Wetland Delineation
Sammamish Bridge and Road Project
Woodinville, Washington

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Submitted To:
Mr. Aaron Silver
DMJM Harris
10900 NE 8th Street, Suite 750
Bellevue, Washington 98004

By:
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, Washington 98103

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WETLAND DELINEATION
SAMMAMISH BRIDGE AND ROAD PROJECT
WOODINVILLE, WASHINGTON

1.0 INTRODUCTION

Shannon & Wilson, Inc. was contracted by DMJM Harris to conduct a wetland delineation of the Sammamish Bridge and Road Project, which encompasses the State Route 202 (SR-202) right-of-way between NE Woodinville Drive and 131st Avenue NE within the city limits of Woodinville, Washington (Figure 1). This section of the SR-202 right-of-way, hereafter referred to as "the site," includes approximately 3.4 acres located in the SE ¼ of Section 9, Township 26N, Range 5E, Willamette Meridian. The purpose of the wetland delineation was to provide a determination of the extent, limits, and categories of wetlands on and adjacent to the property.

1.1 Scope of Services

The scope of services for this project was limited to the following tasks:

- Review background information available for the site, including the King County's interactive iMap Geographic Information System (GIS) mapping system (http://www.metrokc.gov/gis/mapportal/iMAP_main.htm), the City of Woodinville's interactive mapping system (http://www.nwmaps.net/woodinville/), the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, and the United States Department of Agriculture (USDA) King County Soil Survey.
- Identify and delineate wetlands found on the subject property that meet the three-parameter jurisdictional definition as established by the U.S. Army Corps of Engineers (Corps) 1987 Wetlands Delineation Manual and the Washington State Department of Ecology (Ecology) 1997 Wetland Identification and Delineation Manual.
- Classify the wetlands using Ecology's Washington State Wetland Rating System for Western Washington – Revised (Ecology Publication #04-06-025).
- Prepare a site sketch showing the approximate extent of the identified wetlands, to be used by a surveyor to survey wetland flags and data point locations.
- Prepare a wetland delineation report describing our methods and the results of our fieldwork, and categorizing the wetlands found on the subject property according to Section 21.24.320 of the Woodinville Municipal Code (WMC).

1.2 Site Location and Description

The site is comprised of the SR-202 right-of-way, approximately 125 feet wide, between NE Woodinville Drive and 131st Avenue NE within the city limits of Woodinville, Washington. The east and west ends of the site, where SR-202 intersects with NE Woodinville Drive and 131st Avenue NE, are surrounded by commercial businesses, while the central portion of the site extends across the Sammamish River, considered a shoreline of the state (Type 1 river) (Figure 2).

The banks of the Sammamish River within the site boundaries are relatively steep (approximately 36 percent). On the right bank (northeast bank) of the river, the King County's paved Sammamish River Regional Trail parallels the river as it meanders through landscaped areas and patches of Himalayan blackberry. On the left bank (southwest bank) of the river, an incised stormwater outflow channel cuts perpendicularly into the slope of the riverbank, which is surrounded by both native and non-native vegetation. The surrounding vegetation is dominated by recently planted shrubs and trees, which are the result of a mitigation project by the Washington State Department of Transportation (WSDOT) in 2003 to mitigate for the placement of riprap in the Sammamish River. The riprap was installed to address scour problems around the pilings of the existing SR-202 bridge over the river.

2.0 METHODS

Shannon & Wilson, Inc. conducted the wetland delineation fieldwork on December 12, 2006. Wetlands were delineated using methods described in the 1987 Corps Wetland Delineation Manual, supplemented by the Ecology 1997 Wetlands Identification and Delineation Manual. A Shannon & Wilson representative observed site conditions by walking the site to determine whether it had been recently disturbed and to identify plant community types and wetland classification types. Wetland presence and boundaries were delineated by conducting a routine method delineation. Appendix A includes a complete description of methodology used.

Data plots were characterized within identified wetland and upland plant community types to help describe general conditions at the site. Information on vegetation, soils, and hydrology were collected at each data plot. These data plots were located near the upland/wetland interface to more accurately determine the boundaries of on-site wetlands or were located in areas that

exhibited conditions similar to wetlands (i.e., drainage patterns and hydrophytic vegetation). Information gathered at these locations is provided in Appendix B.

Wetland areas were determined using the triple-parameter approach, which considers vegetation types, soil conditions, and hydrologic conditions. For an area to be considered wetland, it must display each of the following: (a) dominant plant species that are considered hydrophytic by the accepted classification indicators, (b) soils that are considered hydric under federal definition, and (c) indications of wetland hydrology, in accordance with federal definition. Please see Appendix A for more information and categorization of hydrophytic vegetation, hydric soils, and wetland hydrology.

Identified wetlands were delineated by flagging the wetland boundaries with orange "wetland boundary" pin flags and pink "wetland boundary" flagging. Data point locations were flagged with florescent green, florescent orange, and white polka-dotted flagging.

3.0 DOCUMENT REVIEW

Background information pertaining to the wetland site was collected and reviewed for its usefulness. These information sources included:

- USFWS NWI mapping system (http://wetlandsfws.er.usgs.gov/wtlnds/launch.html)
- U.S. Geological Survey Map of Bothell, Washington Quadrangle, 1:24,000 scale (U.S. Geological Survey, 1981)
- U.S. Soil Conservation Service (SCS) Soil Survey of King County Area, Washington – Sheet No. 21 (USDA, 1973)
- U.S. Soil Conservation Service (SCS) Soil Survey of King County Area, Washington (USDA, 1952)
- City of Woodinville's Interactive GIS Mapping System (http://www.nwmaps.net/woodinville/)
- King County iMap GIS Mapping System (http://www.co.pierce.wa.us/pc/interactive.htm)
- City of Woodinville Municipal Code (WMC), Title 21.24, Development Standards - Critical Areas (http://clerk.ci.seattle.wa.us/~public/toc/25-09.htm)
- Aerial photograph circa 2002.

The USFWS NWI mapping system indicates the presence of four wetlands on or near the site (Figure 3). However, the only wetland identified within the project limits was a riverine, lower perennial, unconsolidated bottom, permanently flooded (R2UBH) wetland that corresponds to the location of the Sammamish River.

The King County Soil Survey (USDA, 1973) maps the site as containing urban soils and water (Sammamish River). However, in the earlier soil survey (USDA, 1952), the site is mapped as containing Puyallup fine sandy loam, 0 to 2 percent slopes (Pf), Puget silty clay loam, 0 to 1 percent slopes (Pd), and Kitsap silt loam undulating, 2 to 10 percent slopes (Kb) in addition to Sammamish River (Figure 4). Of these three soil types, Puget silty clay loam is listed on the King County hydric soils list. The remaining two soils are not considered hydric, although they do contain hydric inclusions when located within depression landforms.

4.0 FINDINGS

One wetland (Wetland A) was identified on the site (Figure 5) within the floodway of the Sammamish River. While data were recorded from two data plots (one upland plots and one wetland plot), several other soil pits and sites were examined to establish the wetland boundaries. Data sheets are included in Appendix B.

4.1 Wetland A

Wetland A (872 square feet) is located in the center of the site, along the left bank (south bank) of the Sammamish River. Wetland A is a small, low-quality, palustrine emergent (PEM) wetland as classified using the Cowardin classification system (Cowardin, 1979) or as a riverine wetland using the Hydrogeomorphic classification system (Brinson, 1993).

Vegetation within Wetland A is dominated by native and non-native herbaceous species, such as climbing nightshade (*Solanum dulcamara*, FAC+), small-fruited bulrush (*Scirpus microcarpus*, OBL), reed canarygrass (*Phalaris arundinacea*, FACW), marsh speedwell (*Veronica scutellata*, OBL), and creeping buttercup (*Ranunculus repens*, FACW).

Soils were analyzed for color, texture, and moisture content. In general, the soils observed in Wetland A were comprised of a black (10YR 2/1) organic loam horizon over very dark grayish brown (10YR 3/2) silty sand and gravelly silty sand horizons.

