Final

SKAGIT TRANSMISSION LINE SLOPE STABILIZATION PROJECT

SR-530 Skaglund Hill Wetland Report

Prepared for:
Seattle City Light Environmental Affairs
Division SMT 3360

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SUMMARY

At the request of Seattle City Light (SCL), ESA Adolfson (Adolfson) performed wetland delineations and prepared this technical report for the proposed Skagit Transmission Line Stabilization project site, located in the SW ¼ of Section 12, Township 32 North, Range 7 East, Snohomish County, Washington. The site is located in the North Fork Stillaguamish valley and adjacent to (and south of) State Route 530 between the towns of Oso and Hazel within the SCL Skagit Transmission Line right-of-way, which is an easement over Washington Department of Natural Resources (WDNR) lands. This scope of work did not include an assessment of construction related impacts or provision of mitigation concepts.

The site is located immediately upslope of recent landslide activity (Landau Associates, 2006). The landslide damaged portions of SR 530 and slid downhill to the toe of the landslide at the former railroad grade near the base of the slope north of SR 530 (Landau Associates, 2006). SCL is concerned over the stability of two transmission towers that are immediately upslope of the slide activity and is currently in the process of determining how to address future slide activity in the project area. The wetland delineation was performed to assist with any permit and design requirements that may be needed to address the safety issues at hand with respect to tower stability.

Adolfson Biologist Steve Krueger and Benn Burke delineated two wetlands on the Skagit Transmission Line Stabilization project site (Wetlands AB and C). Both wetlands are palustrine scrub/shrub slope wetlands and are 4,105 square feet (0.09 acre) and 55,621 square feet (1.28 acres) in size, respectively. Note that Wetland AB extends off-site to the north toward SR 530. The Washington State Department of Transportation (WSDOT) previously delineated the off-site portion of Wetland AB and determined that the wetland was approximately (0.15-acres) in size. Combining the on-site and off-site acreage of Wetland AB, the overall size if the Wetland AB is approximately (0.24-acres). Wetland C is located entirely on-site. Vegetation was similar for both wetlands, with small-fruited bulrush, Himalayan blackberry, lady fern, and giant horsetail representing the most dominant vegetation on the site. Soils were a dark gray 5Y 4/1-clay loam, which was inconsistent with the mapped soils in the project area (Tokul-Winston gravelly loam). According to the geotechnical report, the area is subject to recent, historic, and ancient landslide activity. Therefore, past landslides influence surface soil characteristics within the project area. Hydrology for both wetlands is supported by precipitation and near surface groundwater contributions.

Wetlands AB and C were rated using the Washington State Department of Ecology's *Wetland Rating System for Western Washington* (Hruby, 2004). This system was developed by Ecology to differentiate wetlands based on their sensitivity to disturbance, their significance, their rarity, our ability to replace them, and the beneficial functions they provide to society. Wetland AB and C are Category IV slope wetlands. Category IV wetlands have the lowest levels of functions and are often heavily disturbed.

The project is located entirely within the SCL Skagit Transmission Line right-of-way, which is an easement over WDNR land; therefore, Snohomish County does not have jurisdictional

authority over these wetlands. Jurisdiction for these wetlands is most likely to be at the federal and state levels.

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1.0 PROJECT AUTHORIZATION AND SCOPE OF WORK

At the request of Seattle City Light (SCL), ESA Adolfson (Adolfson) performed wetland delineations and prepared this technical report for the Skagit Transmission Line Stabilization project site, located in the SW ¼ of Section 12, Township 32 North, Range 7 East, Snohomish County, Washington (Figures 1 and 1A). The location is adjacent to (and south of) State Route 530 between the towns of Oso and Hazel within the SCL Skagit Transmission Line right-of-way, which is an easement over Washington Department of Natural Resources (WDNR) lands. All rights-of-entry to the subject property for the purpose of conducting this study was granted by SCL. The boundaries of the study area were established based on information and maps provided by SCL prior to initiation of site work.

The Scope of Work for this project included wetlands determinations, delineations, and an assessment of wetland functions, all of which are summarized in this technical report. A brief discussion of regulatory implications and permitting considerations is also included in this report. An analysis of potential wetlands impacts and the development of a mitigation plan were not included in this Scope of Work.

2.0 SITE DESCRIPTION

The, Skagit Transmission Line Stabilization project site is located within the North Fork Stillaguamish River valley and adjacent to (and south of) State Route 530 between the towns of Oso and Hazel within the SCL Skagit Transmission Line right-of-way, which is an easement over WDNR lands in Snohomish County, Washington (SW 1/4 of Section 12, Township 32 North, Range 7 East). The site is bounded to the north and west by a dirt access road that originates at State Route 530 (SR 530), to the east by an unnamed stream, and to the south by the Mt. Baker National Forest and Boulder River Wilderness Area (Figure 1and 1A).

The topography at the Skagit Transmission Line Stabilization project site is generally described as sloping downhill in the northward direction toward the North Fork Stillaguamish River valley (Landau Associates, 2006). The project area is located at the lower portion of the Cascade foothills at an elevation ranging from 490 feet above mean sea level (MSL) to an elevation of approximately 340 feet above MSL between the Boulder River and Boulder Creek drainages to the east and west respectively. Elevations at the upper end of these drainages vary between 2,700 and 3,000 feet above mean sea level. Slopes in the immediate project vicinity average approximately 25 percent (Photo 1).

3.0 WETLAND DEFINITION AND REGULATIONS

The characteristics of an area that result in its classification as "wetland" has been formally defined by federal and state agencies, as described in Appendix A. Numerous federal, state, and local regulations govern development and other activities in or near wetlands; at each level, there

are typically several agencies charged with such powers (Ecology, 1994). Specific regulatory implications concerning the subject property are summarized later in this report.

4.0 METHODS

Two levels of investigation were conducted for the analysis of wetlands on the subject property: a review of existing information and an on-site investigation.

4.1 Review of Existing Information

A review of existing literature, maps, and other materials was conducted to identify wetlands or site characteristics indicative of wetlands on the subject property. These sources can only indicate the likelihood of the presence of wetlands; actual wetland determinations must be based upon data obtained from field investigations.

Several documents were reviewed:

- *U.S. Geological Survey 1:24,000 Topographic Map, Mt. Higgins, Washington quadrangle 1989;*
- *Soil Survey of Snohomish County Area, Washington* (A. Debose and M. Klungland, 1983);
- *National Wetland Inventory, Mt. Higgins, Washington quadrangle* (U.S. Fish and Wildlife Service, 1974);
- *Wetland/Biology Report – SR 530 Skaglund Hills Emergency Slide Repair (MP 36.53 to MP37.28* (WSDOT, 2006);
- Hydric Soils of the State of Washington (Natural Resources Conservation Service, 1995); *and*
- *Geotechnical Engineering Services Report SR-530 – Skaglund Hill Landslide Snohomish County, Washington* (Landau Associates, 2006)

4.2 On-site Investigation

4.2.1 Determining the Presence of Wetlands and Delineating Wetland Boundaries

Methods defined in the *Washington State Wetlands Identification and Delineation Manual* (Ecology, 1997), a manual consistent with the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987), were used to determine the presence and extent of wetlands on the subject property. Washington state and all local governments must use the state delineation manual to implement the Shoreline Management Act and/or the local regulations adopted pursuant to the Growth Management Act. The methodology outlined in the

manual is based upon three essential characteristics of wetlands: (1) hydrophytic vegetation; (2) hydric soils; and (3) wetland hydrology. Field indicators of these three characteristics must all be present in order to determine that an area is a wetland (unless problem areas or atypical situations are encountered).

The "routine on-site determination method" was used to determine the wetland boundaries. The routine method is used for areas equal to or less than five acres in size, or for larger areas with relatively homogeneous vegetative, soil, and hydrologic properties.

Formal data plots were established where information regarding each of the three wetland parameters (vegetation, soils, and hydrology) was recorded. This information was used to distinguish wetlands from non-wetlands. If wetlands were determined to be present on the subject property, the wetland boundaries were delineated. Wetland boundaries were identified with sequentially numbered colored flagging imprinted with the words WETLAND DELINEATION. Data plot locations were also marked with colored flagging.

The methods used to assess wetland characteristics are described in greater detail in Appendix A. Please note that common plant names are used throughout this text; the scientific names are presented in Appendix B.

4.2.2 Classifying Wetlands

Two classification systems are commonly used to describe wetlands. The hydrogeomorphic (HGM) system describes wetlands in terms of their position in the landscape and the movement of water in the wetland (Brinson, 1993). The U.S. Fish and Wildlife Service classification system (Cowardin et al., 1979) describes wetlands in terms of their vegetation communities; these include, for example, emergent, scrub-shrub, and forested community types.

4.2.3 Assessing Wetland Functions

Wetlands play important roles that provide valuable benefits to the environment and society. Because detailed scientific knowledge of wetland functions is limited, evaluations of the functions of individual wetlands are somewhat qualitative and dependent upon professional judgment. For this project, wetland functions were assessed using the Washington State Wetland Rating System. These assessment methods are described in Appendix C.

5.0 FINDINGS

The following sections describe the results of the field investigation conducted by Benn Burke and Steve Krueger on the Skagit Transmission Line Stabilization project site on September 28, 2006. These sections describe the two wetlands found on the site. A total of four data plots were established within relatively uniform areas of vegetation on the site. Data sheets for each of the formal data plots evaluated for this project are provided in Appendix D.

5.1 Existing Information

The Soil Survey for Snohomish County Area (Debose and Klungland, 1983) indicates one soil unit for the project location. The soil type is Tokul-Winston gravelly loam with 25 to 65 percent slopes (Figure 2). The Tokul-Winston gravelly loam is characterized as a moderately deep and moderately well drained soil located on glacial till and volcanic ash. Permeability is moderate to the hardpan layer, which is typically located 20 to 40 inches in depth. Once through the substratum, permeability is slow through the hardpan. This soil unit is not considered a hydric soil, but the unit may have hydric inclusions.

The National Wetland Inventory, Mt. Higgins, Washington quadrangle (U.S. Fish and Wildlife Service, 1974) was consulted to indicate the presence of any previously established wetlands on the site. No wetlands were documented on-site (Figure 3).

5.2 Wetlands Determinations

Biologists Steve Krueger and Benn Burke identified two wetlands (Wetland AB and C) on the Skagit Transmission Line Stabilization project site on September 28, 2006. Wetland AB is not two separate wetlands, but one individual wetland. Discrepancies between what was recorded in field notes and what the surveyor observed resulted in this particular use of nomenclature. Figure 4 shows the approximate location of the wetlands on the Skagit Transmission Line Stabilization project site. The size and outline of the wetland boundaries were established in the field by professional land surveyors and can be used for site planning purposes. Russel K. Dodge performed the survey of wetland flagging.

Since the soils and hydrology were fairly consistent throughout the site, a greater emphasis was placed on wetland vegetation when determining where the wetland boundary was flagged. This was primarily done in areas at the western edge of Wetland C. This area was more disturbed as evidenced by shorter vegetation and compacted soils from vehicular use. In these areas, wetland and upland boundaries were established based on presence of creeping buttercup (wetland) and snowberry (upland).

