REVISED

WETLAND DELINEATION REPORT

Pacific Mountain Energy Center
Kalama, Washington

Prepared for

Energy Northwest

January 17, 2007

URS

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Exhibit____(ADE-1)

CONTENTS

1. INTRODUCTION

URS Corporation conducted a wetland delineation for the proposed Pacific Mountain Energy Center in Kalama, Washington (Figure 1). The PMEC consists of a power plant, railroad spur, and natural gas pipeline. The power plant and railroad spur are located along Tradewinds Road in the east half of Section 36 in Township 7 north, Range 2 west. The pipeline is planned to be buried within the right of ways of Tradewinds Road and Hendrickson Drive in the northeast quarter of Section 1 in Township 6 north, Range 2 west and the northwest quarter of Section 6 in Township 6 north, Range 1 west. The power plant site was delineated by Anchor Environmental. Fill of a wetland on the power plant site is under a separate permit application submitted by the Port of Kalama and will not be discussed in this report.

URS conducted a wetland delineation of the railroad spur on April 11, 2006 to determine the presence and extent of critical areas on the proposed site. URS also conducted a wetland reconnaissance of the natural gas pipeline. A reconnaissance level investigation was completed for the pipeline portion of the PMEC. The exact location of the entry and exit for drilling under the Kalama River remains uncertain at this time.

URS Corporation confirmed the presence of one wetland on the proposed railroad spur route. In addition, two wetlands were observed along the natural gas pipeline route. This report documents the investigation work performed, describes the proposed development site wetlands, and characterizes the vegetation communities, soils, and hydrologic regimes occurring on the property that were used to distinguish wetlands from uplands.

An additional site visit was made on August 31, 2006 to the wetland located on the proposed railroad spur alignment. An agency pre-application meeting was held on September 6, 2006 to discuss PMEC and the wetland fill. This meeting was attended by several regulatory agencies: EFSEC, Washington State Department of Ecology (Ecology), Washington State Department of Fish and Wildlife (WDFW), and Cowlitz County. This wetland delineation report was been updated to include additional information gathered during the late summer site visit and to reflect agency comments.

2. METHODS

2.1. WETLAND DELINEATION

Documents reviewed to aid in the identification and determination of wetlands in the PMEC vicinity include:

- Soil Survey for Cowlitz County Area, Washington (NRCS 2006);
- National Wetlands Inventory Online Mapping Tool (USFWS 2006); and
- Aerial Photographs.

Wetland determination and delineations were made on site by wetland biologists using the 1987 U.S. Army Corps of Engineers (Corps) Wetlands Delineation Manual and the 1997 Ecology Wetland Identification and Delineation Manual. The 1997 Ecology methodology was developed to be consistent with the 1987 Corps manual. Delineated and surveyed wetland boundaries are subject to agency verification and approval.

For regulatory purposes, wetlands are defined as follows (Corps 1987):

> Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

According to the two manuals, the following three characteristics usually must be present for an area to be identified as a wetland: (1) wetland hydrology, (2) hydric soil, and (3) hydrophytic vegetation. Wetland hydrology includes seasonal, periodic, or permanent inundation or soil saturation that creates anaerobic conditions in the soil for a portion of the growing season sufficient for wetland soil and vegetation to be maintained. Hydric soils are saturated, flooded, or ponded long enough during the growing season to become deoxygenated in the upper soil horizon. Hydrophytic vegetation consists of those plant species growing in water, in soil, or on a substrate that at least periodically lacks oxygen.

The growing season is technically defined as the period when soil temperatures 19.7 inches below the ground surface (bgs) are greater than 5°C (41°F), according to the 1987 Corps Wetlands Delineation Manual and regulatory guidance (Corps 1992). However, Corps guidance letters and the Ecology manual state that the final determination of growing season should be based on careful observations of evidence that active growth is occurring. This evidence can include new or recent growth such as flowers, new shoots, new leaves, or swollen buds on plants. It was determined that the site visit did occur within the growing season.

A total of 3 sample plots were used to investigate the proposed railroad spur site. The sample plots are located in places that adequately represent the variation in vegetation, soils, and hydrologic regime across the site. The presence or absence of hydrophytic vegetation, hydric soil, and wetland hydrology indicators were documented for each sample plot as a means of justifying the delineated wetland boundaries. Wetland delineation data forms can be found in Appendix A.

Wetland Hydrology

To determine whether a vegetation community has wetland hydrology, an area is examined for inundation, soil saturation, shallow groundwater tables, or other hydrologic indicators. An area in which soils are saturated to the surface for at least 5 to 12 percent of the growing season meets the criterion for wetland hydrology. Seasonal changes in water levels and the effect of recent precipitation events must be considered when evaluating an area's hydrology. Wetland hydrology can also be inferred from the presence of any of the following indicators: watermarks on vegetation, drift lines, sediment deposits, water-stained leaves, surface-scoured areas, wetland drainage patterns, algae growth, and oxidized root channels.

Hydric Soil

Soil observations were made in wetlands and adjacent upland areas by digging 1.5-foot-deep soil profiles in each sample plot. Soil color and other characteristics used to indicate hydric soils were documented using the Munsell Soil Color Chart (GretagMacbeth 2000). The Natural Resources Conservation Service (NRCS) soil survey provided soil taxonomy, map unit name (soil series), and drainage class data. Soil in which any of the following indicators is present meets the criteria for hydric soil:

- **Gleyed soil (gray colors)**. Gleyed soils develop when mineral soil is saturated or inundated for periods of time sufficient to result in anaerobic (no oxygen) conditions. Anaerobic conditions cause elements common in soil, such as iron and manganese, to exist in reduced forms that are usually bluish, greenish, or grayish in color. Soil colors are determined using a Munsell soil color chart (GretagMacbeth 2000), which has separate pages for gley-colored soils.

- **Low chroma matrix**. A low chroma matrix develops when mineral soil is saturated or inundated for substantial periods of time during the growing season (but not long enough to produce gleyed soil) to result in anaerobic or hypoxic (low oxygen) conditions. A soil matrix is the portion of a given soil layer (usually more than 50 percent by volume) that has the predominant color. The Munsell system uses three dimensions to describe soil color: hue, value, and chroma. The Munsell soil color chart uses abbreviations to describe the colors, for example, 10YR 3/2. In the abbreviation, the first number and letters indicate the hue (10YR), the next number indicates the value (3), and the last number indicates chroma (2). A chroma of 1 or 2 is considered low. Soils with a matrix chroma of 2 are usually considered hydric when mottles are present. Mottles are rust-colored spots or blotches in the soil formed by the oxidation of iron compounds via fluctuating water levels. Mottles found in soil with a matrix chroma of 2 (or less) often indicate that a soil is hydric.