The two major hydrologic sources to Wetland A are believed to be over-bank flooding from the Sammamish River and the direct release of stormwater into the wetland from a created stormwater channel. Due to these two hydrologic sources, the wetland was presumed to have a probable aquic moisture regime.

Saturation was present to the surface and free water was observed within the soil pit at approximately 16 inches at the time of our site visit. Due to the proximity of the wetland to the Sammamish River and the water marks on the SR-202 bridge abutments, indirect observations suggest that the wetland is saturated for a sufficient duration during the growing season to satisfy the wetland hydrology criterion.

4.2 Uplands

The site's uplands are fragmented by impervious surfaces associated with SR-202, the Burlington Northern Railway, and other adjacent businesses and parking areas. Immediately adjacent to Wetland A, the upland vegetation along the left bank of the Sammamish River appeared to have been disturbed. Numerous willow cuttings had been planted within and adjacent to the incised stormwater outfall channel. Other native plants recently had been installed along the perimeter of much of Wetland A associated with mitigation done by WSDOT. These native plantings included red-osier dogwood (*Cornus sericea*, FACW), snowberry (*Symphoricarpos albus*, FACU), nootka rose (*Rosa nutkana*, NI), oceanspray (*Holodiscus discolor*, NI), salmonberry (*Rubus spectabilis*, FAC+), red elderberry (*Sambucus racemosa*, FACU), and Douglas fir (*Pseudotsuga menziesii*, FACU). Downstream of Wetland A, along the banks of the Sammamish River, vegetation was dominated by Himalayan blackberry (*Rubus discolor*, FACU-) with patches of reed canarygrass (*Phalaris arundinacea*, FACW) and creeping buttercup (*Ranunculus repens*, FACW).

Soils along these upland banks were also analyzed for color, texture, and moisture content. These soils were typically comprised of (10YR 2/2) gravelly loam, although the soils within the area of installed native plantings were covered by a horizon of black (10YR 2/1), highly organic loam, which had been amended by compost.

5.0 WETLAND REGULATIONS

Several federal, state, and local regulations apply to development proposals in and/or near wetlands. A summary of applicable regulatory implications is given below.

5.1 City of Woodinville

Local Wetlands Regulations

Under Title 21.24.320 of the WMC, the City requires that wetlands be rated using the current version of Ecology's *Washington State Wetland Rating System, Western Washington*. Under this methodology, Wetland A is rated as a Category IV wetland (Score < 30), because of its total score of 25 points (see Appendix C for the wetland rating form). However, under WMC 21.24.320(2)(a), "wetlands proximal to and influenced by the main stem of the Sammamish River or Little Bear Creek" are considered Class 1 wetlands by the City. Therefore, despite the low quality of the wetland (see Appendix C), the wetland is a Class 1 wetland and requires a 150-foot standard buffer. This 150-foot standard buffer extends beyond several "non-conforming" uses, such as SR-202 and other impervious surfaces.

According to Deb Crawford with the City of Woodinville, the standard 150-foot buffer can be reduced to 115 feet with enhancement and can be further reduced to 100 feet with enhancement and a functional assessment showing no loss of buffer functions. Improvements to existing non-conforming uses, including road crossings, may be permitted provided that the Planning Director determines there is no alternative, minimization occurs, and mitigation for unavoidable loss of wetland or buffer occurs. Mitigation for the loss of Class 1 wetland would need to occur at a 4:1 wetland creation to wetland loss ratio. Similarly, mitigation for the loss of buffer would need to occur at a 1:1 buffer replacement/enhancement to impacted buffer ratio.

The stormwater outfall channel was not delineated as wetland since Ecology's 1997 Wetland Identification and Delineation manual and WMC 21.06.710 define wetlands as excluding those, "artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and *drainage ditches*, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway." Similarly, the stormwater outfall channel was not considered a stream for the

purposes of this report since WMC Section 21.06.633 defines streams as excluding "irrigation ditches, canals, *storm or surface water run-off devices or other entirely artificial watercourses*" unless they are used by salmonids. No salmonid use occurs within the stormwater outfall channel.

5.2 State Regulations

Shoreline Master Plan

Under Title 173.27 of the Washington Administrative Code (WAC) and Chapter 90.58 of the Revised Code of Washington (RCW), shorelines of the state and their associated shore lands are regulated under the Shoreline Master Plan (SMP). The SMP is regulated by the local jurisdiction and can be developed by that jurisdiction. However, under WMC 24.10 the State's SMP was adopted by the City of Woodinville.

Under the SMP, the Sammamish River and associated wetlands are considered shorelines of the state. The shore lands of these water bodies, extending 200 feet upland from the ordinary high water mark, are also subject to the SMP. Since road crossings are not considered an exempt activity under WAC 173.27.040, a variance, conditional use permit, or a shoreline substantial development permit will likely be required.

Clean Water Act - Section 401

Ecology has authority to issue Clean Water Act (CWA) Section 401 Water Quality Certification for most projects that require the Corps permits under Section 404 (see Section 6.3). The purpose of the certification process is to ensure that federally permitted activities comply with the federal CWA, state water quality laws, and any other applicable state laws. Some general requirements for Section 401, if it is required, include pollution spill prevention and response measures, disposal of excavated or dredged material in upland areas, use of fill material that does not compromise water quality, clear identification of construction boundaries, and site access to the permitting agency for inspection.

Hydraulic Project Approval

The Washington State Department of Fish and Wildlife issues hydraulic project approval (HPA) permits to regulate construction activities that will occur in or over the ordinary high water mark

of a water of the state, such as the Sammamish River. These permits allow construction activities to occur provided they comply with conditions within the permit, such as work windows and other minimization measures.

5.3 Federal Regulations

Clean Water Act – Section 404

The Corps' CWA Section 404 review process is required for projects involving discharges of dredges or fill materials into the waters of the United States, including non-isolated wetlands and streams. Any proposed work located within a jurisdictional wetland will require a nationwide permit (NWP) or an individual permit from the Corps.

6.0 CLOSURE

The findings and conclusions documented in this report have been prepared for specific application to this project, and have been developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area, and in accordance with the terms and conditions set forth in our agreement. The conclusion and recommendations presented in this report are professional opinions based on interpretation of information currently available to us, and are made within the operational scope, budget, and schedule constraints of this project. No warranty, express or implied, is made.

Wetland boundaries identified by Shannon & Wilson are considered to be preliminary until the Corps and/or the local jurisdictional agency validate the flagged wetland boundaries. Validation of the wetland boundary by the regulating agency(s) provides a certification, usually written, that the wetland boundaries verified are the boundaries that will be regulated by the agency(s) until a specified data or until the regulations are modified. Only the regulating agency(s) can provide this certification.

Since wetlands are dynamic communities affected by both natural and human activities, changes in wetland boundaries may be expected; therefore, wetland delineations cannot remain valid for an indefinite period of time. The Corps typically recognizes the validity of wetland delineations for a period of five years after completion. Development activities on a site five years after the

completion of this wetland delineation report may require revision of the wetland delineation. In addition, changes in government code, regulations, or laws may occur. Because of such changes beyond our control, our observations and conclusions regarding this site may need to be revised wholly or in part.

SHANNON & WILSON, INC.