5.2.1 Wetland AB

Overview. Wetland AB is part of a larger wetland that extends off-site to the north. The off-site portion was previously delineated by the Washington State Department of Transportation (WSDOT, 2006). This report only addresses the on-site portion of the wetland extending from the north side of the tower access road to the south (Wetland AB).

Wetland AB is a slope wetland that drains to the north toward the North Fork Stillaguamish River and is immediately up gradient of some recent landslide activity, which occurred in 2006 (Photos 2 and 3). The landslide damaged portions of SR 530 and slid downhill to the toe of the landslide at the former railroad grade near the base of the slope north of SR 530 (Landau Associates, 2006). The on-site portion of wetland AB is approximately 4,105 square feet in size with palustrine scrub/shrub communities and extends off-site to the north beyond the project boundaries (Figures 1A and 4). The off-site portion of Wetland AB, as identified by WSDOT is

approximately 6,534 square feet in size (WSDOT, 2006). Data plot DP-4 characterizes the on-site portion of Wetland AB.

Hydrology. The main sources of hydrology for Wetland AB include near surface groundwater contributions and precipitation. Free water was not observed in the soil pit during the site visit. However, soil was saturated to the surface throughout the wetland in September 2006.

Soils. Wetland AB soils were not consistent with mapped soils for the area. Soils were dark gray (5Y 4/1) clay loam to 16 inches in depth. Low matrix chroma indicated the presence of hydric soils (Photo 4).

Vegetation. Small-fruited bulrush, Himalayan blackberry, giant horsetail, soft rush, and immature red-alder dominated the wetland area identified within the project boundary (Photo 3). The presence of small-fruited bulrush, an obligate wetland species, further substantiates the dominance by wetland vegetation within Wetland AB.

Wetland Functions. The results of the functions assessment for the wetland areas are presented in Appendix C. Wetland AB is a Category IV wetland under the Ecology four-tier rating system (Hruby, 2004). Wetland AB merited a **low** rating for **water quality** (3 points), although it has an unconstricted surface outlet. Residence time for water moving through the wetland is not very long due to the slope being approximately 15 percent. Dense uncut herbaceous vegetation likely provides some sediment removal functions; however, areas upslope are predominantly second growth forests with little or no alteration or potential to contribute pollutants. Therefore, the opportunity for wetland AB to provide improved water quality is limited.

Hydrologic functions merited a **low** score (5 points). Wetland AB is located on an approximate 15 percent slope and at least half the wetland area is covered with dense, uncut, rigid vegetation, which is capable of reducing flow velocities during storm events and with many small depressional areas throughout the wetland, some storage may be provided. These factors may reduce some sources of erosion; however, on a site-specific basis this wetland likely contributes to localized landslide activity.

Habitat functions received a **low** score (8 points) as a result of the site being dominated by Himalayan blackberry, the fact that the wetland contains a low-interspersion of habitat types, and that the wetland occurs in a power line corridor that is regularly maintained (disturbed) to manage growth of vegetation. The area is adjacent to a relatively large and undisturbed vegetated upland corridor; primarily mature forests to the south, which provide some habitat function and value above that provided by the wetland.

5.2.2 Wetland C

Overview. Wetland C is a relatively large wetland that begins immediately south of transmission line tower B34/48N and generally drains east at an approximate 25 percent gradient to a small unnamed tributary stream to the North Fork Stillaguamish River, which forms the eastern edge of

the project boundary (Figure 4; Photos 5 and 6). This slope wetland is approximately 55,621 square feet in size with palustrine scrub/shrub communities. All of Wetland C occurs on-site with boundaries defined by the tower access road to the north, the treeline and up gradient topography to the south, up gradient topography to the west, and the stream to the east (Figures 1A and 4,). Data plot DP-2 characterizes Wetland C.

Hydrology. The main sources of hydrology for Wetland C include near surface groundwater contributions and precipitation. Free water was not observed in the soil pit during the site visit. However, soil was saturated to the surface throughout the wetland.

Soils. Wetland C soils were not consistent with mapped soils for the area. Soils were dark gray (5Y 4/1) clay loam to 18 inches in depth. Low matrix chroma and distinct mottling indicated the presence of hydric soil.

Vegetation. Small-fruited bulrush, giant horsetail, Himalayan blackberry, cattail, salmonberry, and lady fern dominate the wetland area identified within the project boundary (Photos 5 and 6). Small-fruited bulrush and cattail are obligate wetland species and further substantiate the dominance by wetland vegetation within Wetland C.

Wetland Functions. The results of the functions assessment for the wetland areas are presented in Appendix C. Wetland C is a Category IV wetland under the Ecology four-tier rating system (Hruby, 2004). Wetland C merited a **low** rating (3 points) for **water quality**, although it contains an unconstricted surface outlet. Residence time for water moving through the wetland is not very long due to the slope being approximately 25 percent (Figure 5; Photo 1), Dense uncut herbaceous vegetation likely provides some sediment removal functions; however, areas upslope are predominantly second growth forests with little or no alteration or potential to contribute pollutants. Therefore, the opportunity for wetland C to provide improved water quality is limited.

Hydrologic functions merited a **low** score (8 points). Wetland C is located on an approximate 25 percent slope and is covered with dense, uncut, rigid vegetation, which is capable of reducing flow velocities during storm events and with many small depressional areas throughout the wetland, some storage may be provided (Photo 1). These factors may reduce some sources of erosion; however, on a site-specific basis this wetland likely contributes to localized landslide activity.

Habitat functions received a **low** score (9 points) as a result of the site being dominated by Himalayan blackberry, the fact that the wetland contains a low-interspersion of habitat types, and that the wetland occurs in a power line corridor that is regularly maintained (disturbed) to manage growth of vegetation. The area is adjacent to a relatively large and undisturbed vegetated upland corridor; primarily mature forests to the south (Figure 1A), which provide some habitat function and value above that provided by the wetland.

5.3 Upland Description

The upland areas surrounding Wetlands AB and C are composed primarily a mixture of second-growth coniferous forest and maintained scrub/shrub plant communities. Douglas fir, western hemlock, western red cedar, and big-leaf maple dominate the forest area, with an understory of vine maple (Figure 1A). Dominant herbs include giant horsetail and sword fern. Scrub/shrub vegetation communities were dominated by thimbleberry, salmonberry, Himalayan blackberry with an herb layer consisting of sword fern, pig-a-back plant, bracken fern, and giant horsetail. In general, upland areas had a distinct lack of hydrology when compared with wetland areas. During the field investigation, upland soils were similar to wetland soils and were not consistent with the mapped Tokul-Winston gravelly loam. Soils were generally a dark gray (5Y 4/1) clay loam. Data plots. DP-1 and DP-3 describe the upland areas. Similarities in soil types between wetland data plots and upland plots can be largely attributed to the fact that this area is an active slide area and the subsoils have been exposed and intermixed.

5.4 Wildlife Habitats

5.4.1 Site Observations

The project area is located completely within SCL's Skagit Transmission Line right-of-way, which is regularly maintained by cutting vegetation beneath the transmission lines. The area is also heavily dominated by Himalayan blackberry. Wildlife observed included the American crow, winter wren, and black-capped chickadee. Evidence of browsing by deer and/or elk was also evident in the project area. Other wildlife signs included observations of tunnels created by burrowing mammals. The area to the south of the project site is directly contiguous with large tracts of second growth coniferous forest, which is more likely to provide habitat for a wider diversity of wildlife species. The Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) database does not indicate the presence of or use of the area by marbled murrelets or spotted owls (Beth Blattenberger, personal communication, 2006).

A small, unnamed stream forms the eastern boundary of Wetland C and is a tributary to the North Fork Stillaguamish River. After leaving the project site, the unnamed stream crosses beneath SR-530 and travels approximately 1,000 feet to the North Fork Stillaguamish River. The North Fork Stillaguamish supports populations of Chinook, chum, coho, pink, and sockeye salmon in addition to winter steelhead (WDFW, 2006). The Puget Sound Evolutionarily Significant Unit (ESU) Chinook salmon is currently listed as threatened and the Puget Sound Distinct Population segment (DPS) steelhead is currently proposed for listing as threatened (NOAA, 2006). The Washington Department of Fish and Wildlife's (WDFW) Salmonscape interactive mapper did not indicate any fish use of the unnamed stream, and furthermore indicated that the culvert beneath SR 530 was a complete barrier to any upstream migration of fish species (WDFW, 2006). Therefore, fish use of the unnamed stream in the project area is not anticipated.

Other species of birds, mammals, reptiles, and amphibians in addition to those observed are expected to use habitat on the project site. For example, nocturnal species may be present that were not active during the site visit, or other species may only be highly visible or present in this area during certain seasons.

5.4.2 Previously Identified Species and Habitats in Project Area

A review of WDFW's Priority Habitats and Species (PHS) databse was not included within the scope of this study; however, as noted above the North Fork Stillaguamish River and surrounding contiguous tracts of second growth forest are considered priority habitats and several species that occur within these habitats have special status rankings. The project area itself does not support these habitats nor are any threatened or endangered species likely to use the project area, given its disturbed and regularly maintained condition.

5.5 Off-site Wetlands

The NWI indicates the presence of riverine wetlands associated with the North Fork Stillaguamish River approximately 650 to 1,000 feet north and down gradient of the project boundaries. Both on-site wetlands are hydrologically connected to the riverine wetlands via contributions to surface water flows in the unnamed stream at the projects eastern boundary. The NWI also identified a palustrine scrub shrub wetland over one mile to the east; however, there is no hydrologic connection between this wetland and on-site wetlands (Figure 3).

6.0 REGULATORY IMPLICATIONS

Wetlands are regulated at the federal, state, and local levels. Agencies with jurisdiction include the U.S. Army Corps of Engineers (Corps) and the Washington State Department of Ecology (Ecology). The Washington Department of Fish and Wildlife regulates work within streams. Regulatory implications associated with development in wetlands include, but may not be limited to, those discussed in this section. All applicable permits should be obtained prior to developing or otherwise altering streams or wetlands.

6.1 Federal Regulations

The Corps regulates discharges of dredged or fill materials into waters of the United States, including wetlands, under Section 404 of the Clean Water Act. The purpose of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." A Section 404 permit may be required if a proposed project involves filling wetlands or altering streambeds or other waters of the U.S.

The Corps has established two types of permit programs under Section 404: nationwide and individual. Nationwide permits (NWPs) are issued when a proposed activity will have minimal adverse impacts to wetlands. All other projects are evaluated under the individual permitting process. The Corps determines which permitting process is used for a proposed project. The Corps will require that wetland impacts be avoided or minimized to the extent practicable, and mitigation will likely be required for unavoidable wetland impacts. The NWP program and Regional Conditions associated with this program for the Seattle Region are expected to expire in March 2007. The Corps will then put a new updated NWP program in place with revised conditions and standards.