- **High organic content**. Soil retains high levels of organic matter when saturation prevents decomposition over long periods, thus allowing organic debris to accumulate. Organic content is considered high if the soil is composed of more than 20 to 30 percent (threshold differs depending upon other soil characteristics) organic material by weight in a layer at least 8 inches thick located in the upper 32 inches of the soil profile.

- **Soils appearing on the hydric soils list**. A list of hydric soils has been compiled by the U.S. Department of Agriculture's National Technical Committee for Hydric Soils (NRCS 2001). Listed soils have reducing conditions for a significant portion of the growing season in a major portion of the root zone and are frequently saturated within 12 inches of the soil surface.

- **Other hydric indicators**. Other positive indicators of hydric soil include sulfide or "rotten egg" odor, aquic or peraquic moisture regimes (reducing soil moisture regimes due to groundwater at or near the soil surface), and the presence of iron or manganese concretions.

Hydrophytic Vegetation

The dominant plant species in each vegetation community were identified within each sample plot. Vegetation communities are defined here as a contiguous assortment of plants in a given area sharing similar environmental conditions. Dominant plants are those plant species that comprise at least 20 percent areal cover of a given plot. The sample plots are circular and have a 30-foot radius for trees and shrubs and a 5-foot radius for herbaceous plants. Plots were situated so that they best represent the vegetation present within each community.

The hydrophytic indicator status for each dominant species, as designated by the U.S. Fish and Wildlife Service for Region 9 (USFWS 1993), was used to determine whether the vegetation in each community is hydrophytic. To meet the hydrophytic vegetation criteria, more than 50 percent of the dominant species must have an indicator status of obligate, facultative wetland, and/or facultative. Indicator status categories are defined in Table 2-1. The facultative status categories are often modified using minus (-) or plus (+) symbols. For example, FAC+ species are considered to have a somewhat greater estimated probability of occurring in wetlands than FAC species, whereas FAC- species are considered to have a somewhat lesser estimated probability of occurring in wetlands than FAC species.

Table 1. Plant Species Wetland Indicator Categories

Indicator Category	Occurrence	Probability in Wetlands (estimated)
Obligate (OBL)	Occurs almost always in wetlands under natural conditions	>99%
Facultative Wetland (FACW)	Usually occurs in wetlands, but occasionally found in non-wetlands	67-99%
Facultative (FAC)	Equally likely to occur in wetlands and non-wetlands	34–66%
Facultative Upland (FACU)	Usually occurs in non-wetlands, but occasionally found in wetlands	1–33%
Upland (UPL)	Occurs almost always under natural conditions in non-wetlands in this region, but may occur in wetlands in another region	<1%

Source: Corps 1987

2.2. WETLAND CLASSIFICATION

Cowardin Classification

Wetlands are classified according to the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). Under the Cowardin classification scheme, wetlands and deepwater habitats are grouped into systems based on shared hydrologic factors. These systems are marine, estuarine, riverine, lacustrine, and palustrine. Palustrine is the only system present on the proposed development site.

Palustrine Systems include all nontidal wetlands dominated by trees, shrubs, emergent herbaceous plants, mosses, and/or lichens, and all such wetlands that occur in tidal areas where the salinity due to ocean-derived salts is below 5 ppt. Wetlands included in the palustrine system are those commonly referred to as marshes, swamps, bogs, fens, prairies, seeps, and intermittent ponds. A Palustrine system can exist directly adjacent to or within the Lacustrine, Riverine, or Estuarine systems.

Palustrine wetlands are divided into classes by the dominant vegetation. Palustrine forested (PFO) wetlands or forested wetland communities are dominated by trees or arborescent shrubs greater than 20 feet tall having greater than 30 percent cover. Palustrine scrub-shrub (PSS) wetlands or scrub-shrub wetland communities are dominated by woody shrubs less than 20 feet tall with at least 30 percent cover. Palustrine emergent (PEM) wetlands or emergent wetland communities are dominated by nonwoody, rooted vascular plants having at least 30 percent cover.

The U. S. Fish and Wildlife Service National Wetlands Inventory (NWI) provides information on the characteristics, extent, and status of the nation's wetlands and deepwater habitats. The NWI collects data from aerial photography to produce maps that correspond to the USGS 7.5 or 15 minute topographic quadrangles. NWI quadrangles use the Cowardin classification system to characterize wetland features on each map.

HGM Classification

Wetlands were also classified according to the Hydrogeomorphic (HGM) classification. The HGM classification groups wetlands into categories based on the geomorphic and hydrologic characteristics that control many wetland functions. We have used the modified version of this classification system that is found in the Washington State Wetland Rating System for Western Washington (Ecology 2004). The HGM classes found on the site are riverine, depressional, and slope.

Depressional wetlands occur in depressions where elevations within the wetland are lower than the wetland outlet. The shapes of depressional wetlands vary, but in all cases water is detained for an extended period before being released downstream, evaporated, or infiltrated. The depression may have an outlet, but the lowest elevations in the wetland are generally somewhere other than the outlet.

2.3. WETLAND RATINGS AND BUFFERS

Wetlands were rated using both Ecology's *Revised Wetlands Rating System for Western Washington* (Ecology 2004) and Cowlitz County's rating system. Cowlitz County also uses a four tiered classification system to rate wetlands (Cowlitz County 2005). Ecology's Western Wetland Rating Data Forms are provided in Appendix B. Ratings were revised after receiving comments from Ecology. Ecology's new annotated forms were used.

Department of Ecology Wetland Rating System

Category I are those wetlands of exceptional value in terms of protecting water quality, storing flood and storm water, and/or providing habitat for wildlife as indicated by a rating system score of 70 points or more on the Ecology rating forms. These wetlands are communities of infrequent occurrence that often provide documented habitat for sensitive, threatened, or endangered species, and/or have other attributes that are very difficult or impossible to replace if altered.