Per C. Johnson
Biologist

Katie L. Walter, P.W.S.
Associate
Natural Resources Manager

PCJ:KLW/pcj

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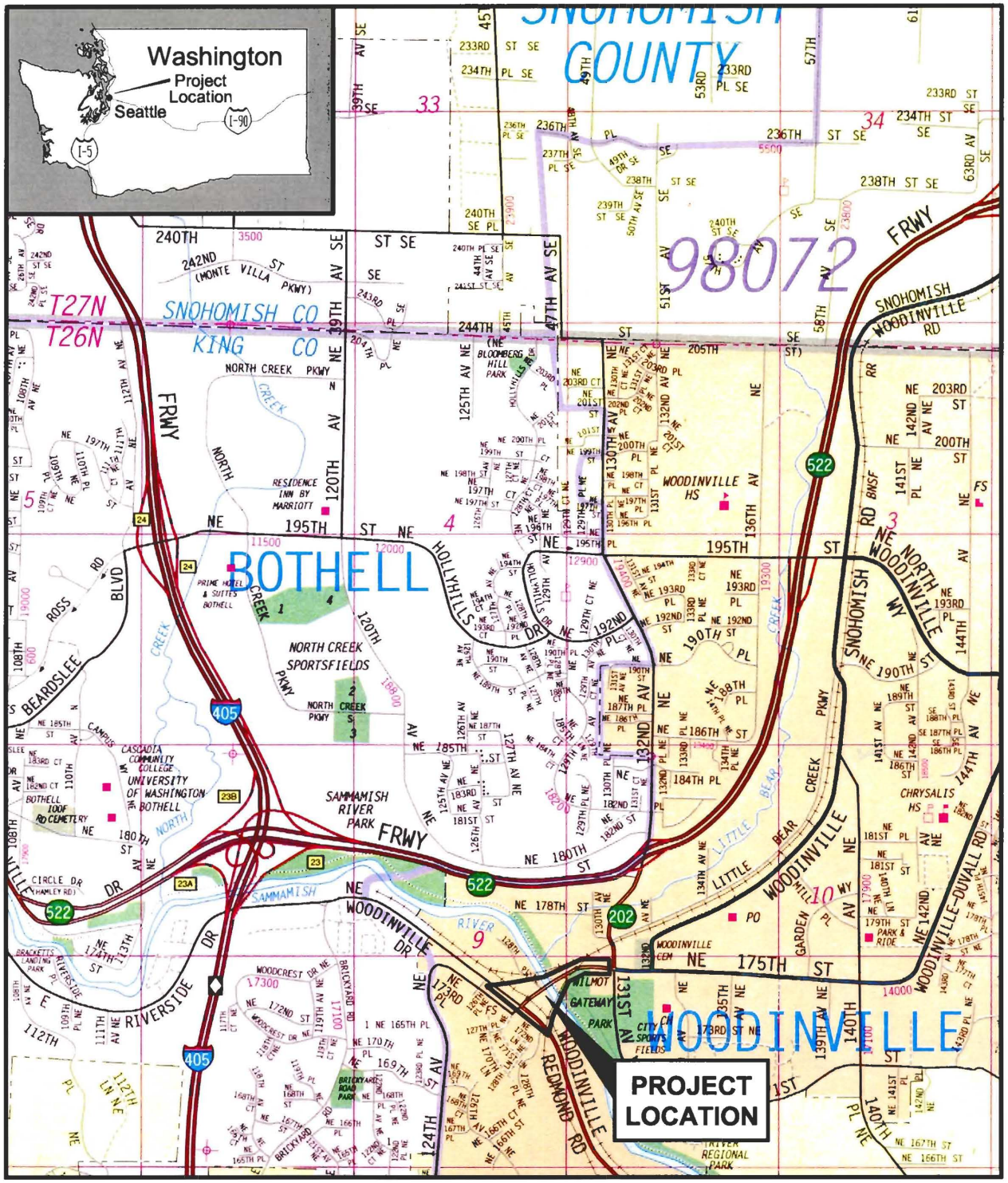

NOTE

Sammamish Bridge And Road Project
Woodinville, Washington

VICINITY MAP

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FIG. 1

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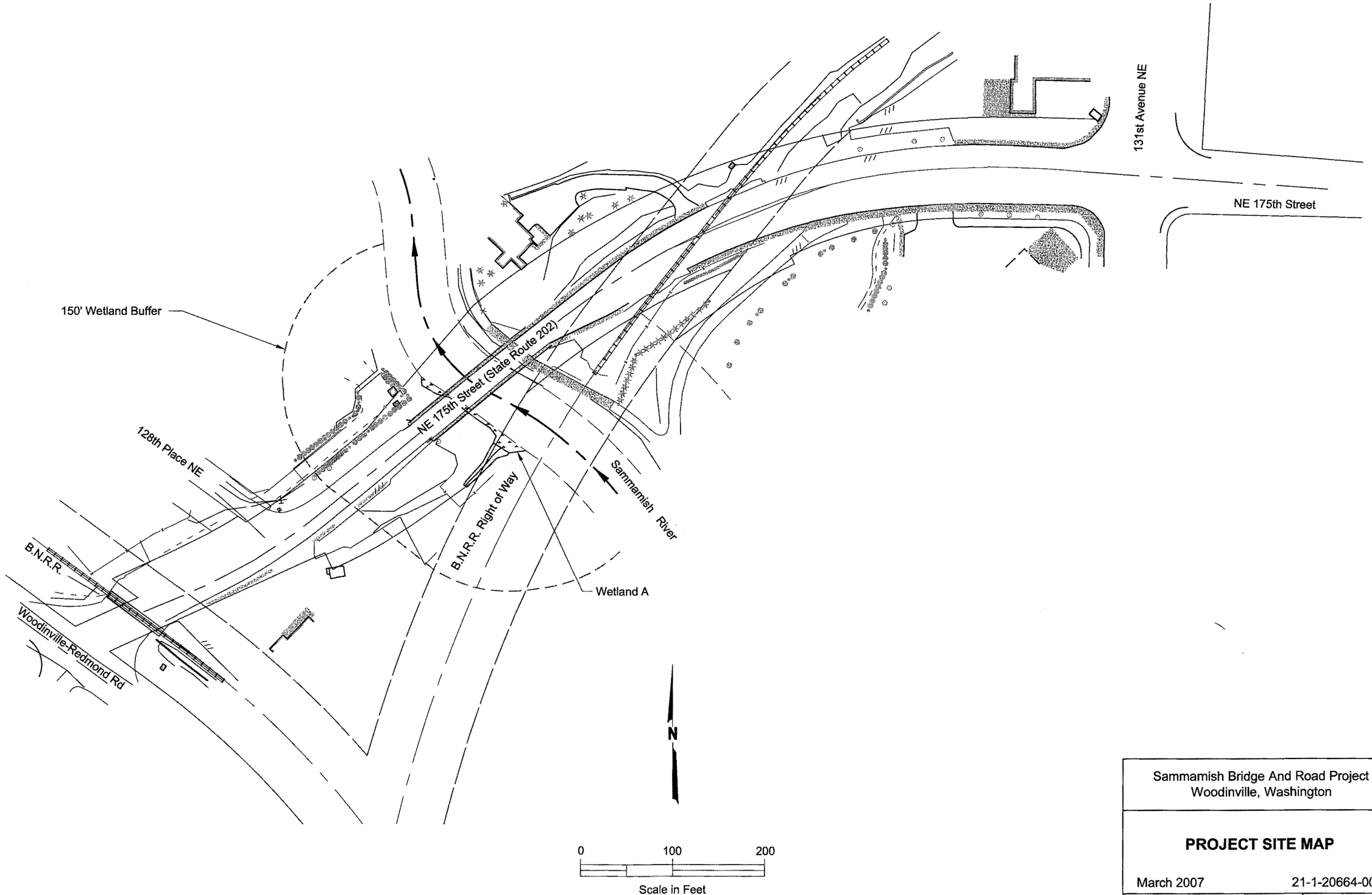