6.2 State Regulations

The state certification process under Section 401 of the federal Clean Water Act is usually triggered through a Section 404 permit application. Section 401 directs each state to certify that proposed in-water activities will not adversely affect water quality or violate state aquatic protection laws. In Washington State, Ecology is responsible for administering the state certification program. Ecology may issue approval, approval with conditions, denial, or a request for delay due to lack of information. Any conditions attached to the 401 certification become part of the Section 404 permit.

Snohomish County is one of the 15 coastal counties in Washington regulated under the Washington State Coastal Zone Management (CZM) Program. Activities that would affect coastal resources and involve approvals from the federal government (such as a Section 404 permit) must be evaluated for CZM compliance through a process called "federal consistency." The Washington State Department of Ecology administers the CZM program in this state.

If relocation or alteration of stream culverts or other in-stream work is proposed as part of the project, a Hydraulic Project Approval (HPA) would be required from the Washington Department of Fish and Wildlife under the state Hydraulic Code (RCW 77.55, WAC 220-110).

6.3 Local Regulations

According to SCL, an official representative of Snohomish County informed SCL that Snohomish County does not have jurisdiction over state-owned lands. The wetlands are located within an easement over WDNR lands and therefore, on-site wetlands will be regulated at the federal and state levels.

7.0 LIMITATIONS

Within the limitations of schedule, budget, scope-of-work, and seasonal constraints, we warrant that this study was conducted in accordance with generally accepted environmental science practices, including the technical guidelines and criteria in effect at the time this study was performed, as outlined in the Methods section. The results and conclusions of this report represent the authors' best professional judgment, based upon information provided by the project proponent in addition to that obtained during the course of this study. No other warranty, expressed or implied, is made.

8.0 REFERENCES

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9.0 GLOSSARY

agricultural wetland - Areas where wetland soils and hydrology remain, but hydrophytic vegetation has been removed to allow a crop to be grown.

anaerobic - A situation in which molecular oxygen is absent (or effectively so) from the environment.

atypical situation - Areas in which one or more wetland parameters (vegetation, soil, and/or hydrology) have been sufficiently altered by recent human activities or natural events to preclude the presence of wetland indicators of the parameter. "Recent" is intended to mean that period of time since legal jurisdiction of an applicable law began.

best management practices (BMPs) – The physical, structural, and/or managerial practices that, when used singly or in combination, prevent or reduce pollutant discharges.

buffer - A designated area along the edge of a stream or wetland that is regulated to control the negative effects of adjacent development from intruding into the aquatic resource.

concretion - A local concentration of chemical compounds such as calcium carbonate or iron oxide in the soil that forms a grain or nodule of varying size, shape, hardness, and color. Concretions of significance in hydric soil are usually iron and/or manganese oxides occurring at or near the soil surface that develop under conditions of prolonged soil saturation.

dominant species – Plant species that define the character of a vegetation community. In wetland delineation, this is typically measured using percent areal cover. For each stratum in the plant community (trees, shrubs, and herbs), dominant species are the most abundant plant species that when ranked in descending order of abundance and cumulatively totaled immediately exceed 50 percent cover for the stratum, plus any additional species that individually compose 20 percent or more of the total cover in the stratum. The list of dominant plant species is then combined across strata. (Corps of Engineers Wetland Delineation Manual, 1987)

emergent - A plant that grows rooted in shallow water, the bulk of which emerges from the water and stands vertically. Usually applied to non-woody vegetation.

emergent wetland - In the USFWS classification system (Cowardin et al., 1979), a wetland characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens.

enhancement - An improvement in the functions and values of an existing wetland, typically through native plantings.

fill material - Any material placed in an area to increase the surface elevation.

forested wetland - In the USFWS classification system (Cowardin et al., 1979), a wetland characterized by woody vegetation that is six meters (20 feet) tall or taller.

gleyed - A soil condition resulting from prolonged soil saturation, manifested by the presence of bluish or greenish colors throughout the soil or in mottles (spots or streaks) among other colors.

herbaceous - Having the characteristics of an herb; a plant with no persistent woody stem above the ground.

hydric soil – A soil that formed under conditions of saturation, flooding, or ponding long enough to develop anaerobic conditions in the upper part.

hydrogeomorphic (HGM) classification – A system of classifying wetlands based on their position in the landscape and the movement of water within the wetland.

hydrology – The science dealing with the properties, distribution, and circulation of water.

hydrophyte - Any plant growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. The sum total of hydrophytes in an area is known as "hydrophytic vegetation."

in-kind compensation - Compensation for lost wetland habitat with a replacement wetland of the same habitat type.

inundation – A condition in which water from any source temporarily or permanently covers a land surface.

invasive plant species - Plant species that become established easily in disturbed conditions, reproduce readily, and often establish monocultures. Most invasive plants are non-native species; they were introduced to the Northwest intentionally or unintentionally by humans. Examples of common invasive species in the Pacific Northwest are Scot's broom, Canada thistle, hedge bindweed, English ivy, reed canarygrass, and purple loosestrife.

lacustrine - In the USFWS classification system (Cowardin et al., 1979), lacustrine refers to a freshwater area that has all of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) has less than 30% coverage of trees, shrubs, persistent emergent plants, mosses, or lichens; and (3) total area exceeds 20 acres. For areas less than 20 acres, an area is considered lacustrine if it has an active wave-formed or bedrock shoreline or is deeper than 6.6 feet in the deepest part. "Freshwater" means less than 0.5 parts per thousand ocean-derived salts.

mitigation – Defined in WAC 197-11-766 as:

(1) Avoiding the impact altogether by not taking a certain action or parts of an action;

(2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;

(3) Rectifying the impact by repairing, rehabilitating, or restoring the affected

environment;

(4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;

(5) Compensating for the impact by replacing, enhancing or providing substitute resources or environments: and/or

(6) Monitoring the impact and taking appropriate corrective measures.

mottles - Spots or blotches of different color or shades of color interspersed within the dominant color in a soil layer. This usually results from periodic anaerobic conditions in the soil.

100-year floodplain - The flood with a 100-year recurrence interval; those areas identified as Zones A, A1-30, AE, AH, AO, A99, V, V1-30, and VE on most current Federal Emergency Management Agency (FEMA) Flood Rate Insurance Maps, or areas identified as 100-year floodplain on applicable local Flood Management Program maps.

ordinary high-water mark - The line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; changes in the character of soil or vegetation; topographic shelves; or the presence of a line of litter or debris.

out-of-kind compensation - Compensation for lost wetland habitat with a replacement wetland of a different habitat type.

palustrine - In the USFWS classification system (Cowardin et al., 1979), palustrine refers to freshwater areas dominated by trees, shrubs, persistent emergent plants, mosses, or lichens. They can be non-tidal or tidal. Palustrine also includes wetlands lacking this vegetation but with the following characteristics: (1) area less than 20 acres; (2) no active wave-formed or bedrock shoreline; (3) water depth in the deepest part is less than 6.6 feet at low water. "Freshwater" means having less than 0.5 parts per thousand ocean-derived salts.

persistent emergents – Emergent plants that remain standing at least until the beginning of the next growing season.

reach - A length of stream channel with uniform characteristics.

redoximorphic soil characteristics – Features of the soil such as masses, nodules, or mottles formed through reduction and oxidation of iron and manganese in seasonally saturated soils.

restoration - To improve a disturbed or altered wetland by returning wetland parameters that may be missing.

rhizosphere - The zone of soil surrounding a plant root in which interactions between the living root and microorganisms occur.

riverine - In the USFWS classification system (Cowardin et al., 1979), riverine refers to freshwater areas that are contained within a channel and are not dominated by trees, shrubs, and persistent emergent plants. Examples include rivers and streams. "Freshwater" means having less than 0.5 parts per thousand ocean-derived salts.

saturated soil conditions - A condition in which all easily drained spaces between soil particles in the root zone are temporarily or permanently filled with water.

scrub-shrub - In the USFWS classification system (Cowardin et al., 1979), areas dominated by woody vegetation less than 6 meters (20 feet) tall. The species include tree shrubs, young trees, and trees or shrubs that are stunted because of environmental conditions.

Section 404 permit - A permit issued by the U.S. Army Corps of Engineers under Section 404 of the federal Clean Water Act that allows an activity (filling) within a wetland. A 404 permit usually requires compensation or mitigation for the wetland impacts.

soil matrix - The portion of a given soil that has the dominant color. In most cases, the matrix is the portion of the soil having more than 50% of the same color.

synonymy - Different scientific names for the same species.

waters of the United States - As defined in 33 CFR Part 328, the term "waters of the United States" means:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    iii. Which are used or could be used for industrial purpose by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters identified in paragraphs 1-4;

6. The territorial seas;

7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs 1-6.

   Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 123.11(m) which also meet the criteria of this definition) are not waters of the United States.

8. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with the EPA.

wetlands - Those areas that are inundated or saturated by surface or groundwater 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 (Federal Register, 1982, 1986).

wetland boundary – The point on the ground at which a shift from wetlands to non-wetlands or aquatic habitat occurs.

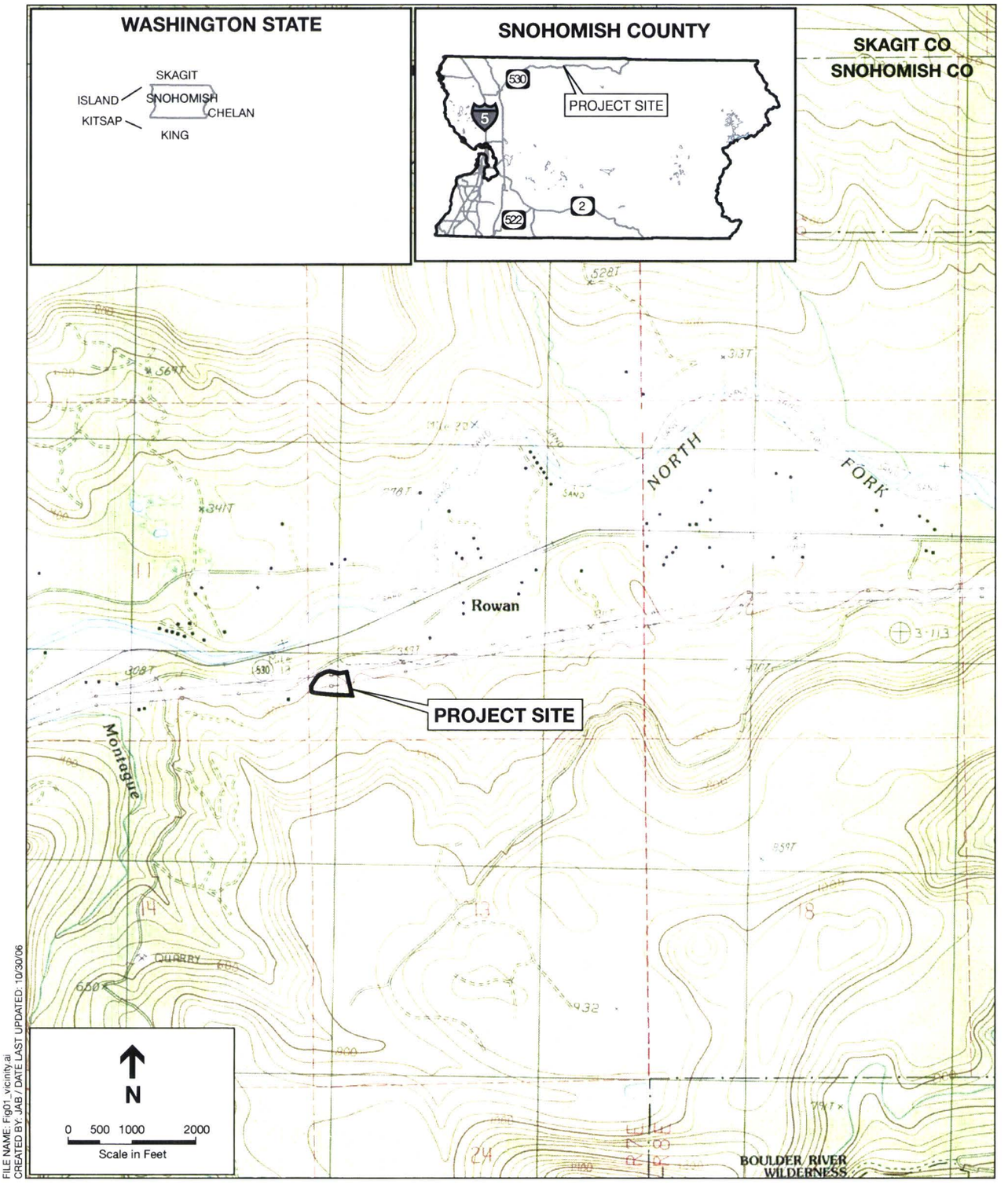
wetland hydrology - Wetland hydrology is considered to be present when there is permanent or periodic inundation or soil saturation at or near the soil surface for more than 12.5% of the growing season (typically two weeks in lowland Pacific Northwest areas). Areas that are inundated or saturated for between 5% and 12.5% of the growing season in most years may or may not be wetlands. Areas inundated or saturated for less than 5% of the growing season are non-wetlands (Ecology, 1997).