Category II wetlands are those wetlands that are difficult, though not impossible, to replace, generally have little to no disturbance, and provide high levels of some functions. The primary criteria for category II wetlands are that they score 51–69 out of 100 points on the rating questions related to functions. Category II wetlands also include estuarine wetlands less than 1 acre, or greater than 1 acre that are disturbed, and interdunal wetlands greater than 1 acre. Although category II wetlands occur more commonly than category I wetlands, they are deemed to warrant a relatively high level of protection.

Category III wetlands generally provide a moderate level of functions, have been disturbed in some way, and are often less diverse or more isolated from other natural resources. The primary criteria for category III wetlands are they score 30–50 out of 100 points as defined in Ecology's Wetlands Rating System for Western Washington. Interdunal wetlands between 0.1 and 1 acre

in size are also category III regardless of their score. Category III wetlands are regulated wetlands that do not contain features or levels outlined in Categories I, II, or IV. They occur more frequently, are less difficult to replace, and need a moderate level of protection compared to higher rated wetlands.

Category IV wetlands have the lowest levels of functions (less than 30 points on the rating questions relating to functions). They do not meet the criteria for Category I, II or III wetlands. These are wetlands that should be replaceable and, in some cases, can be improved from a functions standpoint. These wetlands may provide important functions and values and should be protected to some degree.

Cowlitz County Wetland Rating System

Category 1 wetlands are documented to have site-specific habitat or state-listed endangered, threatened, or sensitive animal species. Category 1 wetlands have no minimum size requirement.

Category 2 wetlands will have 1) high quality, regionally rare, or irreplaceable ecological functions, 2) a complex of three or more wetland types which cannot be replicated through newly created wetlands or restoration, OR 3) will be agency approved enhancement mitigation projects. No minimum size is required for Category 2 wetlands.

Category 3 wetlands have sufficient characteristics to provide any of the following functions: significant flood control, ground and surface water aquifer recharge, significant fish and wildlife habitat, significant water quality attributes for sediment retention and pollution control. Agency approved created wetland mitigation projects are placed in this category. A one acre minimum size is required for Category 3 wetlands.

Cowlitz County maintains two classes of **Category 4** wetlands. The first class, Category 4a wetlands, are those areas dominated by non-native, invasive plant species with a minimum size of one acre. The second class of Category 4 wetlands are those areas two acres or larger which may not be classified as Category 1, 2, 3, or 4a.

Cowlitz County Wetland Buffers

Cowlitz County enforces wetland buffers (Cowlitz County 2005) based on protection of the wetland's physical functions and/or fish and wildlife habitat functions. Wetland buffers associated with physical functions (flood control and aquifer recharge) are determined using the soil series present within the wetland in conjunction with a wetland assessment of those functions. Wetland buffers based on physical functions range from a maximum of 200 feet to a minimum of 40 feet. Wetland buffers associated with habitat functions are determined by wetland type, size, and presence of priority or special habitats and/or species. These buffers are determined by a wetland assessment but will not be less than 75 feet.

2.4. WETLAND FUNCTIONS ASSESSMENT

Wetland functions were analyzed using methodology developed by Ecology and published in the Revised Wetlands Rating System for Western Washington (Ecology 2004). These functions are assessed in three broad categories: water quality improvement, hydrologic function, and habitat

quality. Both the potential and opportunity to provide each function is analyzed. The potential to perform a function is based on the physical, biological, and chemical characteristics within the wetland itself. The opportunity is to what degree the wetland's position in the landscape will allow it to perform a specific function.

2.5. WETLAND MAPPING

The boundary between the wetland and upland areas in the railroad spur area were marked in the field with pink flagging. Sample plots were also marked with pink flagging. Flag locations were mapped using a survey quality Trimble ProXRS global positioning system. Locations were collected then post-processed to obtain submeter accuracy of the regulatory wetland edge.

3. RESULTS

3.1. RAILROAD SPUR

URS conducted a pre-field review of the National Wetland Inventory (NWI), local soil survey, and topographical maps. The NWI indicates that extensive wetland complexes occur throughout the proposed development site and greater vicinity (Figure 2). The presence of one wetland was confirmed during the April 11, 2006 field visit. During the initial site visit, this wetland (Wetland A) was determine to be composed of a complex of three wetland communities: palustrine forested, palustrine scrub-shrub, and palustrine open water according to the Cowardin classification system. The August 31, 2006 site visit revealed the palustrine open water community actually contains several palustrine aquatic bed patches. In addition, a narrow strip of palustrine emergent wetland lies between the scrub-shrub and open water communities.

Wetland A

Wetland A is an 8.86-acre wetland complex confined by developed lands on all sides (Figure 4).

Hydrology

Wetland A has an altered hydrology due to a blocked outlet culvert at the north end of the wetland. The culvert is blocked by railroad ties and other organic debris. This blockage has raised the water elevation in the wetland at least three feet. Evidence of increased water depth includes dead and dying vegetation, an inundated driveway that accesses several electrical utility poles, and lack of extensive open water in aerial photos (Terraserver 2000). The blocked outlet and excess ponding of water in the wetland has significantly altered the vegetation communities present in the wetland. Historic aerial photos illustrate that Wetland A was dominated by a small palustrine emergent community, and extensive palustrine scrub-shrub and palustrine forested communities.

Groundwater is one of the main sources of water for this wetland. Soils are very coarse loamy sands that may provide for rapid interchange between the wetland and the local groundwater system. In addition, a culvert is located under the BNSF railroad that drains a large wetland to

the east (Figure 4). No surface ditches were found that might drain to the wetland. Wetland A does not receive tidal influences from the Columbia River. Direct precipitation also appears to provide a small amount of water to the wetland. The developed areas to the west have stormwater systems, but no outfalls are present in Wetland A.

Vegetation

Current hydrologic conditions have created five wetland communities in Wetland A. The open water and aquatic bed communities extend the full length of the wetland from the north end of the wetland south to where the culvert drains from under the railroad. They are interspersed between one another and lie immediately adjacent to the railroad grade. These two communities contain such aquatic plants as lesser duckweed (*Lemna minor*/OBL), greater duckweed (Spirodela polyrhiza/OBL), common bladderwort (*Utricularia macrorhiza/*OBL), waterfern (*Azolla mexicana/*OBL), pondweed (*Potamogeton* sp.), and western water-milfoil (*Myriophyllum hippuroides/*OBL). They also contain non-native wildlife such as bullfrogs (*Rana catesbeiana*) and mosquito fish (*Gambusia affinis*).

