Z-L19-UP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-11	A	7.5YR 3/2	None	/ None	Silt Loam
11-21	B	2.5Y 5/2	10YR 4/4	15% / Prominent	Silt Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Relatively low chroma colors are present throughout the soil matrix, but redoxymoprhic features are not present above 10 inches. The presence of hydric soils is questionable in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: The lack of wetland vegetation, hydrology and soils indicate that the sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located in one of two well-drained fields south of Henry Road in assessment area 10A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: D. Halladay, K. Dunkin

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L19
Plot ID: Z-L19-UP-02

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Hypochaeris radicata	Herb	FACU	75
2. Trifolium sp.	Herb	NI	1
3. Plantago sp.	Herb	NI	5
4. Poa sp.	Herb	NI	10
5. Unid'd grass sp.	Herb	NI	40
6. Alopecurus pratensis	Herb	FACW	5
7. Festuca sp.	Herb	NI	5
8. Anthoxanthum odoratum	Herb	FACU	1
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: A dominant species in the sampling point is an unidentified grass that is likely an upland species, but remains unconfirmed due to the absence of seed heads during the January sampling. The other dominant vegetation is a FACU species (Hypochaeris radicata) and is generally indicative of an upland plot in the study area.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 14 (in.)

Depth to Saturated Soil: 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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The point was sampled during a wet time of the year with recent heavy rainfall. The soils are not inundated nor saturated above 12 inches and would not likely meet wetland criteria during the growing season.

SOILS

Plot ID: Z-L19-UP-02

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-2	A	7.5YR 3/2	None	/ None	Silt Loam
2-12	B	10YR 2/2	None	/ None	Sandy Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil matrix is relatively low chroma. But, redoxymorphic features are not present and it does not appear that the sampling point is in a wetland.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Due to the dominance of confirmed and suspected upland species, the unlikelihood of wetland hydrology during the growing season, and the lack of hydric soils, this sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located in one of two well-drained fields south of Henry Road in assessment area 10A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: D. Halladay, K. Dunkin

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L19
Plot ID: **Z-L19-UP-03**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Equisetum telmateia	Herb	FACW	25
2. Alopecurus pratensis	Herb	FACW	30
3. Festuca rubra	Herb	FAC+	10
4. Plantago lanceolata	Herb	FAC	1
5. Rubus laciniatus	Shrub	FACU+	1
6. Anthoxanthum odoratum	Herb	FACU	30
7. Holcus lanatus	Herb	FAC	30
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 75%

Remarks: The sampling plot was revisited on May 28, 2007 and the vegetation listed above represents species present in May. The January sampling event consisted of four unidentified species and a mixture of FAC and mostly FACU species. {Festuca sp 25, Rubus laciniatus FACU+ 10, Rosa sp 10, Alnus rubra FAC 20, Cirsium arvense FACU+ 1, Rubus armeniacus FACU 5, Poa sp 60, Trifolium sp 1}

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 14 (in.)
Depth to Saturated Soil: 12 (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)

Remarks: The point was sampled during a wet time of the year with recent heavy rainfall. The soils are not inundated nor saturated within the upper 12 inches and would not likely meet wetland criteria during the growing season.

SOILS

Plot ID: Z-L19-UP-03

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-13	A	10YR 3/2	None	/ None	Silt Loam
13-17	B	10YR 4/2	10YR 5/3	15% / Faint	Sandy Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil is relatively low chroma, but because redoximorphic features are not present in the upper 12 inches, the soil is not hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Due to the dominance of one FAC species and two suspected upland species, the unlikelihood of wetland hydrology during the growing season, and the lack of hydric soils, this sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located in one of two well-drained fields south of Henry Road in assessment area 10A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: D. Halladay, K. Dunkin	Date: 24-Jan-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: PEM Transect ID: Z-L19 Plot ID: **Z-L19-WP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Agrostis sp.	Herb	NI	60
2. Spiraea douglasii	Shrub	FACW	15
3. Phalaris arundinacea	Herb	FACW	1
4. Juncus effusus	Herb	FACW	1
5. Trifolium sp.	Herb	NI	1
6. Rubus armeniacus	Shrub	FACU	5
7. Rubus laciniatus	Shrub	FACU+	5
8. Unid'd grass sp.	Herb		50

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: Dominant vegetation in the sampling point are an unidentified Agrostis and other grass species that are likely upland species, but remains unconfirmed due to the absence of seed heads during the January sampling. Spiraea douglasii is present at 15% and two FACU species (Rubus discolor and Rubus lacinatus) and two FACW species (Phalaris arundinacea and Juncus effusus) are present within the plot at trace amounts. It does not appear that wetland vegetation is dominant in the sampling point and wetland vegetation in the sampling point is not indicitive of a wetland.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 8 (in.)

Depth to Saturated Soil: Surface (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)

Remarks: The sampling point is saturated to the surface and most of the surrounding area is inundated, suggesting that wetland hydrology is present in the sampling point and would satisfy wetland criteria during the growing season.

SOILS

Plot ID: Z-L19-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	7.5YR 2.5/1	None	/ None	Silt Loam
10-16	B	2.5Y 3/2	7.5YR 4/3	15% / Distinct	Silty Clay Loam
				/	
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The combination of soil saturation to the surface and presence of hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is located between two well-drained fields south of Henry Road in assessment area 10B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Christensen

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L21
Plot ID: **Z-L21-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca rubra	Herb	FAC+	80
2. Anthoxanthum odoratum	Herb	FACU	80
3. Taraxacum laevigatum	Herb	UPL	10
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50%

Remarks: Half of the dominant species are FAC, FACW, or OBL.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

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

Depth to Saturated Soil: Surface (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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The soil is saturated to the surface due to heavy rainfall.

SOILS

Plot ID: Z-L21-UP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18	A	10YR 2/2	None	/ None	Loam
				/	
				/	
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: The soil matrix is relatively dark but not low-chroma, and redoxymorphic features are not present in the upper 12 inches. Hydric soils are not present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? Yes

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Wetland vegetation and hydric soils are not present in the sampling point. Wetland hydrology is present, however, the presence of wetland hydrology is due primarily to recent, heavy rainfall.

Approved by HQUSACE 3/92

Additional Comments:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Christensen

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland
Transect ID: Z-L21
Plot ID: **Z-L21-WP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca rubra	Herb	FAC+	80
2. Anthoxanthum aristatum	Herb	UPL	80
3. Crataegus douglasii	Tree	FAC	50
4. Alnus rubra	Tree	FAC	30
5. Symphoricarpos albus	Shrub	FACU	15
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75%

Remarks: More than half of the dominant vegetation is OBL, FACW, or FAC.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 3 (in.)
Depth to Saturated Soil: Surface (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)

Remarks: The soil is saturated in the upper 12 inches. Wetland hydrology is present in the sampling point.

SOILS

Plot ID: Z-L21-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 2/2	None	/	Sandy Loam
6-18	B	10YR 5/2	10YR 6/6	25% /	Sandy Clay
				/	
				/	-
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: The soil is low chroma with redoxymorphic features in the upper 12 inches. Hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation and wetland hydrology indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Christensen, D. Halladay

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadows
Transect ID: Z-L22
Plot ID: **Z-L22-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Taraxacum officinale	Herb	FACU	25
2. Trifolium arvense	Herb	UPL	5
3. Anthoxanthum odoratum	Herb	FACU	80
4. Ranunculus repens	Herb	FACW	1
5. Festuca rubra	Herb	FAC+	75
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: The sampling plot was revisited on May 28, 2007 and the vegetation listed above represents species present in May. The January sampling event consisted of two unidentified species and two FAC and one FACU species.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 9 (in.)
Depth to Saturated Soil: 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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The point was sampled during a wet time of the year with recent heavy rainfall. The soils are not inundated nor saturated to the surface and would not likely meet wetland criteria during the growing season.

SOILS

Plot ID: Z-L22-UP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR 2/2	None	/ None	Loam
12-16	B	10YR 5/2	10YR 6/6	25% / Prominent	Sandy Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil is relatively low chroma, but because redoximorphic features are not present in the upper 12 inches, the soil is not hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Due to the dominance of confirmed and suspected upland species, the unlikelihood of wetland hydrology during the growing season, and the lack of hydric soils, this sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated south of Henry Road in a well drained field in assessment area 10A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L22
Plot ID: **Z-L22-UP-03**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca rubra	Herb	FAC+	80
2. Taraxacum officinale	Herb	FACU	20
3. Plantago lanceolata	Herb	FAC	10
4. Lotus corniculatus	Herb	FAC	20
5. Anthoxanthum odoratum	Herb	FACU	50
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50%

Remarks: The area was visited once in January and again in May to confirm species identification when the grasses were in bloom. Half of the dominant species are OBL, FACW, or, FAC. Weedy species and other non-dominant species are more likely to be Upland.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 14 (in.)
Depth to Saturated Soil: 14 (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)

Remarks: Even after a period of heavy rainfall in January, no indicators of wetland hydrology are present.

SOILS

Plot ID: Z-L22-UP-03

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 2/2	None	/ None	Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil profile was homogenous throughout the 16 + inch soil pit in the sampling plot. No signs of hydric soil were apparent.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: While facultative species were present, much of the vegetation could not be identified to species because the field was recently mowed. The vegetation was not used as a wetland indicator.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located in a mowed field south of Henry Road in assessment area 10A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L22
Plot ID: **Z-L22-UP-04**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Anthoxanthum odoratum	Herb	FACU	15
2. Festuca rubra	Herb	FAC+	25
3. Ranunculus acris	Herb	FACW-	1
4. Trifolium pratense	Herb	FACU	1
5. Cynosurus cristatus	Herb	UPL	10
6. Taraxacum officinale	Herb	FACU	1
7. Holcus lanatus	Herb	FAC	10
8. Hypochaeris radicata	Herb	FACU	10

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9. Plantago lanceolata	Herb	FAC	5
10. Alopecurus pratensis	Herb	FACW	5
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100

Remarks: The sampling plot was revisited on May 28, 2007 and the vegetation listed above represents species present in May. The January sampling event consisted of two unidentified species and two FAC and one FACU species (Festuca sp NI 90; Taraxacum officinale FACU 20; Lotus corniculatus FAC 10; Plantago lanceolata FAC 5; Poa sp. NI 15)

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 0 (in.)
Depth to Saturated Soil: 0 (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)

Remarks: The soil is saturated to the surface. Some ponding water was observed near the tree line, however, these data were collected during a wet period in January when wetland hydrology was present in non-wetland areas.

SOILS

Plot ID: Z-L22-UP-04

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-14	A	10YR 2/2	None	/ None	Loam
14-18	B	10YR 5/2	10YR 6/6	30% / Prominent	Loam
				/	
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: The soil is somewhat low chroma with redox below 14 inches. Because redox is not present in the upper 12 inches, the soil is not hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Some facultative species are present, but because the data were collected mid-winter after the field had been mowed, vegetation is not a reliable indicator. Wetland hydrology is also present, but areas of ponded water are typically the result of recent surface flow from heavy rainfall. Hydric soils are not present. The sampling point is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated in the open fields south of Henry Road in assessment area 10A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 24-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L22
Plot ID: **Z-L22-UP-06**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca rubra	Herb	FAC+	80
2. Ranunculus repens	Herb	FACW	5
3. Trifolium arvense	Herb	UPL	5
4. Anthoxanthum odoratum	Herb	FACU	50
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50

Remarks: The sampling plot was revisited on May 28, 2007 and the vegetation listed above represents species present in May. The January sampling event consisted of two unidentified species and two FAC and one FACU species.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: Surface (in.)

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

Depth to Saturated Soil: Surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- [x] 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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is inundated and saturated to the surface. Wetland hydrology is present in the sampling point.

SOILS

Plot ID: Z-L22-UP-06

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-14	A	10YR 3/2	None	/ None	Loam
14-	B	10YR 4/2	5YR 5/8	15% /	Sandy Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil is relatively low chroma, but because redoximorphic features are not present in the upper 12 inches, the soil is not hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? Yes

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks:

Approved by HQUSACE 3/92

Additional Comments: Soils are wet due to recent rain. Plot located in pasture, commonly plowed or tilled, just east of Z-L22-UP-04 in assessment area 10A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Christensen

Date: 27-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Wetland
Transect ID: Z-L22
Plot ID: Z-L22-WP01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Juncus effusus	Herb	FACW	80
2. Moss	NA	NI	80
3. Anthoxanthum odoratum	Herb	FACU	30
4. Festuca rubra	Herb	FAC+	30
5. Rubus armeniacus	Shrub	FACU	10
6.			
7.			
8.			

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 66%

Remarks: More than 50% of the dominant vegetation is FAC, FACW, or OBL. Hydrophytic vegetation is present in the sampling point.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

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

Depth to Saturated Soil: Surface (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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The soil is saturated to the surface. Wetland hydrology is present.

SOILS

Plot ID: Z-L22-WP01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10YR 2/2	None	/ None	Sandy Loam
8-12	B	10YR 5/3	None	/ None	Sand
12-18	C	N/A N/A	None	/ None	Gravel
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: No indicators of hydric soil are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation and wetland hydrology indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated in a drainage ditch at the edge of a gravel road. It appears that there are inclusions of gravel fill in the sampling point.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 25-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L25
Plot ID: **Z-L25-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca sp.	Herb	NI	60
2. Lotus corniculatus	Herb	FAC	5
3. Taraxacum officinale	Herb	UPL	5
4. Rubus spectabilis	Shrub	FAC+	5
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0

Remarks: Bare ground covered 30% of the plot. Vegetation included few dominant species. The only dominant vegetation (Fescue) could not be identified to species because the field had recently been mowed and no seed heads were present. Species of upland weeds were present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: 0 (in.)

Depth to Free Water in Pit: 11 (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)

Remarks: No indicators of wetland hydrology are present in th sampling point.

SOILS

Plot ID: Z-L25-UP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-9	A	10YR 3/3		/	Silt Loam
9-18	B	10YR 3/3	7.5YR 4/6	5% / Faint	Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil appears to be churned and recently tilled. Some slight redoxymorphic features were observed, but it does not appear that the soil is hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: No indicators of wetland vegetation, hydrology or soils are present. The sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located in an open field south of Henry Road that as recently been mowed and seeded in assessment area 9A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 25-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PEM
Transect ID: Z-L25
Plot ID: **Z-L25-WP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Holcus mollis	Herb	FACU	30
2. Juncus effusus	Herb	FACW	30
3. Medicago lupulina	Herb	FAC	10
4. Rubus armeniacus	Shrub	FACU	5
5. Rubus spectabilis	Shrub	FAC+	5
6. Alnus rubra	Tree	FAC	20
7. Carex obnupta	Herb	OBL	20
8. Phalaris arundinacea	Herb	FACW	20

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0

Remarks: The site is inundated and little vegetation remains. The only vegetation observed in the sampling point is an unidentified species of Fescue.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: 2 (in.)
Depth to Free Water in Pit: Inundated (in.)
Depth to Saturated Soil: 10 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- [x] Inundated
- [x] Saturated in Upper 12 Inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [x] 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)

Remarks: The sampling point is inundated. Primary indicators of wetland hydrology are present in the sampling point.

SOILS

Plot ID: Z-L25-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10YR 3/2	10YR 6/1	10% / Faint	Silt Loam
8-10	B		10YR 5/8	10% / Faint	organic till layer
10-18	B2	10YR 4/2	5YR 4/6	25% / Prominent	Clay Loam
				/	-
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: The presence of prominent redoxymorphic features and low chroma colors indicates the presence of hydric soils.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The inundation of the sampling point and presence of hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located in the wetland in the open fields north of Henry Road in assessment area 9A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, E. Christensen	Date: 25-Jan-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Upland Meadow Transect ID: Z-L26 Plot ID: Z-L26-UP-02

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca rubra	Herb	FAC+	60
2. Anthoxanthum aristatum	Herb	UPL	25
3.			
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: Dominant vegetation in the sampling point are an unidentified Poa and Fescue species that are likely upland species, but remains unconfirmed due to the absence of seed heads during the January sampling.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 10 (in.)

Depth to Saturated Soil: None (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)

Remarks: Even after a period of heavy rainfall in January, no indicators of wetland hydrology are present. Moss is present in the sampling point at 20%.

SOILS

Plot ID: Z-L26-UP-02

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR 3/2	None	/ None	Silt Loam
12-18	B	2.5YR 5/2	10YR 5/	5% /	Sandy Loam
				/	
				/	-
				/	

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
- ___ Other (Explain in Remarks)

Remarks: The soil is somewhat low chroma with redox below 12 inches. Soil in sample plot was not as red as other upland plots.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Although the vegetation was not identified to species, the lack of wetland hydrology and hydric soils indicate that the sampling point is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located in the long field west of the creek, north of Henry Road in assessment area 9A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 25-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L26
Plot ID: Z-L26-UP-03

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca rubra	Herb	FAC+	25
2. Ranunculus acris	Herb	FACW-	10
3. Anthoxanthum odoratum	Herb	FACU	10
4. Phalaris arundinacea	Herb	FACW	35
5. Cynosurus cristatus	Herb	UPL	10
6. Poa palustris	Herb	FAC	5
7. Rumex crisous	Herb	FAC+	1
8. Agrostis capillaris	Herb	FAC	1
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100

Remarks: The sampling plot was revisited on May 28, 2007 and the vegetation listed above represents species present in May. The January sampling event consisted of two unidentified species and Phalaris arundinacea. While the dominant species are hydrophytic, volunteers and emergent weeds are primarily upland species.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 11 (in.)
Depth to Saturated Soil: None (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)

Remarks: Soil was saturated in the upper 12 inches, but it is apparently from surface water not ground water.

SOILS

Plot ID: Z-L26-UP-03

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR 3/2	None	/ None	
12-	A	10YR 3/2	10YR 5/6	/	
				/	
				/	-
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil is somewhat low chroma with redox below 12 inches. Because redox is not present in the upper 12 inches, the soil is not hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: The lack of distnict wetland hydrology and hydric soils, an unidentifiable vegetation led us to determine that the sampling point is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated in the sloped field south of Henry Road in assessment area 9A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 25-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PEM
Transect ID: Z-L26
Plot ID: **Z-L26-WP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Carex obnupta	Herb	OBL	60
2. Phalaris arundinacea	Herb	FACW	35
3. Ranunculus repens	Herb	FACW	15
4. Juncus effusus	Herb	FACW	50
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: All species identified in the sampling point are hydrophytic.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: 4 (in.)
Depth to Free Water in Pit: 0 (in.)
Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- [x] 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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is inundated. Wetland hydrology is present.

SOILS

Plot ID: Z-L26-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-7	A	10YR 3/2	None	/ None	Silt Loam
7-18	B	10YR 5/2	None	/ None	Sandy Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: No indicators of hydric soils are present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? Yes

Remarks: Although indicators of hydric soils are not present, the presence of hydrophytic vegetation and wetland hydrology indicate that the sampling point s in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located in the wetland that extends through the two westernmost open fields, north of Henry Road in assessment area 9A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 26-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Meadow
Transect ID: Z-L27
Plot ID: **Z-L27-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Pteridium aquilinum	Herb	FACU	15
2. Alnus rubra	Tree	FAC	40
3. Rubus spectabilis	Shrub	FAC+	20
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Species in the sampling point were primarily facultative, with one dominant FAC species and one dominant FAC+ species. One FACU species was present at 15%. Hydrophytic vegetation is not dominant in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: Z-L27-UP-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-1	duff		None	/ None	
1-16	A	10YR 3/3	None	/ None	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Duff layer is approximately 1 inch.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: The lack of wetland vegetation, hydrology and soils indicate that the sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located east of the creek and south of Henry Road in asssessment area 14.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, E. Christensen	Date: 26-Jan-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: PEM Transect ID: Z-L27 Plot ID: **Z-L27-WP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Carex obnupta	Herb	OBL	40
2. Rubus spectabilis	Shrub	FAC+	20
3. Tellima grandiflora	Herb	UPL	25
4. Alnus rubra	Tree	FAC	30
5. Populus balsamifera	Tree	FAC	1
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75%

Remarks: The presence of a dominant obligate species and that 75% of the species in the plot are OBL, FACW or FAC indicate that hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: 1 (in.)

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

Depth to Saturated Soil: Surface (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)

Remarks: The presence of two primary indicators of wetland hydrology (site is inundated and saturated in the upper 12 inches) suggest that wetland hydrology is present in the sampling point.

SOILS

Plot ID: Z-L27-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 2/2	None	/ None	Silt Loam
		10YR 4/3	5YR 5/6	25% / Faint	Silt Loam
				/	
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: Because the sample plot was inundated with water, it was not possible to thoroughly evaluate the soil profile below 10 inches. The low chroma color and redoxymorphic features in the upper 10 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation, wetland hydrology and hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located just east of the creek, south of Henry Road in asssessment area 14.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: D. Halladay	Date: 30-Jan-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Upland Forest Transect ID: Z-L29 Plot ID: **Z-L29-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Rubus armeniacus	Shrub	FACU	25
2. Rubus laciniatus	Shrub	FACU+	5
3. Polystichum munitum	Herb	FACU	50
4. Rubus spectabilis	Shrub	FAC+	25
5. Alnus rubra	Tree	FAC	30
6. Acer circinatum	Tree	FAC-	10
7. Oemleria cerasiformis	Herb	FACU	25
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 40%

Remarks: Species in the sampling point were primarily facultative. Less than 50% of the dominant species were FAC, FACW or OBL.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

- Depth of Surface Water: None (in.)
- Depth to Free Water in Pit: 10 (in.)
- Depth to Saturated Soil: 8 (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)

Remarks: The point was sampled during a wet time of the year with recent heavy rainfall. The soils are not inundated nor saturated to the surface and may not likely meet wetland criteria during the growing season.

SOILS

Plot ID: Z-L29-UP-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18	A	7.5YR 3/2	None	/ None	Silt Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil is relatively low chroma, but because redoximorphic features are not present, the soil is not hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? ?

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Due to the dominance of FAC and FACU species, the unlikelihood of wetland hydrology during the growing season, and the lack of hydric soils, this sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sample plot is located in the forested area near wetland Z-L29, just north of Henry Road near Gulf Road in assessment area 6.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 02-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: Z-L29
Plot ID: **Z-L29-UP-02**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Thuja plicata	Tree	FAC	25
2. Ranunculus acriformis	Herb	FACW-	20
3. Populus balsamifera	Tree	FAC	25
4. Rubus spectabilis	Shrub	FAC+	20
5. Physocarpus capitatus	Shrub	FACW-	20
6. Polystichum munitum	Herb	FACU	20
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50%

Remarks: The vegetation in the plot is primarily facultative and upland, with more than 50% of the dominant vegetation FAC, FACW or OBL. Wetland vegetation is present in the sample point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 6 (in.)
Depth to Saturated Soil: 4 (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)

Remarks: Water is present in the pit, but it appears to be coming from surface flow.

SOILS

Plot ID: Z-L29-UP-02

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18	A	10YR 3/2	None	/ None	Sandy Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: The soil matrix is homogenous throughout the 18 inch pit. There are no indicators of hydric soil in the sampling point.

WETLAND DETERMINATION

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

Is this Sampling Point Within a Wetland? No

Remarks: Wetland vegetation is present but it is not dominant, and no obligate species occur in the sampling point. Hydrology in the sampling point appears to be coming from surface flow, following a substantial rainy period. The soils show no hydric indicators. The sampling point is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sample plot is located in the forested area near wetland Z-L29, just north of Henry Road near Gulf Road in assessment area 6.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 02-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes	Community ID: PFO
Is the site significantly disturbed (Atypical Situation)?	No	Transect ID: Z-L29
Is the area a potential Problem Area? (If needed, explain on reverse.)	No	Plot ID: Z-L29-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Carex obnupta	Herb	OBL	25
2. Carex hoodii	Herb	FAC	15
3. Polystichum munitum	Herb	FACU	20
4. Alnus rubra	Tree	FAC	25
5. Rubus spectabilis	Shrub	FAC+	35
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 60%

Remarks: The dominance of the obligate species (Carex obnupta) and other FAC species indicate that wetland vegetation is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: 4 (in.)

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

Depth to Saturated Soil: Surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- [x] 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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The presence of four inches of standing water indicates that wetland hydrology is present.

SOILS

Plot ID: Z-L29-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam, 0 to 2 percent slopes

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	A	10YR 3/3	None	/ None	Silt Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Because the sample plot was inundated with water, it was not possible to thoroughly evaluate the soil profile. Even though the plot was located in a relatively dry area compared to the surrounding area, it was not possible to complete the evaluation.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation and standing water indicate that the sampling point is within a wetland. The soil in the wetland was difficult to evaluate because the area was inundated.

Approved by HQUSACE 3/92

Additional Comments: The sample plot is located in the forested area near wetland Z-L29, just north of Henry Road near Gulf Road in assessment area 6.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: D. Halladay, E. Christensen

Date: 30-Jan-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: Z-L30
Plot ID: **Z-L30-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Rubus armeniacus	Shrub	FACU	100
2. Alnus rubra	Tree	FAC	95
3. Abies grandis	Tree	FACU-	15
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50%

Remarks: The dominant vegetation in the plot is facultative and FACU, suggestive of an upland forest. Wetland vegetation is not present in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: None (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)

Remarks: Even after a period of heavy rainfall in January, no indicators of wetland hydrology are present.

SOILS

Plot ID: Z-L30-UP-01

Map Unit Name (Series and Phase): Neptune very gravelly sandy loam

Drainage Class: excessive

Taxonomy (Subgroup): Entic haploxerolls

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	7.5YR 2.5/1	None	/ None	Sandy Loam
8-18	B	7.5YR 3/4	None	/ None	Silt Loam
				/	
				/	
				/	

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
- ___ Other (Explain in Remarks)

Remarks: The soil is relatively low chroma in the upper 8 inches but is not consistent throughout the profile. Redoximorphic features are not present and the soil is not hydric.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: The absence of hydrophytic vegetation, wetland hydrology and hydric soils indicate that the sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sample plot is located in assessment area 13E

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: D. Halladay, E. Christensen	Date: 31-Jan-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: PFO Transect ID: Z-L30 Plot ID: **Z-L30-WP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Spiraea douglasii	Shrub	FACW	30
2. Salix lucida	Tree	FACW	50
3. Carex obnupta	Herb	OBL	75
4. Rosa nutkana	Shrub	FAC	40
5. Populus balsamifera	Tree	FAC	20
6. Alnus rubra	Tree	FAC	30
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 83%

Remarks: The presence of a dominant obligate species and that 83% of the species in the plot are OBL, FACW or FAC indicate that wetland vegetation is present. Typha latifolia is prevalent in the surrounding wetland area.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

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

Remarks: The presence of two primary indicators of wetland hydrology (site is inundated and saturated in the upper 12 inches) suggest that wetland hydrology is present in the sampling point. The surrounding wetland area is inundated with 6+ inches of water.

SOILS

Plot ID: Z-L30-WP-01

Map Unit Name (Series and Phase): Neptune very gravelly sandy loam

Drainage Class: excessive

Taxonomy (Subgroup): Entic haploxerolls

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	O	10YR 2/1	None	/ None	organic material
3-15	A		None	/ None	gravel
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [x] 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
- [ ] Other (Explain in Remarks)

Remarks: The soil profile was not completed because gravel was encountered at 3 inches and remained throughout the rest of the pit. Sulfidic odor was prevalent at the sampling point. The plot is located 10 feet east of the road.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? ?

Is this Sampling Point Within a Wetland? Yes

Remarks: Even though a soil profile could not be completed due to gravel encountered, the predominance of hydrophytic vegetation and wetland hydrology indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sample plot is located in assessment area 13E

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: J. Rock, E. Christensen

Date: 03-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: Z-L31
Plot ID: Z-L31-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	75
2. Carex obnupta	Herb	OBL	25
3. Rubus spectabilis	Shrub	FAC+	50
4. Spiraea douglasii	Shrub	FACW	50
5. Alnus rubra	Tree	FAC	75
6. Populus balsamifera	Tree	FAC	25
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: 100% of the dominant species are FAC, FAC+, FACW, and OBL. Hydrophytic vegetation is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: 3 (in.)
Depth to Free Water in Pit: Inundated (in.)
Depth to Saturated Soil: Surface (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- [x] 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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is inundated with 3" of water and saturated to the surface. Wetland hydrology is present in the sampling point.

SOILS

Plot ID: Z-L31-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10YR 2/1	None	/ None	Loam
8-16	B	10YR 6/1	10YR 5/6	25% / Distinct	Clay Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the presence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sample plot is located in assessment area 4B

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Christensen

Date: 03-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: Z-L33
Plot ID: **Z-L33-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Rubus ursinus	Shrub	FACU	90
2. Phalaris arundinacea	Herb	FACW	75
3. Rosa nutkana	Shrub	FAC	20
4. Oemleria cerasiformis	Herb	FACU	20
5. Populus balsamifera	Tree	FAC	60
6. Alnus rubra	Tree	FAC	60
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 67%

Remarks: 67% of the dominant species are FAC or FACW. Hydrophytic vegetation is present but two FACU species (Rubus ursinus and Oemleria cerasiformis) are also dominant.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 17 (in.)
Depth to Saturated Soil: 16 (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: Z-L33-UP-01

Map Unit Name (Series and Phase): Birchbay silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18	A	10YR 3/2	None	/ None	Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Soils are homogenous throughout the profile. The soil is relatively low chroma, but because redoximorphic features are not present in the upper 12 inches, the soil is not hydric.

WETLAND DETERMINATION

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

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is located approximately 50 feet west of Kickerville Rd in assessment area 4B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen, D. Halladay

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: Z-L34
Plot ID: Z-L34-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Acer circinatum	Tree	FAC-	75
2. Alnus rubra	Tree	FAC	25
3. Rubus spectabilis	Shrub	FAC+	5
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50%

Remarks: 50% of the dominant species are FAC. Hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: 3 (in.)
Depth to Free Water in Pit: Surface (in.)
Depth to Saturated Soil: Surface (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)

Remarks:

SOILS

Plot ID: Z-L34-WP-01

Map Unit Name (Series and Phase): Birchbay silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 3/1	None	/ None	
6-16	B	10YR 6/2	10YR 5/8	40% /	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation, wetland hydrology and hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is located in assessment area 4D.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen, D. Halladay

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PSS
Transect ID: Z-L34
Plot ID: **Z-L34-WP-02**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Oemleria cerasiformis	Herb	FACU	15
2. Lonicera involucrata	Shrub	FAC+	1
3. Rubus spectabilis	Shrub	FAC+	50
4. Ranunculus repens	Herb	FACW	50
5. Rubus laciniatus	Shrub	FACU+	10
6. Alnus rubra	Tree	FAC	90
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: 100% of the dominant species are FAC, FAC+, or FACW. Hydrophytic vegetation is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: 4 (in.)
Depth to Free Water in Pit: Surface (in.)
Depth to Saturated Soil: Surface (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- [x] 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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is saturated to the surface and inundated. Wetland hydrology is present.

SOILS

Plot ID: Z-L34-WP-02

Map Unit Name (Series and Phase): Birchbay silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-8	A	10YR 3/2	None	/ None	Silt Loam
8-16	B	10YR 4/2	10YR 6/8	40% /	Silt Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Total depth of soil pit is estimated due to inundation. Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The combination of hydrophytic vegetation, soil saturation to the surface and inundation, and presence of hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is located in assessment area 4D.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen, D. Halladay

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PSS
Transect ID: Z-L37
Plot ID: Z-L37-UP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	100
2. Rubus armeniacus	Shrub	FACU	25
3. Symphoricarpos albus	Shrub	FACU	25
4. Rosa nutkana	Shrub	FAC	5
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 33%

Remarks: Only 33% of the dominant species are hydrophytic. Other dominant species are FACU. Wetland vegetation is not dominant in the sampling point and wetland vegetation in the sampling point is not indicitive of a wetland.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: 9 (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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The point was sampled during a wet time of the year with recent heavy rainfall. The soils are not inundated nor saturated to the surface and are not likely to meet wetland criteria during the growing season.