wetland indicator status (WIS) - Categories assigned to plant species based upon the estimated probabilities (expressed as a frequency of occurrence) of the species occurring in a wetland or a non-wetland. Wetland indicator status categories include the following:

- *Obligate (OBL): species that almost always occur in wetlands under natural conditions (estimated probability >99%).*
- *Facultative wetland (FACW): species that usually occur in wetlands (estimated probability 67 to 99%), but are occasionally found in non-wetland areas.*
- *Facultative (FAC): species that are equally likely to occur in wetlands (estimated probability 34 to 66%) or non-wetland areas.*
- *Facultative upland (FACU): species that usually occur in non-wetland areas (estimated probability 67 to 99%), but are occasionally found in wetlands.*
- *Upland (UPL): species that almost always occur in non-wetland areas under normal conditions (estimated probability >99%).*

A (+) or (-) following the WIS signifies a greater or lesser likelihood, respectively, of the species being found in wetland conditions. Plant species can also be designated "No indicator" or NI, which includes species for which insufficient information is available to determine status, or which were not evaluated by USFWS in compiling the WIS listings. Plant species that are not listed on the USFWS list of WIS ratings are designated "NL" and are presumed to be upland species.

FIGURES AND PHOTOGRAPHS



SOURCE: USGS, Mt. Higgins Quadrangle, WA, 1989.

Seattle City Light SR 530 (Skagland Hill) Wetland Delineation . 26126

Figure 1
Site Vicinity Map
Snohomish County, Washington

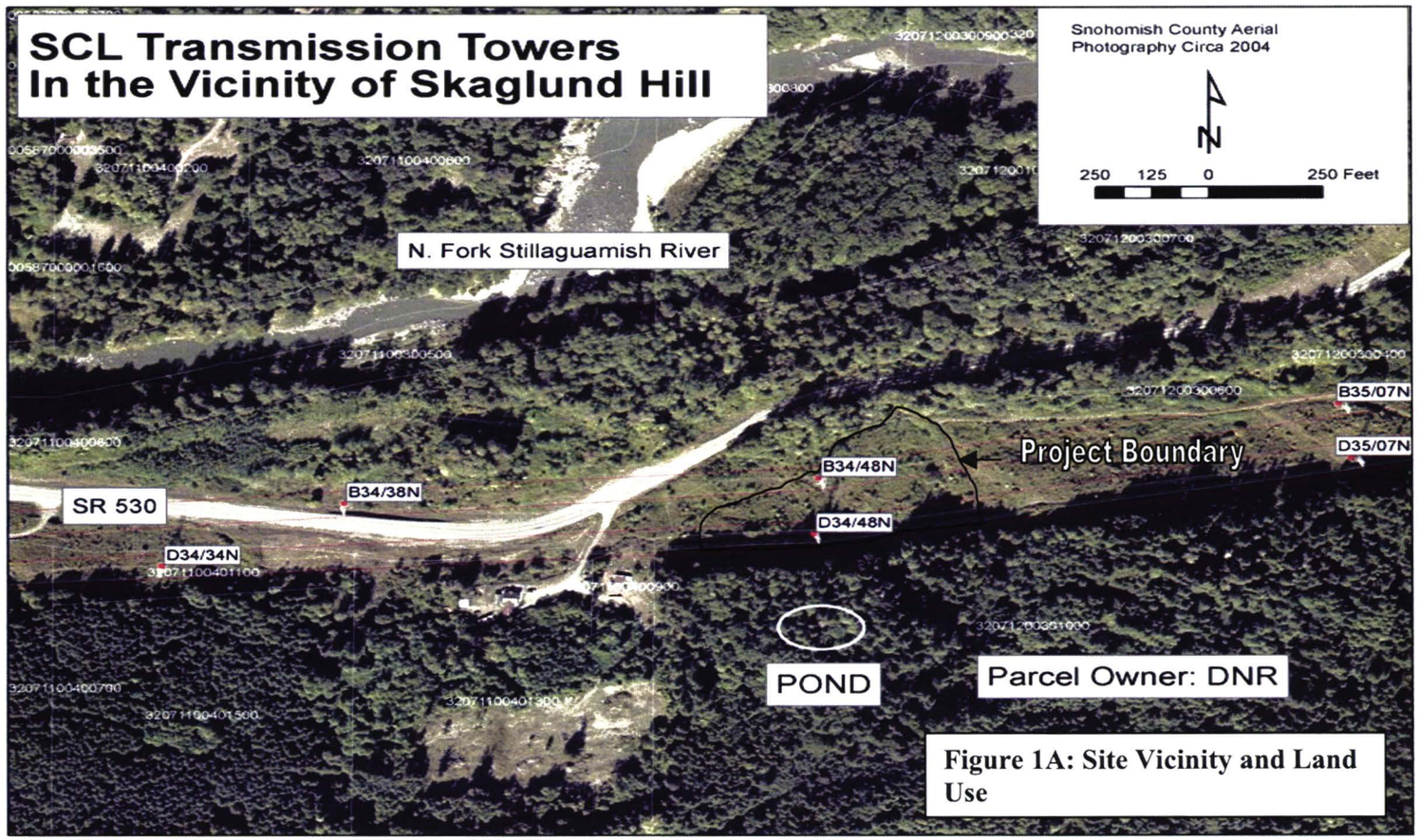
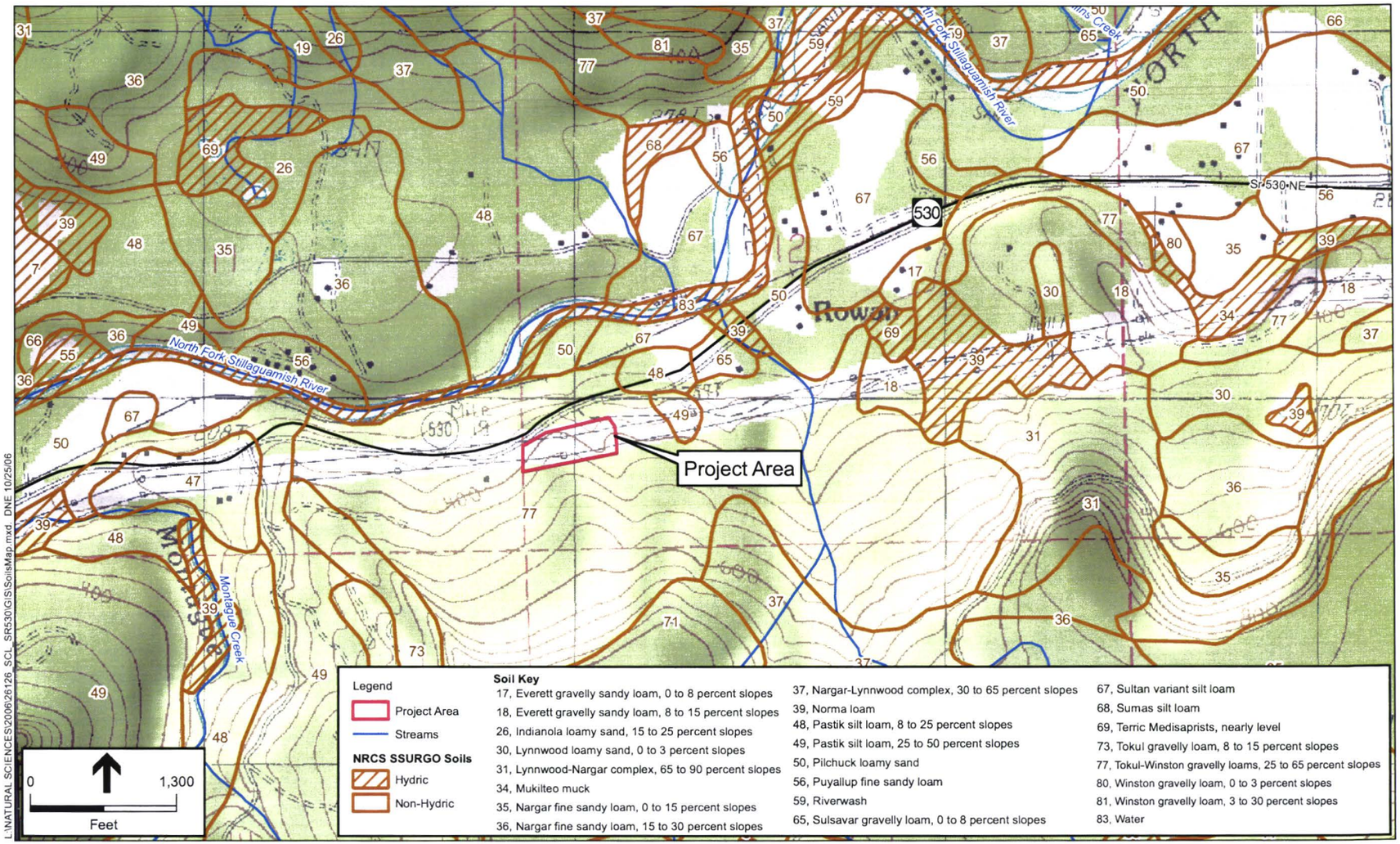