The narrow emergent community lies between the open water and scrub-shrub communities. This community was completely inundated during the April 2006 site visit. However, it was mapped during the August 2006 site visit and was found in some places to be only 2 feet wide. The emergent community contains reed canarygrass (*Phalaris arundinacea*/FACW), floating water pennywort (*Hydrocotyle ranunculoides*/OBL), marsh speedwell (*Veronica scutellata*/OBL), and yellow flag (*Iris pseudacorus*/OBL).

A scrub-shrub community grows along the wetland edge around the open water community. This community expands in the south central section of the wetland from where the wetland begins expanding in width to the south wetland boundary and west to the forested wetland community. The dominant plant species in the scrub-shrub community include reed canarygrass, red-osier dogwood (*Cornus sericea*/FACW), Sitka willow (*Salix sitchensis*/FAC+), and Pacific willow (*Salix lucida* ssp. *lasiandra*/FACW).

The forest community comprises the south and southwest corner of Wetland A. Dominant species in the forested community include species present in the scrub-shrub community, black cottonwood (*Populus balsamifera* ssp. *trichocarpa/FAC*), and Oregon ash (*Fraxinus latifolia*). Several standing snags indicate that the forested portion of the wetland was recently at least double its current size.

Soils

The proposed development site is part of a historic Columbia River dredge spoils disposal area. Existing soil survey data is based on historic soil surveys. Most of the proposed development site is classified as moderately well drained Maytown silt loams and Caples silty clay loams (Figure 3). These floodplain derived soils have distinct horizon profiles containing silt or silty clay loams. These soils are not included on the hydric soils list for Cowlitz County (NRCS 2001).

Soils sampled on the proposed railroad spur site more closely match the colors and textures of Pilchuck loamy fine sand or Riverwash soil series mapped for this area, but do not display any soil horizons. Two sample plots were dug in Wetland A and one in the upland (Figure 4). All three soil pits contained very dark gray (10YR 3/1) loamy sands greater than 12 and 17 inches

deep. The very dark gray color represents the parent material color of the sand particles and not hydric soil conditions. Sample plot three in the south central part of the wetland, inundated by at least eighteen inches of water in April 2006, had 2 inches of fibrous organic material above the mineral soil and few coarse prominent redoximorphic features with a strong brown color (7.5YR 5/8) in the soils.

Wetland Ratings

Wetland A was rated using the *Washington State Wetland Rating System for Western Washington* (Ecology 2004). The wetland is rated as a Category II with a moderately high level of habitat function. The wetland rating form is available in Appendix B.

Wetland A was also rated according to Cowlitz County Code (Cowlitz County 2006). An assessment by URS staff identified the wetland as Category 2 according to county code. This rating is based on the presence of at least three wetland communities and habitat features (standing snags with nest cavities, highly convoluted interspersion of vegetation and water features) deemed high quality, rare, and irreplaceable within a reasonable time frame of several decades. Its opportunity and potential to improve water quality and reduce flooding and erosion are high because of its restricted outlet and presence of high intensity development surrounding the wetland.

3.2. NATURAL GAS PIPELINE

A wetland reconnaissance was conducted along the pipeline alignment. Two large wetland complexes were identified along the proposed corridor (Figure 1).

One large wetland and riparian corridor complex was found on either side of the Kalama River directly south of Wetland A along the pipeline route. The section of this wetland north of the Kalama River is a palustrine forested wetland dominated by large black cottonwoods, Oregon ash, willows, and many shrub species. A Washington Department and Fish and Wildlife boat ramp is located adjacent to this wetland. The section of wetland on the south shore of the Kalama River is an interspersed complex of palustrine emergent and palustrine scrub-shrub communities. The palustrine emergent community is dominated by reed canarygrass. The palustrine scrub-shrub zone contains willows, Douglas spiraea, salmonberry (Rubus spectabilis/FAC) and Japanese knotweed (Polygonum cuspidatum/NI).

A second large wetland area is located directly west of Hendrickson Drive and the proposed pipeline route about 0.25 mile south of the Kalama River. The large palustrine wetland is a complex of emergent, scrub-shrub, and forested vegetation communities. The area adjacent to Hendrickson Road, nearest the proposed pipeline route, is mostly an emergent vegetation community dominated by reed canarygrass. A small section of willow and reed canarygrass dominated palustrine scrub-shrub community is located at the southeast end of this wetland complex next to the road.

3.3. PLANT SITE

Anchor Environmental LLC delineated the plant site. They identified a large wetland complex along the north edge of the proposed Pacific Mountain Energy Center (Anchor 2006). The wetland contains extensive palustrine and riverine wetlands with multiple vegetation communities. Wetlands delineated by Anchor Environmental are being addressed under a separate application process by the Port of Kalama.

4. REFERENCES

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Figures

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Figure 1
Site Vicinity

URS

Wetland Delineation Report
Pacific Mountain Energy Center
Kalama, Washington

Map center: 46° 2' 30" N, 122° 52' 7" W

Figure 2

National Wetland Inventory

Job No. 33758342

URS

Wetland Delineation Report
Pacific Mountain Energy Center
Kalama, Washington

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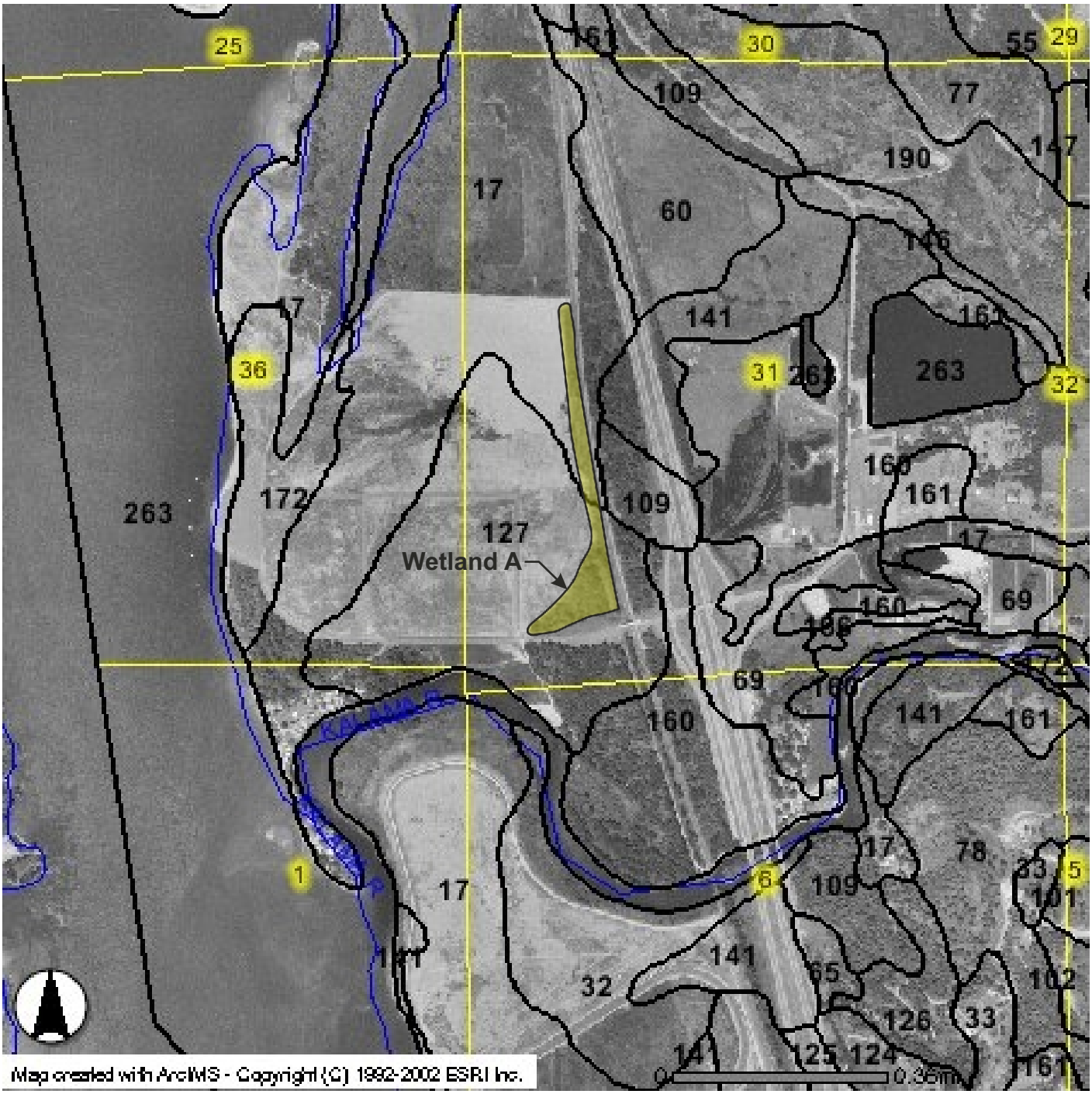

LEGEND

17	Caples silty clay loam
127	Maytown silt loam
160	Pilchuck loamy fine sand
172	Riverwash

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Figure 3
Soil Survey

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Wetland Delineation Report
Pacific Mountain Energy Center
Kalama, Washington

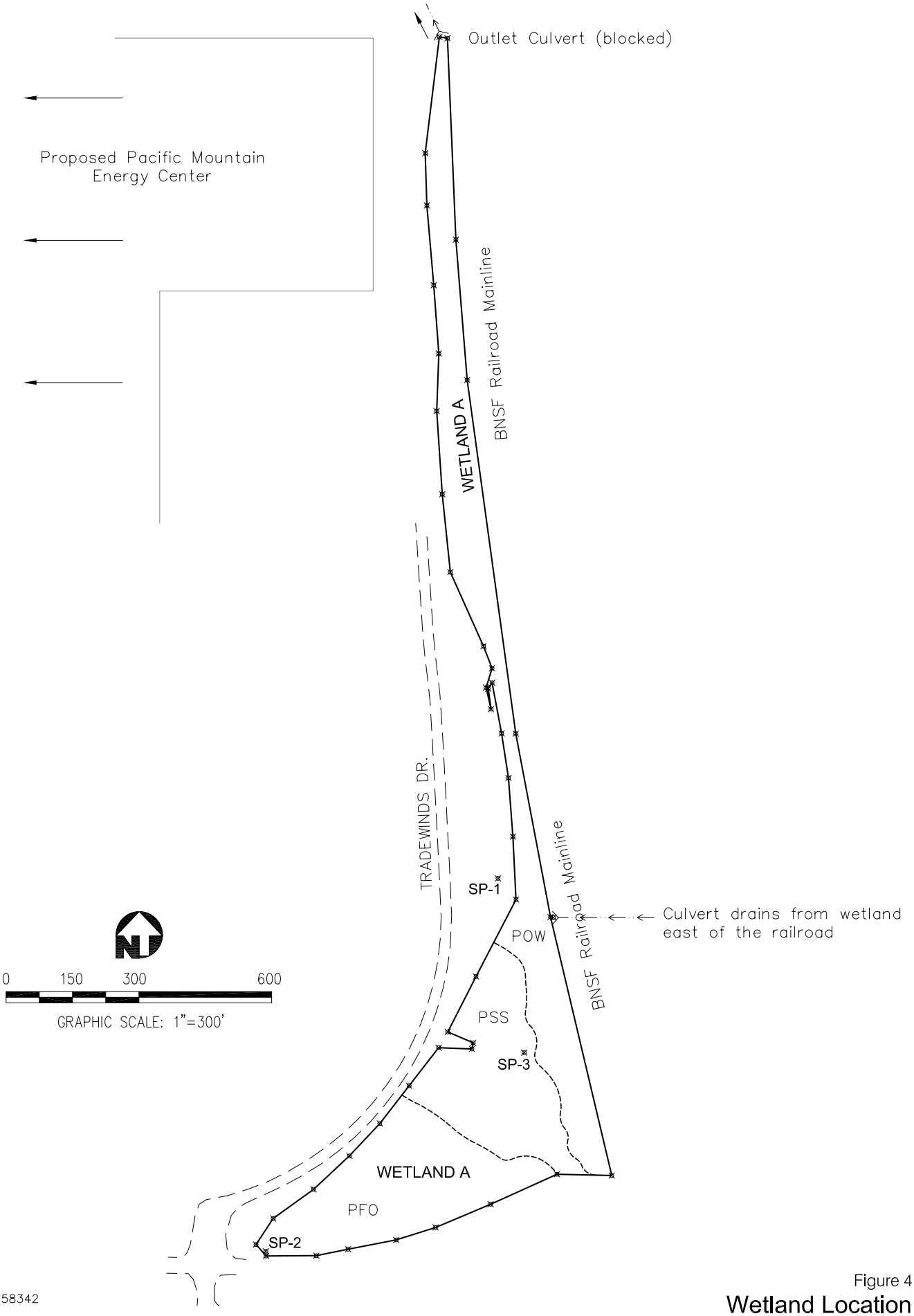

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Figure 4

Wetland Location

Wetland Delineation Report
Energy Northwest IGCC
Kalama, Washington

APPENDIX A

WETLAND DELINEATION DATA FORMS

URS Routine On-site Wetlands Determination

URS Seattle Office, 1501 4th Ave, Suite 1400, Seattle, Washington 98102 Tele: 206.438.2700

Project Name:
Project Location: Port of Kalama
Applicant/Owner: Energy Northwest
Transect/Plot: SP-1 Plot Location:
Fieldwork Date: April 11, 2006
County: Cowlitz State: WA
Investigator(s): B. Kidder, J. Walker

Normal circumstances exist on site? Yes ☒ No ☐
Significantly disturbed (atypical situation)? Yes ☐ No ☒
Is this a potential Problem Area? Yes ☐ No ☒

Vegetation

Normal plot size/shape? (radius – trees & shrubs = 30', herbs = 5'/ circular) Yes ☒ No ☐

	Species	Ind. Status	% Raw Cover		Species	Ind. Status	% Raw Cover
Trees	Populus balsamifera	FAC	60 ✓	Herbs	Arabidopsis thaliana	—	5
					Rumex acetosella	FACU	2
					Holcus lanatus	FAC	10
					Myosotis discolor	FACW	2
Shrubs					Hypochaeris radicata	FACU	2
					Holosteum umbellatum	—	5

Percent of dominant plant species that are OBL, FACW, FAC+, & FAC: 100% ✓ = dominant species
Is the hydrophytic vegetation criteria met? Yes ☒ No ☐ * = also includes saplings (woody plants <20 ft tall)

Comments: sparse herbaceous vegetation, very sandy substrate

Soil

Mapped Series: Maytown silt loam Taxonomy: Fluventic Haploxeralls Drainage Class: Moderately well-drained
On Hydric Soils List? Yes ☐ No ☒ Confirmed map soil type or inclusion: No, closer to Pilchuck or Riverwash

Horizon	Depth	Matrix Color	Redoximorphic Features	Texture, Other
A	0-17	10YR 3/1	—	loamy sand

☐ Histosol/Histic epipedon ☐ Gleyed within 10" bgs ☐ Sandy soils - High organic content in surface horizon
☐ Sulfidic odor ☐ On Hydric Soils List and matches profile ☐ Sandy soils - Organic streaking or pan
☐ Concretions within 3" bgs ☐ Reducing conditions ☐ Other:
☐ Low matrix chroma and redox. within 10" bgs ☐ Aquic moisture regime

Is the hydric soil criterion met? Yes ☐ No ☒

Comments: no "wetland" sand indicators present, such as organic streaking; soil color appears to represent parent material in sand, not wetland conditions

Hydrology

Recorded Data:
Recorded Data Available: ☐ Aerial Photos: ☐ Stream Gauge: ☐ Other: ☐

Field Data: Growing Season? Yes ☒ No ☐
Depth of Inundation: N/A Depth to Saturation: >17" Depth to Free Water: >17"

Primary Hydrology Indicators:
☐ Inundated ☐ Drift lines
☐ Saturated within 12" bgs ☐ Sediment deposits
☐ Wetland drainage pattern ☐ Water marks

Secondary Hydrology Indicators:
☐ Oxidized Root Channels within 12" bgs ☐ FAC- neutral test
☐ Local soil survey ☐ Water-stained leaves
☐ Other:

Is the hydrology criterion met? Yes ☐ No ☒

Comments: plot is in upland adjacent to POW channel between Road + Railroad

Determination

Wetland? Yes ☐ No ☒
Cowardin Class/ HGM Class: Upland

Comments:

URS Routine On-site Wetlands Determination

URS Seattle Office, 1501 4th Ave, Suite 1400, Seattle, Washington 98102 Tele: 206.438.2700

Project Name:
Project Location: Port of Kalama
Applicant/Owner: Energy Northwest
Transect/Plot: SP-2 Plot Location:
Fieldwork Date: April 11, 2006
County: Cowlitz State: WA
Investigator(s): B. Kidder, J. Walker

Normal circumstances exist on site? Yes ☒ No ☐
Significantly disturbed (atypical situation)? Yes ☐ No ☒
Is this a potential Problem Area? Yes ☐ No ☒

Vegetation

Normal plot size/shape? (radius – trees & shrubs = 30', herbs = 5'/ circular) Yes ☒ No ☐

	Species	Ind. Status	% Raw Cover		Species	Ind. Status	% Raw Cover
Trees	Populus balsamifera	FAC	80 ✓	Herbs	Phalaris arundinacea	FACW	100 ✓
	Fraxinus latifolia	FACW	20 ✓		Cirsium arvense	FAC-	1
Shrubs	Cornus sericea	FACW	20 ✓				
	Spiraea douglasii	FACW	5				
	Rosa nutkana		5				

Percent of dominant plant species that are OBL, FACW, FAC+, & FAC: 100%
Is the hydrophytic vegetation criteria met? Yes ☒ No ☐

✓ = dominant species
* = also includes saplings (woody plants <20 ft tall)

Comments: Vegetation is dominated by hydrophytic species

Soil

Mapped Series: Maytown silt loam Taxonomy: Fluventic Haploxeralfs Drainage Class: Moderately Well drained
On Hydric Soils List? Yes ☐ No ☒ Confirmed map soil type or inclusion: No, Pilchuck or Riverwash

Horizon	Depth	Matrix Color	Redoximorphic Features	Texture, Other
A	0-12	10YR 3/1	—	loamy sand
		→	parent material color	

☐ Histosol/Histic epipedon
☐ Sulfidic odor
☐ Concretions within 3" bgs
☒ Low matrix chroma ~~and redox. within 10"~~ bgs
☐ Gleyed within 10" bgs
☐ On Hydric Soils List and matches profile
☐ Reducing conditions
☐ Aquic moisture regime
☐ Sandy soils - High organic content in surface horizon
☐ Sandy soils - Organic streaking or pan
☐ Other:

Is the hydric soil criterion met? Yes ☒ No ☐

Comments: ~~Low~~ soil matrix chroma of "1" is a hydric soil indicator / couple inches of organic matter sitting over mineral soil partially decomposed

Hydrology

Recorded Data:
Recorded Data Available: ☐ Aerial Photos: ☐ Stream Gauge: ☐ Other: ☐

Field Data: Growing Season? Yes ☒ No ☐
Depth of Inundation: N/A however Depth to Saturation: 0" Depth to Free Water: 0"

Primary Hydrology Indicators:
☒ Inundated (areas adjacent to sample have up to 1" inundation)
☒ Saturated within 12" bgs
☐ Wetland drainage pattern
☐ Drift lines
☐ Sediment deposits
☐ Water marks

Secondary Hydrology Indicators:
☐ Oxidized Root Channels within 12" bgs
☐ Local soil survey
☐ Other:
☐ FAC- neutral test
☐ Water-stained leaves

Is the hydrology criterion met? Yes ☒ No ☐

Comments:

Determination

Wetland? Yes ☒ No ☐
Cowardin Class/ HGM Class: PFO / Depressional

Comments:

URS Routine On-site Wetlands Determination

URS Seattle Office, 1501 4th Ave, Suite 1400, Seattle, Washington 98102 Tele: 206.438.2700

Project Name: LNG Pipeline
Fieldwork Date: 10 March 2006
Project Location:
County: Cowlitz State: WA
Applicant/Owner: Energy Northwest / Port of Kalama
Investigator(s): WTK, JAW
Transect/Plot: SP-3 Plot Location: middle of wetland near power line poles on inundated access driveway

Normal circumstances exist on site? Yes ☒ No ☐
Significantly disturbed (atypical situation)? Yes ☐ No ☒
Is this a potential Problem Area? Yes ☐ No ☒

Vegetation

Normal plot size/shape? (radius – trees & shrubs = 30', herbs = 5'/ circular) Yes ☒ No ☐

	Species	Ind. Status	% Raw Cover
Trees*			
	Salix lasiandra ssp. lasiandra	FACW	5
Shrubs*	Fraxinus latifolia	FACW	10
	Salix sitchensis	FAC+	30
	Rosa sp	FAC	T
	Spiraea douglasii	FACW	5
	Populus balsamifera	FAC	T
Herbs	Phalaris arundinacea	FACW	30

Percent of dominant plant species that are OBL, FACW, FAC+, & FAC: 100 ✓ = dominant species
Is the hydrophytic vegetation criteria met? Yes ☒ No ☐ * = also includes saplings (woody plants <20 ft tall)

Comments:

Soil

Mapped Series: Maytown silt loam Taxonomy: Fluventic Haploxeralls Drainage Class: Moderately well drained
On Hydric Soils List? Yes ☐ No ☒ Confirmed map soil type or inclusion: No, Pilchuck or Riverwash

Horizon	Depth	Matrix Color	Redoxomorphic Features	Texture, Other
~~O~~ Of	0-2	Fibrous material	—	—
A	2-15	10YR 3/1	7.5YR5/8 one course prominent	loamy sand

☒ Histosol/Histic epipedon ☐ Gleyed within 10" bgs ☐ Sandy soils - High organic content in surface horizon
☐ Sulfidic odor ☐ On Hydric Soils List and matches profile ☐ Sandy soils - Organic streaking or pan
☐ Concretions within 3" bgs ☐ Reducing conditions ☐ Other:
☒ Low matrix chroma and redox. within 10" bgs ☒ Aquic moisture regime

Is the hydric soil criterion met? Yes ☒ No ☐

Comments: A horizon matrix is the parent material (dominant color from driveway) because is one very large solitary ped redox feature may be remnant fill material

Hydrology

Recorded Data:
Recorded Data Available: ☐ Aerial Photos: ☐ Stream Gauge: ☐ Other: ☐

Field Data: Growing Season? Yes ☒ No ☐
Depth of Inundation: > 18 inches Depth to Saturation: > Ø" Depth to Free Water: > Ø"

Primary Hydrology Indicators:
☒ Inundated
☒ Saturated within 12" bgs
☐ Wetland drainage pattern
☐ Drift lines
☐ Sediment deposits
☒ Water marks

Secondary Hydrology Indicators:
☐ Oxidized Root Channels within 12" bgs
☐ Local soil survey
☐ Other:
☐ FAC- neutral test
☐ Water-stained leaves

Is the hydrology criterion met? Yes ☒ No ☐

Comments:

Determination

Wetland? Yes ☒ No ☐
Cowardin Class/ HGM Class: PSS / Depressional

Comments: plot on edge of inundated access driveway, where embankment quickly drops to ~~several~~ couple feet of water. beavers have cut most of willow branches. Lots of recent evidence

APPENDIX B

WASHINGTON STATE DEPARTMENT OF ECOLOGY

WETLAND RATING DATA FORMS

Wetland name or number A

WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated June 2006 to increase accuracy and reproducibility among users

Name of wetland (if known): Wetland A Date of site visit: 4 April 2006; 31 August 2006

Rated by B Kidder, J. Walker Trained by Ecology? Yes No Date of training 19-20 April 2006

SEC: 31 TWNSHP: 7N RNGE: 1W Is S/T/R in Appendix D? Yes X No

Map of wetland unit: Figure ____ Estimated size 0.86 acres

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 Functions	26
Score for Hydrologic Functions	12
Score for Habitat Functions	22
TOTAL score for Functions	60

Category based on SPECIAL CHARACTERISTICS 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	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 A

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 A

Classification of Wetland Units in Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
NO – go to 2 **YES** – the wetland class is **Tidal Fringe**

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

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

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
NO – go to 4 **YES** – The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
____The wetland is on a slope (*slope can be very gradual*),
____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
____The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
NO – go to 5 **YES** – The wetland class is **Slope**

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

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

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

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

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

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

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

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

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated	*HGM Class to Use in Rating*
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake-fringe	Lake-fringe
Depressional + Riverine along stream within boundary	Depressional
Depressional + Lake-fringe	Depressional
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE under wetlands with special characteristics

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

Wetland name or number A

D	Depressional and Flats Wetlands WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality	Points (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	*(see p.38)*
D	D 1.1 Characteristics of surface water flows out of the wetland: Unit is a depression with no surface water leaving it (no outlet) points = 3 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet (points = 2) Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	Figure ___ 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* YES (points = 4) NO points = 0	4
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 Wetland has persistent, ungrazed, vegetation > = 1/2 of area (points = 3) Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 3
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* Area seasonally ponded is > ½ total area of wetland (points = 4) Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	Figure ___ 4
D	**Total for D 1** *Add the points in the boxes above*	13
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft 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 areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other _____ (YES) multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	26

Wetland name or number A

	D Depressional and Flats Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 3 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	7
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire unit is in the FLATS class points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	12
D	**D 4. Does the wetland unit 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*	12

* call w/ Tom Hruby of Ecology on 1/17/07 confirmed that since there are no resources to be damaged b/t the wetland and the Columbia River and this section of the Columbia River is tidally-influenced, this wetland does not have opportunity to reduce flooding of C. River.

Wetland name or number A

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* 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:* 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	Figure 4 4
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* X Permanently flooded or inundated X Seasonally flooded or inundated ___ Occasionally flooded or inundated ___ Saturated only 4 or more types present — points = 3 3 types present — points = 2 2 types present — point = 1 1 type present — points = 0 ___ Permanently flowing stream or river in, or adjacent to, the wetland ___ Seasonally flowing stream in, or adjacent to, the wetland ___ ***Lake-fringe wetland* = 2 points** ___ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	Figure ___ 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* *List species below if you want to:* If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1

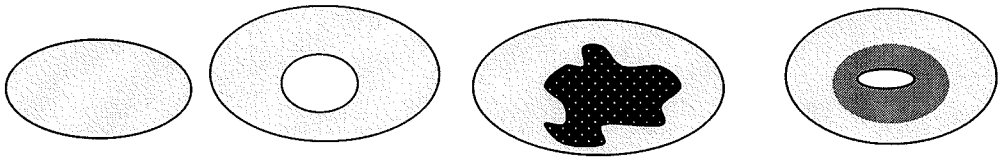
Total for page 6

Wetland name or number A

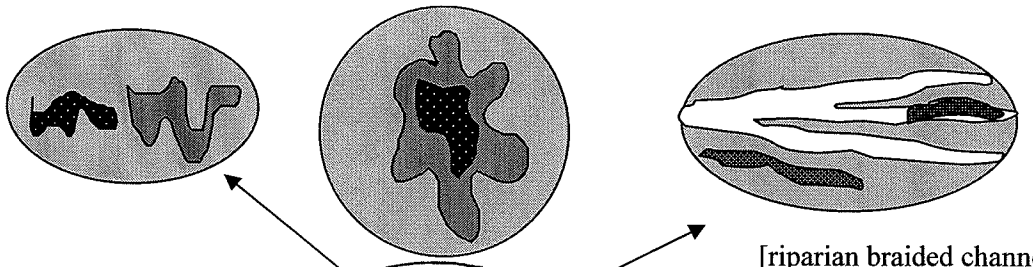
H 1.4. Interspersion of habitats *(see p. 76)*

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure 4
Doesn't fully depict interspersion



None = 0 points Low = 1 point Moderate = 2 points



High = 3 points [riparian braided channels]

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

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)

X Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

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.

4

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

13

Comments

Wetland name or number A

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

Total for page 2

Wetland name or number A

H 2.3 Near or adjacent to other priority habitats listed by WDFW *(see p. 82)*

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

These are DFW definitions. Check with your local DFW biologist if there are any questions.

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).

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

___ **Old-growth forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age.

X **Mature forests:** Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

___ **Prairies:** Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.

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

___ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages

X **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.

X **Urban Natural Open Space**: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and/or the open space functions as a corridor connecting other *priority habitats*, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and is surrounded by urban development.

___ **Estuary/Estuary-like:** Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5ppt. during the period of average annual low flow. Includes both estuaries and lagoons.

___ **Marine/Estuarine Shorelines**: Shorelines include the intertidal and subtidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g., cliffs, snags, mature trees, dunes, meadows) that are important to shoreline associated fish and wildlife and that contribute to shoreline function (e.g., sand/rock/log recruitment, nutrient contribution, erosion control)

If wetland has **3 or more** priority habitats = **4 points**

If wetland has **2** priority habitats = **3 points**

If wetland has **1** priority habitat = **1 point** No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

4

Wetland name or number A

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits)* ***(see p. 84)*** There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 There is at least 1 wetland within ½ mile. points = 2 There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	9
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	22

Wetland name or number A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands *(see p. 86)* Does the wetland unit meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt. YES = Go to SC 1.1 (NO) X	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? YES = Category I NO go to SC 1.2	**Cat. I**
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? YES = Category I NO = Category II — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	**Cat. I** **Cat. II** **Dual rating I/II**

Wetland name or number A

SC 2.0 Natural Heritage Wetlands *(see p. 87)*

Cat. I

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)*

S/T/R information from Appendix D X or accessed from WNHP/DNR web site X

YES X – contact WNHP/DNR (see p. 79) and go to SC 3.2 NO ___

SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?

YES = Category I NO X

SC 3.0 Bogs *(see p. 87)*

Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.***

1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 (No) - go to Q. 2
2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?

   Yes - go to Q. 3 (No)- Is not a bog for purpose of rating
3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?

   Yes – Is a bog for purpose of rating No - go to Q. 4

   NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.

1. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?*

2. YES = Category I No___ Is not a bog for purpose of rating

Cat. I

SC 4.0 Forested Wetlands ***(see p. 90)*** Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.* — **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more. NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter. — **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth. YES = Category I (NO) X	**Cat. I**
SC 5.0 Wetlands in Coastal Lagoons ***(see p. 91)*** Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* YES = Go to SC 5.1 (NO) X not a wetland in a coastal lagoon SC 5.1 Does the wetland meets all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than 1/10 acre (4350 square feet) YES = Category I NO = Category II	**Cat. I** **Cat. II**

SC 6.0 Interdunal Wetlands *(see p. 93)* Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? YES - go to SC 6.1 (NO) X not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: • Long Beach Peninsula- lands west of SR 103 • Grayland-Westport- lands west of SR 105 • Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? YES = Category II NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? YES = Category III	**Cat. II** **Cat. III**
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	N/A

APPENDIX C

SITE PHOTOGRAPHS

Photograph 1. April 2006 wetland conditions.

Photograph 2. August 2006 wetland conditions.

Photograph 3. December 2006 wetland conditions.