Sammamish Bridge And Road Project
Woodinville, Washington

PROJECT SITE MAP

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FIG. 2

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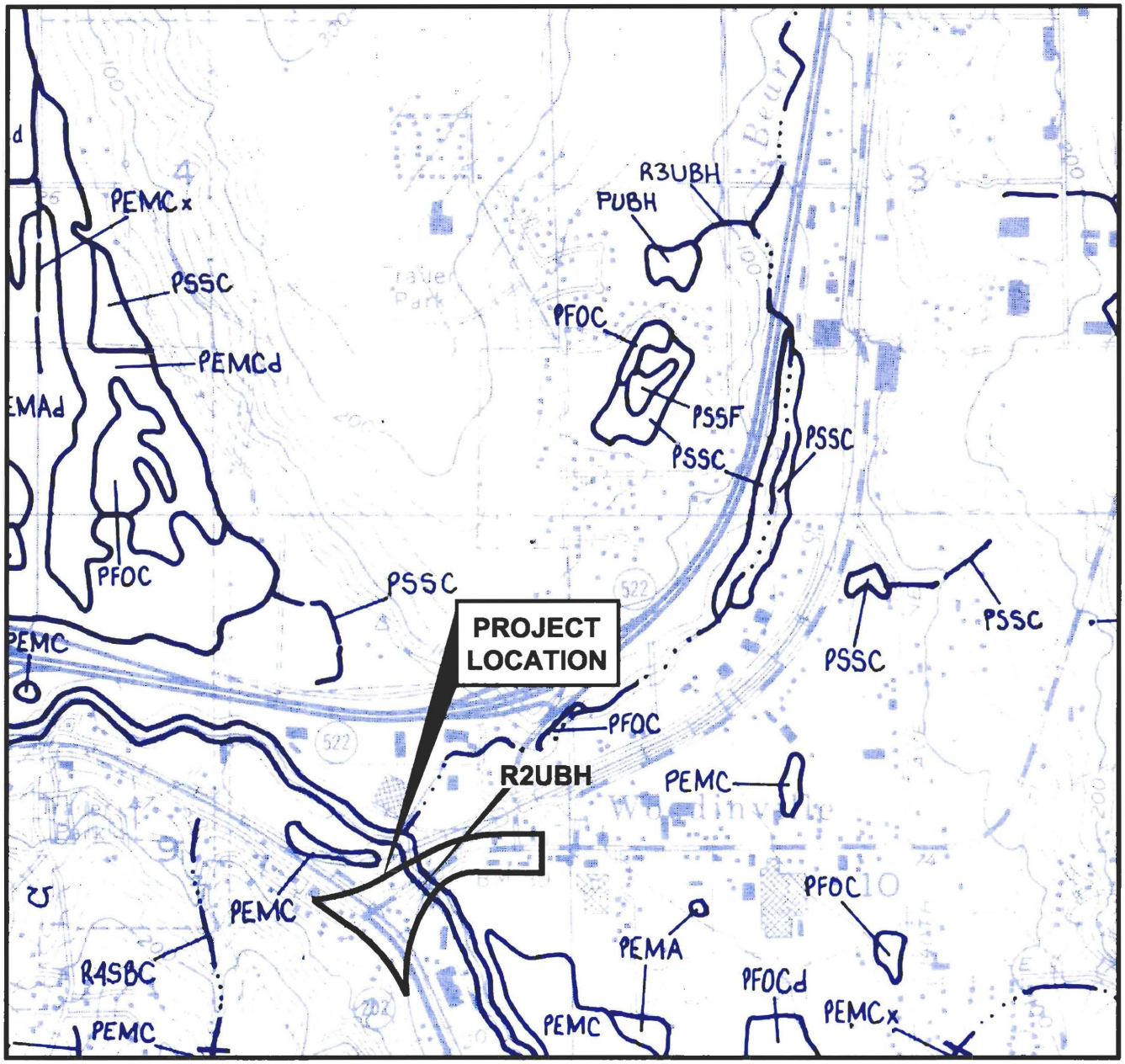

0 1/4 1/2

Scale in Miles

LEGEND

R2UBH Riverine Lower Perennial Unconsolidated Bottom, Permanently Flooded.

NOTE

This figure is based on the *National Wetlands Inventory* map of Bothell, Washington, 1989, Fish and Wildlife Service, U. S. Department of the Interior.

Sammamish Bridge And Road Project
Woodinville, Washington

NATIONAL WETLANDS INVENTORY MAP

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FIG. 3

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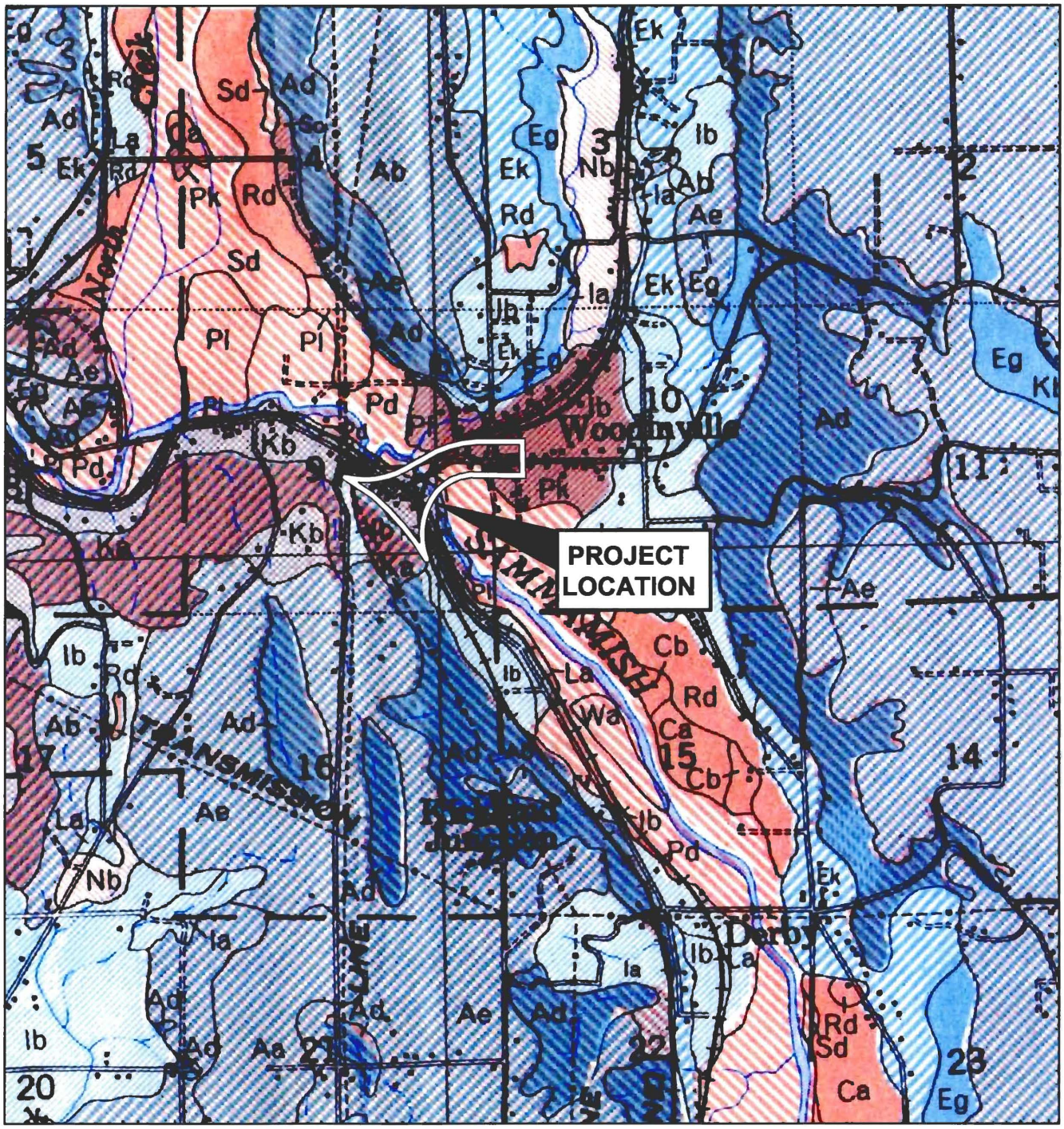

LEGEND

Pd Puget silty clay loam (0-1% slope)

Pf Puyallup fine sandy loam (0-2% slope)

Kb Kitsap silt loam undulating (2-10% slope)

NOTE

This figure is based on the *Soil Survey of King County, Washington,* Soil Conservation Service, USDA, 1952.