Figure 1A: Site Vicinity and Land Use



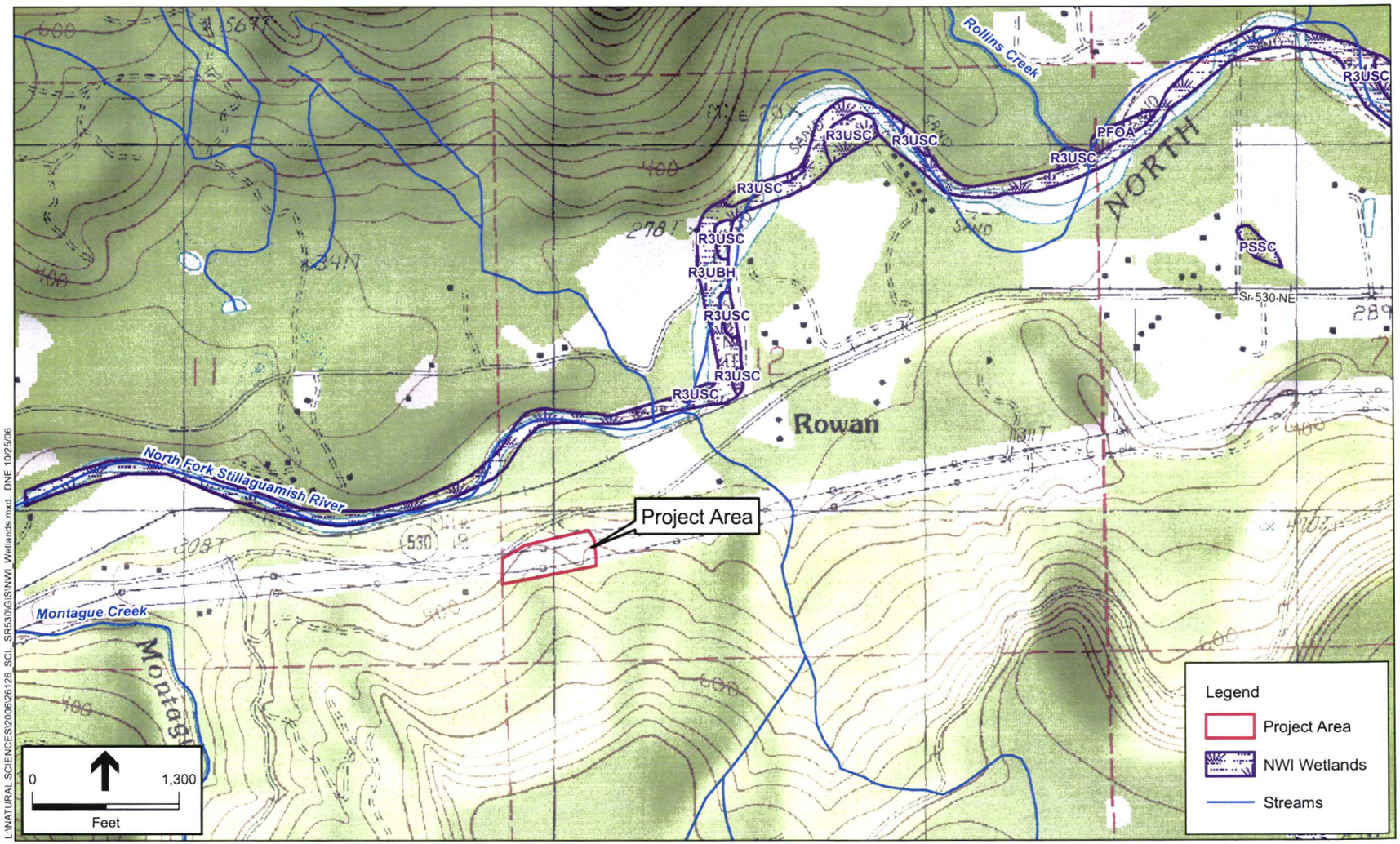
SOURCE: NRCS SSURGO soils data, 2003; USGS Topoquad, 1995