SOILS

Plot ID: Z-L37-UP-01

Map Unit Name (Series and Phase): Birchbay silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 3/3	None	/ None	Loam
10-16	B	7.5YR 3/3	None	/ None	Loam
	B	7.5YR 2.5/2	None	/ None	Loam
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? Yes

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Due to the predominance of two FACU species, the unlikelihood of wetland hydrology during the growing season, and the lack of hydric soils, this sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is within mowed powerline corridor in assessment area 4A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, E. Christensen, D. Halladay	Date: 06-Feb-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Upland Shrub Transect ID: Z-L37 Plot ID: **Z-L37-UP-02**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Betula papyrifera	Tree	FAC	50
2. Cirsium sp.	Herb	NI	5
3. Festuca sp.	Herb	NI	60
4. Poa sp.	Herb	NI	70
5. Symphoricarpos albus	Shrub	FACU	15
6. Rubus armeniacus	Shrub	FACU	10
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks: Two of the three dominant species in the sampling point are unidentified species of Fescue and Poa that are likely upland species, but remains unconfirmed due to the absence of seed heads during the January sampling. A dominant FAC species (Betula papyrifera) is present, along with two other FACU species. Wetland vegetation does not appear to be dominant in this sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: Z-L37-UP-02

Map Unit Name (Series and Phase): Birchbay silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 2/2	None	/ None	Loam
7-11	B	7.5YR 3/4	None	/ None	Silt Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Due to the dominance of one FAC species and two suspected upland species, the absence of wetland hydrology, and the lack of hydric soils, this sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is within mowed powerline corridor in assessment area 4A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M.Gray, E. Christensen, D. Halladay

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PSS
Transect ID: Z-L37
Plot ID: Z-L37-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	100
2. Spiraea douglasii	Shrub	FACW	15
3.			
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: 100% of dominant vegetation is FACW. Hydrophytic vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 10 (in.)

Depth to Saturated Soil: 2 (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)

Remarks: The sampling point is saturated close to the surface, suggesting that wetland hydrology is present in the sampling point and may also satisfy wetland criteria during the growing season.

SOILS

Plot ID: Z-L37-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18	A	10YR 3/2	10YR 5/8	10% /	Silty Clay Loam
				/	
				/	
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: Relatively low chroma colors and redoxymorphic features throughout the matrix indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The combination of hydrophytic vegetation, soil saturation near the surface, and presence of hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is located within a powerline corridor in assessment area 4A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen, D. Halladay

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PSS
Transect ID: Z-L37
Plot ID: **Z-L37-WP-02**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	100
2. Spiraea douglasii	Shrub	FACW	30
3. Lonicera involucrata	Shrub	FAC+	25
4. Carex obnupta	Herb	OBL	20
5. Rubus armeniacus	Shrub	FACU	15
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: 100% of dominant vegetation is FAC, FACW, or OBL. Hydrophytic vegetation is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: 2 (in.)

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

Depth to Saturated Soil: Surface (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- [x] 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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is saturated to the surface and inundated. Wetland hydrology is present.

SOILS

Plot ID: Z-L37-WP-02

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18	A	10YR 3/2	None	/ None	Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Soils are homogenous throughout the pit. The low chroma color may indicate that hydric soils are present in the sampling point but no redoximorphic features were present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present?

Is this Sampling Point Within a Wetland? Yes

Remarks: Wetland vegetation and hydrology are present. Although indicators of hydric soils are not present, it appears that the sampling point is in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is located within a powerline corridor in assessment area 4A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: D. Halladay

Date: 06-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PFO
Transect ID: Z-L37
Plot ID: **Z-L37-WP-03**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Carex obnupta	Herb	OBL	95
2. Rubus spectabilis	Shrub	FAC+	50
3. Acer circinatum	Tree	FAC-	1
4. Alnus rubra	Tree	FAC	75
5. Symphoricarpos albus	Shrub	FACU	5
6. Populus balsamifera	Tree	FAC	10
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: 100% of dominant vegetation is FAC, FAC+, or OBL. Hydrophytic vegetation is present.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: 6 (in.)
Depth to Saturated Soil: Surface (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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is saturated to the surface and the depth to free water in the pit indicates that wetland hydrology is present in the sampling point.

SOILS

Plot ID: Z-L37-WP-03

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 3/1	None	/ None	Silty Clay Loam
				/	
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: The low chroma matrix indicate that hydric soil is present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation, wetland hydrology and hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is located within a powerline corridor in assessment area 4A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: E. Christensen, J. Rock	Date: 03-Feb-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: PFO Transect ID: Z-L37 Plot ID: **Z-L37-WP-04**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Carex obnupta	Herb	OBL	100
2. Rubus spectabilis	Shrub	FAC+	30
3. Populus balsamifera	Tree	FAC	30
4. Alnus rubra	Tree	FAC	100
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: The dominance of the obligate species (Carex obnupta) and other FAC species indicate that wetland vegetation is present.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

- Depth of Surface Water: 1 (in.)
- Depth to Free Water in Pit: 12 (in.)
- Depth to Saturated Soil: 0 (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)

Remarks: The sampling point is inundated in February. Characteristics of wetland hydrology are confirmed in the sampling point.

SOILS

Plot ID: Z-L37-WP-04

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR 2/1	None	/ None	Loam
4-16	B	10YR 6/1	10YR 5/6	40% / Distinct	Silty Clay
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [x] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Hydric soil indicators including sulfidic odor and low chroma colors suggest that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? Yes

Remarks: The presence of hydrophytic vegetation, wetland hydrology and hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is situated near the corner of Kickerville and Lonseth Road in assessment area 4A.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, D. Halladay	Date: 06-Feb-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Upland Meadow Transect ID: Z-L38 Plot ID: **Z-L38-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	100
2. Festuca rubra	Herb	FAC+	5
3. Symphoricarpos albus	Shrub	FACU	15
4. Rubus armeniacus	Shrub	FACU	10
5. Thuja plicata	Tree	FAC	15
6. Pteridium aquilinum	Herb	FACU	1
7. Holodiscus discolor	Shrub	UPL	1
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: The FACW species Phalaris arundinacea is dominant but other species present are FAC, FACU, and UPL. Another species in the sampling point is an unidentified species of Fescue that is likely an upland species, but remains unconfirmed due to the absence of seed heads during the January sampling. Wetland vegetation in the sampling point is not indicitive of a wetland.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: Z-L38-UP-01

Map Unit Name (Series and Phase): Birchbay silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-7	A	10YR 3/3	None	/ None	Silt Loam
7-8	B	10YR 3/3	10YR 5/6	10% /	Silt Loam
				/	
				/	-
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: The soil profile was only completed to 8 inches due to proximity to underground pipeline. Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland? No

Remarks: One FACW species was dominant (Phalaris arunidinacea), but other species present in the sampling plot were FACU and UPL. Hydric soils are present, but with the absence of any indicators of wetland hydrology, the sampling point is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Plot is located in pipeline corridor near assessment area 4E .

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: E. Christensen, D. Halladay	Date: 07-Feb-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Upland Forest Transect ID: Z-L43 Plot ID: **Z-L43-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca sp.	Herb	NI	15
2. Alnus rubra	Tree	FAC	100
3. Rubus ursinus	Shrub	FACU	30
4. Oemleria cerasiformis	Herb	FACU	5
5. Rubus spectabilis	Shrub	FAC+	5
6. Poa sp.	Herb	NI	30
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50%

Remarks: One dominant species in the sampling point is an unidentified Poa that is likely upland, but remains unconfirmed due to the absence of seed heads during the February sampling. Therefore, it was not included in the percent of species in the sampling point that are OBL, FACW or FAC. The other dominant species (Alnus rubra and Rubus ursinus) are FAC and FACU. Wetland vegetation does not appear to be dominant in this sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: None (in.)

Depth to Saturated Soil: None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: Z-L43-UP-01

Map Unit Name (Series and Phase): Birchbay silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 3/2	None	/ None	Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: The absence of hydrophytic vegetation, wetland hydrology, and hydric soils indicate that the sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point located between Gulf Road and plowed field, just north of Henry Road, in assessment area 7B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: E. Christensen, D. Halladay

Date: 07-Feb-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PEM
Transect ID: Z-L43
Plot ID: Z-L43-WP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Phalaris arundinacea	Herb	FACW	80
2. Festuca rubra	Herb	FAC+	10
3. Poa sp.	Herb	NI	25
4. Vicia americana	Herb	FAC	5
5. Juncus effusus	Herb	FACW	10
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: One dominant species in the sampling point is an unidentified Poa that is likely upland, but remains unconfirmed due to the absence of seed heads during the February sampling. Therefore, it was not included in the percent of species in the sampling point that are OBL, FACW or FAC. The other dominant species (Phalaris arundinacea) is FACW. Hydrophytic vegetation is present in the sampling point.

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 8 (in.)

Depth to Saturated Soil: Surface (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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks: The sampling point is saturated to the surface and the depth to free water in the pit indicates that wetland hydrology is present in the sampling point.

SOILS

Plot ID: Z-L43-WP-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-9	A	10YR 3/2	None	/ None	Loam
9-18	B	2.5YR 5/2	10YR 5/8	25% /	Clay Loam
				/	
				/	
				/	

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] 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
- [ ] Other (Explain in Remarks)

Remarks: Low chroma color and redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland?

Remarks: The combination of hydrophytic vegetation, soil saturation to the surface, and presence of hydric soils indicate that the sampling point is within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located in a plowed field just north of Henry Road, in assessment area 7B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, E. Christensen	Date: 20-Mar-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Transect ID: Z-L47 Plot ID: Z-L47-UP-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca rubra	Herb	FAC+	85
2. Taraxacum officinale	Herb	FACU	10
3.			
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 8 (in.)

Depth to Saturated Soil: 2 (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)

Remarks:

SOILS

Plot ID: Z-L47-UP-01

Map Unit Name (Series and Phase): Birch Bay Silt Loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-16	A	10YR 3/2	None	/ None	Silt Loam
16-18	B	10YR 3/2	7.5YR 4/3	5% / Faint	Silt Loam
				/	
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?

Wetland Hydrology Present?

Hydric Soils Present? No

Is this Sampling Point Within a Wetland?

Remarks:

Approved by HQUSACE 3/92

Additional Comments: The plot is located in a mowed field.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, E. Christensen	Date: 20-Mar-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Transect ID: Z-L47 Plot ID: Z-L47-UP-02

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca			
2. Juncus effusus	Herb	FACW	
3. Ranunculus	Herb		
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks:

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

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

Depth to Saturated Soil: Surface (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
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks:

SOILS

Plot ID: Z-L47-UP-02

Map Unit Name (Series and Phase): Birch Bay Silt Loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type?

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18	A	10YR 3/2	None	/ None	Silt Loam
16-18	A2	10YR 3/2	10YR 5/6	5% / Faint	Sandy Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?

Wetland Hydrology Present?

Hydric Soils Present? No

Is this Sampling Point Within a Wetland?

Remarks:

Approved by HQUSACE 3/92

Additional Comments:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, E. Chrisenesen	Date: 20-Mar-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Transect ID: Z-L47 Plot ID: **Z-L47-UP-05**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Ranunculus acriformis	Herb	FACW-	5
2. Plantago lanceolata	Herb	FAC	10
3. Anthoxanthum odoratum	Herb	FACU	25
4. Festuca rubra	Herb	FAC+	25
5. Holcus lanatus	Herb	FAC	10
6. Cynosurus cristatus	Herb	UPL	1
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 50%

Remarks: The sampling plot was revisited on May 29, 2007 and the vegetation listed above represents species present in May. The March sampling event consisted ofonly two identifiable FAC species. 50% of the dominant species present during the May sampling wre FAC+, but the other species was FACU. Wetland vegetation is not dominant in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 16 (in.)

Depth to Saturated Soil: 2 (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)

Remarks: The sampling point is saturated to within two inches of the surface and contains free water in the pit. Wetland hydrology is present in the sampling point.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Gray, E. Christensen

Date: 20-Mar-07
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID:
Transect ID: Z-L47
Plot ID: Z-L47-UP-08

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Poa sp.	Herb	NI	40
2. Grass sp.	Herb	NI	60
3. Ranunculus			10
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks:

HYDROLOGY

- [ ] Recorded Data (Describe in Remarks):
  - [ ] Stream, Lake, or Tide Gauge
  - [ ] Aerial Photographs
  - [ ] Other
- [x] No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

Depth to Free Water in Pit: 8 (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)

Remarks:

SOILS

Plot ID: Z-L47-UP-08

Map Unit Name (Series and Phase): Birch Bay Silt Loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 2/2	None	/ None	Silt Loam
10-	B	10YR 6/2	10YR 5/8	5% / Distinct	Sandy Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?
Wetland Hydrology Present?
Hydric Soils Present?

Is this Sampling Point Within a Wetland?

Remarks:

Approved by HQUSACE 3/92

Additional Comments:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: M. Gray, E. Christensen	Date: 20-Mar-07 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Transect ID: Z-L47 Plot ID: Z-L47-UP-09

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Festuca	Herb		
2. Taraxacum officinale	Herb	FACU	
3. Plantago	Herb		
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-).

Remarks:

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☐ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)

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

Depth to Saturated Soil: None (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)

Remarks:

SOILS

Plot ID: Z-L47-UP-09

Map Unit Name (Series and Phase): Birch Bay Silt Loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-18	A	10YR 3/2	None	/ None	Silt Loam
				/	
				/	
				/	
				/	

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
- [ ] Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present?

Wetland Hydrology Present?

Hydric Soils Present? Yes

Is this Sampling Point Within a Wetland?

Remarks:

Approved by HQUSACE 3/92

Additional Comments:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Chambers, V. Mead

Date: 15-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: Upland Forest
Transect ID: Z-L4
Plot ID: Z-L4-PU-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Alnus rubra	Tree	FAC	75
2. Populus balsamifera	Tree	FAC	25
3. Ilex aquifolium	Shrub	NI	25
4. Acer macrophyllum	Tree	FACU	25
5. Rubus parviflorus	Shrub	FAC-	25
6. Rubus laciniatus	Shrub	FACU+	25
7. Rubus spectabilis	Shrub	FAC+	30
8. Oemleria cerasiformis	Herb	FACU	20
9. Physocarpus capitatus	Shrub	FACW-	10
10. Rubus armeniacus	Shrub	FACU	40
11. Galium aparine	Herb	FACU	45
12. Rubus ursinus	Shrub	FACU	25
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 27%

Remarks: Creeping buttercup (Ranunculus repens) is present nearby. The unidentified species were not included in the total number of dominant species in the sampling point. Only 27% of dominant species are FAC or FAC+. Hydrophytic vegetation is not dominant in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ 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)

Remarks:

SOILS

Plot ID: Z-L4-PU-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	7.5YR 4/6	10YR 5/8	/ Faint	Silt Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Redoxymorphic features in the upper 12 inches indicate that hydric soils are present in the sampling point, but the soil matrix is lighter than most hydric soils in the study area.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is SE of F38 in assessment area 7B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal
Applicant/Owner: Pacific International Terminals
Investigator: M. Chambers, V. Mead

Date: 16-Jun-06
County: Whatcom
State: Washington

Do Normal Circumstances exist on the site?	Yes
Is the site significantly disturbed (Atypical Situation)?	No
Is the area a potential Problem Area? (If needed, explain on reverse.)	No

Community ID: PSS
Transect ID: Z-L5
Plot ID: Z-L5-PW-01

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Carex obnupta	Herb	OBL	40
2. Rubus spectabilis	Shrub	FAC+	40
3. Thuja plicata	Tree	FAC	25
4. Alnus rubra	Tree	FAC	60
5. Athyrium filix-femina	Herb	FAC	40
6. Unid'd sp.	Herb	NI	50
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks: The unidentified species were not included in the total number of dominant species in the sampling point. 100% of the domiant species were FAC or OBL. Hydrophytic vegetation is dominant.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water: None (in.)
Depth to Free Water in Pit: None (in.)
Depth to Saturated Soil: None (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)

Remarks: Sampling point is located along a creek. Primary and secondary indicators include water marks and water-stained leaves.

SOILS

Plot ID: Z-L5-PW-01

Map Unit Name (Series and Phase): Whitehorn silt loam

Drainage Class: poorly drained

Taxonomy (Subgroup): Aquandic endoaqualfs

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-10	A	10YR 3/2	None	/ None	Sandy Loam
				/	
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes

Wetland Hydrology Present? Yes

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? Yes

Remarks: Based on the absence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is SE of F38 in assessment area 7B.

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Gateway Pacific Terminal Applicant/Owner: Pacific International Terminals Investigator: K. Dunkin, M. Chambers	Date: 06-Sep-06 County: Whatcom State: Washington
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain on reverse.)	Community ID: Upland Forest Transect ID: Z-L9 Plot ID: **Z-L9-UP-01**

VEGETATION

Dominant Plant Species	Stratum	Indicator	%
1. Leontodon sp.	Herb	NI	10
2. Juncus sp.	Herb	NI	
3.			
4.			
5.			
6.			
7.			
8.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Dominant Plant Species	Stratum	Indicator	%
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

*Indicator prefix = assigned by delineator, not defined by FWS.

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 0%

Remarks: Sparse cover of Canada thistle (Cirsium arvense) occurs in the vicinity of the sampling point and a trace of blackberry exists. No species were dominant in the sampling point.

HYDROLOGY

- ☐ Recorded Data (Describe in Remarks):
  - ☐ Stream, Lake, or Tide Gauge
  - ☐ Aerial Photographs
  - ☐ Other
- ☑ No Recorded Data Available

Field Observations:

Depth of Surface Water:	None (in.)
Depth to Free Water in Pit:	None (in.)
Depth to Saturated Soil:	None (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)

Remarks: Wetland hydrology indicators are not present.

SOILS

Plot ID: Z-L9-UP-01

Map Unit Name (Series and Phase): Whatcom silt loam

Drainage Class: moderately well

Taxonomy (Subgroup): Aqualpic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	A	10YR 4/4	None	/ None	
3-18	B	10YR 4/4	None	/ None	Silt Loam (gravelly)
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: Very fine roots are present at 0 to 12 inches. No organic accumulations are present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? No

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

Remarks: Based on the absence of hydrophytic vegetation, wetland hydrology and hydric soils, it is determined that this data plot is not in a wetland.

Approved by HQUSACE 3/92

Additional Comments: Sampling point is SE of F38 in assessment area 2.

SOILS

Plot ID: Z-L47-UP-05

Map Unit Name (Series and Phase): Birch Bay Silt Loam

Drainage Class: moderately well

Taxonomy (Subgroup): Typic haplorthods

Field Observations Confirm Mapped Type? Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-12	A	10YR 3/2	None	/ None	Silt Loam
12-16	B	10YR 4/3	10YR 5/1	40% /	Silt Loam
				/	
				/	
				/	

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
- ☐ Other (Explain in Remarks)

Remarks: A hard pan exists below 16 inches. Hydric soil indicators are not present.

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No

Wetland Hydrology Present? Yes

Hydric Soils Present? No

Is this Sampling Point Within a Wetland? No

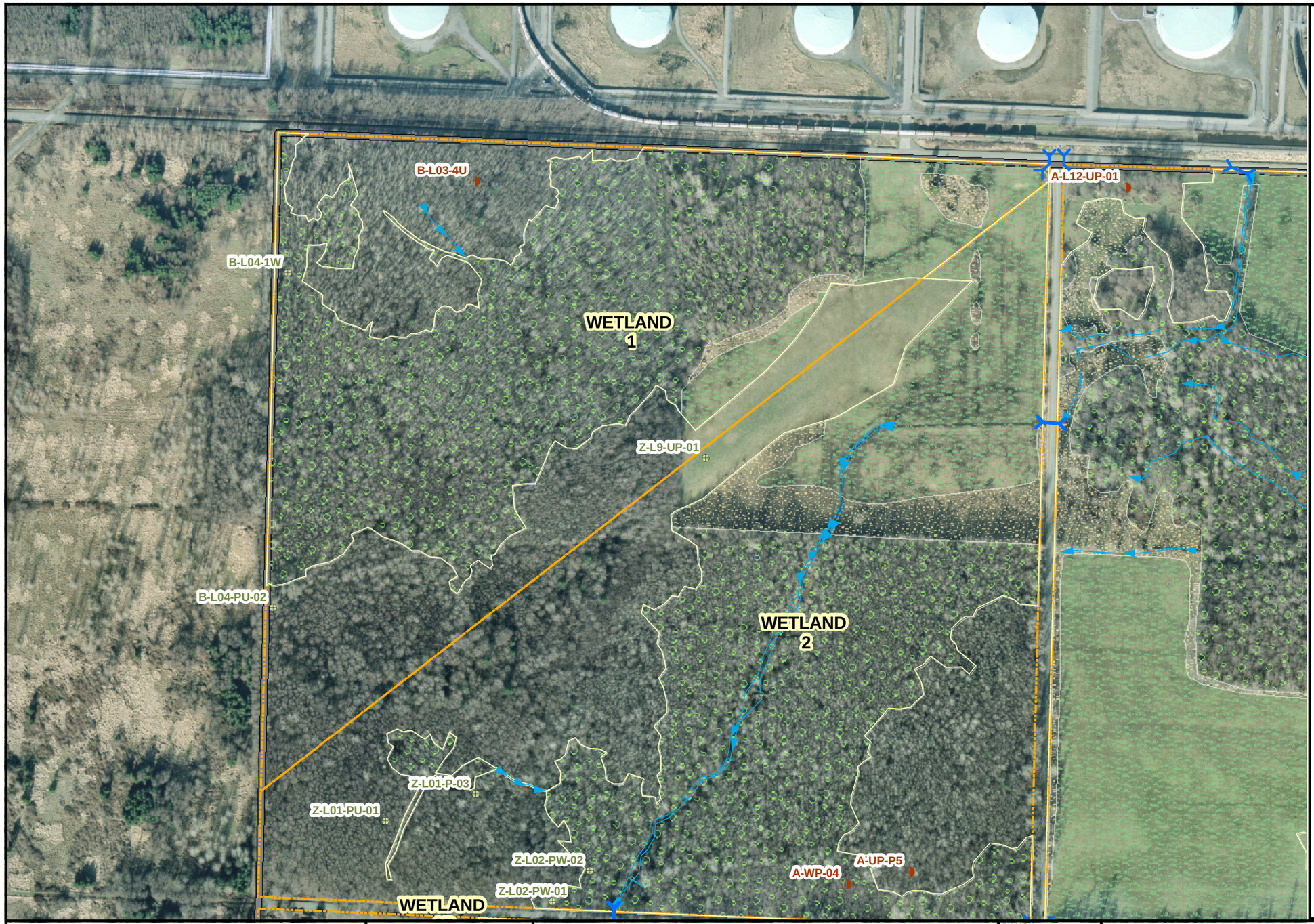
Remarks: The lack of hydrophytic vegetation or hydric soils indicates that the sampling point is not within a wetland.

Approved by HQUSACE 3/92

Additional Comments: The sampling point is located in a routinely mowed field.

APPENDIX D

Wetland Assessment Areas Maps



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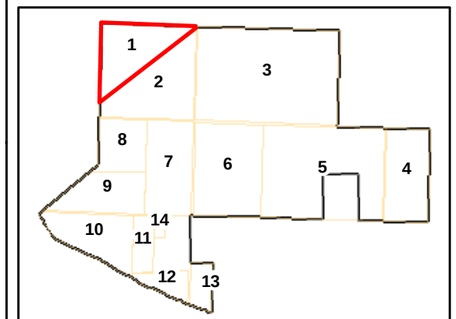

LEGEND

- SURVEYED DATA POINT
- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

N

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

AMEC Earth & Environmental
7376 SW Durham Road
Portland, OR, U.S.A. 97224

DWN BY: PM
CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 1

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D1

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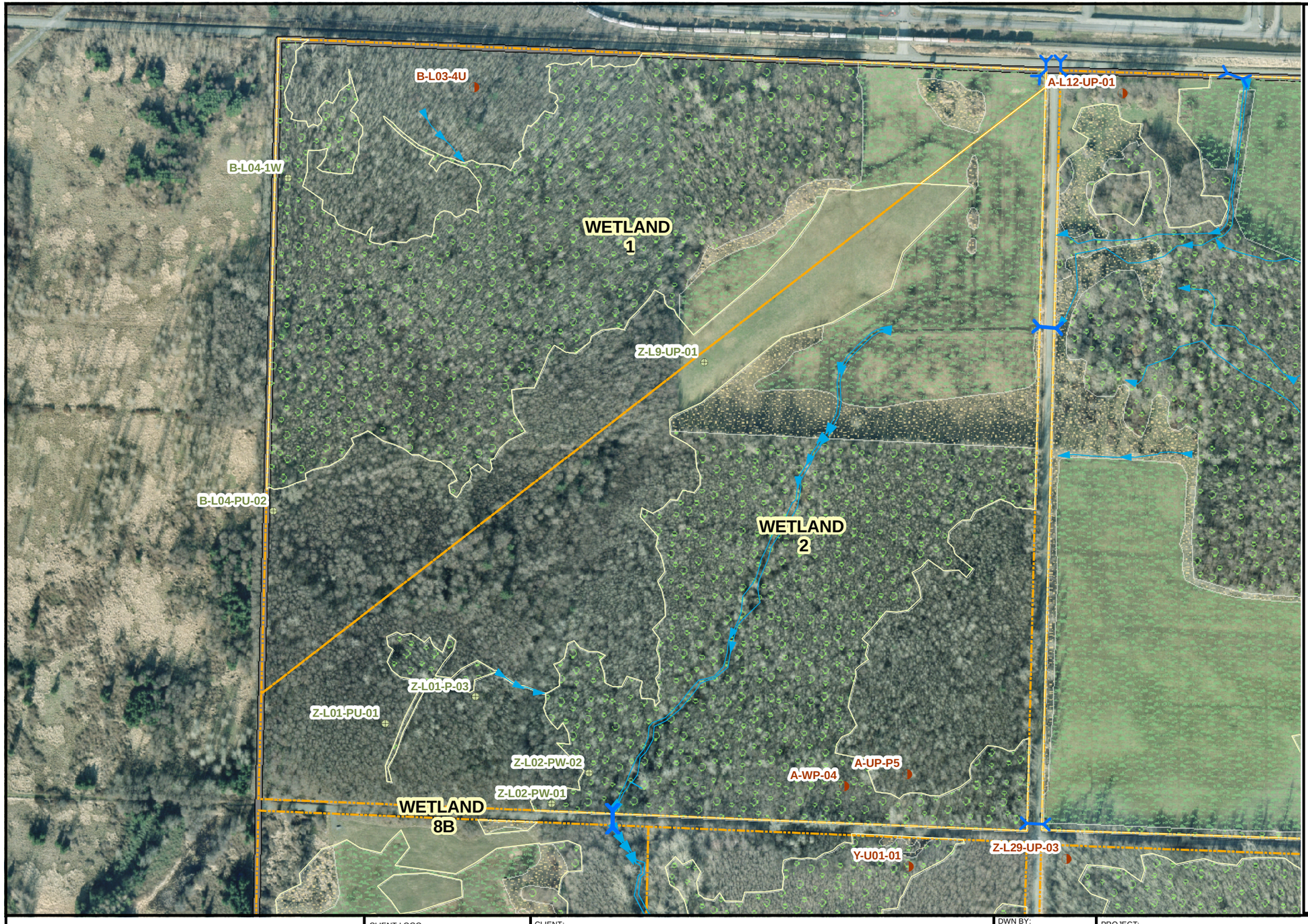

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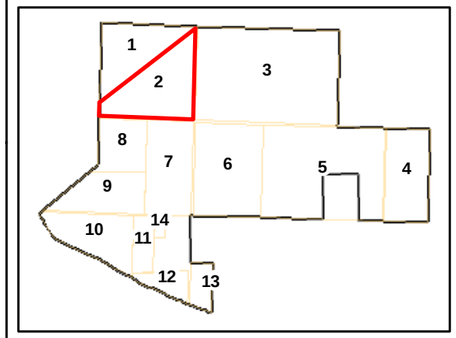


LEGEND

- SURVEYED DATA POINT
- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

N

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

AMEC Earth & Environmental
7376 SW Durham Road
Portland, OR, U.S.A. 97224

DWN BY: PM
CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

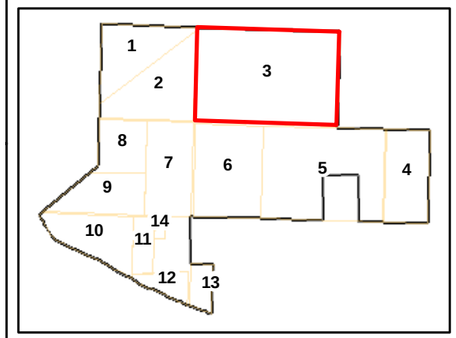
PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 2

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D2

K:\AMEC US OFFICES\KIRKLAND\15338-0\DWG\ArcView\Cherry_Point_MapBook.mxd

LOCATION KEY



LEGEND

- SURVEYED DATA POINT
- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

N

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

AMEC Earth & Environmental
7376 SW Durham Road
Portland, OR, U.S.A. 97224

DWN BY: PM
CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 3

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D3

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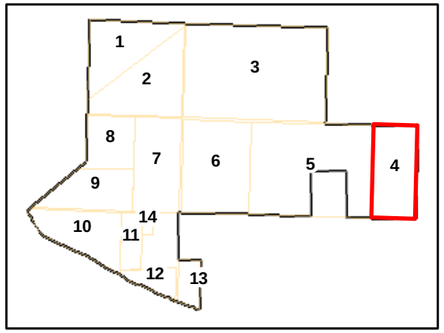

LEGEND

- SURVEYED DATA POINT
- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

N

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

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CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 4

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D4

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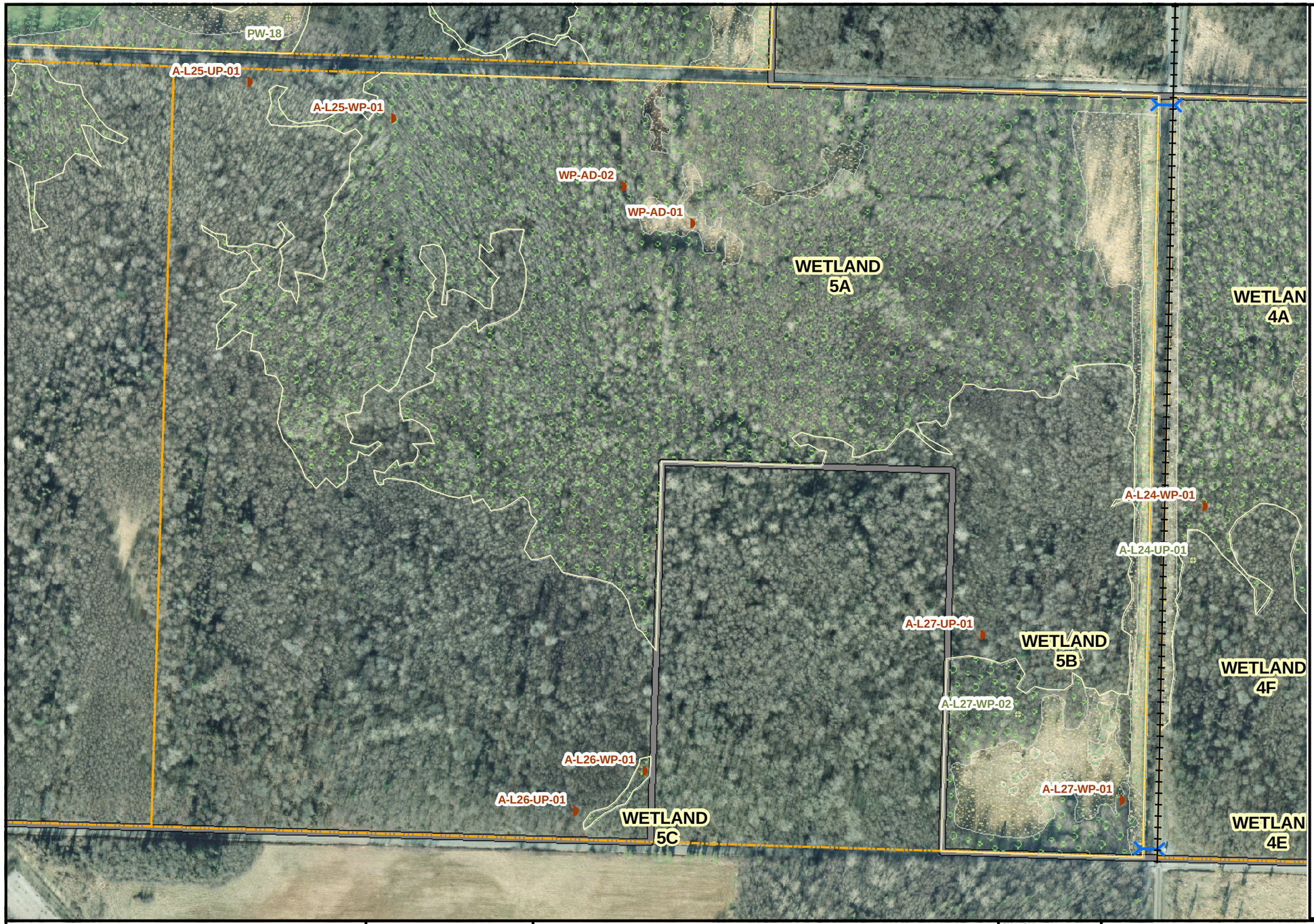

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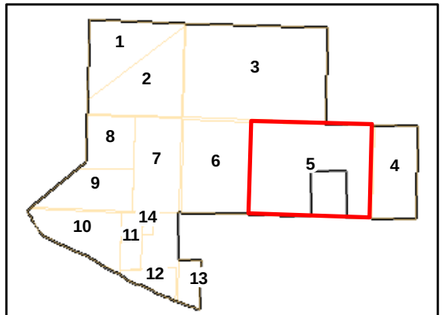

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- SURVEYED DATA POINT
- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

N

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

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DWN BY: PM
CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 5

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D5

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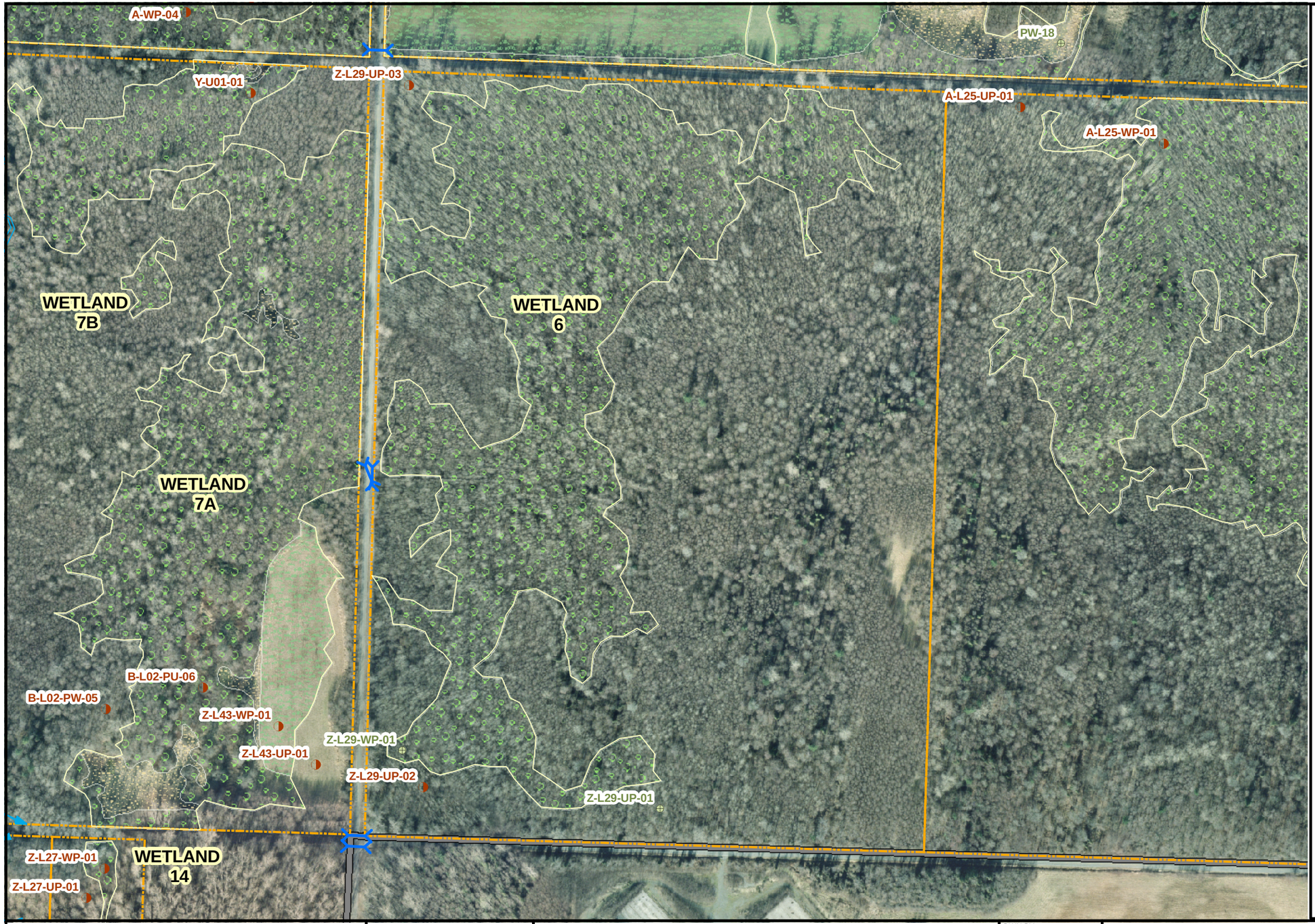

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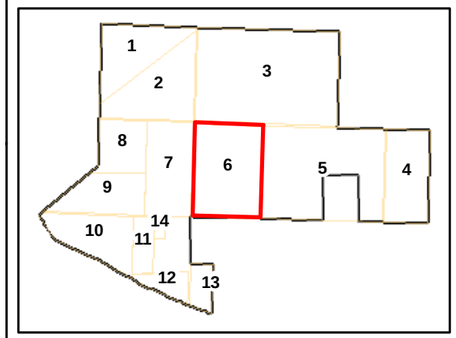

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- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

N

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

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DWN BY: PM
CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 6

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D6

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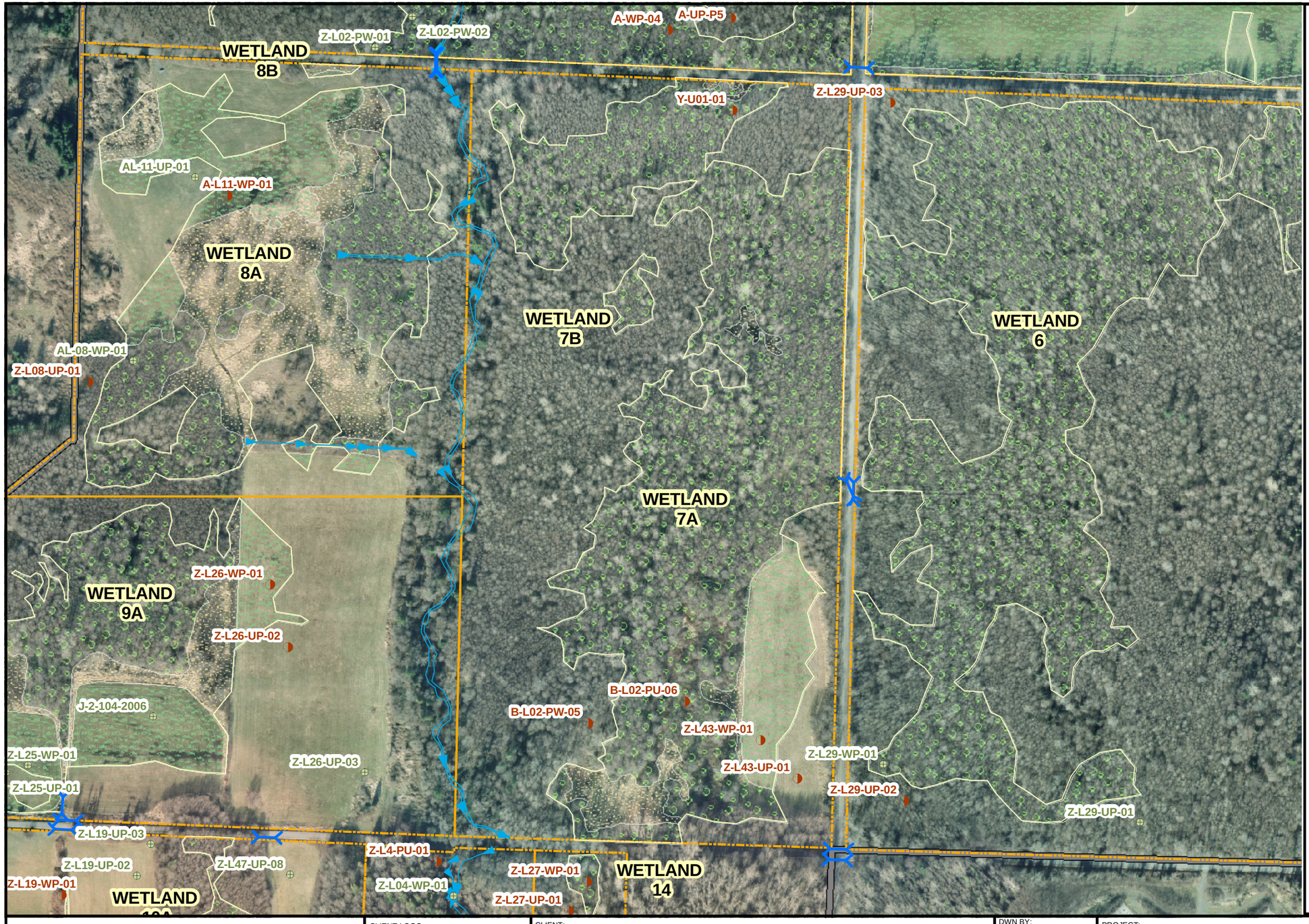

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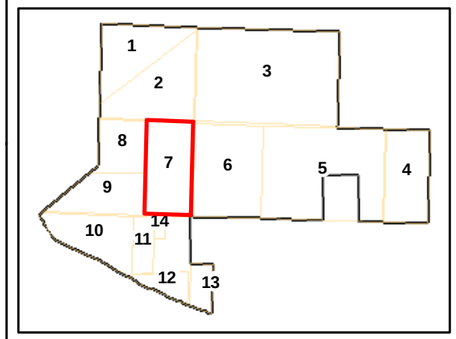

LEGEND

- SURVEYED DATA POINT
- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

N

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

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DWN BY: PM
CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 7

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D7

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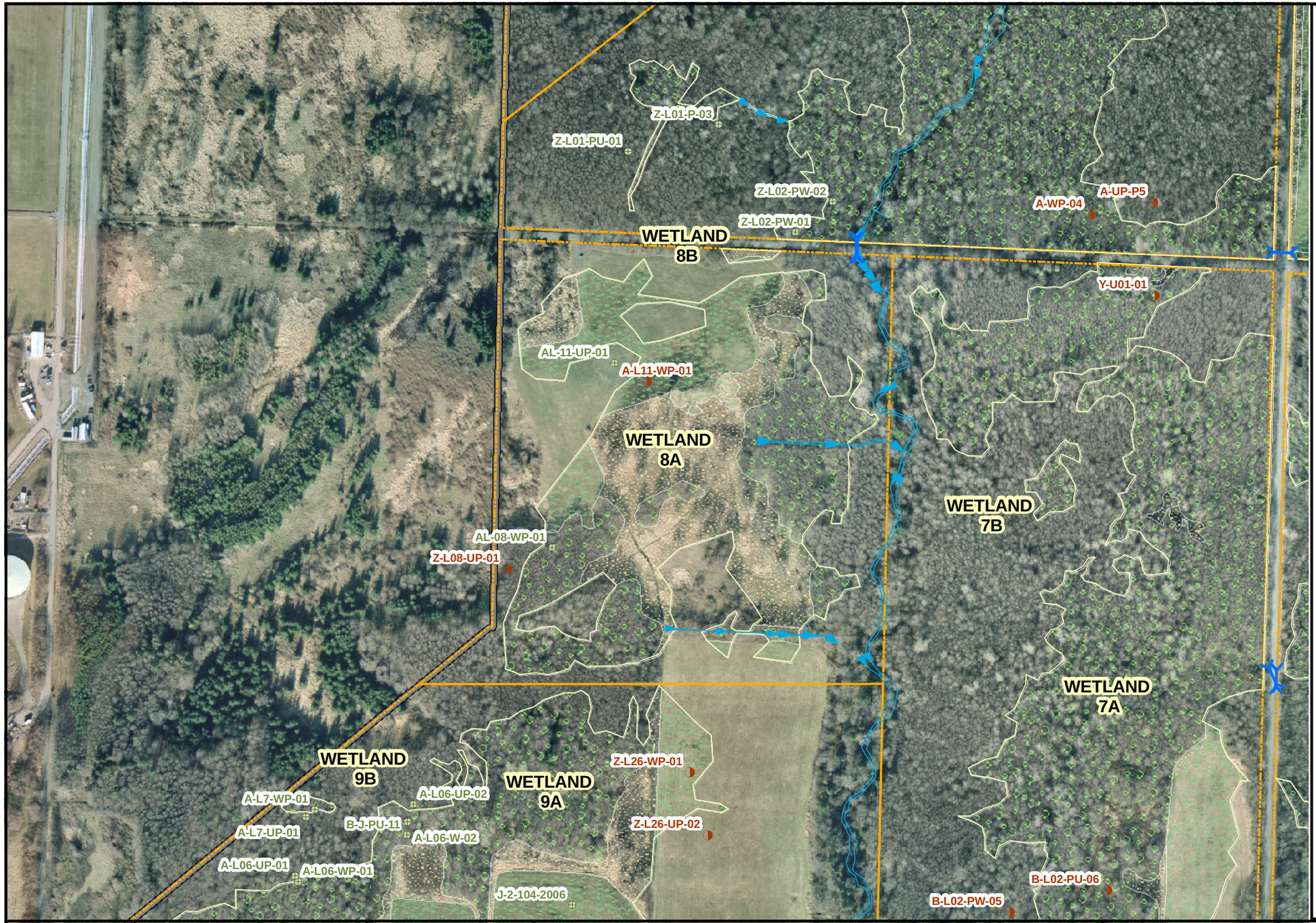

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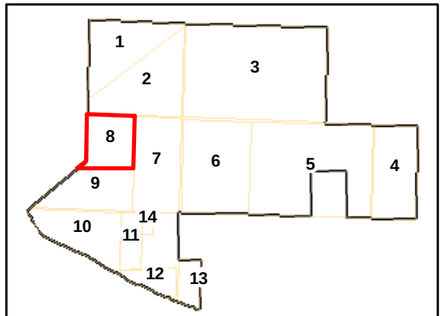

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- SURVEYED DATA POINT
- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

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DWN BY:	PM
CHK'D BY:	MG/KD
DATUM:	NAD83
PROJECTION:	WA SP North, Ft.
SCALE:	1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 8

DATE:	FEBRUARY 2008
PROJECT NO.:	5-91M-15338-0
REV. NO.:	-
APPENDIX NO.:	APPENDIX D8

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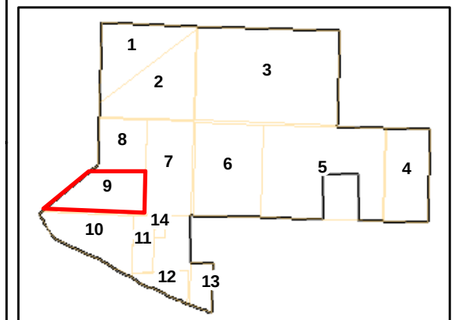

LEGEND

- SURVEYED DATA POINT
- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

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DWN BY:	PM
CHK'D BY:	MG/KD
DATUM:	NAD83
PROJECTION:	WA SP North, Ft.
SCALE:	1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 9

DATE:	FEBRUARY 2008
PROJECT NO.:	5-91M-15338-0
REV. NO.:	-
APPENDIX NO.:	APPENDIX D9

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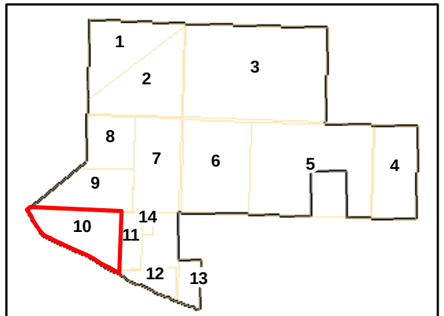

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- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

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DWN BY: PM
CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 10

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D10

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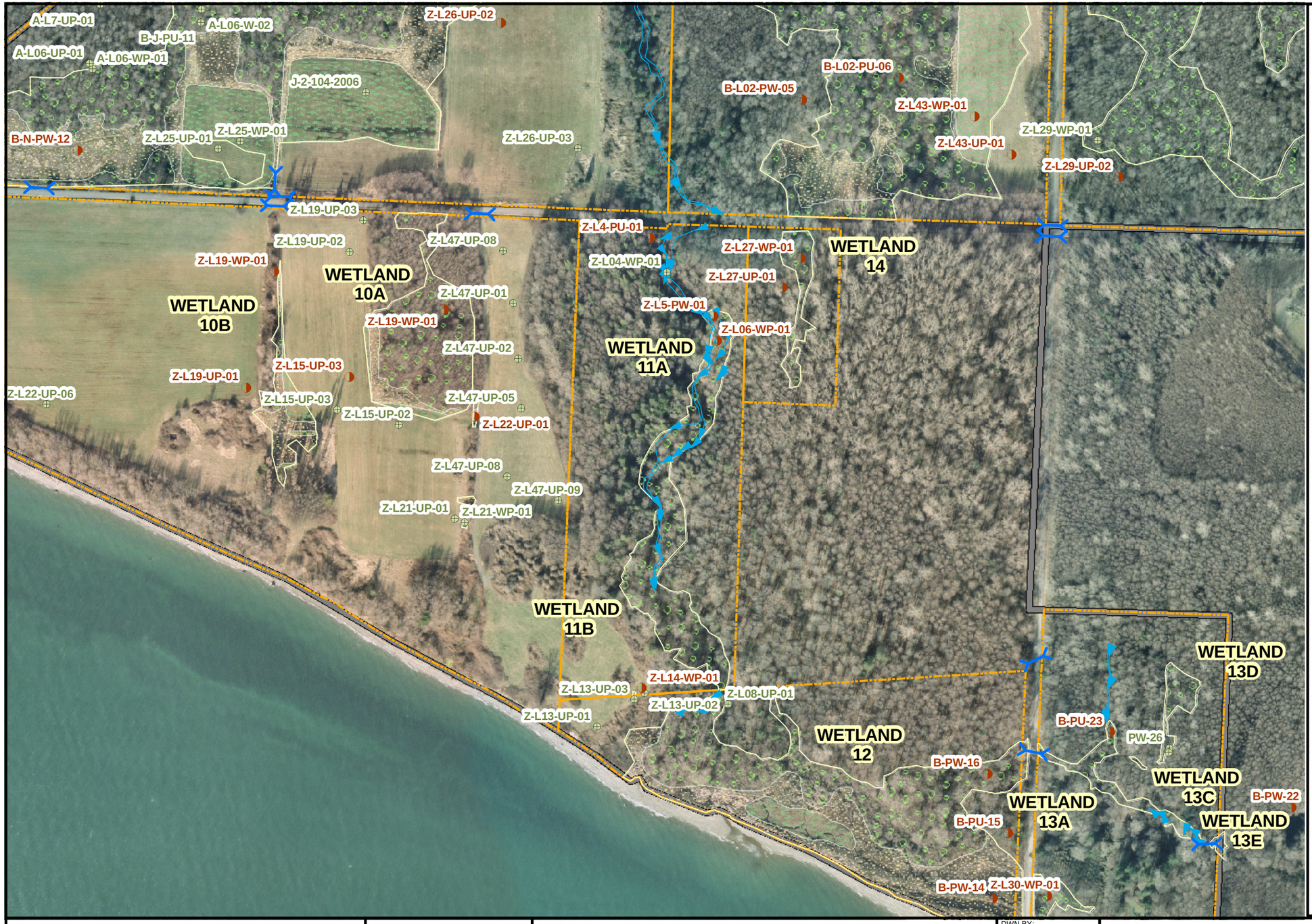

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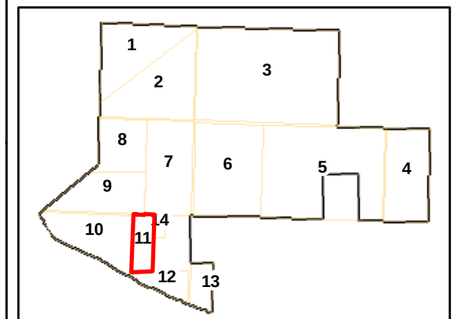

LEGEND

- SURVEYED DATA POINT
- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

N

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

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Portland, OR, U.S.A. 97224

DWN BY: PM
CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 11

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D11

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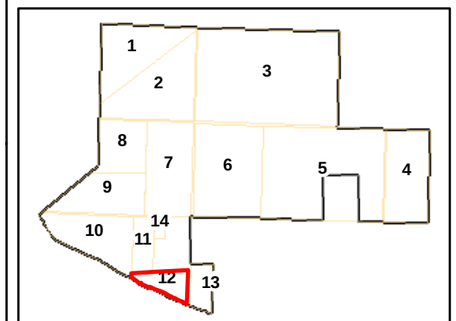

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- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

N

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

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DWN BY: PM
CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 12

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D12

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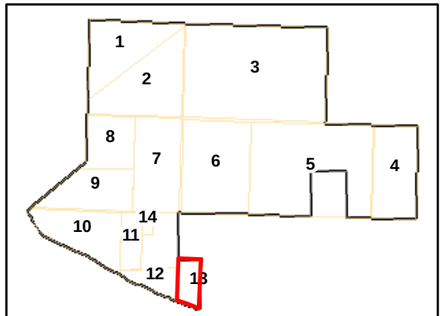

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- APPROXIMATE DATA POINT
- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

N

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

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Portland, OR, U.S.A. 97224

DWN BY: PM
CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 13

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D13

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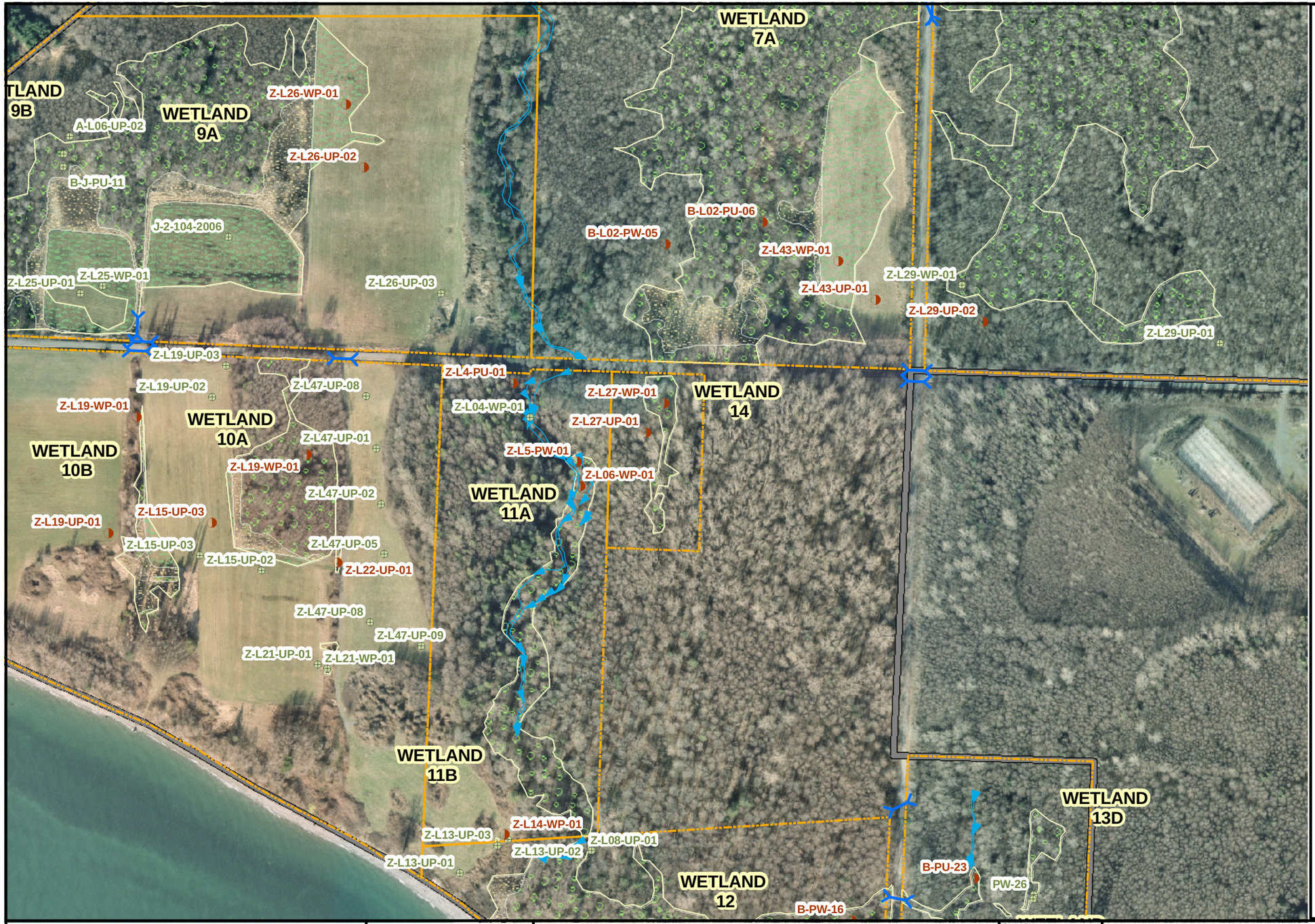

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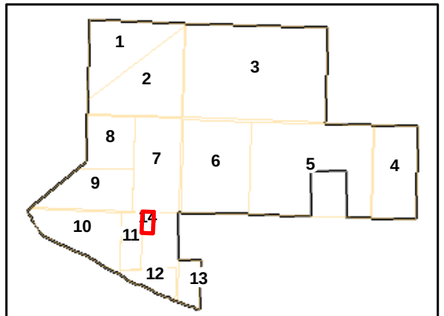

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- CULVERT
- RAILROAD
- DRAINAGE
- STUDY AREA BOUNDARY
- FRESHWATER FORESTED WETLAND (PFO)
- FRESHWATER SHRUB WETLAND (PSS)
- FRESHWATER EMERGENT WETLAND (PEM)
- ASSESMENT UNIT

0 200 400 600 Feet

CLIENT LOGO

CLIENT: GATEWAY PACIFIC TERMINALS

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DWN BY: PM
CHK'D BY: MG/KD
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 350 feet

PROJECT: WETLAND DELINEATION

TITLE: WETLAND ASSESMENT UNIT 14

DATE: FEBRUARY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: -
APPENDIX NO.: APPENDIX D14

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APPENDIX E

Wetland Rating Forms

Table E1 Summary of wetland ratings.

Assessment Unit	Rated by	HGM Class	More than 1 HGM Class	Category	Total Score
1	Dunkin	Flats/Depressional	No	III	44
2	Gray	Slope	Yes, Riverine	III	39
3	Dunkin	Slope	Yes, Depression	III	33
4A	Dunkin	Slope	Yes, Depression	III	34
4B	Gray	Depressional	No	III	38
4C	Gray	Slope	Yes, Depression	III	32
4D	Gray	Slope	No	III	32
4E	Gray	Depressional	No	III	34
4F	Gray	Slope	No	IV	17
5A	Dunkin	Slope	Yes, Depression	III	45
5B	Gray	Depressional	No	III	40
5C	Gray	Slope	Yes, Depression	III	45
6	Dunkin	Slope	Yes, Depression	III	43
7A	Dunkin	Slope	No	III	45
7B	Gray	Depressional	No	III	33
8A	Dunkin	Slope	No	III	30
8B	Gray	Depressional	No	III	30
9A	Dunkin	Slope	No	III	42

9B	Gray	Depressional	No	III	42
10A	Dunkin	Slope	No	III	34
10B	Gray	Depressional	No	III	33
10C	Gray	Depressional	No	IV	28
11A	Dunkin	Riverine	Yes, Slope	I	70
11B	Gray	Depressional	No	III	33
12	Dunkin	Depressional/ Coastal Lagoon	Yes, Riverine	I	N/A
13A	Dunkin	Riverine	Yes, Depression	I	73
13C	Gray	Depressional	No	III	35
13D	Gray	Slope	No	III	38
13E	Gray	Riverine	Yes, Depression	II	64
13F	Gray	Depressional	No	III	36
14	Gray	Depressional	No	III	37

Wetland name or number 1

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 1 Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No _ Date of training Oct 2006

SEC: 18 TWNSHP: 39 RNGE: 1E Is S/T/R in Appendix D? Yes_ No X

Map of wetland unit: Figure_____ Estimated size>40 Acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III__X IV___

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

Score for Water Quality Fun	18
Score for Hydrologic Functions	7
Score for Habitat Functions	19
TOTAL score for Functions	44

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply__X__

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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Wetland name or number 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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

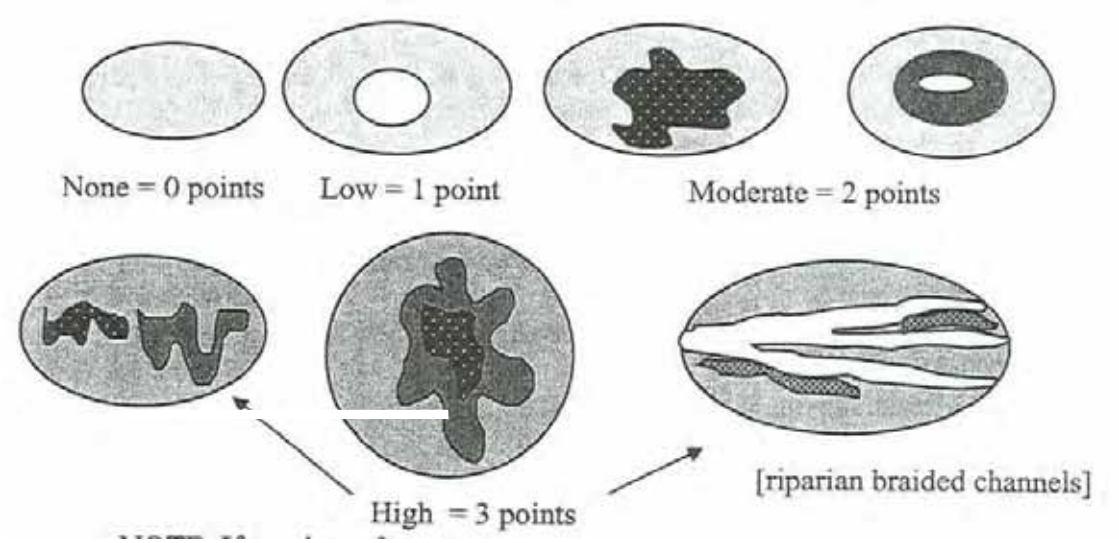
Wetland name or number 1

	D Depressional and Flats Wetlands	**Points**
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality	(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 has 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** 1 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 > = ½ 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** 5
D	D 1.4 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 years.* 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*	9
D	**D 2. Does the wetland have the opportunity to improve water quality?**	***(see p. 44)***
	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.* X Grazing in the wetland or within 150 ft X 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 area, 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**	multiplier 2
D	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	18

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	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	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 ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire 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 have the <u>opportunity</u> to reduce flooding and erosion?**	***(see p. 49)***
	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**	multiplier 1
D	**TOTAL – Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	7

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)***	**Figure**
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* _X_ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *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	4
H 1.2 Hydroperiods ***(see p.73)***	**Figure**
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	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	2

Total for page 8

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure**____ 3
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* X 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.*	3
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	14

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) **Points = 0** X Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure** 1
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	14
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	19

Wetland name or number 2

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 2 Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No _ Date of training Apr 2007

SEC: 17 & 18 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes__ No X

Map of wetland unit: Figure_____ Estimated size>40 Acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III_X_ IV___

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

Score for Water Quality Fun	10
Score for Hydrologic Functions	6
Score for Habitat Functions	23
TOTAL score for Functions	39

Category based on SPECIAL CHARACTERISTCS 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**	**X**
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above		Check if unit has multiple HGM classes present	X

Riverine

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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 2

	Slope Wetlands **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the potential to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	3
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure_____ 2
S	**Total for S 1** *Add the points in the boxes above*	5
S	**S 2. Does the wetland 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.* _X_ Grazing in the wetland or within 150 ft ___ Untreated stormwater discharges to wetland _X_ Tilled fields, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland _X_ Other oil refinery, railroad **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**TOTAL – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	10

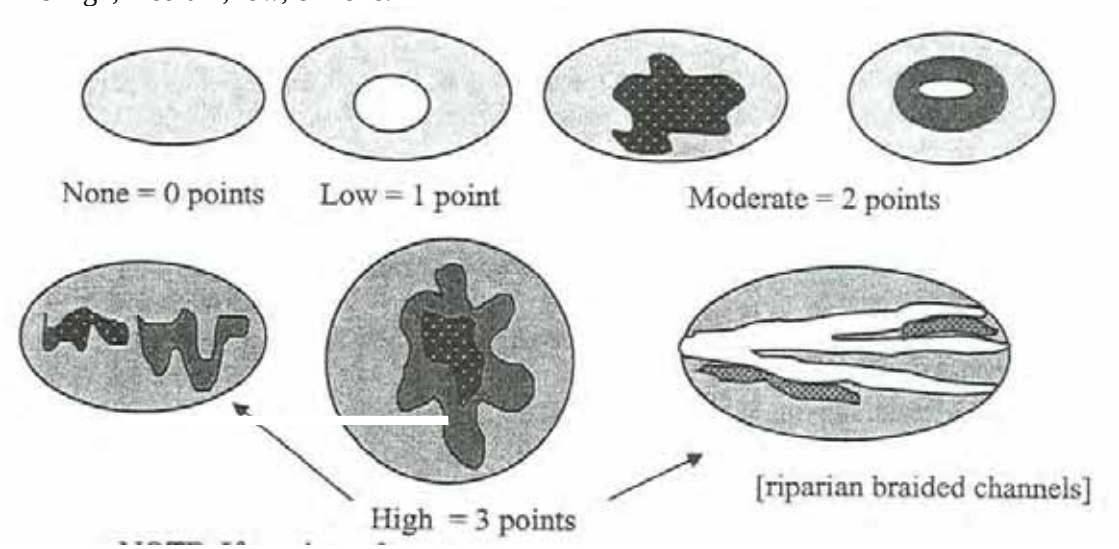
Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	3
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	0
S	*Add the points in the boxes above*	3
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	6

Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ Forested (areas where trees have > 30% cover) *If the unit has a forested class check if:* _X_ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *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	4
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 _X_ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	3
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 9

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure**____ 3
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X Standing snags (diameter at the bottom > 4 inches) in the wetland X 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 (> 30 degree 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.*	3
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	15

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** X 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 3
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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.* X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ___ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ___ **Cliffs**: Greater than 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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

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 wetlands 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	15
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	23

Wetland name or number 3

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 3 Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No _ Date of training Oct 2006

SEC:17 & 18 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size >40 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV___

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

Score for Water Quality Fun	6
Score for Hydrologic Functions	6
Score for Habitat Functions	21
TOTAL score for Functions	33

Category based on SPECIAL CHARACTERISTCS 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** (depressional)	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

Wetland name or number 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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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 3

S	**Slope Wetlands** **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the potential to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	2
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure_____ 1
S	**Total for S 1** *Add the points in the boxes above*	3
S	**S 2. Does the wetland 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, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**TOTAL – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	6

Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	1
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	3
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	6

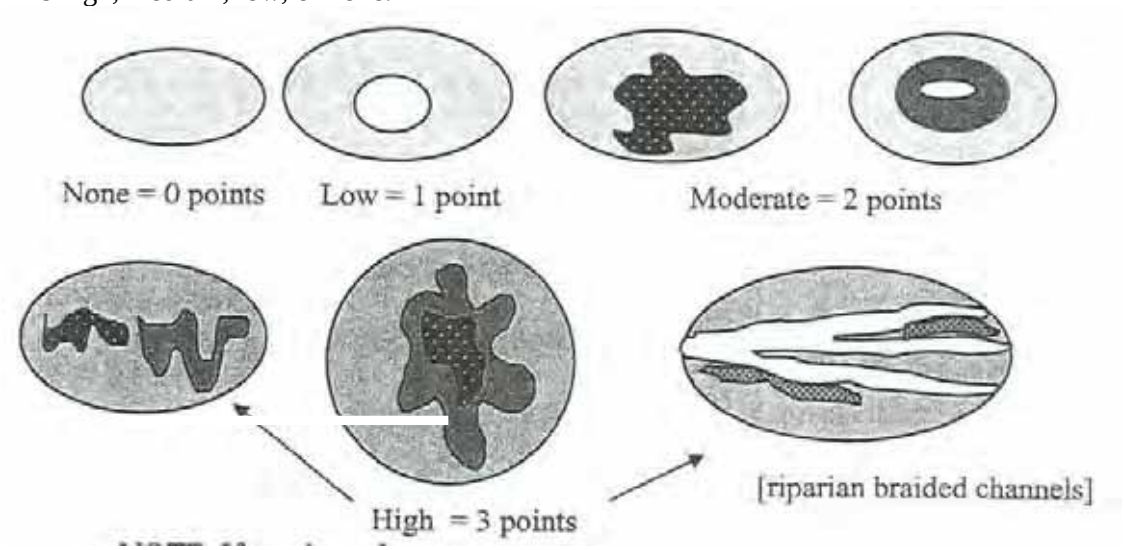
Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. X Aquatic Bed X Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) X 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	4
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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) X Permanently flooded or inundated — 4 or more types present — points = 3 X Seasonally flooded or inundated — 3 types present — points = 2 X Occasionally flooded or inundated — 2 types present — points = 1 X Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	3
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 9

H 1.4 Interspersion of habitats ***(see p. 76)*** **Figure**

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



3

NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes

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.

X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long).

X 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 (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

X 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.

3

H 1. TOTAL Score – potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

15

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) **Points = 0** X Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure** 1
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	2

Total for page 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 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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*	6
TOTAL for H 1 from page 14	15
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	21

Wetland name or number 4A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 4A Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No _ Date of training Oct 2007

SEC: 17 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes____ No X

Map of wetland unit: Figure_____ Estimated size 27 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III__X IV___

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

Score for Water Quality Fun	6
Score for Hydrologic Functions	10
Score for Habitat Functions	18
TOTAL score for Functions	34

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply__X_

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** (depression)	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

Wetland name or number 4A

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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 4A

	Slope Wetlands **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	Points (only 1 score per box)
S	**S 1. Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	1
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure_____ 2
S	**Total for S 1** *Add the points in the boxes above*	3
S	**S 2. Does the wetland have the <u>opportunity</u> 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 X Untreated stormwater discharges to wetland ___ Tilled fields, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland X Other rail line, gas line, roadways **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	6

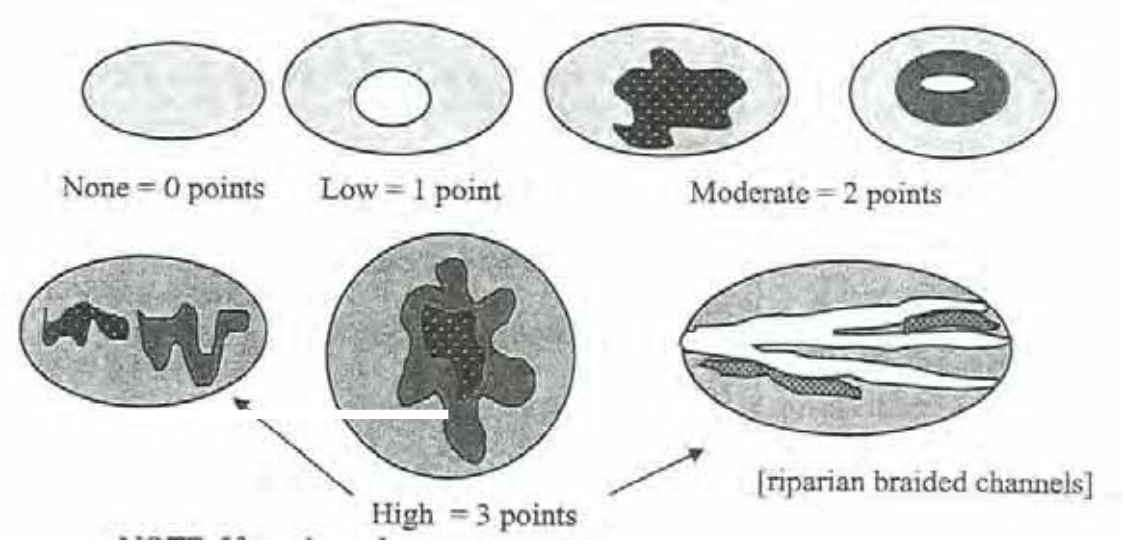
Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	3
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	5
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	10

Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	3
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 7

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 3
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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.*	2
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	13

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) **Points = 0** X Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure_____** 1
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	13
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	18

Wetland name or number 4B

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 4B Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No ____ Date of training Apr 2007

SEC: 17 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes__ No X

Map of wetland unit: Figure_____ Estimated size 4 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III__X_ IV___

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

Score for Water Quality Fun	14
Score for Hydrologic Functions	10
Score for Habitat Functions	14
TOTAL score for Functions	38

Category based on SPECIAL CHARACTERISTCS 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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

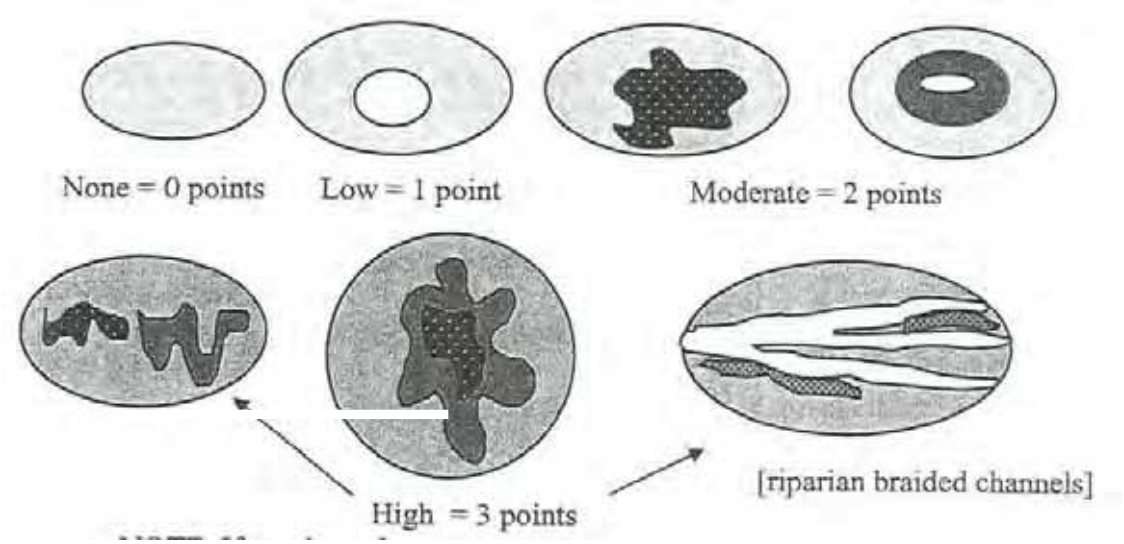
Wetland name or number 4B

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 has 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 > = ½ 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**____ 5
D	D 1.4 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 years.* 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*	7
D	**D 2. Does the wetland 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 X___ Tilled fields or orchards within 150 ft of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential area, farmed fields, roads, or clear-cut logging X___ 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

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	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	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 ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	5
D	**D 4. Does the wetland 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 2
D	**TOTAL – Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	10

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed X Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) X 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	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 X Occasionally flooded or inundated — 2 types present — points = 1 X Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	1
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 5

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 2
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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.*	2
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	9

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) **Points = 0** X Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure** 1
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	14

Wetland name or number 4C

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 4C Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No _ Date of training Apr 2007

SEC: 17 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes__ No X

Map of wetland unit: Figure_____ Estimated size 0.15 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III__X IV___

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

Score for Water Quality Fun	8
Score for Hydrologic Functions	10
Score for Habitat Functions	14
TOTAL score for Functions	32

Category based on SPECIAL CHARACTERISTCS 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** (depression)	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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 4C

	Slope Wetlands **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	Points (only 1 score per box)
S	**S 1. Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	2
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure_____ 2
S	**Total for S 1** *Add the points in the boxes above*	4
S	**S 2. Does the wetland have the <u>opportunity</u> 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, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	8

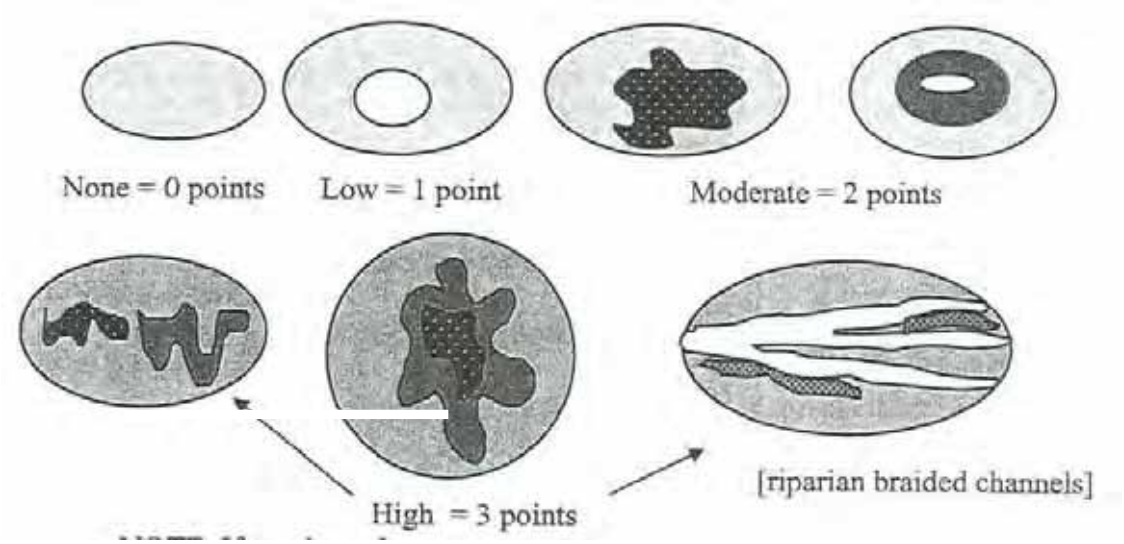
Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	3
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	5
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	10

Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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.*	2
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) **Points = 0** X Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure** 1
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	14

Wetland name or number 4D

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 4D Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No _ Date of training Apr 2007

SEC: 17 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_ No X

Map of wetland unit: Figure_____ Estimated size 1 acre

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	8
Score for Hydrologic Functions	10
Score for Habitat Functions	14
TOTAL score for Functions	32

Category based on SPECIAL CHARACTERISTCS 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**	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Wetland name or number 4D

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

S	**Slope Wetlands** **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	2
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure_____ 2
S	**Total for S 1** *Add the points in the boxes above*	4
S	**S 2. Does the wetland have the <u>opportunity</u> 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, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	8

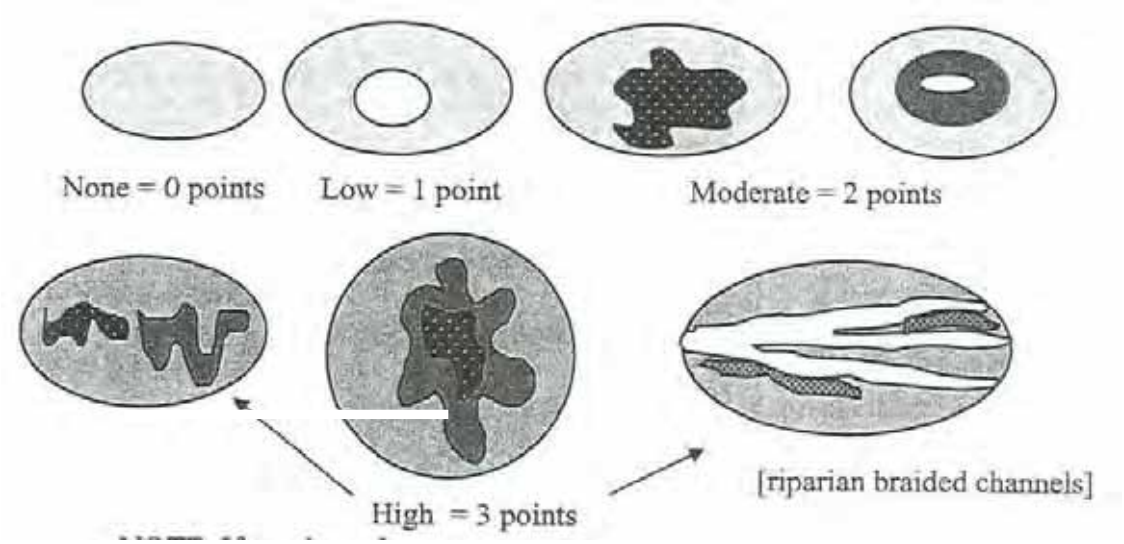
Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	3
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	5
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	10

Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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.*	2
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	9

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) **Points = 0** X Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure** 1
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	14

Wetland name or number 4E

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 4E Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No _ Date of training Apr 2007

SEC: 17 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes__ No___

Map of wetland unit: Figure_____ Estimated size 0.17 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III__X_ IV___

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

Score for Water Quality Fun	12
Score for Hydrologic Functions	12
Score for Habitat Functions	10
TOTAL score for Functions	34

Category based on SPECIAL CHARACTERISTCS 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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

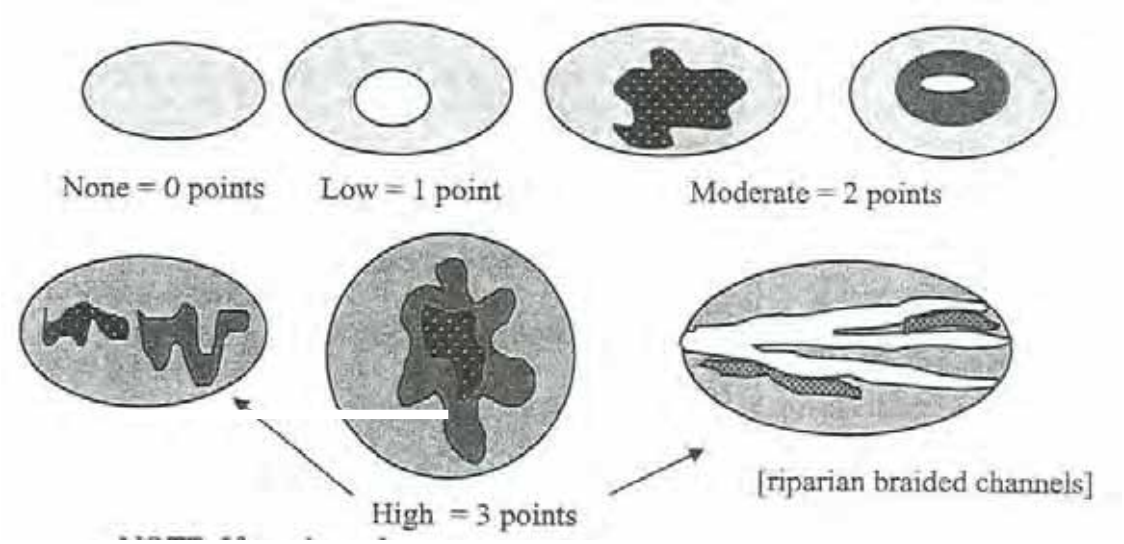
Wetland name or number 4E

	D Depressional and Flats Wetlands	**Points**
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality	(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 has 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**_____ 1
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 > = ½ 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**_____ 3
D	D 1.4 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 years.* 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*	6
D	**D 2. Does the wetland 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 area, 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

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	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	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	1
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 ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	1
D	**D 4. Does the wetland 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 2
D	**TOTAL – Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ 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	1
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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 4

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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 (> 30 degree 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*	5

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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** 1
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	5
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 4F

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 4F Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No _ Date of training Apr 2007

SEC: 17 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size 1 acre

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV__X

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

Score for Water Quality Fun	6
Score for Hydrologic Functions	4
Score for Habitat Functions	7
TOTAL score for Functions	17

Category based on SPECIAL CHARACTERISTCS 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**	**X**
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

S	**Slope Wetlands** **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	2
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure_____ 1
S	**Total for S 1** *Add the points in the boxes above*	3
S	**S 2. Does the wetland have the <u>opportunity</u> 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, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	6

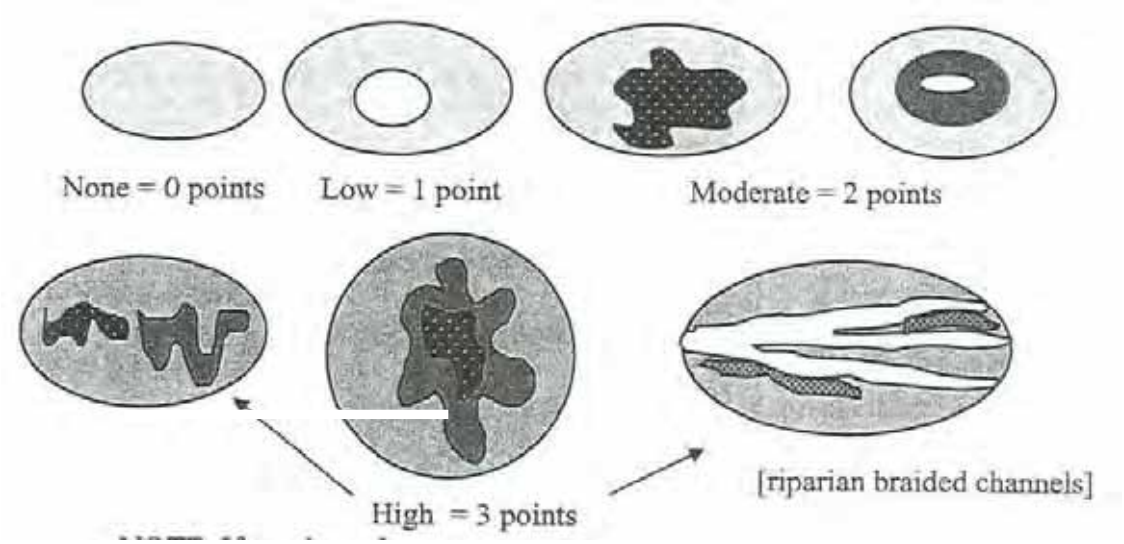
Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the potential to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	0
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	2
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	4

Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ 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	1
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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 4

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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.* X 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 (> 30 degree 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*	6

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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** 1
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	6
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 5A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 5A Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No _ Date of training Oct 2006

SEC: 17 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size>40 Acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	8
Score for Hydrologic Functions	16
Score for Habitat Functions	21
TOTAL score for Functions	45

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X

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** (depression)	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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 5A

	Slope Wetlands **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the potential to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	2
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	**Figure**_____ 2
S	**Total for S 1** *Add the points in the boxes above*	4
S	**S 2. Does the wetland 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, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**TOTAL – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	8

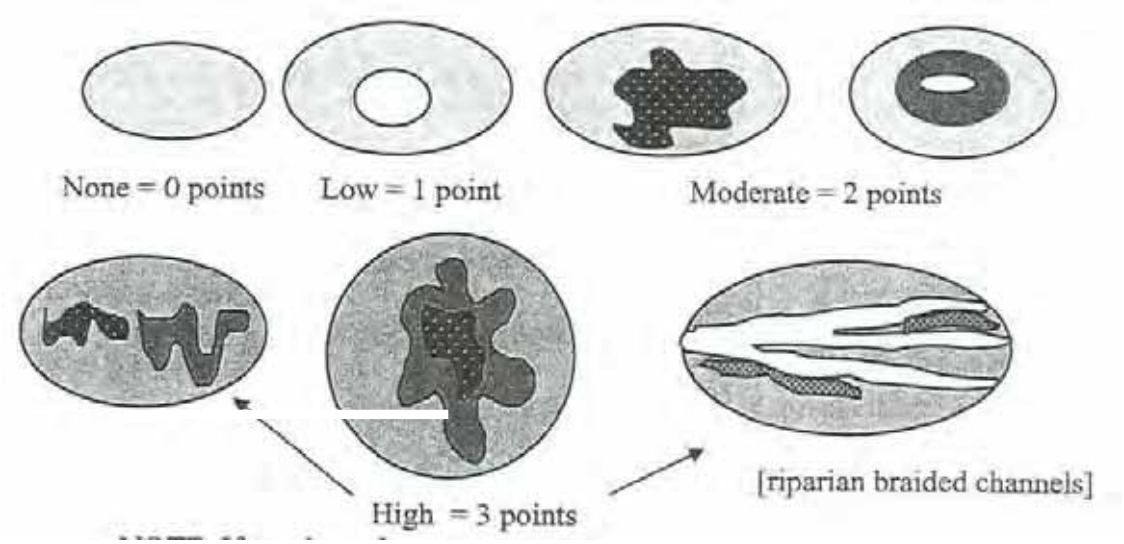
Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	6
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	8
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	16

Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 3
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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)* X 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.*	3
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	12

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 4
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	2

Total for page 6

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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*	9
TOTAL for H 1 from page 14	12
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	21

Wetland name or number 5B

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 5B Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No _ Date of training Apr 2007

SEC: 17 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size: 0.13 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	5
Score for Hydrologic Functions	18
Score for Habitat Functions	17
TOTAL score for Functions	40

Category based on SPECIAL CHARACTERISTCS 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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

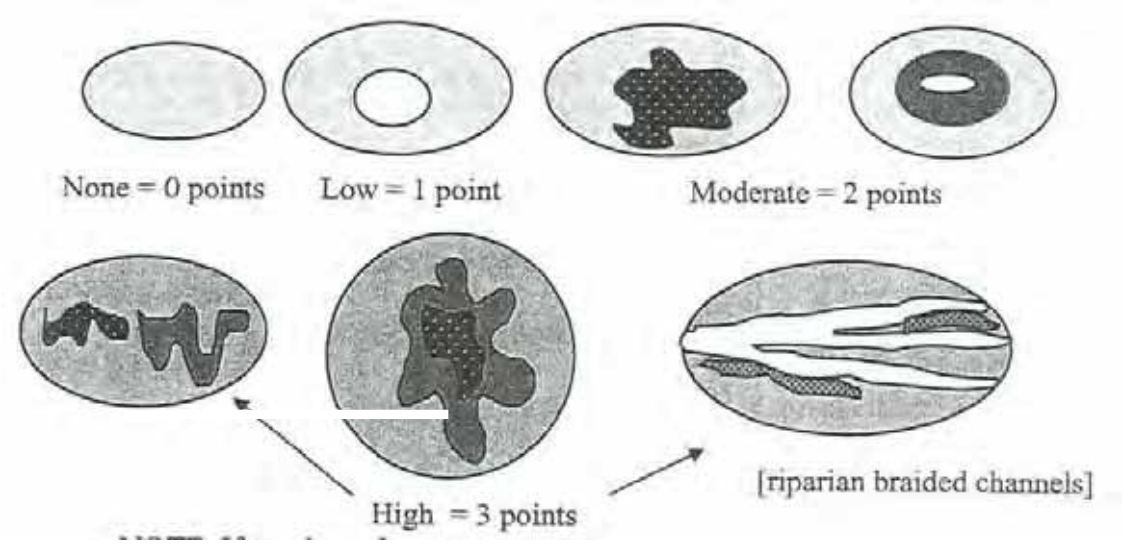
Wetland name or number 5B

	D Depressional and Flats Wetlands	**Points**
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality	(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 has 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 > = ½ 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**_____ 5
D	D 1.4 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 years.* 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*	9
D	**D 2. Does the wetland have the opportunity to improve water quality?**	***(see p. 44)***
	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 _X_ Tilled fields or orchards within 150 ft of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential area, 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**	multiplier 2
D	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	18

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	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	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 ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	5
D	**D 4. Does the wetland 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***	5

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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.*	2
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	9

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 4
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 5

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	17

Wetland name or number 5C

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 5C Date of site visit: 2006-2007

Rated by Gray Trained by Ecology? Yes X No _ Date of training Oct 2006

SEC: 17 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size: 0.22

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	8
Score for Hydrologic Functions	16
Score for Habitat Functions	21
TOTAL score for Functions	45

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X

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** (depression)	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

Wetland name or number 5C

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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 5C

	Slope Wetlands **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the potential to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	2
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	**Figure**_____ 2
S	**Total for S 1** *Add the points in the boxes above*	4
S	**S 2. Does the wetland 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, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**TOTAL – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	8

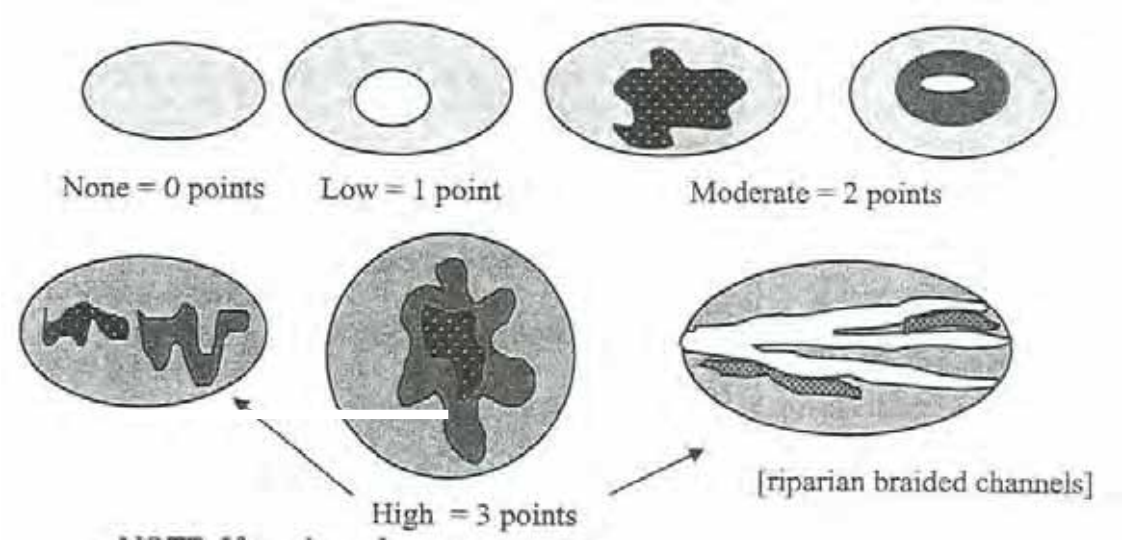
Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	6
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	8
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	16

Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 3
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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)* X 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.*	3
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	12

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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** 4
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	2

Total for page 6

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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*	9
TOTAL for H 1 from page 14	12
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	21

Wetland name or number 6

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 6 Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No ___ Date of training Oct 2006

SEC:17 & 18 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size 37 Acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III__X IV___

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

Score for Water Quality Fun	8
Score for Hydrologic Functions	16
Score for Habitat Functions	19
TOTAL score for Functions	43

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X

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** (depression)	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

Wetland name or number 6

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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 6

S	**Slope Wetlands** **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the potential to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	2
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure_____ 2
S	**Total for S 1** *Add the points in the boxes above*	4
S	**S 2. Does the wetland 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, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**TOTAL – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	8

Comments

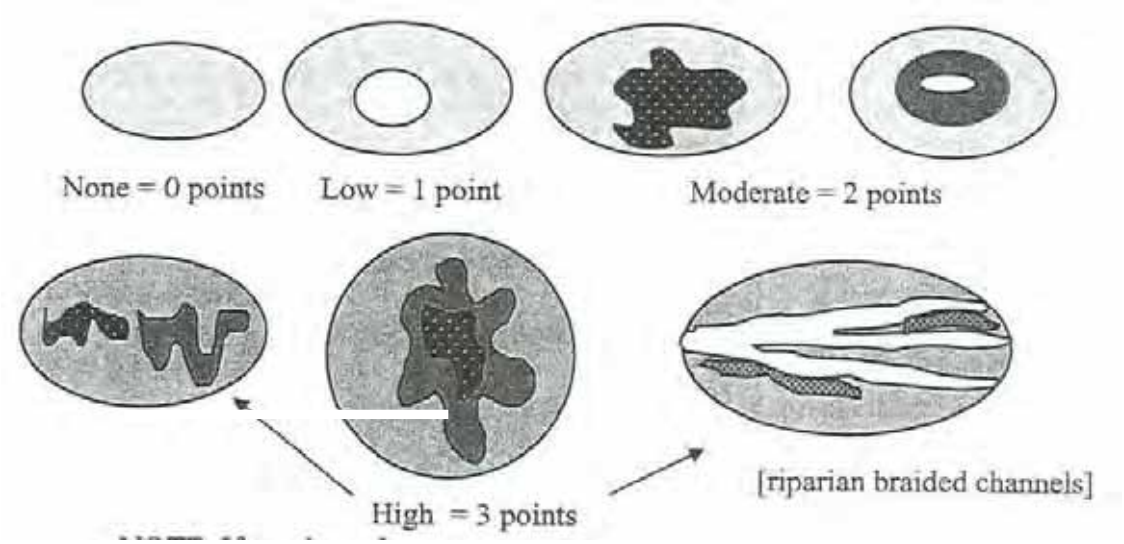
S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	6
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	8
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	16

Comments

Wetland name or number 6

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated 3 types present points = 2 _X_ Occasionally flooded or inundated 2 types present points = 1 _X_ Saturated only 1 type present points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure**____ 1
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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)* X 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.*	3
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	10

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 4
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	2

Total for page 6

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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*	9
TOTAL for H 1 from page 14	10
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	19

Wetland name or number 7A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 7A Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No ____ Date of training Oct 2006

SEC: 18 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes____ No X

Map of wetland unit: Figure_____ Estimated size: 40 Acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	8
Score for Hydrologic Functions	16
Score for Habitat Functions	21
TOTAL score for Functions	45

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X

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**	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

S	**Slope Wetlands** **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	2
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure_____ 2
S	**Total for S 1** *Add the points in the boxes above*	4
S	**S 2. Does the wetland have the <u>opportunity</u> 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, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	8

Comments

Wetland name or number 7A

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the potential to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	6
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	8
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	16

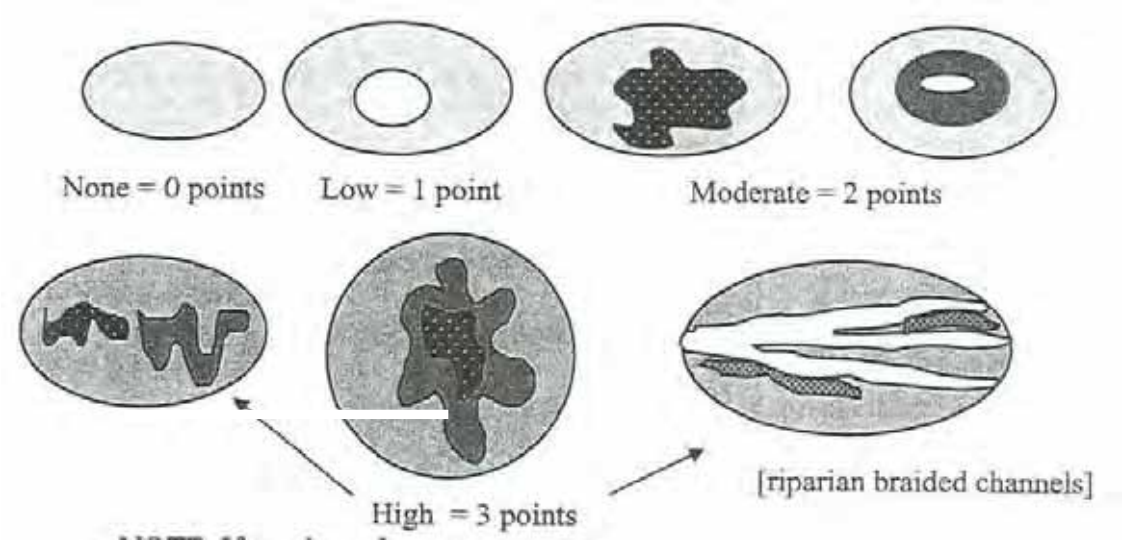
Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated 3 types present points = 2 _X_ Occasionally flooded or inundated 2 types present points = 1 _X_ Saturated only 1 type present points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** — **Figure** ____

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



3

NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes

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 (> 30 degree 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.

3

H 1. TOTAL Score – potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

12

Comments

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".* ___ 100m (330 ft) 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** X 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 4
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	2

Total for page 6

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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*	9
TOTAL for H 1 from page 14	12
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	21

Wetland name or number 7B

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 7B Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No ____ Date of training Apr 2007

SEC: 18 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes__ No X

Map of wetland unit: Figure_____ Estimated size 0.18 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III__X IV___

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

Score for Water Quality Fun	10
Score for Hydrologic Functions	5
Score for Habitat Functions	18
TOTAL score for Functions	33

Category based on SPECIAL CHARACTERISTCS 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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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 7B

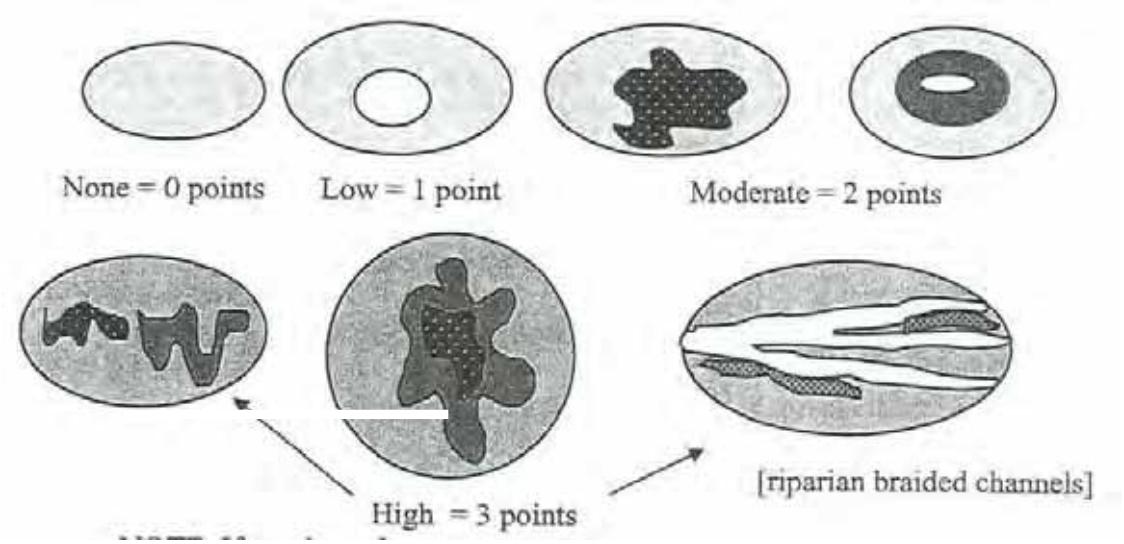
D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	***(see p. 38)***
D	D 1.1 Characteristics of surface 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 has 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 > = ½ 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**____ 3
D	D 1.4 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 years.* 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*	5
D	**D 2. Does the wetland 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.* _X_ 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 area, 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 X Other railroad tracks, industrial areas upstream **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

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	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	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 ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	5
D	**D 4. Does the wetland 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***	5

Wetland name or number 7B

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Occasionally flooded or inundated 2 types present points = 1 _X_ Saturated only 1 type present points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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.*	2
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	3

Comments

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".* X 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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** 5
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 6

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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*	9
TOTAL for H 1 from page 14	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	18

Wetland name or number 8A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 8A Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No _ Date of training Oct 2006

SEC: 19 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes__ No X

Map of wetland unit: Figure_____ Estimated size 25 Acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III__X IV___

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

Score for Water Quality Fun	3
Score for Hydrologic Functions	4
Score for Habitat Functions	23
TOTAL score for Functions	30

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X

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**	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Wetland name or number 8A

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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 8A

	Slope Wetlands **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the potential to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	2
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure_____ 1
S	**Total for S 1** *Add the points in the boxes above*	3
S	**S 2. Does the wetland 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, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 1
S	**TOTAL – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	3

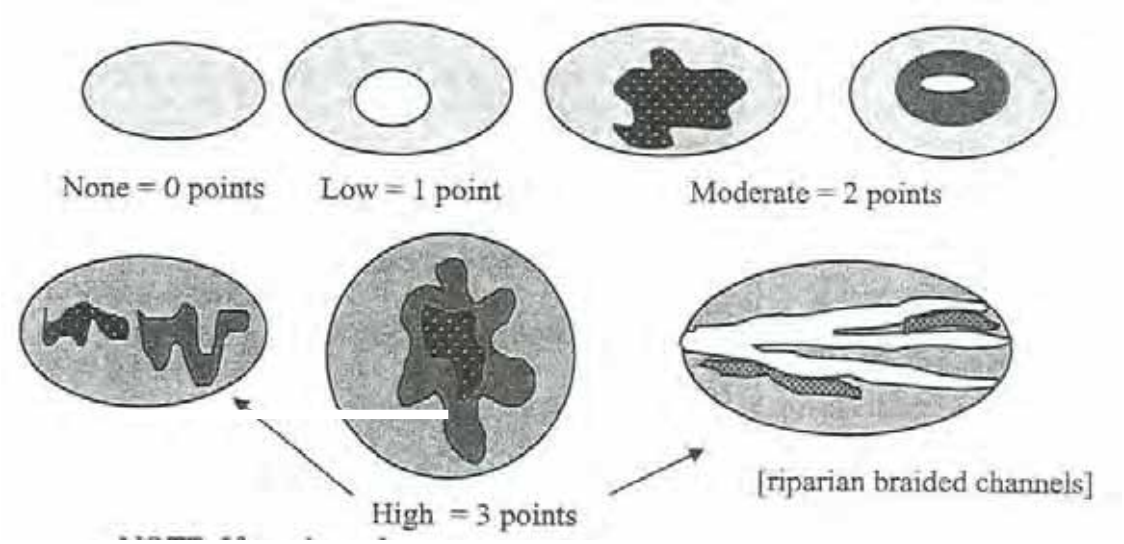
Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the potential to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	0
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	2
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	4

Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 ___ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	1
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 5

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 3
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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.*	2
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	10

Comments

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".* ___ 100m (330 ft) 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** X 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 4
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	4

Total for page 8

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	5
H 2. TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	13
TOTAL for H 1 from page 14	10
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	23

Wetland name or number 8B

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 8B Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No ___ Date of training Apr 2007

SEC: 18 TWNSHP: 39 RNGE: 1E Is S/T/R in Appendix D? Yes___ No X

Map of wetland unit: Figure_____ Estimated size 0.15 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	14
Score for Hydrologic Functions	5
Score for Habitat Functions	11
TOTAL score for Functions	30

Category based on SPECIAL CHARACTERISTCS 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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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 8B

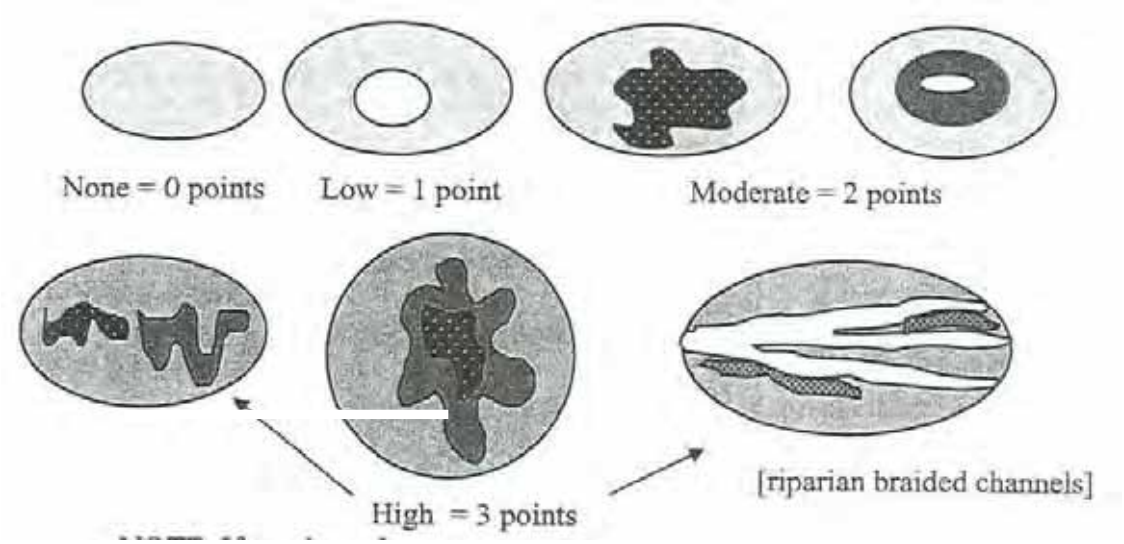
	D Depressional and Flats Wetlands	**Points**
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality	(only 1 score per box)
D	**D 1. Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 38)***
D	D 1.1 Characteristics of surface 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 has 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 > = ½ 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**_____ 3
D	D 1.4 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 years.* 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*	7
D	**D 2. Does the wetland have the <u>opportunity</u> 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.* _X_ Grazing in the wetland or within 150 ft _X_ Untreated stormwater discharges to wetland _X_ Tilled fields or orchards within 150 ft of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential area, 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	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	14

Wetland name or number 8B

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	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	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 ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	5
D	**D 4. Does the wetland 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***	5

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)***	**Figure**
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants ___ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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	1
H 1.2 Hydroperiods ***(see p.73)***	**Figure**
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	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	2

Total for page 5

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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 (> 30 degree 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*	5

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 1
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	6
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 9A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 9A Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No _ Date of training Oct 2006

SEC: 18 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size 25 Acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	8
Score for Hydrologic Functions	10
Score for Habitat Functions	24
TOTAL score for Functions	42

Category based on SPECIAL CHARACTERISTCS 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**	**X**
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

Wetland name or number 9A

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

S	**Slope Wetlands** **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	2
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure_____ 2
S	**Total for S 1** *Add the points in the boxes above*	4
S	**S 2. Does the wetland have the <u>opportunity</u> 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 _X_ Tilled fields, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	8

Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	3
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	5
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 2
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	10

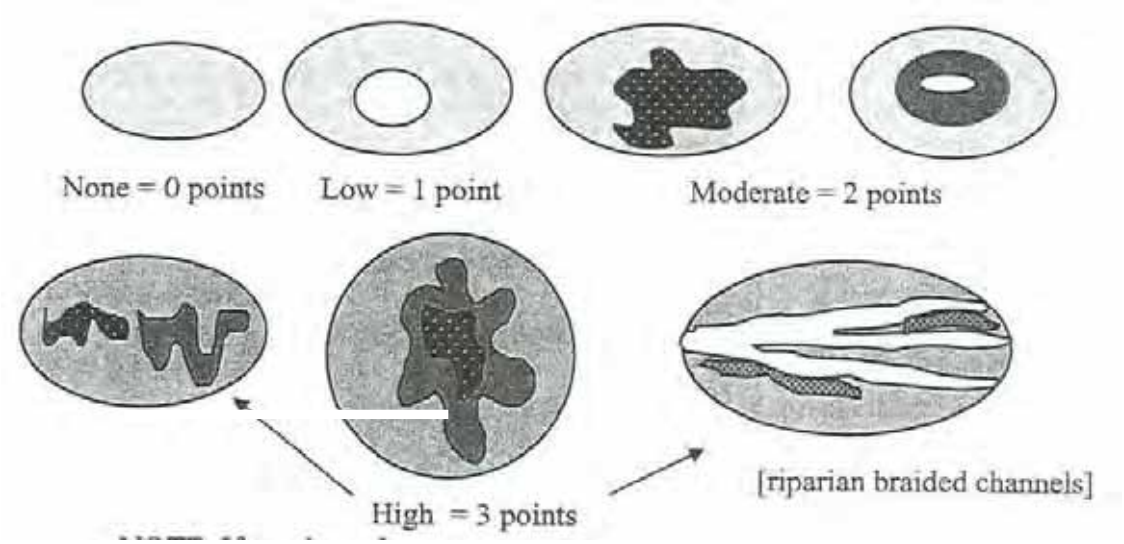
Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** — **Figure** ____

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes

3

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.

X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long).

X 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 (> 30 degree 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.

2

H 1. TOTAL Score – potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

11

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 4
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	4

Total for page 8

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	5
H 2. TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	13
TOTAL for H 1 from page 14	11
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	24

Wetland name or number 9B

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 9B Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No ___ Date of training Apr 2007

SEC: 19 TWNSHP: 39 RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size 0.18 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	14
Score for Hydrologic Functions	10
Score for Habitat Functions	18
TOTAL score for Functions	42

Category based on SPECIAL CHARACTERISTCS 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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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 9B

	D Depressional and Flats Wetlands	**Points**
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality	(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 has 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 > = ½ 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**_____ 3
D	D 1.4 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 years.* 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*	7
D	**D 2. Does the wetland 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 area, 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

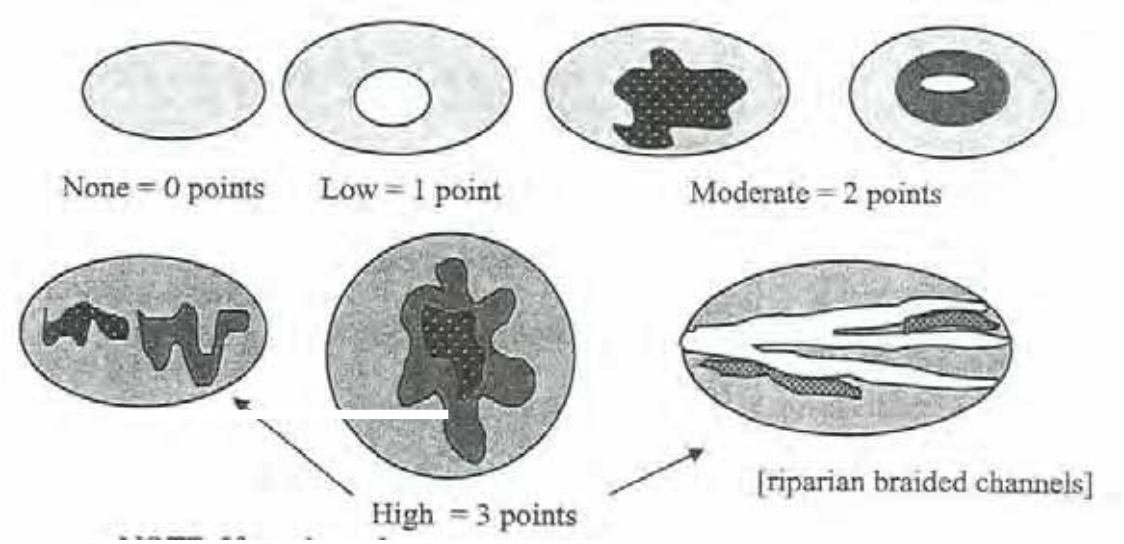
D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream degradation.	**Points** (only 1 score per box)
D	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	D 3.1 Characteristics 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 ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	5
D	**D 4. Does the wetland 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 2
D	**TOTAL – Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	10

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated — 3 types present — points = 2 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** **Figure**

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.



1

NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes

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.

X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long).

X 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 (> 30 degree 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.

2

H 1. TOTAL Score – potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

9

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 5
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 6

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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*	9
TOTAL for H 1 from page 14	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	18

Wetland name or number 10A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 10A Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No ___ Date of training Oct 2006

SEC: 19 TWNSHP: 39 RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size 4 Acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	8
Score for Hydrologic Functions	8
Score for Habitat Functions	18
TOTAL score for Functions	34

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X____

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**	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

S	Slope Wetlands **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	Points (only 1 score per box)
S	**S 1. Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	2
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	**Figure**_____ 2
S	**Total for S 1** *Add the points in the boxes above*	4
S	**S 2. Does the wetland have the <u>opportunity</u> 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, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	8

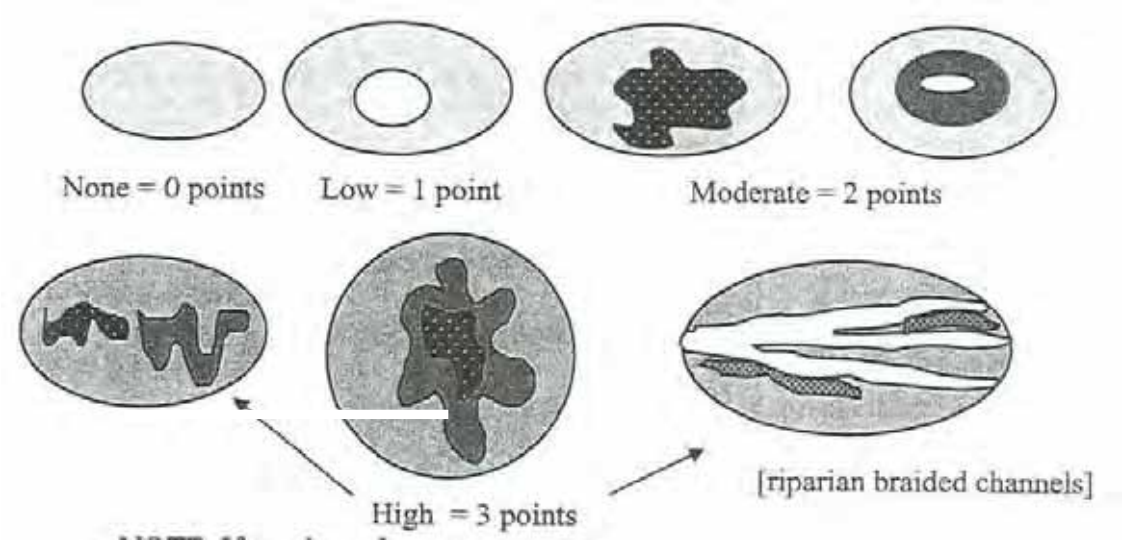
Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	6
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	2
S	*Add the points in the boxes above*	8
S	**S 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 1
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	8

Comments

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)***	**Figure**
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed ___ Emergent plants ___ Scrub/shrub (areas where shrubs have > 30% cover) X 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	0
H 1.2 Hydroperiods ***(see p.73)***	**Figure**
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 X Seasonally flooded or inundated — 3 types present — points = 2 X Occasionally flooded or inundated — 2 types present — points = 1 X Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	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 *List species below if you want to:* 5 – 19 species points = 1 < 5 species points = 0	1

Total for page 4

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 3
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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)* X 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.*	3
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	10

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** X 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 (6.6 ft) 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** 2
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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)*	0

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 wetlands 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	10
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	18

Wetland name or number 10B

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 10B Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No _ Date of training Apr 2007

SEC: 19 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size: 0.04 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III __X_ IV____

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

Score for Water Quality Fun	12
Score for Hydrologic Functions	5
Score for Habitat Functions	16
TOTAL score for Functions	33

Category based on SPECIAL CHARACTERISTCS 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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

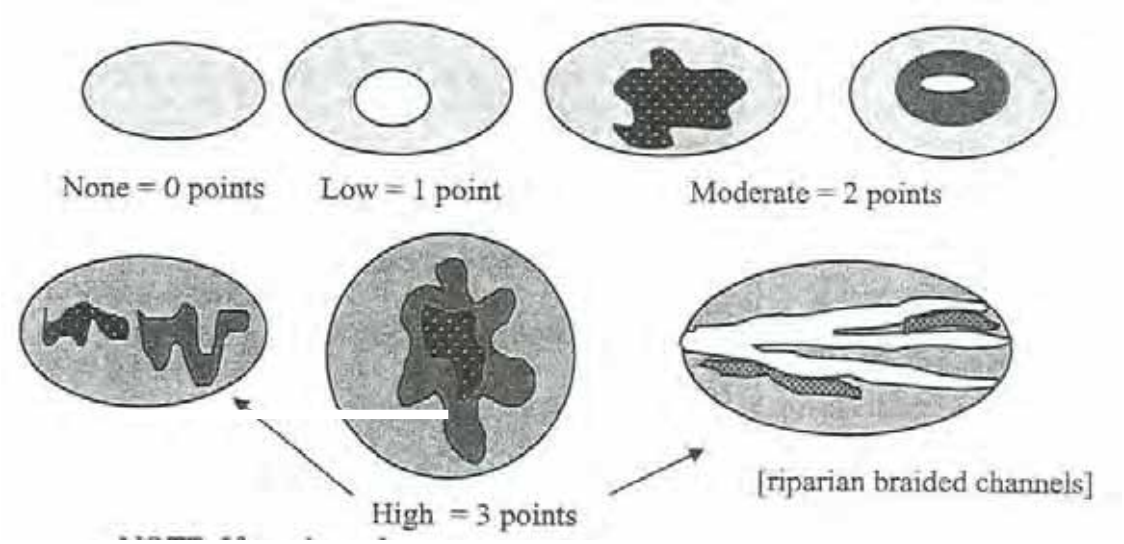
Wetland name or number 10B

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 has 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 > = ½ 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**_____ 3
D	D 1.4 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 years.* 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*	6
D	**D 2. Does the wetland have the opportunity to improve water quality?**	***(see p. 44)***
	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.* X 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 area, 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**	multiplier 2
D	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	12

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	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	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 <u>points = 2</u> 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 <u>points =3</u> 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 ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit <u>points = 0</u> Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	5
D	**D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?**	***(see p. 49)***
	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 <u>X</u> Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	multiplier <u>1</u>
D	**TOTAL – Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	5

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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 Map of Cowardin vegetation classes 3 structures <u>points = 2</u> 2 structures points = 1 1 structure points = 0	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Seasonally flooded or inundated 3 types present <u>points = 2</u> _X_ Occasionally flooded or inundated 2 types present points = 1 _X_ Saturated only 1 type present points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3 <u>Richness of Plant Species</u> ***(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: <u>> 19 species points = 2</u> *List species below if you want to:* 5 – 19 species points = 1 < 5 species points = 0	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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.*	2
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	9

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** X 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 (6.6 ft) 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** 2
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. X__ **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 habit= **3 points** If wetland has **1** priority habitats= **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

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 wetlands 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	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	16

Wetland name or number 11A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 11A Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No _ Date of training Oct 2006

SEC: 19 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size 4 Acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I X 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 Fun	20
Score for Hydrologic Functions	18
Score for Habitat Functions	32
TOTAL score for Functions	70

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X____

Final Category (choose the "highest" category from above) **I**

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** (slope)	X
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?* **Coho salmon - confirmed sitings**	X	
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.		X

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.

R	**Riverine and Freshwater Tidal Fringe Wetlands** WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality	**Points** (only 1 score per box)
R	**R 1. Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 52)***
R	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover > ¾ area of wetland points = 8 Depressions cover > ½ area of wetland points = 4 If depressions > ½ of area of unit draw polygons on aerial photo or map Depressions present but cover< ½ area of wetland points = 2 No depressions present points = 0	**Figure**_____ 2
R	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): Trees or shrubs > 2/3 the area of the unit points = 8 Trees or shrubs > 1/3 area of the unit points = 6 Ungrazed, herbaceous plants > 2/3 area of unit points = 6 Ungrazed, herbaceous plants > 1/3 area of unit points = 3 Trees, shrubs, and ungrazed herbaceous <1/3 area of unit points = 0 Aerial photo or map showing polygons of different vegetation types	**Figure**_____ 8
R	*Add the points in the boxes above*	10
R	**R 2. Does the wetland unit have the <u>opportunity</u> 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 <u>X</u> A stream or culvert discharges into wetland that drains developed areas, residential area, 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. 53)*** multiplier <u>2</u>
R	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from R 1 by R 2 ***Add score to table on p. 1***	20

Comments

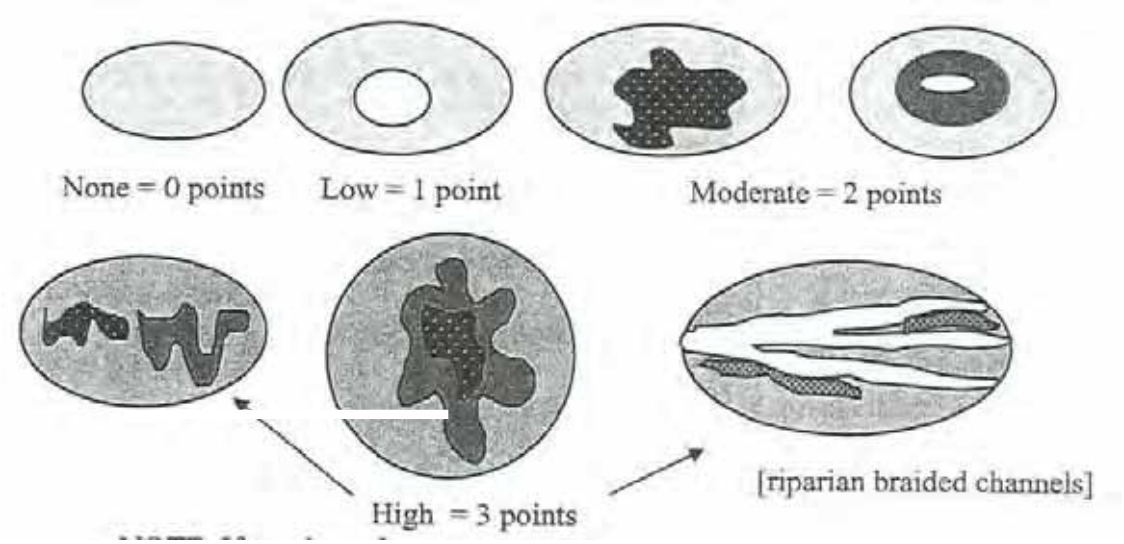
R	**Riverine and Freshwater Tidal Fringe Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream degradation.	**Points** (only 1 score per box)
R	**R3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?**	***(see p. 54)***
	R 3.1 Characteristics of the overbank storage the unit provides: *Estimate the average width of the wetland unit perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit)/(average width of stream between banks).* If the ratio is more than 20 points = 9 If the ratio is between 10 – 20 points = 6 If the ratio is 5 - < 10 points = 4 If the ratio is 1 - < 5 points = 2 If the ratio is < 1 points =1 Aerial photo or map showing average widths	**Figure**_____ 2
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.* (polygons needs to have >90% cover at person height NOT Cowardin classes): Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area points = 7 Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area points = 4 Vegetation does not meet above criteria points = 0 Aerial photo or map showing polygons of different vegetation types	**Figure**_____ 7
R	**Total for R 3** *Add the points in the boxes above*	9
R	**R 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?**	***(see p. 57)***
	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. *Note which of the following conditions apply.* ___ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding ___ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding ___ Other _____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fridge along the sides of a dike)* **YES** multiplier is **2** **NO** multiplier is **1**	multiplier 2
R	**TOTAL – Hydrologic Functions** Multiply the score from R 3 by R 4 ***Add score to table on p. 1***	18

Comments

Wetland name or number 11A

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. <u>X</u> Aquatic Bed <u>X</u> Emergent plants <u>X</u> Scrub/shrub (areas where shrubs have > 30% cover) <u>X</u> 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	4
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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) <u>X</u> Permanently flooded or inundated 4 or more types present points = 3 <u>X</u> Seasonally flooded or inundated 3 types present points = 2 <u>X</u> Occasionally flooded or inundated 2 types present points = 1 <u>X</u> Saturated only 1 type present points = 0 <u>X</u> 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	3
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 9

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 3
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X Standing snags (diameter at the bottom > 4 inches) in the wetland X 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 (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* X 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)* X 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.*	5
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	17

Comments

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".* X 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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** 5
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	4

Total for page 9

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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.* X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ___ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ___ **Cliffs**: Greater than 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. 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 habit= **3 points** If wetland has **1** priority habitats= **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

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 wetlands 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	5
H 2. TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	17
TOTAL for H 1 from page 14	15
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	32

Wetland name or number 11B

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 11B Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No _ Date of training Apr 2007

SEC: 19 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size 0.003 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	14
Score for Hydrologic Functions	9
Score for Habitat Functions	10
TOTAL score for Functions	33

Category based on SPECIAL CHARACTERISTCS 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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

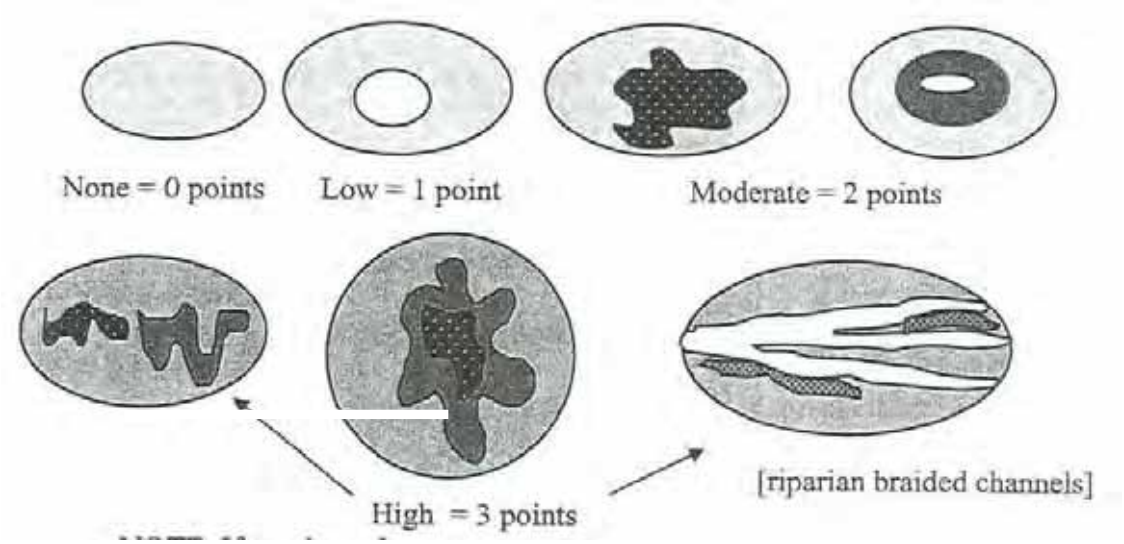
Wetland name or number 11B

D	**Depressional and Flats Wetlands**	**Points**
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality	(only 1 score per box)
D	**D 1. Does the wetland unit have the <u>potential</u> 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 has 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 > = ½ 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	D 1.4 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 years.* 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 have the <u>opportunity</u> 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.* _X_ Grazing in the wetland or within 150 ft ____ Untreated stormwater discharges to wetland _X_ Tilled fields or orchards within 150 ft of wetland ____ A stream or culvert discharges into wetland that drains developed areas, residential area, 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	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	14

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	**D 3. Does the wetland have the potential to reduce flooding and stream erosion?**	***(see p. 46)***
	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	5
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	9
D	**D 4. Does the wetland have the opportunity to reduce flooding and erosion?**	***(see p. 49)***
	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**	multiplier 1
D	**TOTAL – Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	9

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. <u>X</u> 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	0
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 <u>X</u> Seasonally flooded or inundated — 3 types present — points = 2 ___ Occasionally flooded or inundated — 2 types present — points = 1 <u>X</u> 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	1
H 1.3 <u>Richness of Plant Species</u> ***(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	0

Total for page 1

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types 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 (> 30 degree 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*	1

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 2
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 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 330 ft (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.* X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ___ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ___ **Cliffs**: Greater than 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. X **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 habit= **3 points** If wetland has **1** priority habitats= **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)*	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 wetlands 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	2
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 12

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 12 Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No _ Date of training Oct 2006

SEC: 19 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size 11 acres

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 Fun	
Score for Hydrologic Functions	
Score for Habitat Functions	
TOTAL score for Functions	**N.A.**

Category based on SPECIAL CHARACTERISTCS of Wetland

I____X II___ Does not Apply_____

Final Category (choose the "highest" category from above) **I**

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	**X**	**Freshwater Tidal**	
Interdunal			
None of the above		Check if unit has multiple HGM classes present	

Wetland name or number 12

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.		

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.

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 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 X	
SC 1.1 Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland 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**

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 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 ____X SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? YES = Category 1 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 function.*** 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 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 hold 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. 4. 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 cove*r)? YES = Category I NO __X__ 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 function.*

_____ **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 an average diameters (dbh) exceeding 21 inches (53 cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.

YES = Category I NO __X__ 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?

__X__ 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

__X__ 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 meet all of the following three conditions?

__X__ 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).

__X__ 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.

__X__ The wetland is larger than 1/10 acre (4350 square ft.)

YES = Category I NO = Category II

Cat. I

Cat. II

SC 6.0 Interdunal Wetlands ***(see p. 93)*** Is the wetland 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 one 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	**I**

Wetland name or number 13A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 13A Date of site visit: 2006-2007

Rated by Dunkin Trained by Ecology? Yes X No ___ Date of training Oct 2006

SEC: 19 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size 6 Acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I X 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 Fun	20
Score for Hydrologic Functions	26
Score for Habitat Functions	27
TOTAL score for Functions	73

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X____

Final Category (choose the "highest" category from above) **I**

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** (depression)	X
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

R	**Riverine and Freshwater Tidal Fringe Wetlands** WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality	**Points** (only 1 score per box)
R	**R 1. Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 52)***
R	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover > ¾ area of wetland points = 8 Depressions cover > ½ area of wetland points = 4 If depressions > ½ of area of unit draw polygons on aerial photo or map Depressions present but cover< ½ area of wetland points = 2 No depressions present points = 0	**Figure**_____ 2
R	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): Trees or shrubs > 2/3 the area of the unit points = 8 Trees or shrubs > 1/3 area of the unit points = 6 Ungrazed, herbaceous plants > 2/3 area of unit points = 6 Ungrazed, herbaceous plants > 1/3 area of unit points = 3 Trees, shrubs, and ungrazed herbaceous <1/3 area of unit points = 0 Aerial photo or map showing polygons of different vegetation types	**Figure**_____ 8
R	*Add the points in the boxes above*	10
R	**R 2. Does the wetland unit have the <u>opportunity</u> 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 X A stream or culvert discharges into wetland that drains developed areas, residential area, 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. 53)*** multiplier 2
R	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from R 1 by R 2 ***Add score to table on p. 1***	20

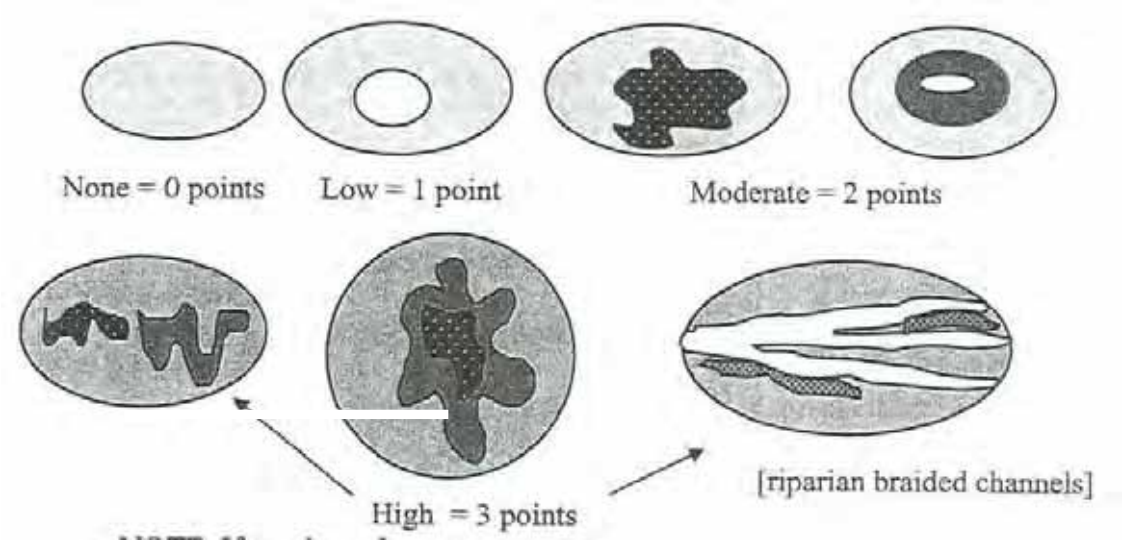
Comments

R	**Riverine and Freshwater Tidal Fringe Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream degradation.	**Points** (only 1 score per box)
R	**R3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?**	***(see p. 54)***
	R 3.1 Characteristics of the overbank storage the unit provides: *Estimate the average width of the wetland unit perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit)/(average width of stream between banks).* If the ratio is more than 20 points = 9 If the ratio is between 10 – 20 points = 6 If the ratio is 5 - < 10 points = 4 If the ratio is 1 - < 5 points = 2 If the ratio is < 1 points =1 Aerial photo or map showing average widths	**Figure**_____ 6
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.* (polygons needs to have >90% cover at person height NOT Cowardin classes): Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area points = 7 Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area points = 4 Vegetation does not meet above criteria points = 0 Aerial photo or map showing polygons of different vegetation types	**Figure**_____ 7
R	**Total for R 3** *Add the points in the boxes above*	13
R	**R 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?**	***(see p. 57)***
	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. *Note which of the following conditions apply.* ___ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding ___ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding ___ Other _____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fridge along the sides of a dike)* **YES** multiplier is **2** **NO** multiplier is **1**	multiplier 2
R	**TOTAL – Hydrologic Functions** Multiply the score from R 3 by R 4 ***Add score to table on p. 1***	26

Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed X Emergent plants ___ Scrub/shrub (areas where shrubs have > 30% cover) X 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	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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) X Permanently flooded or inundated — 4 or more types present — points = 3 X Seasonally flooded or inundated — 3 types present — points = 2 X Occasionally flooded or inundated — 2 types present — points = 1 X Saturated only — 1 type present — points = 0 X Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	3
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 7

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 3
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X Standing snags (diameter at the bottom > 4 inches) in the wetland X 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 (> 30 degree 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)* X 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.*	4
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	14

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** X 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 3
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	2

Total for page 5

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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.* X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ___ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ___ **Cliffs**: Greater than 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. X **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 habit= **3 points** If wetland has **1** priority habitats= **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

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 wetlands 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	5
H 2. TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	13
TOTAL for H 1 from page 14	14
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	27

Wetland name or number 13C

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 13C Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No _ Date of training Apr 2007

SEC: 19 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size 0.02 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	14
Score for Hydrologic Functions	5
Score for Habitat Functions	16
TOTAL score for Functions	35

Category based on SPECIAL CHARACTERISTCS 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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

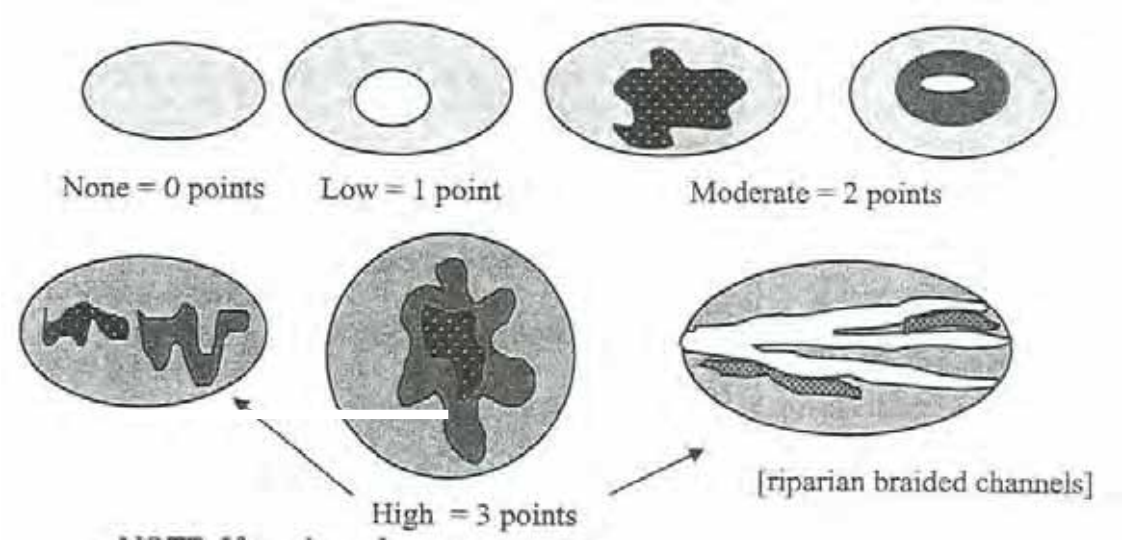
Wetland name or number 13C

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 has 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 > = ½ 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**_____ 3
D	D 1.4 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 years.* 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*	7
D	**D 2. Does the wetland 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 X__ A stream or culvert discharges into wetland that drains developed areas, residential area, 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

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	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	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 ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	5
D	**D 4. Does the wetland 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***	5

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed ___ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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	1
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Occasionally flooded or inundated — 2 types present — points = 1 _X_ Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	1
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 4

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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.*	2
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	7

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 4
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 5

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. X__ **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 habit= **3 points** If wetland has **1** priority habitats= **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

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 wetlands 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*	9
TOTAL for H 1 from page 14	7
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	16

Wetland name or number 13D

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 13D Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No ___ Date of training Apr 2007

SEC: 19 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No___

Map of wetland unit: Figure_____ Estimated size 0.37 acres

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	14
Score for Hydrologic Functions	6
Score for Habitat Functions	18
TOTAL score for Functions	38

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X

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**	X
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

S	**Slope Wetlands** **WATER QUALITY FUNCTIONS** – Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
S	**S 1. Does the wetland unit have the <u>potential</u> to improve water quality?**	***(see p. 64)***
S	S 1.1 Characteristics of average slope of unit: Slope is 1% or less *(a 1% slope has a 1 foot vertical drop in elevation for every 100 ft horizontal distance)* points = 3 Slope is 1% - 2% points = 2 Slope is 2% - 5% points = 1 Slope is greater than 5% points = 0	1
S	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES = 3 points NO = 0 points	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > ½ of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > ¼ of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure_____ 6
S	**Total for S 1** *Add the points in the boxes above*	7
S	**S 2. Does the wetland have the <u>opportunity</u> 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 X Untreated stormwater discharges to wetland ___ Tilled fields, logging, or orchards within 150 ft of wetland ___ Residential, urban areas, or golf courses are within 150 ft upslope of wetland ___ Other _____ **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 67)*** multiplier 2
S	**<u>TOTAL</u> – Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	14

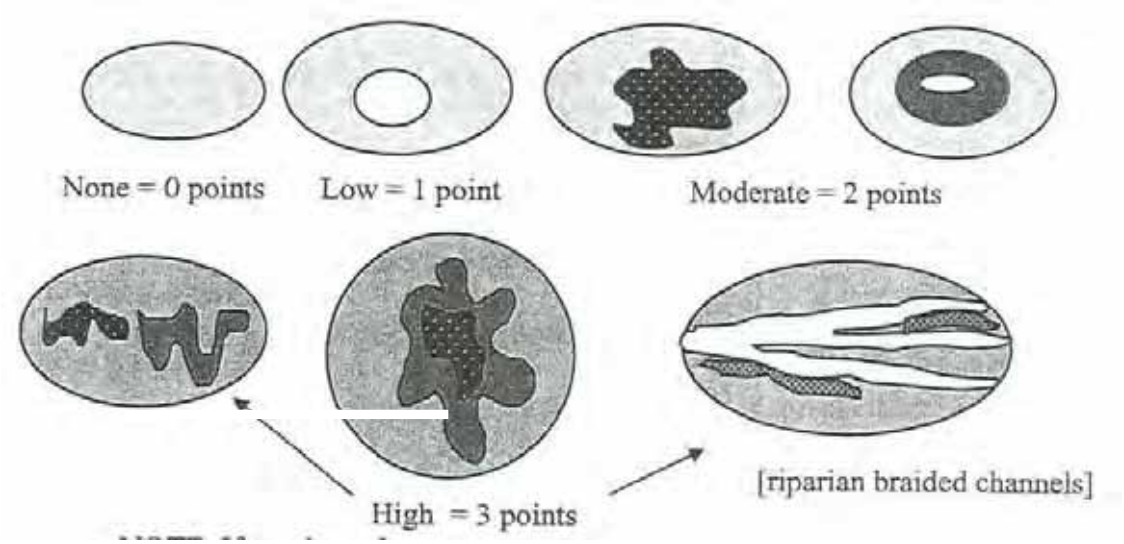
Comments

S	**Slope Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
S	**S 3. Does the wetland unit have the potential to reduce flooding and stream erosion?**	***(see p. 68)***
	S 3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland. (stems of plants should be thick enough (usually > 1/8in), or dense enough, to remain erect during surface flows)* Dense, uncut, **rigid** vegetation covers > 90% of the area of the wetland points = 6 Dense, uncut, **rigid** vegetation > ½ area of wetland points = 3 Dense, uncut, **rigid** vegetation > ¼ area points = 1 More than ¼ of area is grazed, mowed, tilled, or vegetation is not rigid points = 0	6
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = 2 NO points = 0	0
S	*Add the points in the boxes above*	6
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* ___ Wetland has surface runoff that drains to a river or stream that has flooding problems is in a headwater of a river or stream that has flooding problems ___ Other _____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is **2** **NO** multiplier is **1**	***(see p. 70)*** multiplier 1
S	**TOTAL – Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	6

Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed _X_ Emergent plants _X_ Scrub/shrub (areas where shrubs have > 30% cover) _X_ 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 _X_ Occasionally flooded or inundated 2 types present points = 1 _X_ Saturated only 1 type present points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	1
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 5

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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.*	2
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	8

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 5
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 6

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. X__ **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 habit= **3 points** If wetland has **1** priority habitats= **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

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 wetlands 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*	10
TOTAL for H 1 from page 14	8
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	18

Wetland name or number 13E

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 13E Date of site visit: 2006-2007

Rated by Gray Trained by Ecology? Yes X No ___ Date of training Oct 2006

SEC: 19 TWNSHP: 39N RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size Cont. off property

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II_X_ III___ IV___

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

Score for Water Quality Fun	20
Score for Hydrologic Functions	18
Score for Habitat Functions	26
TOTAL score for Functions	64

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X____

Final Category (choose the "highest" category from above) **II**

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** (depression)	X
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	X

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

	Riverine and Freshwater Tidal Fringe Wetlands WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve water quality	**Points** (only 1 score per box)
R	**R 1. Does the wetland unit have the potential to improve water quality?**	***(see p. 52)***
R	R 1.1 Area of surface depressions within the riverine wetland that can trap sediments during a flooding event: Depressions cover > ¾ area of wetland points = 8 Depressions cover > ½ area of wetland points = 4 If depressions > ½ of area of unit draw polygons on aerial photo or map Depressions present but cover< ½ area of wetland points = 2 No depressions present points = 0	**Figure**_____ 2
R	R 1.2 Characteristics of the vegetation in the unit (areas with >90% cover at person height): Trees or shrubs > 2/3 the area of the unit points = 8 Trees or shrubs > 1/3 area of the unit points = 6 Ungrazed, herbaceous plants > 2/3 area of unit points = 6 Ungrazed, herbaceous plants > 1/3 area of unit points = 3 Trees, shrubs, and ungrazed herbaceous <1/3 area of unit points = 0 Aerial photo or map showing polygons of different vegetation types	**Figure**_____ 8
R	*Add the points in the boxes above*	10
R	**R 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 X A stream or culvert discharges into wetland that drains developed areas, residential area, 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. 53)*** multiplier 2
R	**TOTAL – Water Quality Functions** Multiply the score from R 1 by R 2 ***Add score to table on p. 1***	20

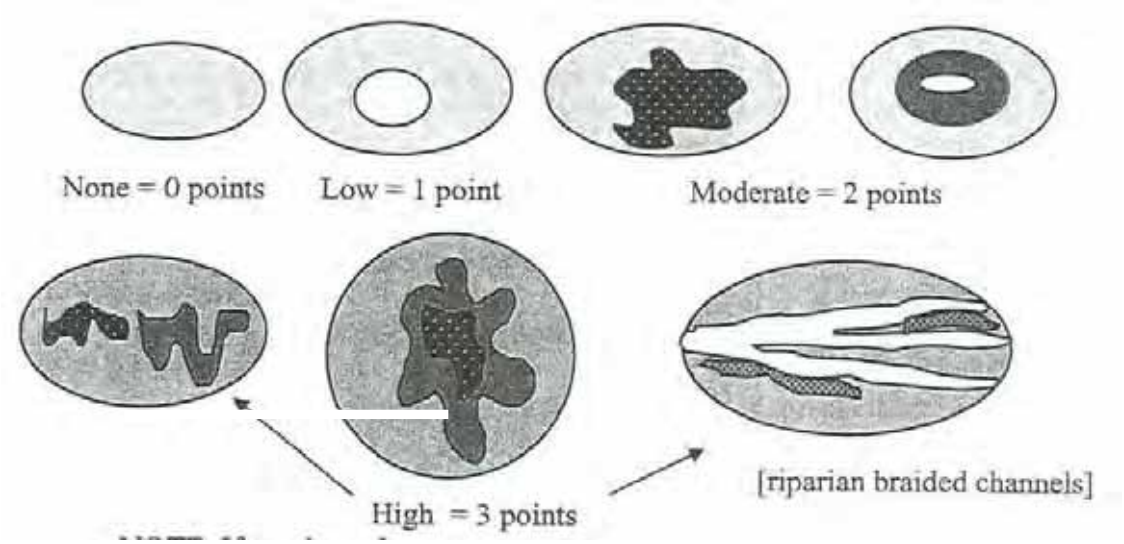
Comments

R	**Riverine and Freshwater Tidal Fringe Wetlands** HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream degradation.	**Points** (only 1 score per box)
R	**R3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?**	***(see p. 54)***
	R 3.1 Characteristics of the overbank storage the unit provides: *Estimate the average width of the wetland unit perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit)/(average width of stream between banks).* If the ratio is more than 20 points = 9 If the ratio is between 10 – 20 points = 6 If the ratio is 5 - < 10 points = 4 If the ratio is 1 - < 5 **points = 2** If the ratio is < 1 points =1 Aerial photo or map showing average widths	**Figure**_____ 2
R	R 3.2 Characteristics of vegetation that slow down water velocities during floods: *Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.* (polygons needs to have >90% cover at person height NOT Cowardin classes): Forest or shrub for > 1/3 area OR herbaceous plants > 2/3 area points = 7 Forest or shrub for > 1/10 area OR herbaceous plants > 1/3 area points = 4 Vegetation does not meet above criteria points = 0 Aerial photo or map showing polygons of different vegetation types	**Figure**_____ 7
R	**Total for R 3** *Add the points in the boxes above*	9
R	**R 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?**	***(see p. 57)***
	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. *Note which of the following conditions apply.* ___ There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding ___ There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding ___ Other _____ *(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fridge along the sides of a dike)* **YES** multiplier is **2** **NO** multiplier is **1**	multiplier 2
R	**TOTAL – Hydrologic Functions** Multiply the score from R 3 by R 4 ***Add score to table on p. 1***	18

Comments

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed X Emergent plants ___ Scrub/shrub (areas where shrubs have > 30% cover) X 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	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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) X Permanently flooded or inundated — 4 or more types present — <u>points = 3</u> X Seasonally flooded or inundated — 3 types present — points = 2 X Occasionally flooded or inundated — 2 types present — points = 1 X Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	3
H 1.3 <u>Richness of Plant Species</u> ***(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	2

Total for page 7

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 3
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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)* X 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.*	3
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	13

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ___ 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** X 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 3
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	2

Total for page 5

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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.* X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ___ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.8 ha (2 acres). ___ **Cliffs**: Greater than 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. X **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 habit= **3 points** If wetland has **1** priority habitats= **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

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 wetlands 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	5
H 2. TOTAL Score – opportunity for providing habitat *Add the scores from H2.1, H2.2, H2.3, H2.4*	13
TOTAL for H 1 from page 14	13
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	26

Wetland name or number 13F

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 13F Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No ___ Date of training Apr 2007

SEC: 19 TWNSHP: 39 RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size_____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___X IV__

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

Score for Water Quality Fun	14
Score for Hydrologic Functions	7
Score for Habitat Functions	15
TOTAL score for Functions	36

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X

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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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

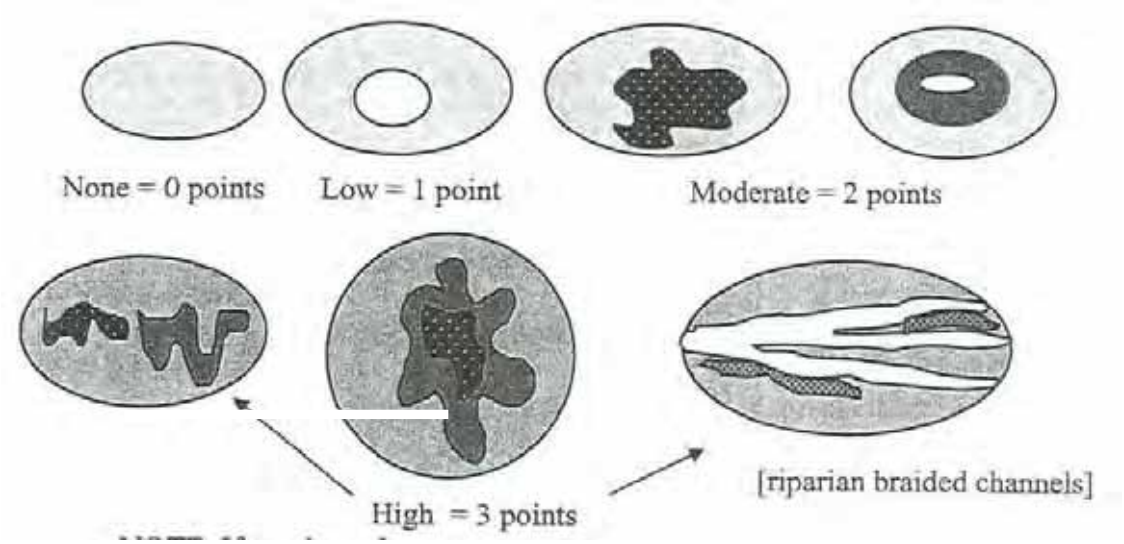
The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying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

	Depressional and Flats Wetlands	**Points**
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality	(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 has 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 > = ½ 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**_____ 1
D	D 1.4 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 years.* 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 have the opportunity to improve water quality?**	***(see p. 44)***
	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 X 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 area, farmed fields, roads, or clear-cut logging X 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**	multiplier 2
D	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	14

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	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	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 <u>points = 2</u> 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	5
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	7
D	**D 4. Does the wetland 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

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. <u>X</u> Aquatic Bed ___ Emergent plants <u>X</u> 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	1
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 <u>X</u> Seasonally flooded or inundated 3 types present points = 2 <u>X</u> Occasionally flooded or inundated 2 types present points = 1 <u>X</u> 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	2
H 1.3 <u>Richness of Plant Species</u> ***(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 4

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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). X 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 (> 30 degree 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*	6

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** X 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 4
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 5

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. X__ **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 habit= **3 points** If wetland has **1** priority habitats= **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

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 wetlands 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*	9
TOTAL for H 1 from page 14	6
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	15

Wetland name or number 13G

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 13G Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No ___ Date of training Apr 2007

SEC: 19 TWNSHP: 39 RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size_____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III X IV____

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

Score for Water Quality Fur	14
Score for Hydrologic Functions	7
Score for Habitat Functions	18
TOTAL score for Functions	39

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X

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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

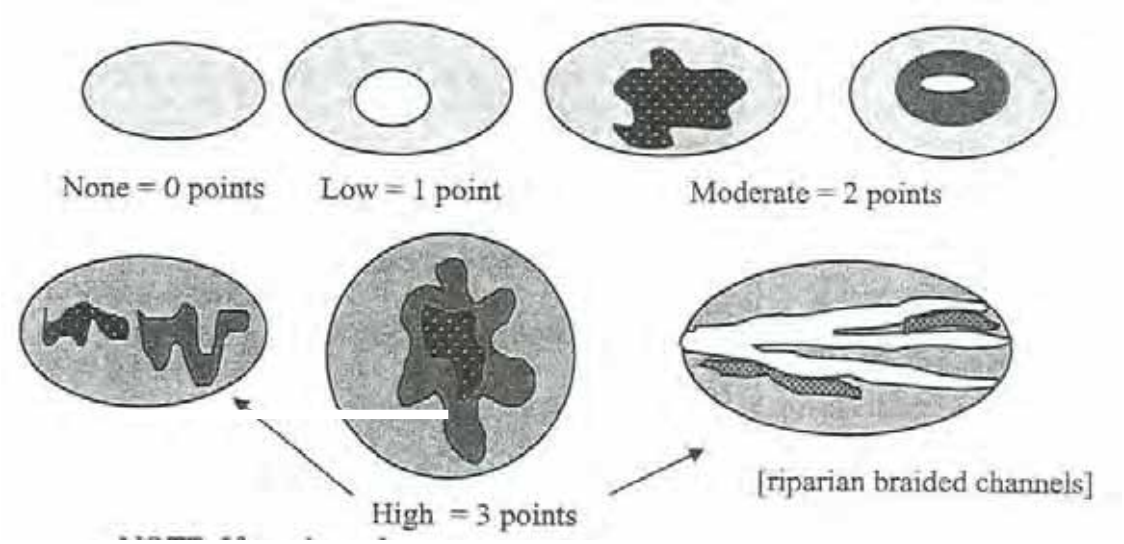
Wetland name or number 13G

	D Depressional and Flats Wetlands	**Points**
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality	(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 has 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 > = ½ 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**_____ 1
D	D 1.4 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 years.* 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 have the opportunity to improve water quality?**	***(see p. 44)***
	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 X 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 area, farmed fields, roads, or clear-cut logging X 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**	multiplier 2
D	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	14

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	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	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 <u>points = 2</u> 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	5
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	7
D	**D 4. Does the wetland have the <u>opportunity</u> to reduce flooding and erosion?**	***(see p. 49)***
	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**	multiplier 1
D	**TOTAL – Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	7

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 <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see P. 72)***	**Figure**_____
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 the unit is smaller than 2.5 acres. <u>X</u> Aquatic Bed <u>X</u> Emergent plants <u>X</u> 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	2
H 1.2 <u>Hydroperiods</u> ***(see p.73)***	**Figure**_____
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 <u>X</u> Seasonally flooded or inundated — 3 types present — points = 2 <u>X</u> Occasionally flooded or inundated — 2 types present — points = 1 <u>X</u> 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	2
H 1.3 <u>Richness of Plant Species</u> ***(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: <u>> 19 species points = 2</u> *List species below if you want to:* 5 – 19 species points = 1 < 5 species points = 0	2

Total for page 6

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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.* X Large, downed, woody debris within the wetland (> 4in. diameter and 6 ft long). X 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 (> 30 degree 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.*	2
H 1. TOTAL Score – potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	9

Comments

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** X 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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** 4
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 5

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. X__ **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 habit= **3 points** If wetland has **1** priority habitats= **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

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 wetlands 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*	9
TOTAL for H 1 from page 14	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	18

Wetland name or number 14

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 – Updated July 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): 14 Date of site visit: 2006-2007

Rated by M. Gray Trained by Ecology? Yes X No ___ Date of training Apr 2007

SEC: 19 TWNSHP: 39 RNGE: 1E Is S/T/R in Appendix D? Yes_____ No X

Map of wetland unit: Figure_____ Estimated size_____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III__X IV___

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

Score for Water Quality Fun	18
Score for Hydrologic Functions	5
Score for Habitat Functions	14
TOTAL score for Functions	37

Category based on SPECIAL CHARACTERISTCS of Wetland

I____ II____ Does not Apply____X

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**	X
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	X	Check if unit has multiple HGM classes present	

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.		X
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).		X
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		X
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.		X

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.

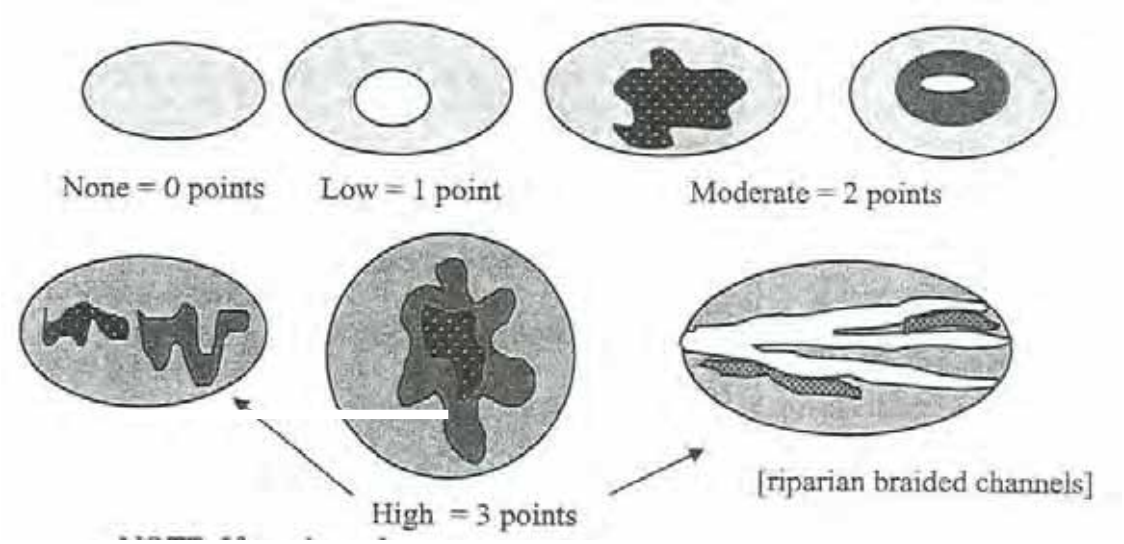
Wetland name or number 14

	Depressional and Flats Wetlands	**Points**
	WATER QUALITY FUNCTIONS – Indicators that the wetland unit functions to improve water quality	(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 has 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 > = ½ 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**_____ 3
D	D 1.4 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 years.* 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*	9
D	**D 2. Does the wetland have the opportunity to improve water quality?**	***(see p. 44)***
	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 X 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 area, farmed fields, roads, or clear-cut logging X 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**	multiplier 2
D	**TOTAL – Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	18

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	**D 3. Does the wetland have the <u>potential</u> to reduce flooding and stream erosion?**	***(see p. 46)***
	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 <u>points = 2</u> 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 <u>points =3</u> 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 ration of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	0
D	**Total for D 3** *Add the points in the boxes above*	5
D	**D 4. Does the wetland 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***	5

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)***	**Figure**
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 the unit is smaller than 2.5 acres. ___ Aquatic Bed ___ Emergent plants X Scrub/shrub (areas where shrubs have > 30% cover) X 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 Map of Cowardin vegetation classes 3 structures points = 2 2 structures points = 1 1 structure points = 0	1
H 1.2 Hydroperiods ***(see p.73)***	**Figure**
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 X Occasionally flooded or inundated — 2 types present — points = 1 X Saturated only — 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	1
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

H 1.4 Interspersion of habitats ***(see p. 76)*** Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  NOTE: If you have four or more vegetation classes or three vegetation types and open water the rating is always "high". Use map of Cowardin vegetation classes	**Figure** 1
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). X 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 (> 30 degree 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

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".* ___ 100m (330 ft) 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** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** X 50m (170 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 95% circumference. **Points = 4** ___ 100m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. **Points = 3** ___ 50m (170 ft) 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 (80 ft) 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 (6.6 ft) 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**_____ 4
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 50 ft 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 = go to 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 miles of a large field or pasture (> 40 acres) OR within 1 mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	1

Total for page 5

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see p. 82)*** Which of the following priority habitats are within 330 ft (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 7.6m (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) > 81cm (32 in) dbh or > 200 years of age. ___ **Mature forests**: Stands with average diameters exceeding 53cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 – 200 years old west of the Cascade crest. ___ **Prairies**: Relatively undisturbed areas (as indicated by dominance of native plants) where greases 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 0.5 ppt. during the period of average annual low flow. Includes both estuaries and lagoons. X__ **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 habit= **3 points** If wetland has **1** priority habitats= **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

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 wetlands 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*	9
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	14

APPENDIX F

Drainage Relationships of Wetlands

Table F1. Drainage Relationships of Wetlands.

Distance to nearest Traditional Navigable Water (TNW) and Relatively Permanent Water (RPW) tributaries were measured as the number of feet (ft.) or miles (mi.) that the wetland was located upstream from the confluence with the nearest RPW tributary or TNW based on observed and likely drainage patterns.

Wetland Name	Location	Size (acres)	Drainage association/ classification	Hydrogeomorphic class	Distance from RPW	Distance from TNW	Wetland drains to:
1	Northwest corner of site	44.21	Abuts Stream 3.	Depressional	0	0.9 mi.[1]	Infiltrates to groundwater north of Lonseth Rd.
2	Northwest corner of site	48.94	Abuts Streams 1 and 4	Slope	0	0.9 mi.	Stream 1 and Stream 4, to Straight of Georgia
3	Northern portion of site	144.37	Abuts Streams 1, 4, and 6	Slope	0	1.2 mi.	Streams 6 and 4 - Straight of Georgia
4A	Eastern portion of site	26.62	Abuts RPW tributary on south side of Lonseth Rd.	Slope	0	2.3 mi.	RPW tributary on south side of Lonseth road - Stream 6 - Stream 5 - Stream 1 - Straight of Georgia
4B	Eastern portion of site	4.36	Abuts non-RPW tributary on the west side of Kickerville Rd.	Depressional	800.	2.5 mi.	Non-RPW tributary on west side of Kickerville Rd. - RPW tributary on south side of Lonseth road - Stream 6 - Stream 5 - Stream 1 - Straight of Georgia

Wetland Name	Location	Size (acres)	Drainage association/ classification	Hydrogeomorphic class	Distance from RPW	Distance from TNW	Wetland drains to:
4C	Eastern portion of site	0.15	Abuts non-RPW tributary on the west side of Kickerville Rd.	Depressional	0.4 mi.	2.7 mi.	Non-RPW tributary on west side of Kickerville Rd. - RPW tributary on south side of Lonseth road - Stream 6 - Stream 5 - Stream 1 - Straight of Georgia
4D	Eastern portion of site	1.31	Adjacent to but not abutting the non-RPW tributary on the north side of Henry Rd.	Slope	0.7 mi.	2.7 mi.	Infiltrates to groundwater
4F	Eastern portion of site	1.07	Isolated	Slope	0.3 mi.	2.6 mi.	Infiltrates to groundwater.
5A	Eastern portion of site	95.24 (on-site)	Abuts RPW tributary on the south side of Lonseth Rd.	Slope	0	1.7 mi.	RPW tributary on south side of Lonseth road - Stream 6 - Stream 5 - Stream 1 - Straight of Georgia
5B	Eastern portion of site	0.13	Isolated	Depressional	0.3 ft	2.0 mi.	Infiltrates to groundwater
5C	Eastern portion of site	0.22	Adjacent to but not abutting Stream 5	Slope	30 ft	1.9 mi.	Infiltrates to groundwater
6	Central portion of site	36.93	Abuts Stream 6 and the RPW tributary on south side of Lonseth	Slope	0	0.9 mi.	Stream 6 - Stream 5 - Stream 1 - Straight of Georgia

Wetland Name	Location	Size (acres)	Drainage association/ classification	Hydrogeomorphic class	Distance from RPW	Distance from TNW	Wetland drains to:
			Rd.				
7A	Western portion of site	40.06	Abuts Stream 5, and the RPWs on the east side of Gulf Rd. and the south side of Lonseth Rd.	Slope	0	0.5 mi.	Stream 5 - Stream 1 - Straight of Georgia
7B	Western portion of site	0.59	Isolated	Depressional	500 ft.	0.8 mi.	Infiltrates to groundwater
8A	Western portion of site	24.69	Abuts Stream 1	Slope	0	0.6 mi.	Stream 1 to Strait of Georgia
8B	Western portion of site	0.15	Abuts RPW on south side of Lonseth Rd.	Depressional	0	1.0 mi.	RPW on south side of Lonseth Rd - Stream 1 - Straight of Georgia
9A	Western portion of site	24.81	Abuts Stream 5	Slope	0	0.7 mi.	Stream 5 - Stream 1 -Straight of Georgia
9B	Western portion of site	0.18	Isolated	Depressional	675 ft.	0.8 mi.	Infiltrates to groundwater
10A	Southwest corner of site	3.73	Abuts RPW tributary on south side of Henry Rd.	Slope	0	0.6 mi.	Infiltrates to groundwater
10B	Southwest corner of site	0.04	Isolated	Depressional	N.A.	450 ft.	Infiltrates to groundwater
11A	Southern portion of site	3.54	Abuts Stream 1	Riverine	0	450 ft.	Stream 1, to Straight of Georgia
11B	Southern portion of site	.003	Isolated	Depressional	250 ft.	550 ft.	Infiltrates to groundwater

Wetland Name	Location	Size (acres)	Drainage association/ classification	Hydrogeomorphic class	Distance from RPW	Distance from TNW	Wetland drains to:
12	Southern portion of site	11.17	Abuts Strait of Georgia	Depressional	N.A.	0	Strait of Georgia
13A	Southern portion of site	5.50	Abuts Stream 2	Riverine	0	0.4	Stream 2, to Strait of Georgia
13C	Southern portion of site	0.02	Isolated	Depressional	125 ft.	0.4 mi.	Infiltrates to groundwater
13D	Southern portion of site	0.37	Adjacent to but not abutting Stream 2	Slope	200 ft.	0.4 mi.	Infiltrates to groundwater
13E	Southern portion of site	0.06	Abuts Stream 2	Riverine	0	0.4 mi.	Stream 2
13F	Southern portion of site	0.62	Abuts Straight of Georgia	Depressional	N.A.	0	Straight of Georgia
13G	Southern portion of site	0.37	Isolated	Depressional	N.A.	140 ft.	Infiltrates to groundwater
14	Southwest portion of site	0.67	Adjacent to but not abutting RPW on south side of Henry Rd.	Depressional	15 ft.	0.5 mi.	Infiltrates to groundwater

Table F2. Characteristics of on-site wetlands, and distance to nearest Traditional Navigable Water (TNW) and Relatively Permanent Water (RPW).

Distances between wetland and tributaries were measured as the number of feet (ft.) or miles (mi.) that the wetland was located upstream from the confluence with the nearest RPW tributary or TNW based on observed and inferred drainage patterns.

Name of drainage	General Location	Drainage Path to Strait of Georgia	Length (mi.)	Width (ft.)	Depth (ft.)	Class[1]	Adjacent wetlands	Distance from RPW (mi.)	Distance from TNW (mi.)
Stream 1	Western portion of site	Strait of Georgia	1.25	various	various	RPW tributary	2, 3, 8A, 11A	N.A.	0
Stream 2	Eastern portion of site	Strait of Georgia	0.96	various	various	RPW tributary	13A, 13D	N.A.	0
Stream 3	South side of Alder Grove Rd.	East of Gulf Rd.: Stream 6 – Stream 4 – Stream 1 – Gulf of Georgia. West of Gulf Rd.: Wetland 1.	1.3	3 to 5	2 to 3	RPW tributary	1,3	N.A.	1.7
Stream 4	North side of Lonseth Rd.	Stream 1 – Straight of Georgia	1.7	3 to 5	2 to 3	RPW tributary	2, 3	N.A.	0.9
Stream 5	North side of Henry Rd., west of the railroad tracks	Stream 1 – Strait of Georgia	1.8	3 to 5	2 to 3	RPW tributary	5A, 5C, 7A, 9A	N.A.	0.4

Name of drainage	General Location	Drainage Path to Strait of Georgia	Length (mi.)	Width (ft.)	Depth (ft.)	Class[1]	Adjacent wetlands	Distance from RPW (mi.)	Distance from TNW (mi.)
Stream 6	East side of Gulf Rd.	North of Henry Rd.: Stream 4 or 5 – Stream 1 – Gulf of Georgia. South of Henry Rd.: Stream 2 – Strait of Georgia.	1.4	3 to 5	2 to 3	RPW tributary	3, 6	N.A.	0.1
Stream 7	East side of railroad berm	RPW tributary on south side of Lonseth Rd. – Stream 6 – Stream 5 – Stream 1 – Strait of Georgia	0.2	No Data	No Data	RPW tributary	4A	N.A.	2.3
Drainage 1	South side Lonseth Rd.	East of Gulf Rd.: Stream 6 – Stream 5 – Stream 1 – Strait of Georgia. West of Gulf Rd.: Stream 1 – Strait of Georgia.	1.7	2 to 4	1 to 3	RPW tributary	4A, 5A, 6, 7A, 8B	N.A.	0.9
Drainage 2	North side of Lonseth Rd, east of railroad tracks	Wetland 5A – RPW south of Lonseth Rd.-Stream 6 – Stream 5 – Stream 1 – Strait of Georgia.	0.2	2 to 4	1 to 3	Non-RPW tributary	4D, 4E	0.5	2.5
Drainage 3	South side of Henry Rd., east of Gulf Rd.	Stream 6- Stream 2 – Straight of Georgia	1.2	2 to 5	1 to 3	Non-RPW tributary	none	0	0.4

Drainage 4	South side of Henry Rd., west of Gulf Rd.	Stream 1 - Strait of Georgia.	0.8	2 to 5	1 to 3	RPW tributary	10A, 14	N.A.	0.4
Drainage 5	West side of Gulf Rd.	North of Henry Rd.: Stream 4 or 5 - Stream 1 - Strait of Georgia. South of Henry Rd. to Stream 2 - Straight of Georgia.	1.4	2 to 4	1 to 3	RPW tributary	2, 7A, 12	N.A.	0.1
Drainage 6	West side of Kickerville Rd.	RPW tributary on south side of Lonseth Rd. -Stream 6 - Stream 5 - Stream 1 - Straight of Georgia.	0.5	1 to 3	1 to 2	Non-RPW tributary	4B, 4C	0	2.5

[1] According to Rapanos Guidance

Memo

To	Randel Perry, USACE, Seattle District, Regulatory	File no.:891-5-15338-B
From	Kristie Dunkin, Ph.D, PMP, AMEC Melinda Gray, M.S., AMEC	Cc:Skip Sahlin
Date	July 14, 2008	

Subject NWS-2008-00266-SO. Gateway Pacific Terminal; Wetland Boundary Jurisdictional Review. Addendum. Revisions following March 2008 Site Review.

BACKGROUND

On February 22, 2008, as part of the permitting process for the Gateway Pacific Terminal (GPT) Project, AMEC Earth & Environmental, Inc., (AMEC) submitted to you a Wetland Determination and Delineation Report (USACE Project No. NWS-2008-00266-SO).

On March 24 and 25, 2008, Kristie Dunkin (AMEC) and Melinda Gray (AMEC) accompanied you (USACE – Seattle District) and Matthew Bennett (USACE – Seattle District) on a review of the study area to review wetland jurisdiction, other potential waters of the U.S., and wetland boundary locations.

In an email to Kristie Dunkin on March 27, 2008, you requested that AMEC re-evaluate the presence of wetland conditions at specified locations and revise the wetland boundaries and report. The field notes recorded by yourself and Matt Bennett onto an AMEC base map (shown as Figure 1) identify the locations where additional investigations should be concentrated in regard to Wetlands 1, 2, 8A, and 9A. Attachment A is your March 27 email for reference and the results of our re-evaluation of the wetland conditions in response to each of the USACE comments (1 through 8).

METHODS

Comprehensive site investigations, similar to those described in the original wetland report submitted on February 22, 2008, were used to revisit areas the USACE suggested be re-evaluated. The fieldwork occurred on March 31 and April 15, 2008.

In brief, potential wetland areas were evaluated in the field using the comprehensive methods outlined in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Washington State Wetlands Identification and Delineation Manual* (Ecology 1997). According to these manuals, hydrophytic (wetland) vegetation and hydric (wetland) soils must be present along with wetland hydrologic conditions for a significant duration during the growing season for an area to be considered a wetland. Data used to evaluate these

AMEC Earth & Environmental, Inc.
11335 NE 122nd Way, Suite 100
Kirkland, Washington 98034
(425) 820-4669 Phone
(425) 821-3914 Facsimile
www.amec.com

parameters were collected from plots representative of typical conditions in each wetland. Additional data collected in areas adjacent to wetlands were used to document upland conditions. In general, the site has facultative vegetation and hydric soil indicators present in upland areas. Specific wetland indicators in forested plant communities include species of hydrophytic vegetation such as *Carex obnupta* and *Lonicera involucrata.*

As you recommended during our site visit, wetland conditions were evaluated in mid-April in the seeded field east of Wetland 9A where vegetation was mowed by digging sample pits to a depth of 18 inches along a series of transects. The eastern boundary of Wetland 9A was defined as the area where the depth to free water in the sample pit was greater than 12 inches from the surface.

Boundaries, transect locations, and data plot locations were mapped using high-resolution GPS methods (0.5-foot accuracy).

RESULTS

Revisions made to wetland boundaries are presented on Figure 2.

Comment 1 (see Area 1 on Figure 2)

Regarding Wetland 9A and 9B, you stated that

> *"Wetland 9B appears to be contiguous to 9A as I observed saturated hydric soil conditions extending from 9B to 9A. The consultants need to take a closer look at this area and determine the exact configuration of the boundary between the two wetlands."*

Response

AMEC staff evaluated the area of interest and confirmed that Wetland 9A and 9B are connected by saturated areas with hydric soils. A revised boundary was identified and mapped (Figure 3). AMEC staff also investigated areas lying to the north, east, and west of the area originally delineated as Wetland 9B to ensure the wetland was not more expansive. The investigation confirmed that wetland conditions are not present beyond the northern boundary of Wetland 9B.

The revised wetland boundary (shown on Figure 3) that now connects Wetland 9A and 9B was identified by relying on wetland hydrology, vegetation, and soils. Wetland vegetation included the obligate wetland species slough sedge (*Carex obnupta*), as well as several facultative wetland species. Soils were saturated to the surface with water as deep as 7 inches in some places.

Comment 2 (see Area 2 on Figure 2)

Regarding Wetland 9A, you stated that

> *"Wetland 9A PEM in SE corner needs a closer inspection. The wetland boundary needs to be revised to extend south from the existing boundary where it occurs at a minor rise in topography. It appears the revised boundary may extend south to the road."*

Response

During the jurisdictional determination and boundary confirmation site visit in mid-March, standing water was observed in the area south of the existing boundary. In the follow-up fieldwork by AMEC staff (March 31), there was a small area of ponded water south of a small rise in topography, near the south end of the field. Upon digging several holes beyond the perimeter of the ponded water, additional wetland area was delineated (Wetland 9C), based primarily on the identification of hydrology and soils. Investigation of the area revealed that Wetland 9C is not hydrologically connected to the larger wetland (9A) to the north (shown in Figure 3). Wetland 9C is a Category IV wetland. The wetland rating is included with this addendum.

Comment 3 (see Area 3 on Figure 2)

Regarding Wetland 9A, you recommended that

> *"The pasture identified as upland located immediately east of 9A needs further assessment and review. It appears wetland mosaic conditions occur. I suggest the consultants establish 3 to 5 transects west to east from the identified wetland boundary to the treeline. Record if standing water occurs in the pit (and at what depth) and to what depth bgs saturation occurs. JUEF and CAOB are reliable indicator species for the wetlands I observed. Where wetland hydrology is present, and hydric soils occur, identify the area as wetland We may take a percentage based approach to the JD in this mosaic condition as wetlands appear to comprise a larger percentage of the area than upland."*

Response

Five east-west transects were laid from the tree line at the east end of the open field, to the identified eastern wetland boundary, as recommended. The primary wetland indicator used to identify the wetland boundary was hydrology. AMEC staff dug 16-inch deep sample pits approximately every 50 feet to evaluate the presence of wetland hydrology. Figure 5 shows the location of the sample pits as recorded by GPS. Table 1 provides the depth to standing water for these sample pits and the wetland determination.

Table 1 Wetland Hydrology Sample Pits (see Figure 5 for locations)

Sample Hole	Depth to Water (in.)	Determination
1	Greater than 16	Upland
2	12	Wetland
3	12	Wetland
4	11	Wetland
5	16	Upland
6	11	Wetland
7	14	Upland
8	11	Wetland
9	13	Upland
10	15	Upland
11	8	Wetland
12	9	Wetland
13	9.5	Wetland
14	10	Wetland
15	7	Wetland
16	15	Upland
17	14	Upland
18	13	Upland
19	14	Upland
20	13	Upland
21	12	Wetland
22	Greater than 16	Upland
23	14	Upland
24	14	Upland
25	14	Upland

Where the depth to free water in the pit was greater than 12 inches, and the soil was not saturated to the surface, the area was determined to be upland. The wetland boundary was revised to include an additional 3.43 acres in Wetland 9A.

Comment 4 (see Area 4 on Figure 2)

Regarding Wetland 2, you recommended that

> *"Wetland 2 tributary should be revised to a wetland swale that appears approximately 10-feet in width."*

Response

In the field, AMEC staff adjusted flags to indicate the area previously surveyed as a drainage was actually a wetland swale. Further investigation revealed the wetland area is slightly broader than the previously surveyed drainage. The identified boundary was mapped with GPS and is shown on Figure 4.

Comment 5 (see Area 5 on Figure 2)

You recommend the following for Wetland 2:

> *"The wetland boundary inspected in the southwest corner of Wetland 2 appears 20 to 40-feet low in some locations. The consultant should revisit the Wetland 2 boundary and revise boundaries accordingly."*

Response

As requested, AMEC staff adjusted the wetland boundary flagging in the southeast corner of Wetland 2 to include an additional 4.3 acres of wetland (shown on Figure 4). The wetland boundary was adjusted to include a small area that indicated wetland hydrology that is connected to the larger system. Vegetation in the area included the characteristic wetland species twinberry (*Lonicera Involucrata*) and the obligate species slough sedge (*Carex obnupta*). Soils were hydric.

Comment 6 (see Area 6 on Figure 2)

Regarding Wetland 8A, you stated:

> *"Wetland 8A southeast corner at unnamed tributary needs to be re-evaluated. The boundary appears to extend from the PFO possibly as far south as the unnamed tributary. Saturation and hydric soils with some presence of Lonicera involucrata are reliable conditions for wetland determination."*

Response

During the site visit on March 25, 2008, ponded water was observed in a thicket of Himalayan blackberry. Other wetland indicators suggesting the boundary may need to be re-evaluated in the southeast corner included the presence of obligate vegetation (*slough sedge*).

AMEC re-evaluated the area on March 31, 2008, and wetland boundaries were expanded so that the plant community dominated by obligate vegetation and areas with wetland hydrologic conditions and hydric soils were included within the wetland (shown in Figure 3).

The small area of ponded water previously observed within a thicket of Himalayan blackberry was no longer present and soils at this location were not hydric. The identified wetland boundary does not include the area of Himalayan blackberry and ponded water that had been observed during the March 25, 2008 site visit.

Comment 7 (see USACE Area 7 on Figure 2)

You addressed an area near Wetland 2, stating:

> *"…in the east side half-circle of upland. Wetland conditions occur in a mosaic pattern in this vicinity and may be more abundant in the northern half of the wetland. All wetlands should be identified paying particular attention to meandering saturated hydric soil connections to the primary wetland system."*

Response

During the March 25 site visit, you and AMEC staff observed obligate species and wetland hydrology in the northeastern portion of an area previously delineated as upland. As recommended, the eastern boundary of Wetland 2 that delineates the half circle of upland adjacent to Gulf Road was re-evaluated.

During the follow-up investigation conducted by AMEC staff on March 31, 2008, it was determined that much of what was previously determined to be upland is more characteristic of an upland/wetland mosaic, with wetland covering a slightly higher percentage of the area. AMEC staff re-evaluated conditions at the site on April 15, 2008. Based on the conditions observed during follow-up visits, the area was redelineated as shown in Figure 4. Ultimately, AMEC determined the conditions in the southeast corner of Wetland 2 that were previously delineated as wetland have predominantly upland conditions, while in the northeastern portion of Wetland 2, areas delineated as upland were determined to be an upland/wetland mosaic with greater than 50 percent wetland area.

Criteria for adjusting the wetland boundaries included indicators of wetland hydrology and wetland vegetation. The strongest wetland indicator species in the forested areas was twinberry (*Lonicera involucrata*). Other vegetation characteristic of the delineated wetland included red alder (*Alnus rubra)*, slough sedge (*Carex obnupta*), and prickly currant (*Ribes lacustre*). Vegetation characteristic of the upland area included red elderberry (*Sambucus racemosa)*, Indian plum (*Oemlaria cerasiformis)*, and oceanspray (*Holodiscus discolor*). Indicators of wetland hydrology, such as water-stained leaves and areas of ponding, were also useful in determining the wetland boundaries for this mosaic area.

Comment 8

You recommended that in regard to Wetland 1:

> *"…flagging conditions sequence was difficult to follow on site. Mosaic conditions may occur landward of delineated boundary. Reevaluate northwest corner of Wetland 1. Saturation and hydric soils with some presence of LOIN are reliable conditions for wetland determination."*

Response

AMEC staff re-evaluated this area on March 31, 2008 and April 15, 2008 by walking six north-south transects, comprehensively investigating the area in the northwest corner of Wetland 1. The dominant vegetation in this area included sword fern, Indian plum, and snowberry. The area in question is characterized by what appears to be scars from historical logging trails.

The less than 2-foot-wide linear features are the only portions of the area where wetland vegetation appears dominant. These areas are relatively small in relation to the landscape and are not hydrologically connected to the larger wetland system. They were delineated as an upland/wetland mosaic with upland as the dominant component throughout.

Additional Comments (see Figure 6)

You suggested on-site tributaries be identified as follows:

> *"Based on our site visit, we believe all of the features labeled "stream" and "drainage" (Whatcom Co. designations) as shown on the drawing labeled Figure B and dated February 2008 are tributaries to waters of the United States - the Strait of Georgia, a Traditional Navigable Water. Examples would be "persistent flow for 9 months out of the year from October through June", "Perennial" (year round flow), etc."*

Response

Streams and drainages were re-evaluated by AMEC staff to verify which streams and drainages would be characterized by persistent flow for 9 months out of the year, perennial, or year round flow. Figure 6, and the associated Table 2, summarizes the tributaries to waters of the United States at the GPT site and indicates the duration of flow. Table 3 provides a summary of wetland connectivity.

Table 2 Characteristics of On-site Wetlands and Distance to Nearest Traditional Navigable Water (TNW) and Relatively Permanent Water (RPW).

Distances between wetlands and tributaries were measured as the number of feet (ft.) or miles (mi.) the wetland was located upstream from the confluence with the nearest RPW tributary or TNW, based on observed and inferred drainage patterns.

Name of Drainage	General Location	Drainage Path to Strait of Georgia	Length (mi.)	Width (ft.)	Depth (ft.)	Class[1]	Adjacent Wetlands	Distance from RPW (mi.)	Distance from TNW (mi.)
Stream 1	Western portion of site	Strait of Georgia	1.25	various	various	RPW tributary	2, 3, 8A, 11A	N/A	0
Stream 2	Eastern portion of site	Strait of Georgia	0.96	various	various	RPW tributary	12, 13A, 13E	N/A	0
Stream 3	South side of Alder Grove Rd. and east of Gulf Rd.; north side of Alder Grove and west of Gulf Rd.	East of Gulf Rd: Stream 6 – Stream 4 – Stream 1 – Gulf of Georgia West of Gulf Rd: Wetland 1	1.3	3 to 5	2 to 3	RPW tributary	1,3	N/A	1.7
Stream 4	North side of Lonseth Rd.	Stream 1 – Straight of Georgia	1.7	3 to 5	2 to 3	RPW tributary	2, 3	N/A	0.9
Stream 5	North side of Henry Rd., west of the railroad tracks	Stream 1 – Strait of Georgia	1.8	3 to 5	2 to 3	RPW tributary	5A, 5C, 7A	N/A	0.4
Stream 6	East side of Gulf Rd.	North of Henry Rd: Stream 4 or 5 – Stream 1 – Gulf of Georgia. South of Henry Rd: Stream 2 – Strait of Georgia	1.4	3 to 5	2 to 3	RPW tributary	3, 6	N/A	0.1

Name of Drainage	General Location	Drainage Path to Strait of Georgia	Length (mi.)	Width (ft.)	Depth (ft.)	Class[1]	Adjacent Wetlands	Distance from RPW (mi.)	Distance from TNW (mi.)
Stream 7	West side of railroad berm	Drainage 1 – Stream 6 – Stream 5 – Stream 1 – Strait of Georgia	0.2	No data	No data	RPW tributary	5A	N/A	2.3
Drainage 1	South side Lonseth Rd.	East of Gulf Rd: Stream 6 – Stream 5 – Stream 1 – Strait of Georgia West of Gulf Rd: Stream 1 – Strait of Georgia.	1.7	2 to 4	1 to 3	RPW tributary	5A, 6, 7A	N/A	0.9
Drainage 2	North side of Henry Rd, east of railroad tracks	Wetland 5A – Stream 5 – Stream 6 – Stream 1 – Strait of Georgia	0.2	2 to 4	1 to 3	Non-RPW tributary	4D, 4E	0.5	2.5
Drainage 3	South side of Henry Rd.	East of Gulf Rd: Stream 6- Stream 2 – Straight of Georgia West of Gulf Rd: Stream 1 – Straight of Georgia	1.2	2 to 5	1 to 3	RPW tributary	14	N/A	0.4
Drainage 4	South side of Henry Rd., west of Stream 1	Stream 1 – Straight of Georgia	0.8	2 to 5	1 to 3	RPW tributary	10A	N/A	0.4
Drainage 5	West side of Gulf Rd.	North of Henry Rd: Stream 4 or 5 – Stream 1 – Straight of Georgia	1.4	2 to 4	1 to 3	Non-RPW tributary	2, 7A,	0	0.1
Drainage 6	West side of Kickerville Rd.	Drainage 1 – Stream 6 – Stream 5 – Stream 1 – Straight of Georgia	0.5	1 to 3	1 to 2	Non-RPW tributary	4A, 4B, 4C	0	2.5

Name of Drainage	General Location	Drainage Path to Strait of Georgia	Length (mi.)	Width (ft.)	Depth (ft.)	Class[1]	Adjacent Wetlands	Distance from RPW (mi.)	Distance from TNW (mi.)
Drainage 7	North side of Henry Rd, west side of Stream 1	Stream 1 – Straight of Georgia	.54	3 to 5	2 to 3	RPW	9A	N/A	0.4
Drainage 8	South side of Lonseth, west side of Stream 1	Stream 1 – Straight of Georgia	.11	2 to 4	1 to 3	RPW	8B	N/A	0.9
Drainage 9	North side of Lonseth, west side of Stream 1	Stream 1 – Straight of Georgia	.11	2 to 4	1 to 3	RPW	2	N/A	0.9

[1] According to Rapanos Guidance

Table 3 Drainage Relationships of Wetlands

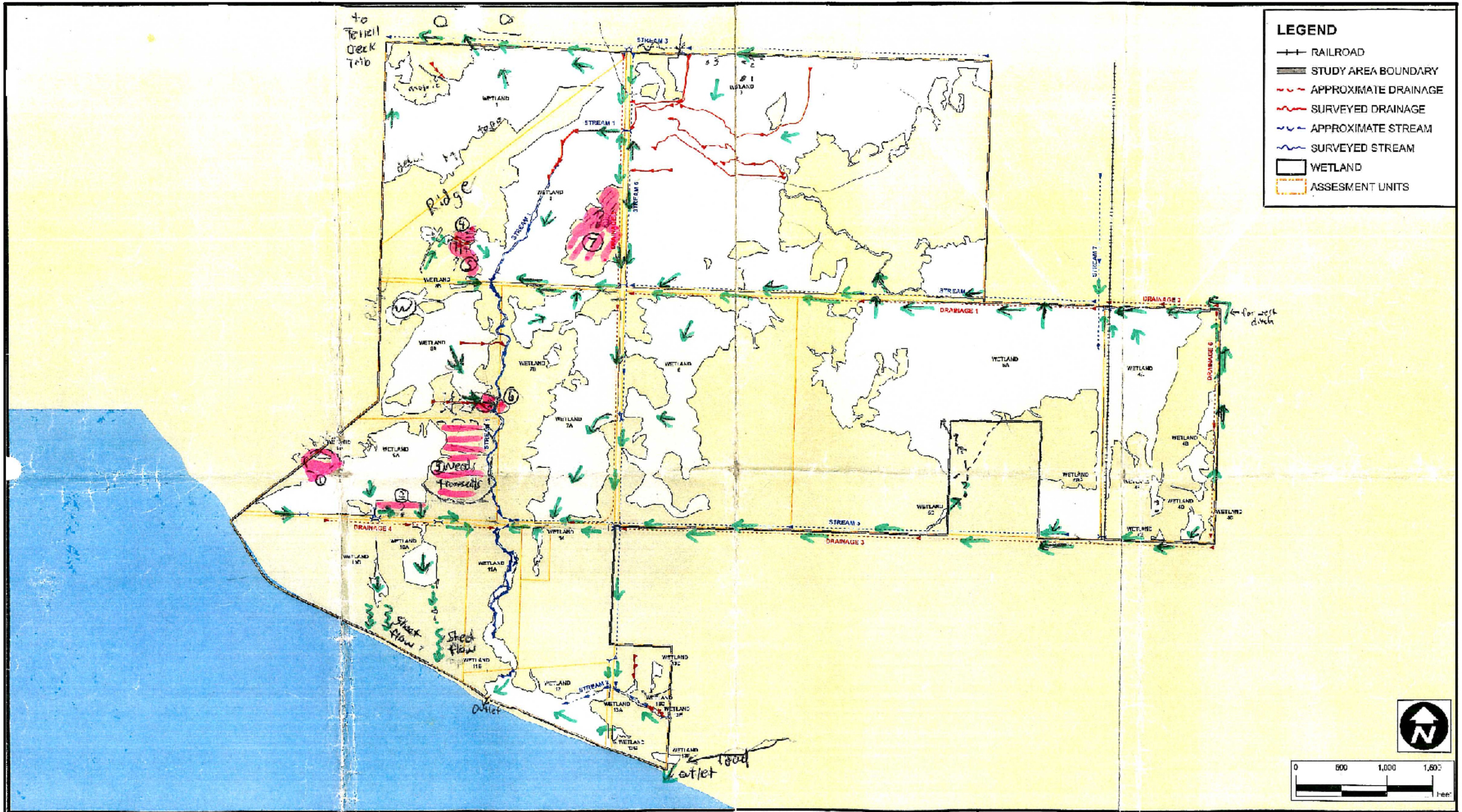
Distance to nearest Traditional Navigable Water (TNW) and Relatively Permanent Water (RPW) tributaries were measured as the number of feet (ft.) or miles (mi.) the wetland was located upstream from the confluence with the nearest RPW tributary or TNW based on observed and likely drainage patterns.

Wetland Name	Location	Size (acres)	Drainage Association/ Adjacency	Hydro-geomorphic Class	Distance from RPW	Distance from TNW	Wetland Drains to
1	Northwest corner of site	44.21	Abuts Stream 3	Depressional	0	0.9 mi.[1]	Infiltrates to groundwater south of Aldergrove Rd.
2	Northwest corner of site	53.28	Abuts Streams 1 and 4, Drainage 9 and 5	Slope	0	0.9 mi.	Drainage 5, Drainage 9, Stream 1 and Stream 4 – Stream 1 – Straight of Georgia
3	Northern portion of site	144.37	Abuts Streams 1, 3, 4, and 6	Slope	0	1.2 mi.	Streams 4 and 6 – Stream 6 – Stream 5 – Stream 1 – Straight of Georgia; Stream 3 and Stream 1 – Straight of Georgia
4A	Eastern portion of site	26.62	Abuts Drainage 6	Slope	0	2.3 mi.	Drainage 6 – Drainage 1 – Stream 6 – Stream 5 – Stream 1 – Straight of Georgia
4B	Eastern portion of site	4.36	Abuts Drainage 6	Depressional	800 ft.	2.5 mi.	Drainage 6 – Drainage 1 – Stream 6 – Stream 5 – Stream 1 – Straight of Georgia
4C	Eastern portion of site	0.15	Abuts Drainage 6	Depressional	0.4 mi.	2.7 mi.	Drainage 6 – Drainage 1 – Stream 6 – Stream 5 – Stream 1 – Straight of Georgia

Wetland Name	Location	Size (acres)	Drainage Association/ Adjacency	Hydro-geomorphic Class	Distance from RPW	Distance from TNW	Wetland Drains to
4D	Eastern portion of site	1.31	Adjacent to but not abutting Drainage 2	Slope	0.7 mi.	2.7 mi.	Infiltrates to groundwater
4E	Eastern portion of site	0.17	Adjacent to but not abutting Drainage 2	Depressional	0.6 mi.	2.6 mi.	Infiltrates to groundwater.
4F	Eastern portion of site	1.07	Isolated	Slope	0.3 mi.	2.6 mi.	Infiltrates to groundwater.
5A	Eastern portion of site	95.24 (on-site)	Abuts Drainage 1 and Stream 5 and 7	Slope	0	1.7 mi.	Stream 7 and Drainage 1 – Stream 6 – Stream 5 – Stream 1 – Straight of Georgia; Stream 5 – Stream 1 – Straight of Georgia
5B	Eastern portion of site	0.13	Isolated	Depressional	0.3 mi	2.0 mi.	Infiltrates to groundwater
5C	Eastern portion of site	0.22	Adjacent to but not abutting Stream 5	Slope	30 ft	1.9 mi.	Infiltrates to groundwater
6	Central portion of site	36.93	Abuts Stream 6 and Drainage 1	Slope	0	0.9 mi.	Drainage 1 and Stream 6 – Stream 5 – Stream 1 – Straight of Georgia
7A	Western portion of site	40.06	Abuts Stream 5, Drainage 1, and Drainage 5	Slope	0	0.5 mi.	Drainage 5 and Stream 5 – Stream 1 – Straight of Georgia
7B	Western portion of site	0.59	Isolated	Depressional	500 ft.	0.8 mi.	Infiltrates to groundwater
8A	Western portion of site	24.79	Abuts Stream 1	Slope	0	0.6 mi.	Stream 1 to Strait of Georgia
8B	Western portion of site	0.15	Abuts Drainage 8	Depressional	0	1.0 mi.	Drainage 8 – Stream 1 – Straight of Georgia

Wetland Name	Location	Size (acres)	Drainage Association/ Adjacency	Hydro-geomorphic Class	Distance from RPW	Distance from TNW	Wetland Drains to
9A	Western portion of site	28.24	Abuts Drainage 7	Slope	0	0.7 mi.	Drainage 7 – Stream 1 –Straight of Georgia
9C	Western portion of site	0.11	Adjacent to but not abutting Drainage 7	Depressional	50 ft	0.7 mi.	Infiltrates to groundwater
10A	Southwest corner of site	3.73	Abuts Drainage 4	Slope	0	0.6 mi.	Infiltrates to groundwater
10B	Southwest corner of site	0.04	Adjacent to but not abutting Drainage 7	Depressional	N.A.	450 ft.	Infiltrates to groundwater
11A	Southern portion of site	3.54	Abuts Stream 1	Riverine	0	450 ft.	Stream 1, to Straight of Georgia
11B	Southern portion of site	0.003	Adjacent to but not abutting the Strait of Georgia	Depressional	250 ft.	550 ft.	Infiltrates to groundwater
12	Southern portion of site	11.17	Abuts Stream 2 and Strait of Georgia	Depressional	N.A.	0	Stream 2 – Strait of Georgia and Straight of Georgia
13A	Southern portion of site	5.50	Abuts Stream 2	Riverine	0	0.4	Stream 2 – Strait of Georgia
13C	Southern portion of site	0.02	Adjacent to Stream 2	Depressional	125 ft.	0.4 mi.	Infiltrates to groundwater
13D	Southern portion of site	0.37	Isolated	Slope	200 ft.	0.4 mi.	Infiltrates to groundwater
13E	Southern portion of site	0.06	Abuts Stream 2	Riverine	0	0.4 mi.	Stream 2 – Straight of Georgia
13F	Southern portion of site	0.62	Abuts Straight of Georgia	Depressional	N.A.	0	Straight of Georgia

Wetland Name	Location	Size (acres)	Drainage Association/ Adjacency	Hydro-geomorphic Class	Distance from RPW	Distance from TNW	Wetland Drains to
13G	Southern portion of site	0.37	Abuts Straight of Georgia	Depressional	N.A.	140 ft.	Straight of Georgia
14	Southwest portion of site	0.67	Abuts Drainage 3	Depressional	0	0.5 mi.	Drainage 3 – Stream 1– Straight of Georgia



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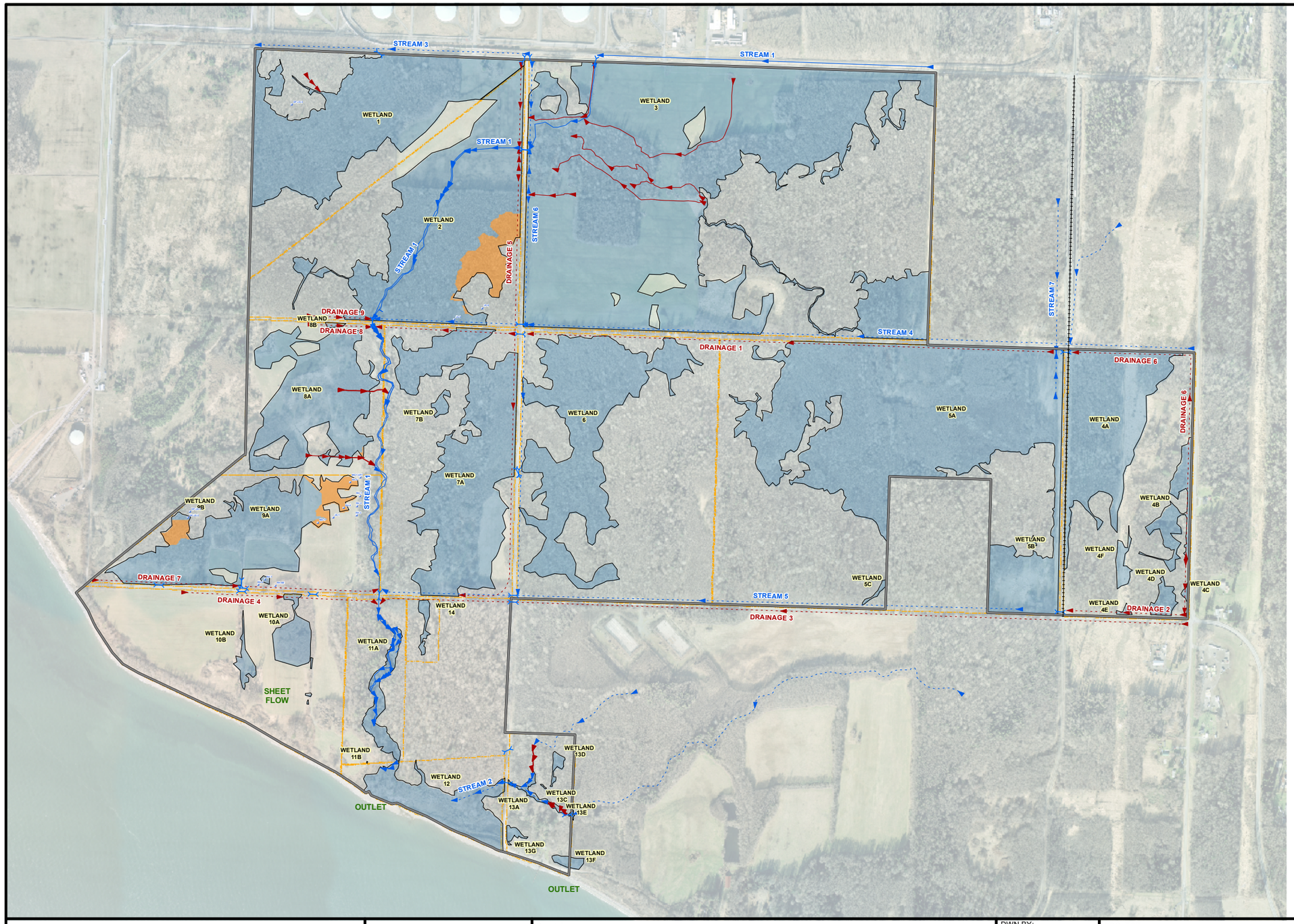
CHK'D BY:	MG
DATUM:	NAD83
PROJECTION:	WA SP North, Ft.
SCALE:	AS SHOWN

PROJECT: GATEWAY PACIFIC TERMINAL

TITLE: USACE FIELD NOTES FROM WETLAND BOUNDARY CONFIRMATION, MARCH 24 AND 25, 2008

DATE:	JUNE 2008
PROJECT NO.:	5-91M-15338-0
REV. NO.:	3
FIGURE NO.:	FIGURE 1

K:\AMEC US OFFICES\KIRKLAND\15338-0\DWG\ArcView\Figure 8 - Stream and Drainage.mxd



LEGEND

- DATA POINT, APRIL 2008
- CULVERT
- RAILROAD
- ROADSIDE DRAINAGE
- SURVEYED DRAINAGE
- APPROXIMATE STREAM
- SURVEYED STREAM
- STUDY AREA BOUNDARY
- WETLAND BOUNDARY
- WETLAND
- WETLAND (REVISED 2008)
- ASSESMENT UNIT

N

0 1,000 2,000 3,000 Feet

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PROJECTION:	WA SP North, Ft.
SCALE:	1 inch equals 1,000 feet

PROJECT: GATEWAY PACIFIC TERMINAL

TITLE: REVISED WETLAND APRIL 2008

DATE:	JUNE 2008
PROJECT NO.:	5-91M-15338-0
REV. NO.:	3
FIGURE NO.:	FIGURE 2

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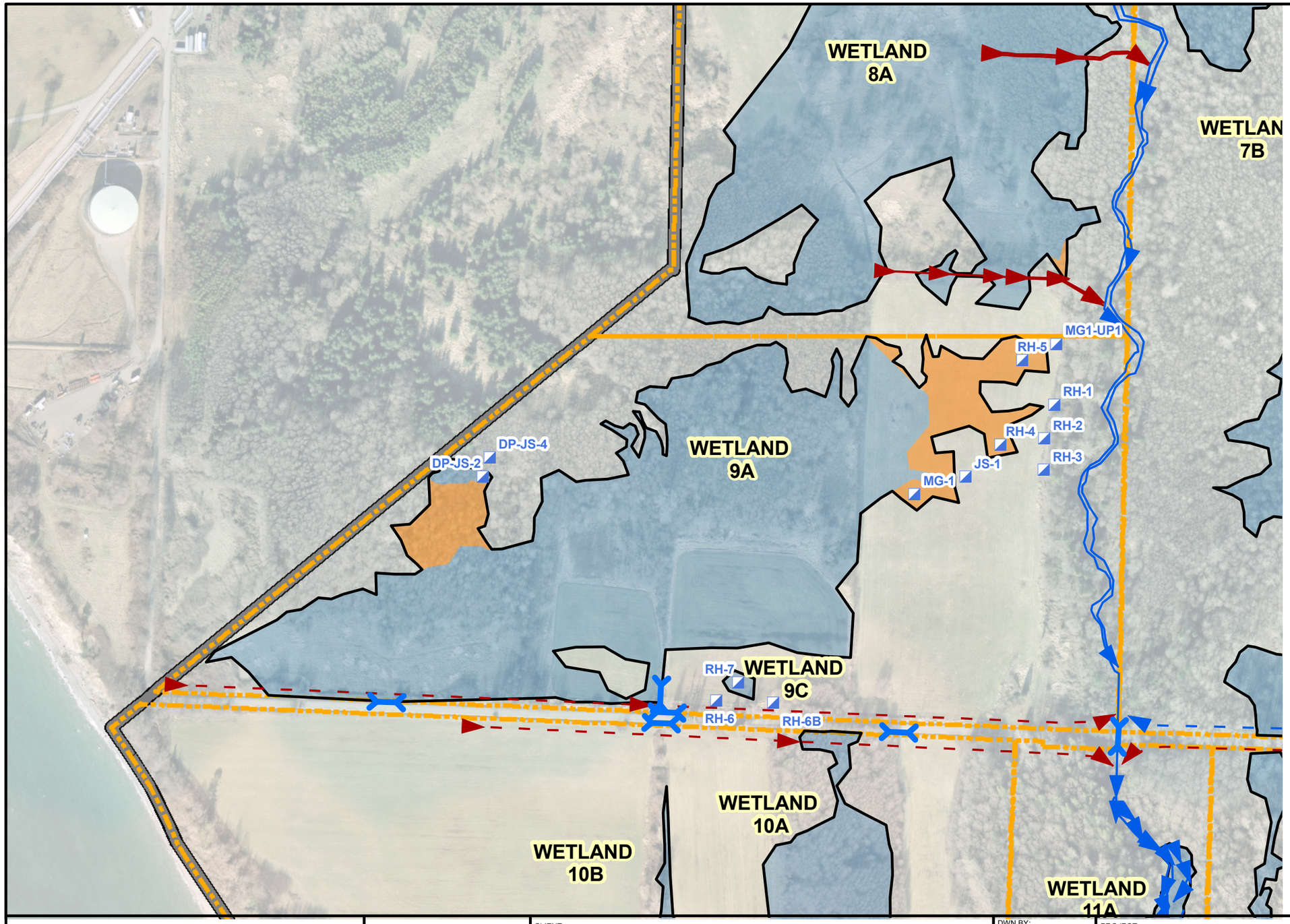

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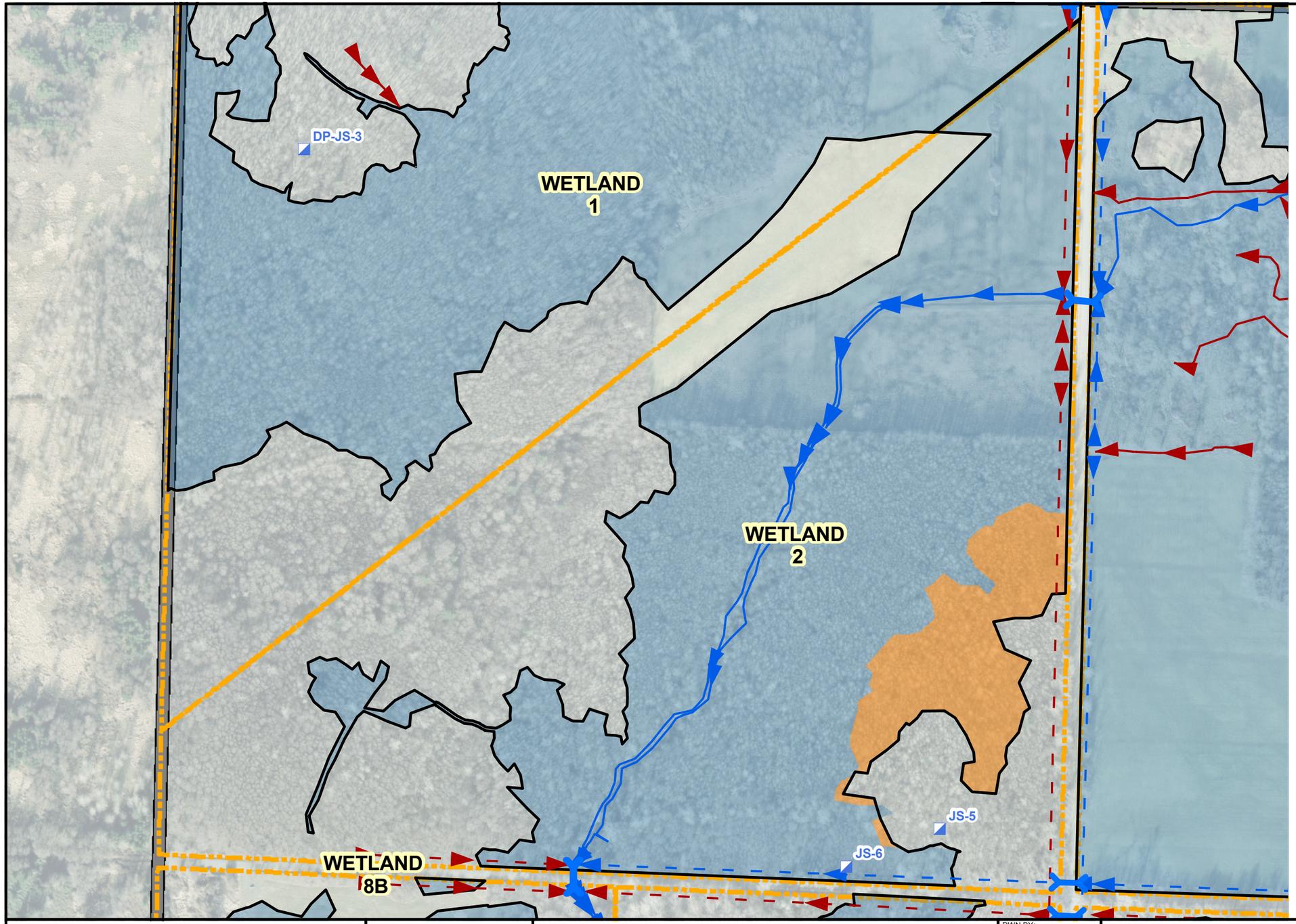
DATUM: NAD83
PROJECTION: WA SP North, Ft.
SCALE: 1 inch equals 300 feet

PROJECT: GATEWAY PACIFIC TERMINAL

TITLE: REVISED WETLAND ASSESSMENT UNIT 9

DATE: JUNE 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: 2
FIGURE NO.: FIGURE 3

K:\AMEC US OFFICES\KIRKLAND\15338-0\DWG\ArcView\GPT US Corps\Figure 4 - Revised Wetland Assessment Unit 2.mxd



LEGEND

- DATA POINT, APRIL 2008
- CULVERT
- RAILROAD
- ROADSIDE DRAINAGE
- SURVEYED DRAINAGE
- APPROXIMATE STREAM
- SURVEYED STREAM
- STUDY AREA BOUNDARY
- WETLAND BOUNDARY
- WETLAND
- WETLAND (REVISED 2008)
- ASSESMENT UNIT

0 300 600 900 Feet

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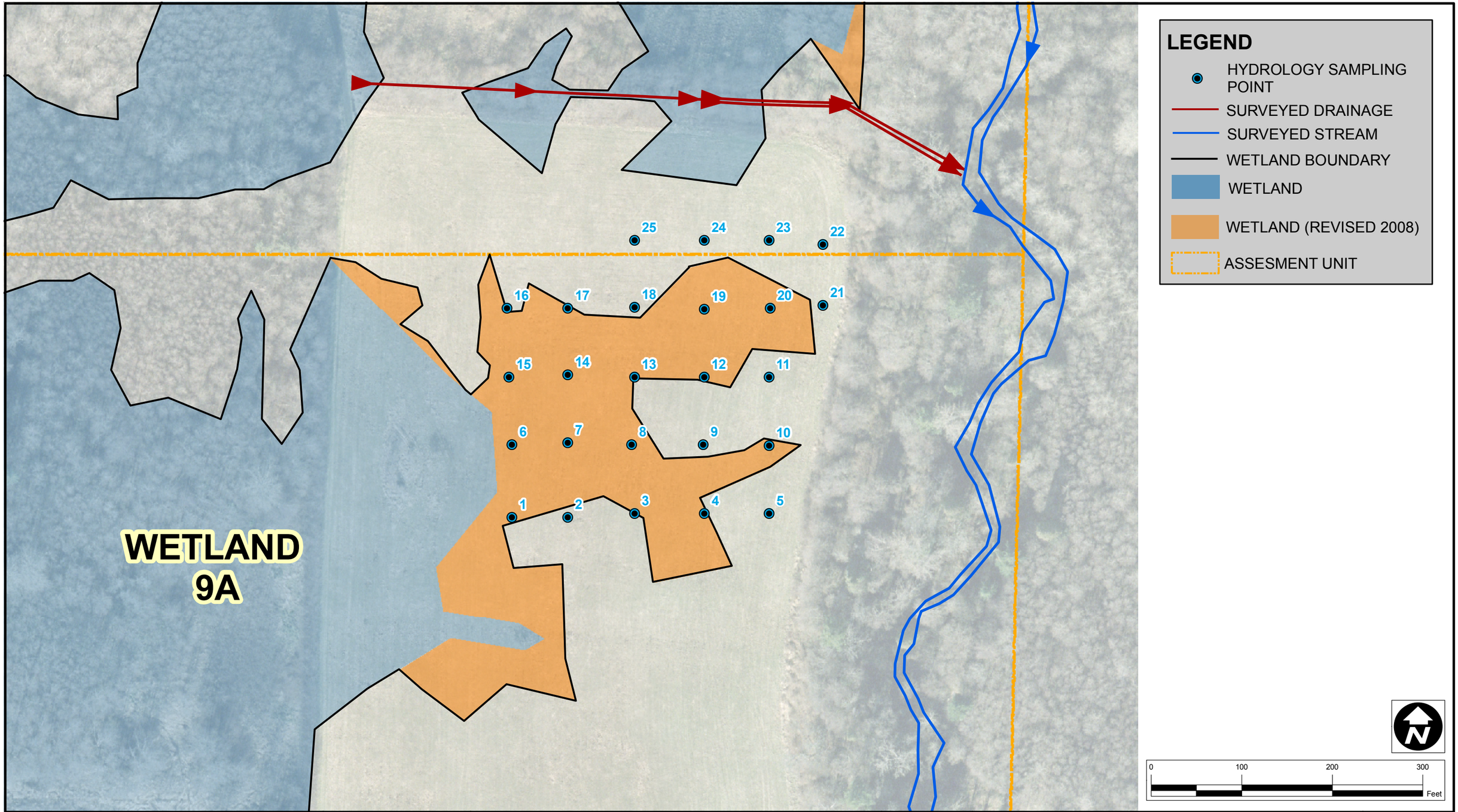
SCALE: 1 inch equals 300 feet

PROJECT: GATEWAY PACIFIC TERMINAL

TITLE: REVISED WETLAND ASSESSMENT UNIT 2

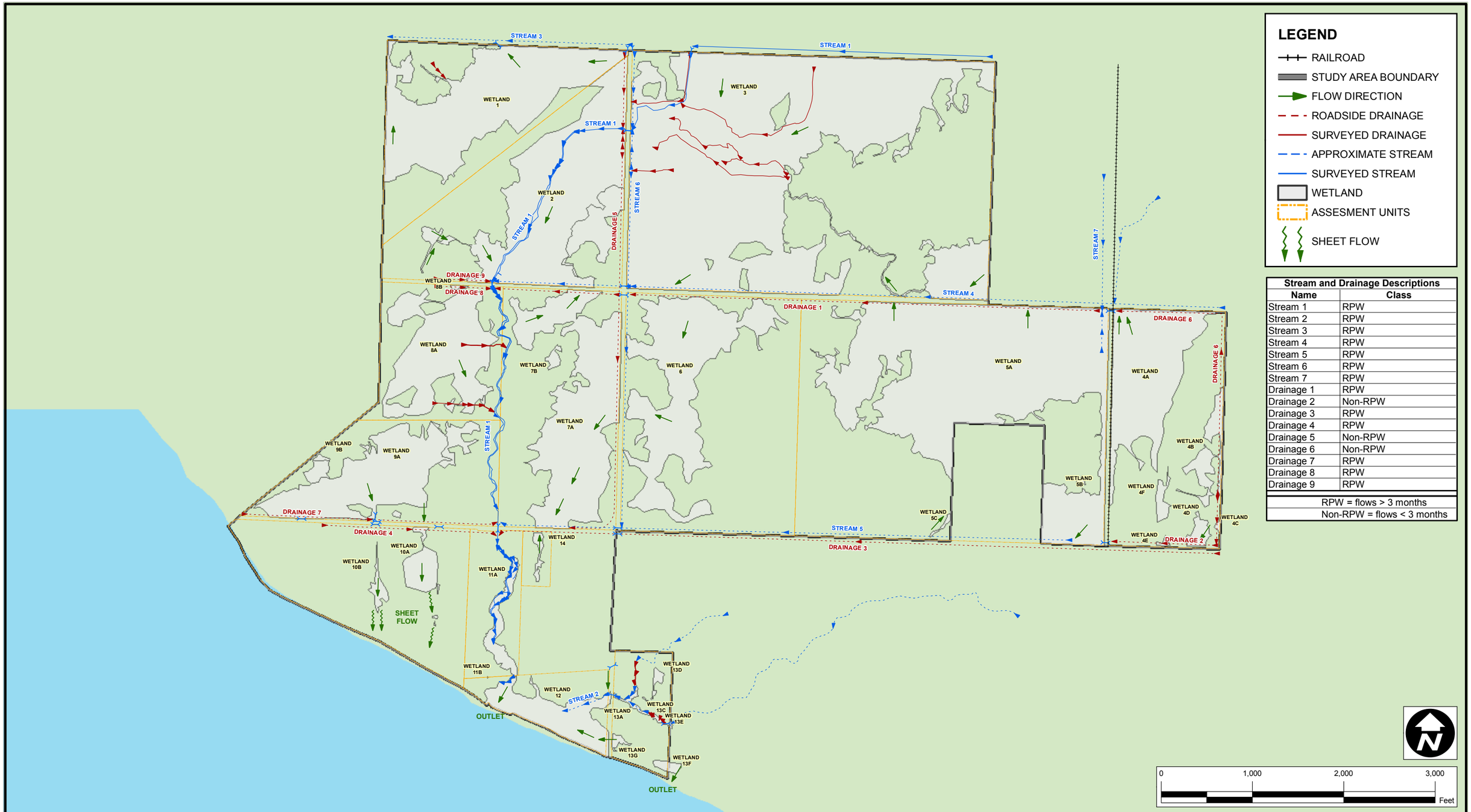
DATE: JUNE 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: 3
FIGURE NO.: FIGURE 4

K:\AMEC US OFFICES\KIRKLAND\15338-0\DWG\ArcView\GPT US Corps\Figure 3 - Revised Wetland Assessment Unit 9.mxd



	CLIENT: PACIFIC INTERNATIONAL TERMINALS		DWN BY: PM	PROJECT: GATEWAY PACIFIC TERMINAL	DATE: JUNE 2008
Pacific International Terminals, A Carrix Enterprise			CHK'D BY: MG		PROJECT NO.: 5-91M-15338-0
	AMEC Earth & Environmental 11335 NE 122nd Way Suite 100 Kirkland, Washington 98034	amec	DATUM: NAD83 PROJECTION: WA SP North, Ft. SCALE: 1 inch equals 100 feet	TITLE: WETLAND HYDROLOGY SAMLPING POINTS	REV. NO.: 2 FIGURE NO.: FIGURE 5

K:\AMEC US OFFICES\KIRKLAND\15338-0\DWG\ArcView\GPT US Corps\Figure 5 - Wetland Hydrology Sampling Points.mxd



Stream and Drainage Descriptions	
Name	**Class**
Stream 1	RPW
Stream 2	RPW
Stream 3	RPW
Stream 4	RPW
Stream 5	RPW
Stream 6	RPW
Stream 7	RPW
Drainage 1	RPW
Drainage 2	Non-RPW
Drainage 3	RPW
Drainage 4	RPW
Drainage 5	Non-RPW
Drainage 6	Non-RPW
Drainage 7	RPW
Drainage 8	RPW
Drainage 9	RPW

RPW = flows > 3 months
Non-RPW = flows < 3 months

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SCALE: 1 inch equals 1,000 feet

PROJECT: GATEWAY PACIFIC TERMINAL

TITLE: FLOW DIRECTION OF WETLANDS, DRAINAGES, AND STREAMS

DATE: JULY 2008
PROJECT NO.: 5-91M-15338-0
REV. NO.: 3
FIGURE NO.: FIGURE 6

K:\AMEC US OFFICES\KIRKLAND\15338-0\DWG\ArcView\Figure 8 - Stream and Drainage.mxd