Sammamish Bridge And Road Project
Woodinville, Washington

SOIL MAP

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FIG. 4

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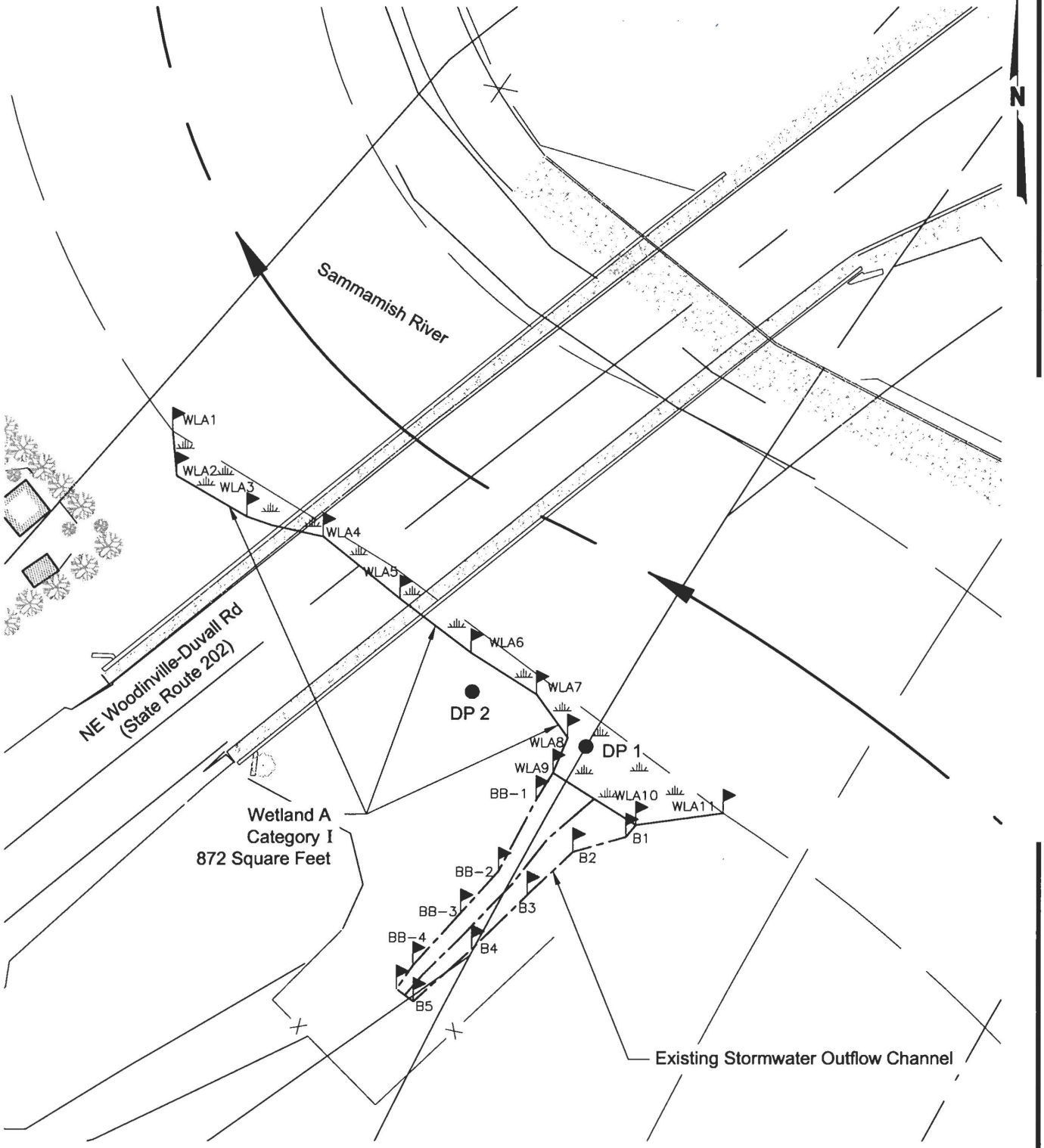

Sammamish Bridge And Road Project
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WETLAND DELINEATION MAP

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FIG. 5

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APPENDIX A

WETLAND DELINEATION METHODOLOGY

APPENDIX A

WETLAND DELINEATION METHODOLOGY

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APPENDIX A

WETLAND DELINEATION METHODOLOGY

The triple-parameter approach, as required in the "Corps of Engineers Wetland Delineation Manual" (March 1987) and the "Washington State Wetlands Identification and Delineation Manual" (March 1997), was used to identify and delineate the wetlands on the site described in this report. Under this methodology, vegetation, soils, and hydrology are each evaluated to determine the presence or absence of wetlands. Based on the use of this method, an area is considered to be a wetland if each of the following is met: (a) dominant hydrophytic vegetation is present in the area, (b) the soils in the area are hydric, and (c) the necessary hydrologic conditions within the area are met.

Corresponding upland and wetland plots were recorded to more accurately determine the boundaries of on-site wetlands.

A.1 WETLAND VEGETATION

Hydrophytic plants are plant species specially adapted for saturated and/or anaerobic conditions. These species can be found in areas where there is a significant duration and frequency of inundation, which produces permanently or periodically saturated soils. Hydrophytic species, due to morphological, physiological, and reproductive adaptations, have the ability to grow, effectively compete, reproduce, and thrive in anaerobic soil. The U.S. Army Corps of Engineers (Corps) and the U.S. Fish and Wildlife Service (USFWS) have assigned indicator status to many plant species, based on the estimated probability of the species existing under wetland conditions. Plants are categorized as Obligate (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), and Upland (UPL). Species with an indicator status of OBL, FACW, or FAC are considered to be adaptive to saturated and/or anaerobic (i.e., wetland) conditions and are referred to as hydrophytic vegetation (Table A-1).

TABLE A-1
DEFINITIONS OF PLANT INDICATOR STATUS

Plant Indicator Status Categories
Obligate Wetland Plants (**OBL**) – Plants that occur in wetlands, under natural conditions, approximately 99 percent of the time.
Facultative Wetland Plants (**FACW**) – Plants that occur in wetlands approximately 67 to 99 percent of the time.
Facultative (**FAC**) – Plants that are as likely to be found in wetlands as in non-wetlands; approximately 34 to 66 percent of the time in either.
Facultative Upland Plants (**FACU**) – Plants that occur in non-wetlands approximately 1 to 33 percent of the time.
Obligate Upland Plants (**UPL**) – Plants that occur in non-wetlands, under natural conditions, approximately 99 percent of the time.
No Indicator (**NI**) – Species that have not been given an indicator status, and assumed to be upland.

Source: National List of Plant Species that Occur in Wetlands: Northwest (Region 9). U.S. Fish and Wildlife Service Biological Report 88(26.9). (Revised 1993) 89 p.

Trees within a 30-foot radius, shrubs within a 15-foot radius, and herbs within a 5-foot radius of each data point were identified and noted. The approximate percentage of cover for each of the different plant species occurring within the tree, shrub, and herb strata were determined. Dominant plant species are considered to be those that, when cumulatively totaled in descending order of abundance, exceed 50 percent of the aerial cover for each vegetative stratum. Any additional species individually representing 20 percent or greater of the total aerial cover for each vegetative strata are also considered dominant.

The indicator status of the dominant plant species within each of the vegetative strata is used to determine the presence of hydrophytic vegetation near each data point. A data point considered to have hydrophytic vegetation is greater than 50 percent of the dominant plant species within the area had an indicator statue of OBL, FACW, or FAC.

A.2 HYDRIC SOILS

Hydric soils are defined as those that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation. As a result of anaerobic conditions, hydric soils exhibit characteristics directly observable in the field, including high organic matter content, greenish or bluish gray color (gley formation), accumulation of sulfidic material, spots of orange or yellow color (mottling), and dark soil colors (low chromas), Table A-2.

TABLE A-2
HYDRIC SOIL INDICATORS

Hydric Indicator	Diagnostic Criteria
Organic Content	>50 percent by volume (constitutes organic soil)
Sulfidic Material	"Rotten egg" odor
Soil Color	Matrix Chroma of 2 or less in mottled soils
	Matrix Chroma of 1 or less in unmottled soils
	Gleyed colors
Water Saturation	Soil saturated at 0.5, 1.0, or 1.5 feet from the surface (depending on the soil drainage class and permeability) for a significant period during the growing season.
Soil Color Definitions	Hue: Indicates the dominant spectral color (i.e., red, yellow, green, blue, and purple).
	Value: Measure of degree of darkness or lightness of the color.
	Chroma: Measure of the purity or strength of the color.

Source: Environmental Laboratory, 1987, Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1, U.S. Army Waterways Experiment Station, Vicksburg, Mississippi.

Throughout a large portion of the area delineated as wetland, identification of hydric soils was aided through observation of surface hydrologic characteristics and indicators of wetland hydrology (e.g., drainage patterns). The extent of hydric soils was defined through direct soil observation within several data points, placed both inside and outside the wetland. Soil observations were completed within soil holes dug with a shovel to a depth of at least 18 inches below the existing ground surface. Soil organic content was estimated visually and texturally. Soil colors were determined through analysis of the hue, value, and chroma best represented in the Munsell Soil Color Chart. A soil chroma of 2 in combination with soil mottling or a soil chroma of 1 without mottling typically indicates a hydric soil if within 10 inches of the surface, or directly below the A horizon.

A.3 WETLAND HYDROLOGY

Soils were examined for the presence of hydrology. Wetland hydrologic characteristics develop during periods when the soils are inundated permanently or periodically, or when the soil is continuously saturated to the surface for sufficient duration to develop hydric soils and to support vegetation typically adapted for life in periodically anaerobic conditions. Wetland hydrology criteria were considered to be satisfied if it appeared that wetland hydrology was present for more than 5 percent (12 days) of the growing season. The growing season begins when the soil

reaches a temperature of 41 degrees Fahrenheit in the zone of root penetration. The growing season in Western Washington at low elevations is typically considered to be from March 1 to October 31 (245 days). The Seattle District Corps requires 14 consecutive days of inundation or saturation to the surface for a soil to be a hydric soil.

The hydrology was evaluated by direct visual observation of surface inundation or soil saturation within 18 inches below the existing ground surface in test plots. According to the 1987 Manual, "for soil saturation to impact vegetation, it must occur within a major portion of the root zone (usually within 12 inches of the surface) of the prevalent vegetation." Therefore, if saturated soils or indicators were observed within 12 inches of the surface, positive indicators of wetland hydrology were noted.

The area near each data point was examined for indicators of wetland hydrology. These indicators include dried watermarks, drift lines, sediment deposits, and drainage patterns. Areas where positive indicators of hydrology were noted were assumed to contain wetland hydrology.

APPENDIX B

WETLAND FIELD DATA SHEETS

Data Point: 1 of 2

DATA FORM
ROUTINE WETLAND DETERMINATION

Project/Site: Sammamish River Bridge
Applicant/Owner: City of Woodinville
Investigator: Walter P. Johnson Job #: 2-1-20064-007

Date: 12-12-06
City: Woodinville
County: King
State: WA

Have vegetation, soils, or hydrology been disturbed: (Yes) No
Is the area a potential Problem Area: Yes (No)
(If needed, explain on reverse.) alluvial fan from stormwater

VEGETATION

Dominant Plant Species	Stratum	% Cover	Indicator
1. Solanum dulcamara	h	30	FAC
2. Scirpus microcarpus	h		
3. Phalaris arundin.	h		
4. Veronica Scutellata	h		
5. Ranunculus repens	h		
6. Willow (Salix)	S		
7.			
8.			

Dominant Plant Species	Stratum	% Cover	Indicator
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

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

Cowardin Classification: PEM

Remarks:

HYDROLOGY

X Recorded Data (Describe in Remarks):
- X Stream, Lake, or Tide Gage
- ___ Aerial Photograph
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water: N/A (in.)
Depth to Free Water in Pit: 16 (in.)
Depth to Saturated Soil: Surface (in.)

Wetland Hydrology Indicators

- ___ Inundated
- X Saturated in Upper 12 Inches
- ___ Water Marks
- X Water Lines
- X Sediment Deposits
- ___ Drainage Patterns in Wetlands
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ Other (Explain in Remarks)

Remarks:

Data Point: 1 of 2

SOILS

Map Unit Name: URBAN

Drainage Class: N/A

Taxonomy (Subgroup): N/A

Field Observations
Confirm Mapped Type? Yes (No)

Profile Description:

Depth (inches)	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-9	10YR 2/1			Organic loam mois
9-16	10YR 3/2			silty Sand
16 +	10YR 3/2			gravelly silty Sand

Hydric Soil Indicators:

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

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes)	No	Is this Data Point Within a Wetland? (Yes) No
Hydric Soils Present?	(Yes)	No	
Wetland Hydrology Present?	(Yes)	No	

Remarks:

Data Point: 2 of 2

DATA FORM
ROUTINE WETLAND DETERMINATION

Project/Site: Sammamish River Bridge
Applicant/Owner: City of Woodinville
Investigator: K. Walker, P. Johnson Job #: 21-20664-002

Date: 12-12-06
City: Woodinville
County: King
State: WA

Have vegetation, soils, or hydrology been disturbed: Yes (No)
Is the area a potential Problem Area: Yes (No)
(If needed, explain on reverse.)

VEGETATION

Dominant Plant Species	Stratum	% Cover	Indicator
1. Red elderberry	S	35%	
2. Snowberry	S	40%	
3. Rose pisocarpa	S	10%	
4. Oceanspray	S	10%	
5. Salmonberry	S	2%	
6.			
7.			
8.			

Dominant Plant Species	Stratum	% Cover	Indicator
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Percent of Dominant Species that are OBL, FACW or FAC (except FAC-). *-Dominant species. _____

Cowardin Classification: _____

Remarks:
plant material obviously part of some type of mitigation. All plant material has been installed.

HYDROLOGY

X Recorded Data (Describe in Remarks):
- X Stream, Lake, or Tide Gage
- ___ Aerial Photograph
- ___ Other

___ No Recorded Data Available

Field Observations:

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

Wetland Hydrology Indicators

- ___ Inundated
- ___ Saturated in Upper 12 Inches
- ___ Water Marks
- ___ Water Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands
- ___ Oxidized Root Channels in Upper 12 Inches
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ Other (Explain in Remarks)

Remarks: Approx. 4-feet above Sammamish Slough/River
& moist throughout. No saturation.

Data Point: 2 of 2

SOILS

Map Unit Name: Urban

Drainage Class: N/A

Taxonomy (Subgroup): N/A

Field Observations
Confirm Mapped Type? Yes (No)

Profile Description:

Depth (inches)	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-11	10YR2/1			highly organic loam (compost amended topsoil)
11+	10YR2/2			gravelly loam large imported cobbles.

Hydric Soil Indicators:

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

Remarks:

WETLAND DETERMINATION

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

Is this Data Point Within a Wetland? Yes (No)

Remarks:

APPENDIX C

WASHINGTON STATE WETLAND RATING FORMS

Wetland name or number A

WETLAND RATING FORM – WESTERN WASHINGTON

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

Name of wetland (if known): Wetland A Date of site visit: 12.12.06

Rated by PCJ AND KLW Trained by Ecology? Yes X No___ Date of training Sept. 06

SEC: 9 TWNSHP: 26N RNGE: 5E Is S/T/R in Appendix D? Yes___ No X

Map of wetland unit: Figure 5 Estimated size 1,000 sf.

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 Functions	10
Score for Hydrologic Functions	10
Score for Habitat Functions	5
TOTAL score for Functions	25

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply X

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

Based on Woodinville Code due to its association with the Sammamish River

Summary of basic information about the wetland unit

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

Wetland name or number _____

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	

Woodinville Municipal Code (WMC) calls out these wetlands "proximal to & influenced by the main stem of the Sammamish River or Little Bear Creek."

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**

Wetland name or number _____

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

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

YES 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 _____

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 ___
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	
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 ___
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 ___
D	**Total for D 1** *Add the points in the boxes above*	
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* — Grazing in the wetland or within 150 ft — Untreated stormwater discharges to wetland — Tilled fields or orchards within 150 ft of wetland — A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging — Residential, urban areas, golf courses are within 150 ft of wetland — Wetland is fed by groundwater high in phosphorus or nitrogen — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p. 44)* multiplier _____
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	

Wetland name or number _____

D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.46)*
D	D 3.1 Characteristics of surface water flows out of the wetland unit Unit is a depression with no surface water leaving it (no outlet) points = 4 Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 *(If ditch is not permanently flowing treat unit as "intermittently flowing")* Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	
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	
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	
D	**Total for D 3** *Add the points in the boxes above*	
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 _____
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	

Wetland name or number _____

	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 >3/4 area of wetland points = 8 Depressions cover > 1/2 area of wetland points = 4. If depressions > ½ of area of unit draw polygons on aerial photo or map ✓ Depressions present but cover < 1/2 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 ___ 3
R	*Add the points in the boxes above*	5
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 150ft ✓ Untreated stormwater discharges to wetland (assumed) — Tilled fields or orchards within 150 feet 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 ✓ The river or stream linked to the wetland has a contributing basin where human activities have raised levels of sediment, toxic compounds or nutrients in the river water above standards for water quality — 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***	10

Comments

Wetland name or number _____

	Riverine and Freshwater Tidal Fringe Wetlands HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion	Points (only 1 score per box)
	R 3. Does the wetland unit have the potential to reduce flooding and erosion?	*(see p.54)*
R	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 54./45 ft. = .25 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 ___ 1
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 need 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 ___ 4
R	*Add the points in the boxes above*	5
R	**R 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. *Note which of the following conditions apply.* X There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding. X 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 fringe along the sides of a dike)* ✓ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p.57)* multiplier 2
R	**TOTAL - Hydrologic Functions** Multiply the score from R 3 by R 4 ***Add score to table on p. 1***	10

Comments

Wetland name or number _____

	Lake-fringe Wetlands WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
L	**L 1. Does the wetland unit have the potential to improve water quality?**	*(see p.59)*
L	L 1.1 Average width of vegetation along the lakeshore *(use polygons of Cowardin classes)*: Vegetation is more than 33ft (10m) wide — points = 6 Vegetation is more than 16 (5m) wide and <33ft — points = 3 Vegetation is more than 6ft (2m) wide and <16 ft — points = 1 Vegetation is less than 6 ft wide — points = 0 Map of Cowardin classes with widths marked	Figure ___
L	L 1.2 Characteristics of the vegetation in the wetland: *choose the appropriate description that results in the highest points, and do not include any open water in your estimate of coverage. The herbaceous plants can be either the dominant form or as an understory in a shrub or forest community. These are not Cowardin classes. Area of Cover is total cover in the unit, but it can be in patches. NOTE: Herbaceous does not include aquatic bed.* Cover of herbaceous plants is >90% of the vegetated area — points = 6 Cover of herbaceous plants is >2/3 of the vegetated area — points = 4 Cover of herbaceous plants is >1/3 of the vegetated area — points = 3 Other vegetation that is not aquatic bed or herbaceous covers > 2/3 unit — points = 3 Other vegetation that is not aquatic bed in > 1/3 vegetated area — points = 1 Aquatic bed vegetation and open water cover > 2/3 of the unit — points = 0 Map with polygons of different vegetation types	Figure ___
L	*Add the points in the boxes above*	
L	**L 2. Does the wetland have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in the lake water, or polluted surface water flowing through the unit to the lake. *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.* — Wetland is along the shores of a lake or reservoir that does not meet water quality standards — Grazing in the wetland or within 150ft — Polluted water discharges to wetland along upland edge — Tilled fields or orchards within 150 feet of wetland — Residential or urban areas are within 150 ft of wetland — Parks with grassy areas that are maintained, ballfields, golf courses (all within 150 ft. of lake shore) — Power boats with gasoline or diesel engines use the lake — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p.61)* multiplier _____
L	**TOTAL - Water Quality Functions** Multiply the score from L1 by L2 ***Add score to table on p. 1***	

Comments

Wetland name or number _____

	Lake-fringe Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce shoreline erosion	Points (only 1 score per box)
L	**L 3. Does the wetland unit have the potential to reduce shoreline erosion?**	*(see p.62)*
L	L 3 Distance along shore and average width of Cowardin classes along the lakeshore (**do not** include aquatic bed): *(choose the highest scoring description that matches conditions in the wetland)* > ¾ of distance is shrubs or forest at least 33 ft (10m) wide — points = 6 > ¾ of distance is shrubs or forest at least 6 ft. (2 m) wide — points = 4 > ¼ distance is shrubs or forest at least 33 ft (10m) wide — points = 4 Vegetation is at least 6 ft (2m) wide (any type except aquatic bed) — points = 2 Vegetation is less than 6 ft (2m) wide (any type except aquatic bed) — points = 0 Aerial photo or map with Cowardin vegetation classes	Figure ___
L	*Record the points from the box above*	
L	**L 4. Does the wetland unit have the opportunity to reduce erosion?** Are there features along the shore that will be impacted if the shoreline erodes? *Note which of the following conditions apply.* — There are human structures and activities along the upland edge of the wetland (buildings, fields) that can be damaged by erosion. — There are undisturbed natural resources along the upland edge of the wetland (e.g. mature forests other wetlands) than can be damaged by shoreline erosion — Other_____ **YES** multiplier is **2** **NO** multiplier is **1**	*(see p.63)* multiplier
L	**TOTAL - Hydrologic Functions** Multiply the score from L 3 by L 4 ***Add score to table on p. 1***	

Comments

Wetland name or number _____

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 is1% 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	
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	
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 > 1/2 of area points = 3 Dense, woody, vegetation > ½ of area points = 2 Dense, uncut, herbaceous vegetation > 1/4 of area points = 1 Does not meet any of the criteria above for vegetation points = 0 Aerial photo or map with vegetation polygons	Figure ___
S	**Total for S 1** *Add the points in the boxes above*	
S	**S 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 150ft — Untreated stormwater discharges to wetland — Tilled fields, logging, or orchards within 150 feet 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 _____
S	**TOTAL - Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	

Comments

Wetland name or number _____

	Slope Wetlands HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream erosion	**Points** (only 1 score per box)
	S 3. Does the wetland unit have the potential to reduce flooding and stream erosion?	*(see p.68)*
S	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 > 1/2 area of wetland points = 3 Dense, uncut, **rigid** vegetation > 1/4 area points = 1 More than 1/4 of area is grazed, mowed, tilled or vegetation is not rigid points = 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	
S	*Add the points in the boxes above*	
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 — 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 _____
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	

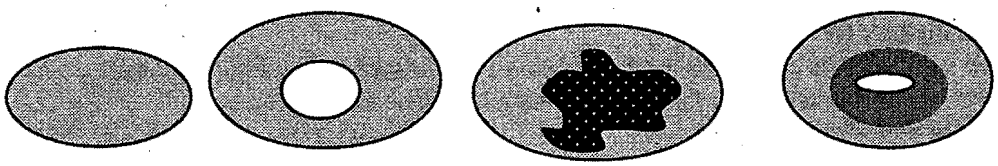
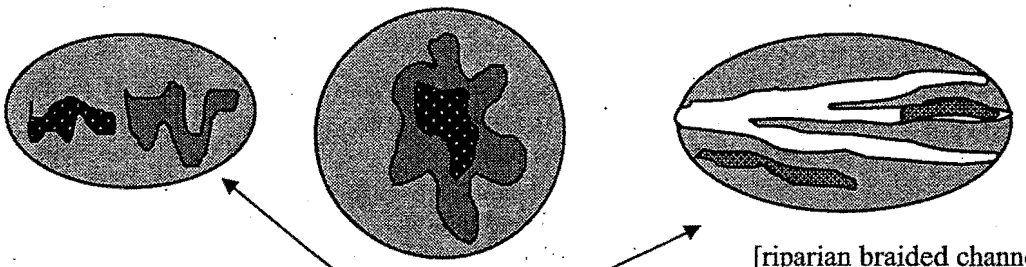
Comments

Wetland name or number _____

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 unit is smaller than 2.5 acres. ____Aquatic bed __✓__Emergent plants ____Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ____The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* 4 structures or more points = 4 3 structures points = 2 2 structures points = 1 ✓ 1 structure points = 0 Map of Cowardin vegetation classes	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 ____Seasonally flooded or inundated — 3 types present — points = 2 __✓__Occasionally flooded or inundated — 2 types present — point = 1 ____Saturated only — ✓ 1 type present — points = 0 ____ Permanently flowing stream or river in, or adjacent to, the wetland ____ Seasonally flowing stream in, or adjacent to, the wetland ____ ***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** Map of hydroperiods	0
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	0

Total for page 0

Wetland name or number _____

H 1.4. Interspersion of habitats *(see p. 76)* Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point Moderate = 2 points  High = 3 points [riparian braided channels] NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes	Figure D
H 1.5. Special Habitat Features: *(see p. 77)* *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.* ____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). ____Standing snags (diameter at the bottom > 4 inches) in the wetland ____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)* ____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. *(structures for egg-laying by amphibians)* ____ Invasive plants cover less than 25% of the wetland area in each stratum of plants *NOTE: The 20% stated in early printings of the manual on page 78 is an error.*	D
H 1. TOTAL Score - potential for providing habitat *Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5*	D

Comments

Wetland name or number _____

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** X Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.** — Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	Figure ___ 0
H 2.2 Corridors and Connections *(see p. 81)* H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). YES = **4 points** (*go to H 2.3*) ✓ NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? YES = **2 points** (*go to H 2.3*) ✓ NO = H 2.2.3 H 2.2.3 Is the wetland: within 5 mi (8km) of a brackish or salt water estuary OR ✓ within 3 mi of a large field or pasture (>40 acres) OR within 1 mi of a lake greater than 20 acres? ✓ YES = **1 point** NO = **0 points**	1

Total for page 1

Wetland name or number _____

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).

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

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

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

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

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

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

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

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

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

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

If wetland has **3 or more** priority habitats = **4 points**
If wetland has **2** priority habitats = **3 points**
If wetland has **1** priority habitat = **1 point** No habitats = 0 points

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

Wetland name or number _____

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

Wetland name or number _____

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

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

Wetland name or number _____

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 ___ or accessed from WNHP/DNR web site ___

YES____ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ___

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

YES = Category I NO ____not a Heritage Wetland

SC 3.0 Bogs *(see p. 87)*

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

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

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

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

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

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

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

Wetland name or number _____

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

Wetland name or number _____

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

APPENDIX D

IMPORTANT INFORMATION ABOUT YOUR WETLAND DELINEATION/MITIGATION AND/OR STREAM CLASSIFICATION REPORT

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 21-1-20664-002

Date: April 9, 2007
To: Mr. Aaron Silver
DMJM Harris

IMPORTANT INFORMATION ABOUT YOUR WETLAND DELINEATION/MITIGATION AND/OR STREAM CLASSIFICATION REPORT

A WETLAND/STREAM REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

Wetland delineation/mitigation and stream classification reports are based on a unique set of project-specific factors. These typically include the general nature of the project and property involved, its size, and its configuration; historical use and practice; the location of the project on the site and its orientation; and the level of additional risk the client assumed by virtue of limitations imposed upon the exploratory program. The jurisdiction of any particular wetland/stream is determined by the regulatory authority(s) issuing the permit(s). As a result, one or more agencies will have jurisdiction over a particular wetland or stream with sometimes confusing regulations. It is necessary to involve a consultant who understands which agency(s) has jurisdiction over a particular wetland/stream and what the agency(s) permitting requirements are for that wetland/stream. To help reduce or avoid potential costly problems, have the consultant determine how any factors or regulations (which can change subsequent to the report) may affect the recommendations.

Unless your consultant indicates otherwise, your report should not be used:

- If the size or configuration of the proposed project is altered.
- If the location or orientation of the proposed project is modified.
- If there is a change of ownership.
- For application to an adjacent site.
- For construction at an adjacent site or on site.
- Following floods, earthquakes, or other acts of nature.

Wetland/stream consultants cannot accept responsibility for problems that may develop if they are not consulted after factors considered in their reports have changed. Therefore, it is incumbent upon you to notify your consultant of any factors that may have changed prior to submission of our final report.

Wetland boundaries identified and stream classifications made by Shannon & Wilson are considered preliminary until validated by the U.S. Army Corps of Engineers (Corps) and/or the local jurisdictional agency. Validation by the regulating agency(s) provides a certification, usually written, that the wetland boundaries verified are the boundaries that will be regulated by the agency(s) until a specified date, or until the regulations are modified, and that the stream has been properly classified. Only the regulating agency(s) can provide this certification.

MOST WETLAND/STREAM "FINDINGS" ARE PROFESSIONAL ESTIMATES.

Site exploration identifies wetland/stream conditions at only those points where samples are taken and when they are taken, but the physical means of obtaining data preclude the determination of precise conditions. Consequently, the information obtained is intended to be sufficiently accurate for design, but is subject to interpretation. Additionally, data derived through sampling and subsequent laboratory testing are extrapolated by the consultant who then renders an opinion about overall conditions, the likely reaction to proposed construction activity, and/or appropriate design. Even under optimal circumstances, actual conditions may differ from those thought to exist because no consultant, no matter how qualified, and no exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock, and time. Nothing can be done to prevent the unanticipated, but steps can be taken to help reduce their impacts. For this reason, most experienced owners retain their consultants through the construction or wetland mitigation/stream classification stage to identify variances, to conduct additional evaluations that may be needed, and to recommend solutions to problems encountered on site.

WETLAND/STREAM CONDITIONS CAN CHANGE.

Since natural systems are dynamic systems affected by both natural processes and human activities, changes in wetland boundaries and stream conditions may be expected. Therefore, delineated wetland boundaries and stream classifications cannot remain valid for an indefinite period of time. The Corps typically recognizes the validity of wetland delineations for a period of five years after completion. Some city and county agencies recognize the validity of wetland delineations for a period of two years. If a period of years have passed since the wetland/stream report was completed, the owner is advised to have the consultant reexamine the wetland/stream to determine if the classification is still accurate.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or water fluctuations may also affect conditions and, thus, the continuing adequacy of the wetland/stream report. The consultant should be kept apprised of any such events and should be consulted to determine if additional evaluation is necessary.

THE WETLAND/STREAM REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when plans are developed based on misinterpretation of a wetland/stream report. To help avoid these problems, the consultant should be retained to work with other appropriate professionals to explain relevant wetland, stream, geological, and other findings, and to review the adequacy of plans and specifications relative to these issues.

DATA FORMS SHOULD NOT BE SEPARATED FROM THE REPORT.

Final data forms are developed by the consultant based on interpretation of field sheets (assembled by site personnel) and laboratory evaluation of field samples. Only final data forms customarily are included in a report. These data forms should not, under any circumstances, be drawn for inclusion in other drawings because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to reduce the possibility of misinterpreting the forms. When this occurs, delays, disputes, and unanticipated costs are frequently the result.

To reduce the likelihood of data form misinterpretation, contractors, engineers, and planners should be given ready access to the complete report. Those who do not provide such access may proceed under the mistaken impression that simply disclaiming responsibility for the accuracy of information always insulates them from attendant liability. Providing the best available information to contractors, engineers, and planners helps prevent costly problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because a wetland delineation/stream classification is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in written transmittals. These are not exculpatory clauses designed to foist the consultant's liabilities onto someone else; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

THERE MAY BE OTHER STEPS YOU CAN TAKE TO REDUCE RISK.

Your consultant will be pleased to discuss other techniques or designs that can be employed to mitigate the risk of delays and to provide a variety of alternatives that may be beneficial to your project.

Contact your consultant for further information.