FIGURE 2

SOIL TYPES IN PROJECT VICINITY

SEATTLE CITY LIGHT SR 530 WETLAND DELINEATION

SNOHOMISH COUNTY, WASHINGTON

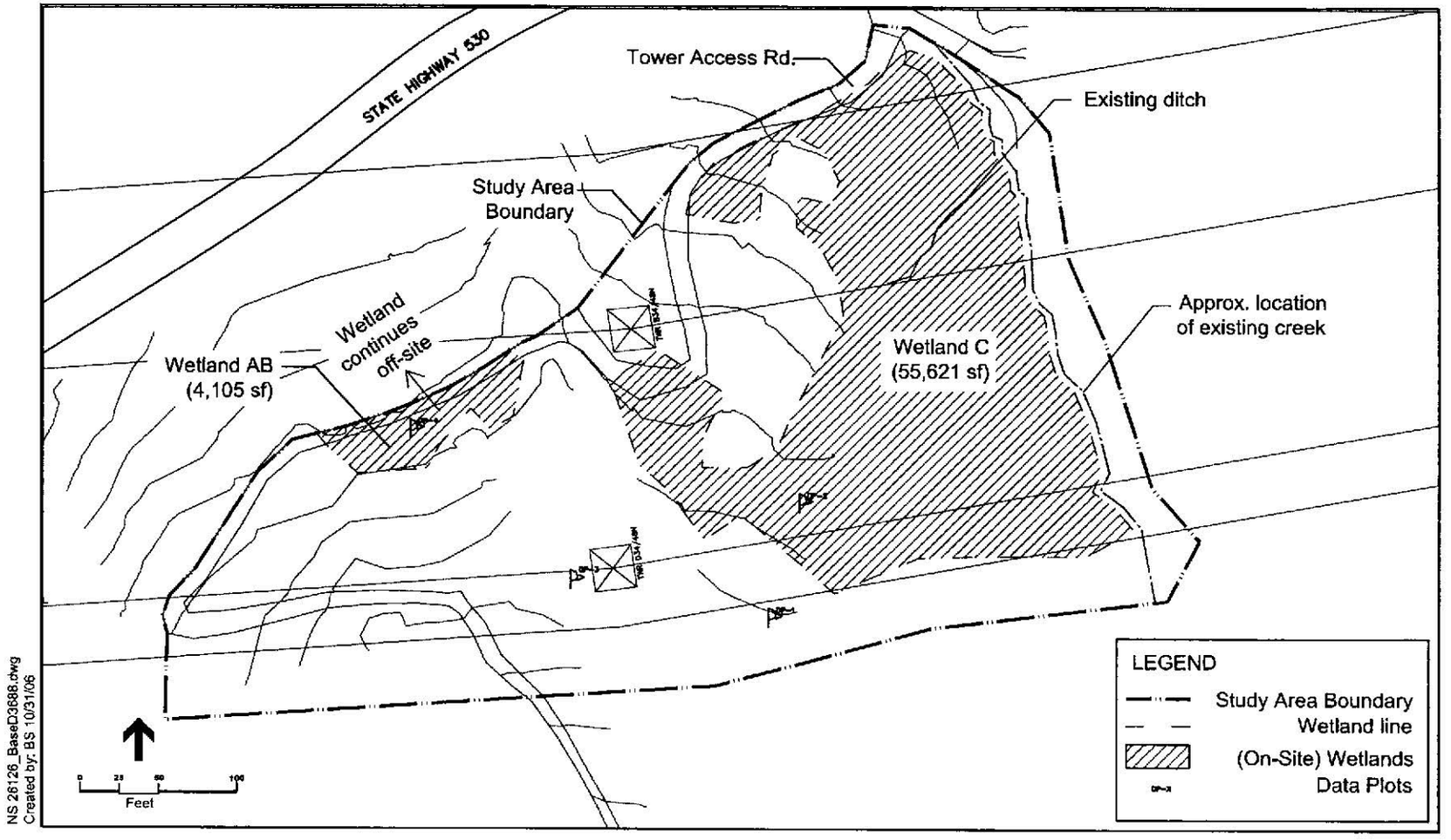


SOURCE: National Wetland Inventory, Mt. Higgins quad, 1974; USGS Topoquad, 1995

. FIGURE 3

NWI WETLANDS

SEATTLE CITY LIGHT SR 530 WETLAND DELINEATION
SNOHOMISH COUNTY, WASHINGTON



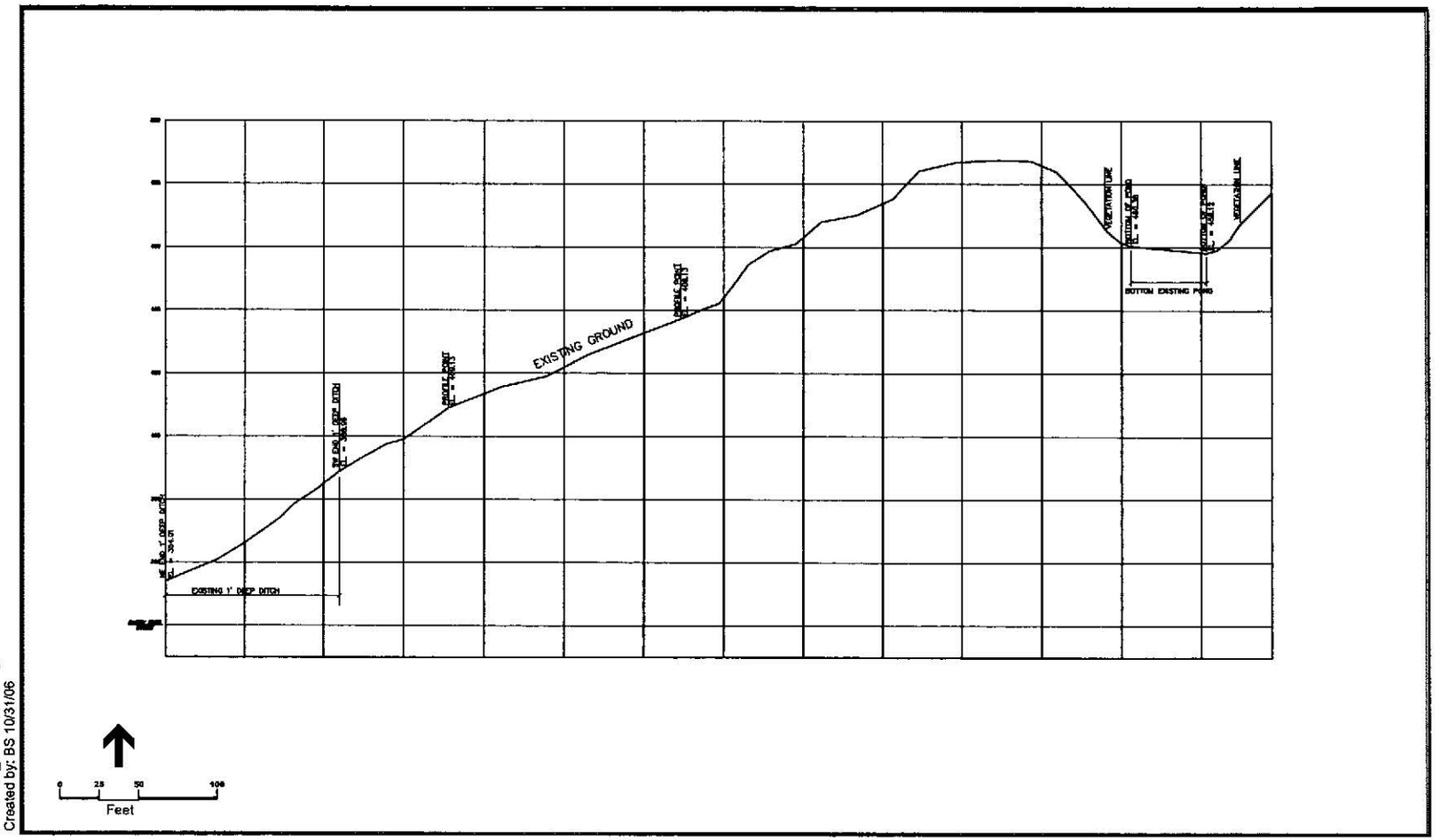
SOURCE: City of Seattle, 2006

SCL_SR530 . 2006126

Figure 4

Wetland Boundary Map

Snohomish County, Washington



NS 26126_BaseD3688.dwg
Created by: BS 10/31/06

SCL_SR530 , 2006126

SOURCE: City of Seattle, 2006

Figure 5

Site Topographic Profile
Snohomish County, Washington

Photo 1. Looking west and upslope toward Wetland C, dense vegetation is primarily Himalayan blackberry (9/28/06).

Photo 2. Looking south (upslope) at Wetland AB from tower access road (9/28/06).

ESA Adolfson
November 2006
26126

Photo 3. Looking east at Wetland AB crossing of tower access road (9/28/06).

Photo 4. Data Plot 4 (Wetland AB soils pit), dark gray 5Y 4/1 clay loam (9/28/06).

Photo 5. Looking southwest and upslope toward Wetland C from unnamed stream and access road at northeast corner of project boundary (9/28/06).

Photo 6. Looking west and downslope at Wetland C and unnamed stream (9/28/06).

APPENDIX A:
METHODS USED TO EVALUATE WETLAND CHARACTERISTICS

Wetland Definition

Wetlands are formally defined by the U.S. Army Corps of Engineers (Corps) (Federal Register 1982), the Environmental Protection Agency (EPA) (Federal Register 1988), the Washington Shoreline Management Act (SMA) of 1971 (Ecology, 1991) and the Washington State Growth Management Act (GMA) (Ecology, 1992) as

> *... those areas that are inundated or saturated by surface or groundwater 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* (Federal Register, 1982, 1986).

In addition, the SMA and the GMA definitions add:

> *Wetlands do not include those artificial wetlands intentionally created from non-wetland site, 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. Wetlands may include those artificially created wetlands intentionally created from non-wetland areas to mitigate the conversion of wetlands.*

Methods defined in the *Washington State Wetlands Identification and Delineation Manual* (Ecology, 1997), a manual consistent with the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987), were used to determine the presence and extent of wetlands on the subject property. Washington state and all local governments must use the state delineation manual to implement the SMA and/or the local regulations adopted pursuant to the GMA. The methodology outlined in the manual is based upon three essential characteristics of wetlands: (1) hydrophytic vegetation; (2) hydric soils; and (3) wetland hydrology. Field indicators of these three characteristics must all be present in order to determine that an area is a wetland (unless problem areas or atypical situations are encountered). These characteristics are discussed below.

Vegetation

Plants must be specially adapted for life under saturated or anaerobic conditions to grow in wetlands. The U.S. Fish and Wildlife Service (USFWS) has determined the estimated probability of each plant species' occurrence in wetlands and has accordingly assigned a "wetland indicator status" (WIS) to each species (USFWS, 1988, 1993). Plants are categorized as obligate (OBL), facultative wetland (FACW), facultative (FAC), facultative upland (FACU), upland (UPL), not listed (NL), or no indicator status (NI). Definitions for each indicator status are listed in the Glossary. Species with an indicator status of OBL, FACW, or FAC are considered adapted for life in saturated or anaerobic soil conditions. Such species are referred to

as "hydrophytic" vegetation. A (+) or (-) sign following the WIS signifies greater or lesser likelihood, respectively, of the species being found in wetland conditions.

Areas of relatively homogeneous vegetative composition can be characterized by "dominant" species. The indicator status of the dominant species within each vegetative stratum is used to determine if the plant community may be characterized as hydrophytic. The vegetation of an area is considered to be hydrophytic if more than 50% of the dominant species have an indicator status of OBL, FACW, or FAC.

Soils

Hydric soils are indicative of wetlands. Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile (Federal Register, 1994). The Natural Resources Conservation Service (NRCS), in cooperation with the National Technical Committee for Hydric Soils, has compiled lists of hydric soils (NRCS, 1995). These lists identify soil series mapped by the NRCS that meet hydric soil criteria. It is common, however, for a map unit of non-wetland (non-hydric) soil to have inclusions of hydric soil, and vice versa. Therefore, field examination of soil conditions is important to determine if hydric soil conditions exist.

The NRCS has developed a guide for identifying field indicators of hydric soils (NRCS, 1998). This list of hydric soil indicators is considered to be dynamic; revisions are anticipated to occur on a regular basis as a result of ongoing studies of hydric soils. Anaerobic conditions create certain characteristics in hydric soils, collectively known as "redoximorphic features," that can be observed in the field (Vepraskas, 1999). Redoximorphic features include high organic content, accumulation of sulfidic material (rotten egg odor), greenish- or bluish-gray color (gley formation), spots or blotches of different color interspersed with the dominant or matrix color (mottling), and dark soil colors (low soil chroma) (NRCS, 1998; Vepraskas, 1999). Soil colors are described both by common color name (for example, "dark brown") and by a numerical description of their hue, value, and chroma (for example, 10YR 2/2) as identified on a Munsell soil color chart (Munsell Color, 2000). Soil color is determined from a moist soil sample.

Hydrology

Water must be present in order for wetlands to exist; however, it need not be present throughout the entire year. Wetland hydrology is considered to be present when there is permanent or periodic inundation or soil saturation at or near the soil surface for more than 12.5% of the growing season (typically two weeks in lowland Pacific Northwest areas). Areas that are inundated or saturated for between 5% and 12.5% of the growing season in most years may or may not be wetlands. Areas inundated or saturated for less than 5% of the growing season are non-wetlands (Ecology, 1997).

Indicators of wetland hydrology include observation of ponding or soil saturation, water marks, drift lines, drainage patterns, sediment deposits, oxidized rhizospheres, water-stained leaves, and local soil survey data. Where positive indicators of wetland hydrology are observed, it is

assumed that wetland hydrology occurs for a sufficient period of the growing season to meet the wetland criteria, as described by Ecology (1997).

APPENDIX B:
COMMON AND SCIENTIFIC NAMES OF PLANTS AND THEIR WETLAND INDICATOR STATUS

PLANT SPECIES LIST FOR THE SKAGIT TRANSMISSION LINE STABILIZATION PROJECT, IDENTIFIED ON SEPTEMBER 28, 2006

COMMON NAME	SCIENTIFIC NAME	WETLAND INDICATOR STATUS*
Trees		
big-leaf maple	*Acer macrophyllum*	FACU
Douglas fir	*Pseudotsuga menziesii*	FACU*
red alder	*Alnus rubra*	FAC
western hemlock	*Tsuga heterophylla*	FACU-
western red cedar	*Thuja plicata*	FAC
Shrubs		
Himalayan blackberry	*Rubus discolor (Rubus armenicus)*	FACU
salmonberry	*Rubus spectabilis*	FAC+
thimbleberry	*Rubus parviflorus*	FAC-
vine maple	*Acer circinatum*	FAC-
snowberry	*Symphoricarpos albus*	FACU
Herbs		
bracken fern	*Pteridium aquilinum*	FACU
common cattail	*Typha latifolia*	OBL
giant horsetail	*Equisetum telmateia*	FACW
lady fern	*Athyrium filix-femina*	FAC
pig-a-back-plant	*Tolmiea menziesii*	FAC*
small-fruited bulrush	*Scirpus microcarpus*	OBL
soft rush	*Juncus effusus*	FACW
sword fern	*Polystichum munitum*	FACU
creeping buttercup	*Ranunculus repens*	FACW

*Key to Wetland Indicator Status codes – Northwest Region (Source: USFWS, 1988, 1993):

OBL Obligate: species that almost always occur wetlands under natural conditions (est. probability >99%).

FACW Facultative wetland : species that usually occur in wetlands (est. probability 67 to 99%), but are occasionally found in non-wetlands.

FAC Facultative: Species that are equally likely to occur in wetlands or non-wetlands (est. probability 34 to 66%).

FACU Facultative upland: species that usually occur in non-wetlands (est. probability 67 to 99%), but are occasionally found in wetlands.

UPL Upland: species that almost always occur in non-wetlands under normal conditions (est. probability >99%).

NL Not listed: species that are not listed by USFWS (1988, 1993) and are presumed to be upland species.

NI No indicator: species for which insufficient information is available to determine status, or which were not evaluated by USFWS.

\+ indicates a species that is more frequently found in wetlands

- indicates a species that is less frequently found in wetlands

* identifies a tentative assignment based upon either limited information or conflicting reviews

APPENDIX C: ASSESSMENT OF WETLAND FUNCTIONS

Washington State Wetland Rating System

Methods

The observed wetlands were rated using the Washington State Department of Ecology's *Wetland Rating System for Western Washington* (Hruby, 2004). This system was developed by Ecology to differentiate wetlands based on their sensitivity to disturbance, their significance, their rarity, our ability to replace them, and the beneficial functions they provide to society. Wetlands are categorized using the Ecology rating system according to the following criteria:

Category I wetlands represent a unique or rare wetland type; or are more sensitive to disturbance; or are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime.

Category II wetlands are difficult, though not impossible, to replace, and provide high levels of some functions.

Category III wetlands have a moderate level of function. They have been disturbed in some ways, and are often less diverse or more isolated from other natural resources in the landscape than Category II wetlands.

Category IV wetlands have the lowest levels of functions and are often heavily disturbed.

Results

See attached wetland rating forms for Wetland AB and C.

Wetland name or number AB

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

Name of wetland (if known): _____ Date of site visit: 9/28/06

Rated by Benn Burke Trained by Ecology? Yes ✓ No ___ Date of training ____

SEC: 12 TWNSHP: 32N RNGE: 7E Is S/T/R in Appendix D? Yes ___ No ___

Map of wetland unit: Figure ____ Estimated size _____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV ✓

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

Score for Water Quality Functions	3
Score for Hydrologic Functions	5
Score for Habitat Functions	8
TOTAL score for Functions	16

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

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

Summary of basic information about the wetland unit

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

Wetland name or number AB

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 A13

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 AB

	S. 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	3
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. (YES) points = 2 NO points = 0	2
S	*Add the points in the boxes above*	5
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** *(see p. 70)* 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**	multiplier 1
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	5

Comments

Wetland name or number AB

	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 ✓	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	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 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 4.5 Photo 3
S	**Total for S 1** *Add the points in the boxes above*	3
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 1
S	**TOTAL - Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	3

Comments

Wetland name or number AB

These questions apply to wetlands of all HGM classes. **Points** (only 1 score per box)

HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat

H 1. Does the wetland unit have the potential to provide habitat for many species?

H 1.1 Vegetation structure ***(see p. 72)***

Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.

____Aquatic bed
____Emergent plants
✓ Scrub/shrub (areas where shrubs have >30% cover)
____Forested (areas where trees have >30% cover)

If the unit has a forested class check if:

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

Add the number of vegetation structures that qualify. If you have:

4 structures or more	points = 4
3 structures	points = 2
2 structures	points = 1
1 structure	points = 0

Map of Cowardin vegetation classes

p55

Figure ___ photo

0

H 1.2. Hydroperiods ***(see p. 73)***

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

____Permanently flooded or inundated	4 or more types present	points = 3
____Seasonally flooded or inundated	3 types present	points = 2
____Occasionally flooded or inundated	2 types present	point = 1
✓ Saturated only	1 type present	points = 0

____ Permanently flowing stream or river in, or adjacent to, the wetland
____ Seasonally flowing stream in, or adjacent to, the wetland
____ ***Lake-fringe wetland = 2 points***
____ ***Freshwater tidal wetland = 2 points***

Map of hydroperiods

Figure 2 USGS Map

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
(5 - 19 species)	points = 1
< 5 species	points = 0

List species below if you want to:

1

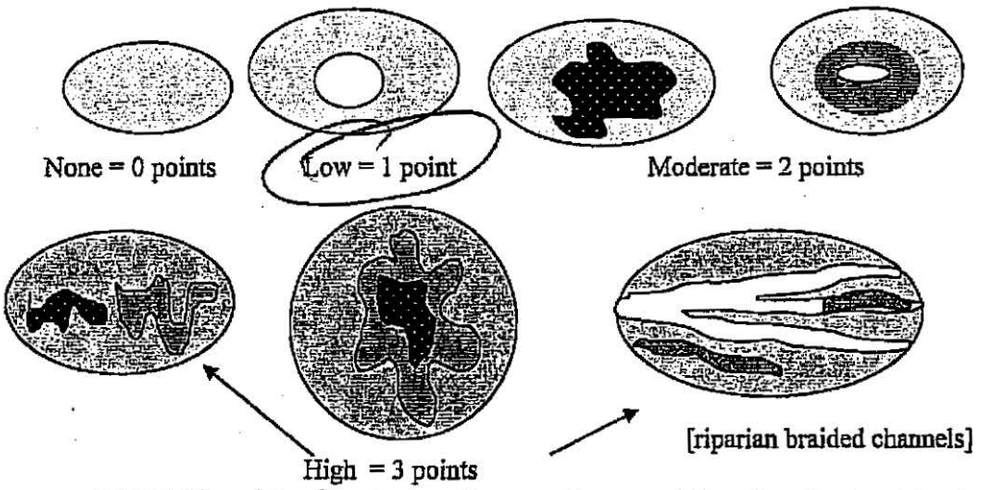
Total for page 1

Wetland name or number AB

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

Figure 3

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.



1

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

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

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

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*

____Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

0

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

2

Comments

Wetland name or number AB

H 2. Does the wetland unit have the opportunity to provide habitat for many species?

H 2.1 Buffers *(see p. 80)*

Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

✓ Buffer does not meet any of the criteria above. **Points = 1**

Aerial photo showing buffers

Figure ___ SEL Figure 8

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

Wetland is in a regularly disturbed and maintained power line corridor

Total for page 2

Wetland name or number A3

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

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

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

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1

Wetland name or number AB

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*	6
TOTAL for H 1 from page 14	2
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	8

Wetland name or number C

WETLAND RATING FORM – WESTERN WASHINGTON

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

Name of wetland (if known): _____ Date of site visit: 9/28/06

Rated by Brad Burke Trained by Ecology? Yes ✓ No ___ Date of training ____

SEC: 12 TWNSHP: 32N RNGE: 7E Is S/T/R in Appendix D? Yes ___ No ___

Map of wetland unit: Figure ____ Estimated size _____

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I___ II___ III___ IV ✓

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

Score for Water Quality Functions	3
Score for Hydrologic Functions	8
Score for Habitat Functions	9
TOTAL score for Functions	20

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply ✓

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

Summary of basic information about the wetland unit

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

Wetland name or number C

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 C

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 – 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 C

	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 ✓	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	0
S	S 1.3 Characteristics of the vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that best fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 inches.* Dense, uncut, herbaceous vegetation > 90% of the wetland area points = 6 Dense, uncut, herbaceous vegetation > 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 1 prob 3
S	**Total for S 1** *Add the points in the boxes above*	3
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 upslope is mature 2nd growth forest — 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 1
S	**TOTAL - Water Quality Functions** Multiply the score from S1 by S2 ***Add score to table on p. 1***	3

Comments

Wetland name or number C

	Slope Wetlands HYDROLOGIC FUNCTIONS – Indicators that the wetland unit functions to reduce flooding and stream erosion	Points (circle one 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	6
S	S 3.2 Characteristics of slope wetland that holds back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area. YES points = (2) Several small depressions NO points = 0	2
S	*Add the points in the boxes above*	8
S	**S 4. Does the wetland have the opportunity to reduce flooding and erosion?** Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following conditions apply.* — Wetland has surface runoff that drains to a river or stream that has flooding problems — Other_____ *(Answer NO if the major source of water is controlled by a reservoir (e.g. wetland is a seep that is on the downstream side of a dam)* **YES** multiplier is 2 (NO) multiplier is 1	*(see p. 70)* multiplier 1
S	**TOTAL - Hydrologic Functions** Multiply the score from S 3 by S 4 ***Add score to table on p. 1***	8

Comments

Wetland name or number C

These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the potential to provide habitat for many species?	
H 1.1 Vegetation structure *(see p. 72)* *Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres.* ____Aquatic bed ____Emergent plants ____Scrub/shrub (areas where shrubs have >30% cover) ____Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ____The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* 4 structures or more points = 4 3 structures points = 2 2 structures points = 1 1 structure points = 0 ✓ Map of Cowardin vegetation classes PSS All blackberry dominated	Figure 1 photo 0
H 1.2. Hydroperiods *(see p. 73)* *Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods)* ____Permanently flooded or inundated 4 or more types present points = 3 ____Seasonally flooded or inundated 3 types present points = 2 ____Occasionally flooded or inundated 2 types present point = 1 __✓__Saturated only 1 type present points = 0 __✓__Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____***Lake-fringe wetland* = 2 points** ____***Freshwater tidal wetland* = 2 points** Map of hydroperiods	Figure 2 USGS map 1
H 1.3. Richness of Plant Species *(see p. 75)* Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: ~~> 19 species~~ points = 2 *List species below if you want to:* 5 - 19 species points = 1 ~~< 5 species~~ points = 0	1

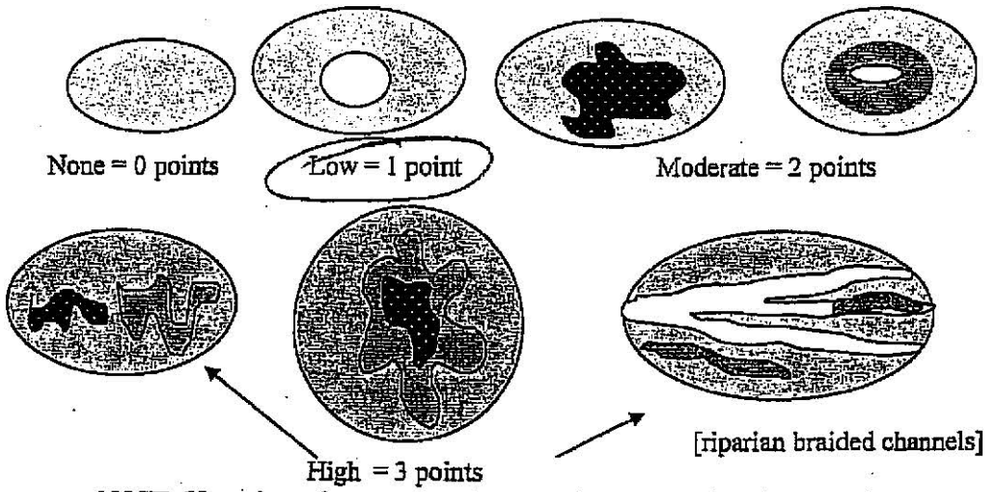
Total for page 2

Wetland name or number C

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

Figure 1

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.



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

1

H 1.5. Special Habitat Features: *(see p. 77)*

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

____Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

____Standing snags (diameter at the bottom > 4 inches) in the wetland

____Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

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

____At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)*

____ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% stated in early printings of the manual on page 78 is an error.

0

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

3

Comments

→ Dense blackberry dominated seep under power lines. Regularly "maintained" to manage vegetation.

Wetland name or number C

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."

Figure 2 SCL map

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5**

— 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4**

— 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3**

— 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3**

If buffer does not meet any of the criteria above

— No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2**

— Heavy grazing in buffer. **Points = 1**

— Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0.**

— Buffer does not meet any of the criteria above. **Points = 1**

Aerial photo showing buffers

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**

Total for page 2

→ Wetland is in regularly disturbed and maintained power line corridor

Wetland name or number C

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

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

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

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

____**Aspen Stands:** Pure or mixed stands of aspen greater than 0.8 ha (2 acres).

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

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

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

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

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

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

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

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

1

____**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 C

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*	6
TOTAL for H 1 from page 14	3
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	9

APPENDIX D: WETLAND DETERMINATION DATA SHEETS

upland

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: SR530/Stagtund Hill — Date: September 28, 2006
Applicant/owner: Seattle City Light — County: Snohomish
Investigator(s): Beau Burke / Steve Krueger — State: WA
S/T/R: SW¼-S12, T32N, R7E

Do Normal Circumstances exist on the site? (yes) no
Is the site significantly disturbed (atypical situation)? yes (no)
Is the area a potential Problem Area? (yes) no
Explanation of atypical or problem area: Old slide area

Community ID:
Transect ID:
Plot ID: DP-1

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus Bifrolor	S	50%	FACU				
Equisetum telmateia	H	30%	FACW				
Thuja plicata	T	30%	FAC				
Acer Circinatum	S	10%	FAC-				
Acer macrophyllum	T	20%	FACU				
Polystichum munitum	H	30%	FACU				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 33%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? yes (no)
Rationale for decision/Remarks: DP-1 has only 33% FAC or wetter plant species. Upland plants dominant.

HYDROLOGY

Is it the growing season? (yes) no
Time of year
Based on: ____ soil temp (record temp ____) other (explain) Time of year

Dept. of inundation: 0 inches
Depth to free water in pit: N/A inches
Depth to saturated soil: N/A inches

Water Marks: yes (no) on
Drift Lines: yes (no)
Sediment Deposits: yes (no)
Drainage Patterns: yes (no)
Oxidized Root (live roots) Channels <12 in. yes (no)
Local Soil Survey: yes (no)
FAC Neutral: yes no
Water-stained Leaves yes (no)

Check all that apply & explain below:
Stream, Lake or gage data: N/A
Aerial photographs: Other:

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks: Upper portion of slope leading to wetland areas. Precipitation only source of water to site.

SOILS

Map Unit Name Tekoa-Uniontown Gravelly loam Drainage Class _____
(Series & Phase) 26-65%- Slopes
Field observations confirm mapped type? Yes (No) Side area
Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell. moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-18"		5Y 4/1	None	None	clay loam	

Hydric Soil Indicators: (check all that apply)

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ✓ Gleyed or Low-Chroma (=1) matrix
- ✓ Matrix chroma ≤ 2 with mottles
- ___ Mg or Fe Concretions
- ___ High Organic Content in Surface Layer of Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on National/Local Hydric Soils List
- ___ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks: Low chroma matrix indicative of wetland soils. On edge of mature slide area.

Wetland Determination (circle)

Hydrophytic vegetation present?	yes	(no)		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	yes (no)
Wetland hydrology present?	yes	(no)		

Rationale/Remarks: Only hydric soil indicators were present during site visit.

NOTES:

Wetland Plot

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: SR 530 / Skaglund Hill	Date: September 28, 2006
Applicant/owner: Seattle City Light	County: Snohomish State: WA
Investigator(s): Steve Krueger / Ben Burke	S/T/R: 20/4-S12, T32N, R7E
Do Normal Circumstances exist on the site? (yes) no Is the site significantly disturbed (atypical situation)? yes (no) Is the area a potential Problem Area? (yes) no Explanation of atypical or problem area: Old slide area	Community ID: Transect ID: Plot ID: DP-2

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Athyrium filix-femina	H	50	FAC+				
Scirpus microcarpus	H	30	OBL				
Typha latifolia	H	30	OBL				
Rubus armeniacus	S	60	FACU				
Equisetum telmateia	H	80	FACW				
Rubus spectabilis	S	25	FAC+				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 83%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
Morphological adaptations	____	Wetland plant database	____
Technical Literature	____	Personal knowledge of regional plant communities	____
		Other (explain)	

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks: Hydrophytic veg is dominant with two species being obligate. Wetland occurs in a regularly maintained powerline corridor. All veg regularly cut.

HYDROLOGY

Is it the growing season? (yes) no		Water Marks: yes (no) on	Sediment Deposits: yes (no)
Based on: ____ soil temp (record temp ____) other (explain) Time of year		Drift Lines: yes (no)	Drainage Patterns: (yes) no
Dept. of inundation: 0 inches		Oxidized Root (live roots) Channels <12 in (yes) no	Local Soil Survey: yes (no)
Depth to free water in pit: >16 inches Depth to saturated soil: 0 inches surface		FAC Neutral: yes no	Water-stained Leaves yes (no)
Check all that apply & explain below: Stream, Lake or gage data: N/A Aerial photographs: N/A Other:		Other (explain):	

Wetland hydrology present? (yes) no
Rationale for decision/Remarks: Drainage patterns present throughout wetland areas correlated by channelization patterns on slope. Some areas likely inundated for a portion of the year during the wet season. Those areas were only saturated to the surface during the site visit.

SOILS

Map Unit Name (Series & Phase) Tokul-Winston gravelly loam, 25-65% slopes

Drainage Class _____

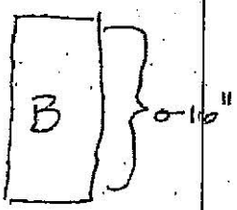
Field observations confirm mapped type? Yes No

Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.
0-16"	B	5Y 4/1	10YR 4/4	many distinct large	Clay loam

Drawing of soil profile (match description)



Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ____ Gleyed or Low-Chroma (=1) matrix
- ✓ Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks: Low chroma color indicative of hydric soils. Area appears to have been subject to historic disturbance activity

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes) no
Wetland hydrology present?	(yes)	no		

Rationale/Remarks: All three wetland indicators were met.

NOTES: Wetland is located within a regularly disturbed powerline corridor.

Upland Plot

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: SR 530 / Skagland Hill	Date: September 28, 2004
Applicant/owner: Seattle City Light	County: Snohomish State: WA
Investigator(s): Bern Burke / Steve Krueger	S/T/R: SW¼ S12, T32N, R7E
Do Normal Circumstances exist on the site? (yes) no Is the site significantly disturbed (atypical situation)? yes (no) Is the area a potential Problem Area? (yes) no Explanation of atypical or problem area: Old Glade Creek	Community ID: Transect ID: Plot ID: DP-3

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Rubus parviflorus	S	60	FAC-	Pteridium aquilinum	H	40	FACU
Rubus spectabilis	S	40	FAC+				
Polystichum munitum	H	20	FACU				
Equisetum telmateia	H	40%	FACW				
Rubus discolor	S	10	FACU				
Tsuga heterophylla	H	30	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 50%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation	____	Physiological/reproductive adaptations	____
Morphological adaptations	____	Wetland plant database	____
Technical Literature	____	Personal knowledge of regional plant communities	____
		Other (explain)	____

Hydrophytic vegetation present? yes (no)
Rationale for decision/Remarks: Less than 50% dominants OBL, FACW, and FAC.

HYDROLOGY

Is it the growing season? (yes) no

Based on: Time of year soil temp (record temp _____) other (explain)

Dept. of inundation: 0 inches	Water Marks: yes (no) on	Sediment Deposits: yes (no)
Depth to free water in pit: >18 inches	Drift Lines: yes (no)	Drainage Patterns: yes (no)
Depth to saturated soil: ____ inches	Oxidized Root (live roots) Channels <12 in. yes (no)	Local Soil Survey: yes no
	FAC Neutral: yes no	Water-stained Leaves yes no

Check all that apply & explain below:
Stream, Lake or gage data: N/A
Aerial photographs: N/A Other:

Other (explain):

Wetland hydrology present? yes (no)
Rationale for decision/Remarks:

SOILS

Map Unit Name Tokul-Olympic Gravelly Loam Drainage Class _____
(Series & Phase) 25-65 percent slopes

Taxonomy (subgroup) _____ Field observations confirm mapped type? Yes (No) Slide area

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell. moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-8"		5YR 4/1	10YR 4/4	Few Fant Indistinct	Clay loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ✓ Gleyed or Low-Chroma (=1) matrix
- ✓ Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks: Based on low-chroma color indicates hydric soil conditions. Area appears to have been subject to historical slide activity

Wetland Determination (circle)

Hydrophytic vegetation present?	yes	(no)		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	yes (no)
Wetland hydrology present?	yes	(no)		

Rationale/Remarks: All three wetland indicators were not met. Only soils were a positive wetland indicator due to low matrix chromes and some mottling.

NOTES:

Wetland Plot

DATA FORM 1 *(Revised)*
Routine Wetland Determination
(WA State Wetland Delineation Manual or
1987 Corps Wetland Delineation Manual)

Project/Site: SR 530 / Skagit Hill — Date: September 28, 2006
Applicant/owner: Seattle City Light — County: Snohomish
State: WA
Investigator(s): Bean Burke / Steve Krueger — S/T/R: SW/4 S12, T32N R7E
Do Normal Circumstances exist on the site? (yes) no — Community ID:
Is the site significantly disturbed (atypical situation)? yes (no) — Transect ID:
Is the area a potential Problem Area? (yes) no — Plot ID: DP-4
Explanation of atypical or problem area: Old slide area.

VEGETATION (For strata, indicate T = tree; S = shrub; H = herb; V = vine)

Dominant Plant Species	Stratum	% cover	Indicator	Dominant Plant Species	Stratum	% cover	Indicator
Salmon Malanocarpus	H	50	OBL				
Rubus discolor	S	40	FACU				
Equisetum palmatella	H	50	FACW				
Juncus effusus	H	25%	FACW				
Pteridium aquilinum	H	30	FACU				
Alnus rubra	T	40	FAC				

HYDROPHYTIC VEGETATION INDICATORS:

% of dominants OBL, FACW, & FAC 67%

Check all indicators that apply & explain below:

Visual observation of plant species growing in areas of prolonged inundation/saturation ____
Morphological adaptations ____
Technical Literature ____
Physiological/reproductive adaptations ____
Wetland plant database ____
Personal knowledge of regional plant communities ____
Other (explain) ____

Hydrophytic vegetation present? (yes) no
Rationale for decision/Remarks: > 50% of dominant species are OBL FACW and FAC

HYDROLOGY

Is it the growing season? (yes) no
Based on: ____ soil-temp (record temp ____) other (explain) Time of year

Water Marks: yes (no) — Sediment Deposits: yes (no)
Drift Lines: yes (no) — Drainage Patterns: (yes) no
Dept. of inundation: 0 inches — Oxidized Root (live roots) Channels <12 in. yes no — Local Soil Survey: yes (no)
Depth to free water in pit: >18 inches — FAC Neutral: yes no — Water-stained Leaves yes (no)
Depth to saturated soil: 0 inches To surface

Check all that apply & explain below:
Stream, Lake or gage data: N/A
Aerial photographs: N/A Other:
Other (explain):

Wetland hydrology present? (yes) no
Rationale for decision/Remarks: Sep's surface water drainage evident throughout site as evidenced by channelization cuts along slope.

SOILS

Map Unit Name Tokul-Ulmshan Gravelly Loam (Series & Phase) 25-65% slopes

Drainage Class _____

Field observations confirm mapped type? Yes (No) Side area

Taxonomy (subgroup) _____

Profile Description

Depth (inches)	Horizon	Matrix color (Munsell moist)	Mottle colors (Munsell. moist)	Mottle abundance size & contrast	Texture, concretions, structure, etc.	Drawing of soil profile (match description)
0-18	A/B	5Y 4/1	5YR	10 A	Clay loam	

Hydric Soil Indicators: (check all that apply)

- ____ Histosol
- ____ Histic Epipedon
- ____ Sulfidic Odor
- ____ Aquic Moisture Regime
- ____ Reducing Conditions
- ✓ Gleyed or Low-Chroma (=1) matrix
- ✓ Matrix chroma ≤ 2 with mottles
- ____ Mg or Fe Concretions
- ____ High Organic Content in Surface Layer of Sandy Soils
- ____ Organic Streaking in Sandy Soils
- ____ Listed on National/Local Hydric Soils List
- ____ Other (explain in remarks)

Hydric soils present? (yes) no

Rationale for decision/Remarks: Based on low chroma and presence of hydric soils. Area appears to have been subject to historic disturbance

Wetland Determination (circle)

Hydrophytic vegetation present?	(yes)	no		
Hydric soils present?	(yes)	no	Is the sampling point within a wetland?	(yes) no
Wetland hydrology present?	(yes)	no		

Rationale/Remarks: All three wetland criterion were met.

NOTES: