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Sensitive Area Study, Buffering Averaging Plan &  
Wildlife Analysis, Wetland Resources, Inc.

February 24, 2014, revised May 6, 2014

**SENSITIVE AREA STUDY,  
BUFFER AVERAGING PLAN  
AND  
WILDLIFE ANALYSIS**

**For**

**THE VILLAGES MPD PHASE 2 PLAT C**

*Wetland Resources, Inc. Project #08035*

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February 24, 2014  
Revision 1: May 6, 2014



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- VICINITY MAP
- FIELD DATA SHEETS
- DOE WETLAND RATING FORMS
- WILDLIFE HABITAT ASSESSMENT REPORT
- CITY OF BLACK DIAMOND – AUGUST 22, 2013 - WETLAND E1 CLASSIFICATION APPROVAL MEMORANDUM
- OCTOBER 15, 2013 WRI MEMORANDUM REGARDING THE REVISED RATING FORM FOR WETLAND E1
- CITY OF BLACK DIAMOND BEST AVAILABLE SCIENCE REPORT

## INTRODUCTION

Pursuant to Section 8.2.1 of The Villages MPD Development Agreement, dated December 12, 2011 ("DA") and BDMC Chapter 19.10 as set forth in Exhibit E to the DA, *Wetland Resources, Inc.* ("WRI") was asked to confirm the categories and buffers of the wetlands that are on, or are adjacent to the Villages MPD Phase 2 Plat C site. The initial wetland investigation for the Phase 2 Plat C site was conducted in April of 2008, with a more recent evaluation conducted on November 1, 2013.

Based on the original delineation conducted in April of 2008 and the November 1, 2013 site visit, three Category III wetlands (Wetlands E7, E8, and E10), one Category II wetland (Wetland E1), one Category I wetland (a portion of the Core Wetland Complex - Wetland TOS), and one Category IV wetland (Wetland 213) are located within or adjacent to the Phase 2 Plat C site. A list of the delineated wetlands, ratings, and associated required buffers is included in Table 5 below.

## SITE DESCRIPTION

The Villages MPD Phase 2 Plat C site is located approximately 1.3 miles west of the intersection of Roberts Drive and SR 169, south of Roberts Drive. The preliminary plat site is located generally within the southeast quarter and portions of the southwest quarter of Section 15, Township 21 North, Range 6 East, and includes very limited areas of the northwest quarter of the northeast quarter of Section 22, Township 21 North, Range 6 East, all within the City limits of Black Diamond, Washington. The preliminary plat is situated on approximately 136 acres consisting of the following King County Tax Parcels: 152106-9108, 152106-9096 and 222106-9004. Topography undulates with alternating swaths of uplands and lowlands and generally trends toward an east aspect. There is a logging road system on this site that is used by unauthorized off-road vehicle (ORV) users, pedestrians and pets. No existing structures exist within the boundary of the Phase 2 Plat C site. Most of the site and surrounding land has consisted of managed forest plantations for decades, which was most recently logged in the late 70's to early 80's. Due to this forest management activity, the site is typically forested with an even-aged stand of Douglas fir and a low lying, native understory.

There are six wetlands located on and in the vicinity of the proposed development area of the Phase 2 Plat C site. They were identified and delineated using the US Army Corps of Engineers methodology and reevaluated under the U.S. Army Corps of Engineers' Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0, 2010). Pursuant to Section 8.2.1 of The Villages MPD DA, the wetland delineations as outlined in the Constraints Map (Exhibit G to the DA) are deemed final and complete through the term of the DA. Wetlands have been designated and rated per BDMC §19.10.210; buffers have been determined based on BDMC §19.10.230.

Six wetlands were identified within or partially within the boundary of, the proposed Phase 2 Plat C site: Wetlands E1, E7, E8, E10, TOS and 213. Wetland E1 is a Category II with a 110-foot buffer in its northern basin and a 225-foot buffer in its southern basin (as noted on the preliminary plat drawings).<sup>1</sup> Wetlands E7, E8, and E10 are Category III wetlands with a 110-foot designated buffer. (DOE, Black Diamond classifications). Wetland TOS is part of the Core Wetland Complex identified within BDMC §19.10.230 and is therefore a Category I wetlands with a designated 225-foot protective buffer. Lastly, Wetland 213 is a Category IV wetland with a 40-foot designated buffer.

### PROJECT DESCRIPTION

The Applicant proposes to subdivide 3 existing tax parcels (152106-9108, 152106-9096 and 222106-9004) into 203 lots and 5 Future Development Tracts under the provisions of Title 17 of the Black Diamond Municipal Code as set forth in Exhibit E of The Villages MPD DA. Twenty additional tracts are provided to allow for utility, access, parks and open space uses, and sensitive areas. Located within these three tax parcels are two Villages MPD Development Parcels (V28 and V29). The total preliminary plat, identified as The Villages MPD Phase 2 Plat C, comprises approximately 136 acres.

The 203 lots will range from a minimum size of 3,150 sf to a maximum size of 8,547 sf. The average lot size is 4,528 sf. The plat's 203 lots are comprised entirely of detached single-family, alley, and front-loaded lots.

No impacts to wetlands will occur as part of this Phase 2 Plat C development proposal. BDMC §19.10.130(D)(7) requires that sensitive area studies contain "a description of reasonable efforts made to apply mitigation in the order of preference as stipulated in BDMC §19.10.050." Mitigation sequencing described in this section of the code describes the overall hierarchy of how development should be designed to "avoid, minimize, and/or restore" adverse impacts to sensitive areas. Phase 2 Plat C site was designed specifically to avoid all impacts to all sensitive areas, and therefore meets the mitigation sequencing requirements of BDMC §19.10.130(D)(7). Buffer averaging is also proposed per the requirements of BDMC §19.10.230(H), which allows "modification to the standard buffer width in accordance with an approved sensitive area report and the best available science on a case-by-case basis..." Per BDMC §19.10.230(H), buffer averaging is considered a modification of the standard buffer width and is not considered an impact to wetlands and their associated buffers.

### BUFFER AVERAGING

The Applicant proposes to buffer average adjacent to Wetland E1. Specifically 2,117 square feet of buffer averaging (reduction) will occur on the back of lots 168-169, 175-178,

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<sup>1</sup> The City reviewed and approved the Class II designation for Wetland E1 on August 22, 2013 (the approval is attached to this report for your ease of reference).

184-191, and 194-196. As compensation, 27,950 square feet of buffer averaging (addition) will occur on the back of lots 149-168, 173-175, 178-184, 196-203.

Per the requirements established in BDMC §19.10.230(H)(1), "Averaging of buffer widths may only be allowed where a qualified professional wetland scientist demonstrates that:

- a) The wetland contains variations in sensitivity due to existing physical characteristics or the character of the buffer varies in slope, soils, or vegetation and the wetland would benefit from a wider buffer in places and would not be adversely impacted by a narrower buffer in other places;

*Wetland E1 and its associated buffer contain clear variations in sensitivity due to past logging activities on the site. Examples of this variation in sensitivity are the frequently used and maintained gravel road located on the northern portion of Wetland E1 and the less frequently used and unmaintained logging roads that cross the wetland. These intrusions create a slightly higher degree of sensitivity from the dense naturally vegetated buffer areas adjacent to the other portion of Wetland E1. Additional buffer is partially provided in areas where the buffer has been significantly reduced (BDMC §19.10.230(E)) by the presence of the aforementioned existing gravel road. By providing buffer in the area of the existing gravel road, the wetland will be better protected and the potential impacts associated with the gravel road will be removed. The maximum width reduction associated with the buffer averaging is 8 feet out of the 110-foot designated buffer. Given the density of vegetation in these areas the wetland will not be adversely impacted by a narrower buffer.*

- b) Buffer averaging will not reduce wetland functions or functional performance;

*By providing a wider buffer in areas where currently little to no buffer exists, the protection to the wetland will be increased and therefore it is expected that at minimum the wetland functions will be maintained and likely increased. The area of buffer averaging (reduction) is a maximum of 8-feet in width and is densely vegetated. By providing additional buffer at such a high ratio, the potential impacts associated with the minor reduction in buffer width will be more than adequately mitigated.*

- c) The total area contained in the buffer area after averaging is no less than that which would be contained within the standard buffer, and all increases in buffer dimension for averaging are generally parallel to the wetland edge;

*Buffer averaging (reduction) is 2,117 square feet and buffer averaging (addition) is 27,950 square feet, which is a net increase in buffer area of 25,833 sq. feet. The proposed increases in buffer width are all parallel to the wetland edge.*

- d) The buffer width at its narrowest point is not reduced to less than 50 percent (50%) of the standard width and in no case less than thirty-five (35) feet.

*At its narrowest point the averaged buffer width is approximately 102 feet wide, which equates to ninety-three percent (93%) of the standard required 110-foot buffer.*

The proposed buffer averaging described above clearly meets the criteria established in BDMC §19.10.230(H)(1) and will result in a better protected wetland which will function at a higher level in the long term.

Equivalent functions will be provided through buffer averaging by meeting or exceeding the guidelines established in BDMC 19.10.230(H) and the Ecology guidance in Wetlands in Washington State, Volume 2, Guidance for Protecting and Managing Wetlands. The City of Black Diamond Best Available Science Review and Recommendations for Code update is silent on buffer averaging with the exception of referencing the aforementioned DOE document.

Equivalent functions and values are provided as follows:

- The buffer reduction areas are a maximum of 8 feet in width in an area that is densely vegetated. Densely vegetated buffers are known to provide the maximum protection to their critical areas, specifically water quality, hydrologic functions and wildlife habitat. Impacts to these functions will be de minimis from the small, proposed intrusion.
- Portions of the additional buffer area are located adjacent to the existing, frequently used gravel roads, which significantly reduced the standard buffer width. These portions of the road will be decommissioned, allowing the buffer to function naturally.
- The Applicant is proposing a greater than 12:1 ratio for buffer averaging rather than the 1:1 required per BDMC 19.10.220(H). This provides an increase in permanently protected buffer area of 24,105 square feet.

#### **WETLAND RECHARGE/WATER BALANCE**

The project engineer (Triad Associates) has evaluated the existing undeveloped discharge rates to the on-site wetland areas as compared to the post developed discharge rates and has devised a solution to maintain the hydrology in its existing condition. The following is an excerpt from the project engineer's Phase 2 Plat C Preliminary Drainage Analysis dated November 8, 2013, specific to the wetland *recharge/water balance*:

*Per the requirements of The Villages Development Agreement at Section 7.4.3, the hydrology of the wetlands within and bordering the preliminary plat site will be maintained. Runoff from roof-tops will be routed to the Wetland TOS and Wetland E1 to approximately match the annual average volume of runoff that is generated by the existing forested site condition. For the portion of the preliminary plat site draining to Wetland TOS, in Stormwater Management Zone 2, only runoff from roofs will be used for wetland recharge to*

maintain hydrology. In Stormwater Management Zone 1C runoff from pervious areas can be used along with roof top runoff as required to maintain the wetland hydrology of Wetland E1 since Wetland E1 is not tributary to Lake Sawyer. Stormwater will be discharged into the wetland buffers via a flow dispersal trench per City of Black Diamond standard drawing SD-15 in City of Black Diamond Engineering Design and Construction Standards dated 2009.

For the purposes of wetland hydrology calculations, average annual rainfall along with runoff, evapotranspiration and recharge volumes from various land coverage types were taken from Appendix D of the FEIS, the Environmental Impact Statement Technical Report on Geology, Soils, and Ground Water for The Villages dated September 26, 2008, prepared by Associated Earth Sciences, Inc. (See the Table 1 below).

**TABLE 1: Average Annual Volumes by Land Cover**

	Precipitation (FT)	Evapotranspiration (ACFT/AC)	Recharge (ACFT/AC)	Runoff (ACFT/AC)
Outwash Forest	4.50	1.59	2.92	0.00
Till Forest	4.50	1.59	1.39	1.52
Outwash Grass	4.50	1.41	2.91	0.18
Till Grass	4.50	1.41	1.39	1.70
Impervious	4.50	0.69	0.00	3.81

Wetland recharge calculations seek to match the annual average runoff volume for developed areas tributary to wetlands between the existing forested condition and the developed condition. The average annual volume to the wetlands is assumed to consist of runoff from the existing till forest area to be developed. Recharge from the till forest areas are assumed to reach the lower aquifer and not the wetland and are therefore not included in the wetland recharge calculation. Using AESI's table, the volume of runoff that these areas would produce in the forested condition were calculated for the area to be developed.

**TABLE 2: Existing Conditions Tributary to Wetland**

	Area To be Dev. (AC)	Recharge (ACFT)	Runoff (ACFT)	Total Volume (ACFT)
Outwash Forest	0	0	0.00	0

Till Forest	14.9	0	22.65	22.65
<b>Total</b>	<b>14.9</b>	<b>0</b>	<b>22.65</b>	<b>22.65</b>

**TABLE 3: Existing Conditions Tributary to Wetland E1**

	<b>Area To be Dev. (AC)</b>	<b>Recharge (ACFT)</b>	<b>Runoff (ACFT)</b>	<b>Total Volume (ACFT)</b>
Outwash Forest	0	0	0.00	0
Till Forest	11.7	0	17.78	17.78
<b>Total</b>	<b>11.7</b>	<b>0</b>	<b>17.78</b>	<b>17.78</b>

**TABLE 4: Equivalent Impervious Area**

<b>Basin</b>	<b>Basin Area acres</b>	<b>Forested Runoff Volume ac-ft</b>	<b>Equivalent Impervious Area ac</b>	<b>Stormwater Management Zone</b>
Wetland TOS	14.9	22.65	5.95	2
Wetland E1	11.7	17.78	4.67	1C

*Runoff will be routed to the wetlands via flow dispersal trenches connected to roof tops. The wetland recharge calculations determined an equivalent area of impervious surfaces that would be required to match the annual average runoff volume entering tributary wetlands. Per the City of Black Diamond Engineering Design and Construction Standards, detail SD-15 for flow dispersal trenches, a single trench can disperse a maximum of 0.5 cfs. The number of trenches required was determined based on the peak flow of the areas routed to each wetland. According to StormSHED, an SBUH hydrologic modeling program, 1 acre of impervious surfaces produces 1.0 cfs of flow during a 100-year rainfall event. Therefore 2 trenches will be required for every equivalent acre of impervious area being routed to the wetlands.*

Based on review of the Water Recharge/Water Balance analysis prepared by Triad Associates (excerpted above), it is the opinion of WRI that there will not be a significant adverse impact to the hydrology of the on-site wetlands from the development of the Villages Phase 2 Plat C project.

**BEST AVAILABLE SCIENCE REVIEW**

The primary source of Best Available Science (BAS) used for this report was the City of Black Diamond Sensitive Areas Ordinance, Best Available Science Review, and Recommendations for Code Update, 2008, prepared by Parametrix, Bellevue, Washington, September 2008 (attached). Additional sources of BAS used in preparation of this Sensitive Area Report are cited in the "Reference Section" of this document. The assumption used by WRI is that the information provided in the City of Black Diamond BAS document summarizes existing Best Available Science Resources as they relate to sensitive areas within the City.

#### WETLAND CLASSIFICATIONS - COWARDIN SYSTEM

The Cowardin System is a comprehensive wetland and deepwater habitat classification system that was developed for the U.S. Fish and Wildlife Service. It is recognized nationally as a standard system for classifying vegetation in wetlands.

There are several questions in the Department of Ecology (DOE) Wetland Rating Form for Western Washington that requires classifying vegetation based on the Cowardin System. Therefore, in addition to classifying wetlands according to the City of Black Diamond requirements, the wetlands on and in the vicinity of the Phase 2 Plat C site have been classified according to the Cowardin System. The Cowardin System is described in Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). Classifications for the wetlands on and in the vicinity of the Phase 2 Plat C site are as follows:

##### **Wetlands E7, E8, and E10**

Palustrine, Forested Wetland Needle Leaved Evergreen, Saturated (PFOB)

##### **Wetland E1**

Palustrine, Forested Wetland, Broad-leaved Deciduous, Seasonally Flooded/Saturated (PFOE)

##### **Wetland TOS**

Palustrine, Scrub-shrub Wetland, Broad-leaved Deciduous, Seasonally Flooded/Saturated (PSSC)

##### **Wetland 213**

Palustrine, Forested Wetland Needle Leaved Evergreen, Saturated (PFOB)

#### WETLAND CLASSIFICATIONS – CITY OF BLACK DIAMOND

In February 2009, the City of Black Diamond adopted an updated Sensitive Areas Ordinance (SAO), Chapter 19.10. Per the City's SAO, the wetlands on the Phase 2 Plat C site shall be classified according to the Washington State Wetland Rating System for

Western Washington, revised August 2004 (Ecology Publication #04-06-025). Regulated buffers are determined using BDMC §19.10.230.

The City's recently updated SAO places a higher priority on habitat, which is reflected in buffer widths. Because of this, WRI visited the project site to verify wetland classifications and habitat scores according to the Department of Ecology (DOE) Wetland Rating Forms. The wetland classifications and regulated buffers for the wetlands identified on and in the vicinity of this project site are as follows:

**Category IV Wetland**  
**Wetland 213**

This wetland received a total score of 28 points for functions, with greater than 20 and less than 29 points for habitat functions, on the DOE Wetland Rating Form and therefore classifies as a Category IV wetland. In the City of Black Diamond, the protective buffer width for all Category IV wetlands is **40 feet** per BDMC §19.10.230(D).

**Category III Wetlands**  
**Wetlands E7, E8, and E10**

These wetlands received total scores between 30-50 points for functions, with greater than 20 and less than 29 points for habitat functions, on the DOE Wetland Rating Form and therefore classify as Category III wetlands. In the City of Black Diamond, the protective buffer width for these Category III wetlands with a moderate habitat score is **110 feet** per BDMC §19.10.230(D).

**Category II Wetland**  
**Wetland E1**

Wetland E1 classifies as a Category II wetland with a total score of 57 points, including a habitat score of 27 points. In the City of Black Diamond, the protective buffer width for Category II wetlands is **110 feet** per BDMC §19.10.230(D). The category and habitat score for Wetland E1 was field verified by Perteet during an August 16, 2013 site visit and documented in WRI's October 15, 2013 letter that was submitted to the City of Black Diamond and is currently undergoing review by the City. The October 15, 2013 letter is attached hereto for your ease of reference.

**Category I Wetland**  
**Wetland TOS**

Wetland TOS classifies as a Category I wetland with a total score of 91 points, including a habitat score of 31 points. In addition, Wetland TOS is directly connected to and mapped as part of the Core Wetland Complex (Core). In the City of Black Diamond, the protective buffer of Core wetlands is **225 feet** per BDMC §19.10.230(B).

TABLE 5: Wetland Information

Wetland	Wetland Size Acres (Sq. ft.)	HGM Class	City of BD Classification	Total Score*	Habitat Score*	Buffer**
E7	0.09 (3,781)	Depressional	Category III	44	24	110'
E8	0.07 (2,939)	Depressional	Category III	41	21	110'
E10	0.10 (4,234)	Depressional	Category III	41	21	110'
E1	11.2 (488,401)	Depressional	Category II	57	27	110'
TOS	>50 Acres	Depressional	Core Complex Category I	91	31	225'
213	0.05 (2,156)	Depressional	Category IV	28	21	40'

\* Total Score and Habitat Score are from the *Washington Wetland Rating System for Western Washington, Revised*, Washington State Department of Ecology. August 2004 (Publication #04-06-025).

\*\*Buffers are based on BDMC §19.10.230(D)

## WETLAND DETERMINATION REPORT

### Methods

The methods used for classifying and rating the wetlands in the Phase 2 Plat C project area are consistent with current City of Black Diamond code requirements as set forth in Exhibit E to The Villages MPD Development Agreement.

WRI conducted a site visit on November 1, 2013, to verify previously delineated wetlands occurring within the boundary of the Phase 2 Plat C site. Wetland conditions were evaluated using the on-site, routine methodology described in the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), (referred as 2010 Regional Supplement) as required by the City of Black Diamond. In general, wetland delineation consisted of two tasks: (1) assessing vegetation, soil, and hydrologic characteristics to identify areas meeting the wetland identification criteria, and (2) mapping wetland boundaries using aerial photography and existing survey information.

The following criteria descriptions were used in the boundary determinations:

## Vegetation Criteria

### *Wetland Vegetation Criteria*

The 2010 Regional Supplement defines hydrophytic vegetation as "the community of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to exert a controlling influence of the plant species present." Field indicators were used to determine whether the vegetation meets the definition for hydrophytic vegetation.

## Soils Criteria and Mapped Description

The National Technical Committee for Hydric Soils, as described in the 2010 Regional Supplement, defines hydric soils as "a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." Field indicators were used to determine whether a given soil meets the definition for hydric soils.

The soils underlying the study area are mapped in the Soil Survey of King County Area Washington, 1973 edition, as Alderwood gravelly sandy loam, 6 to 15 percent slopes (AgC), Everett gravelly sandy loam, 15 to 30 percent slopes (EvC), Bellingham silt loam (Bh), and Seattle Muck (Sk).

The Alderwood gravelly sandy loam, 6 to 15 percent slopes (AgC) soil unit is described as rolling with irregularly shaped areas ranging from 10 to about 600 acres in size. The A-horizon ranges from very dark brown to dark brown. The B-horizon is dark brown, grayish brown and dark yellowish brown. Permeability is moderately rapid in the surface layer and subsoil and very slow in the substratum. Available water capacity is described as low. Included within this soil unit are the poorly drained Norma, Bellingham, Seattle, Tukwila, Shalcar soils, and Alderwood soils that have slopes gentler or steeper than 6 to 15 percent. Included soil units make up no more than 30 percent of the total acreage.

The Everett Series is made up of somewhat excessively drained soils that are underlain by very gravelly sand at a depth of 18 to 36 inches. These soils formed in very gravelly glacial outwash deposits, under conifers. In a representative profile, the surface layer and subsoil are black to brown, gravelly to very gravelly sandy loam about 32 inches thick. Soils included within this soil mapping unit make up no more than 30 percent of the total acreage. Permeability is rapid. Available water capacity is low.

The Bellingham series is made up of poorly drained soils formed in alluvium under grass and sedges. These soils are nearly level and are mostly in depressions on the upland till. In a representative profile, the surface layer is very dark brown silt loam about 11 inches thick. The subsoil is mottled grey silty clay loam about 49 inches thick. Included in this mapping were small areas of Alderwood, Everett, and Seattle soils. Total inclusions do not exceed 15 percent of the total acreage. Permeability of this soil is slow. The available water capacity is high. Bellingham and Seattle soils are included on the Hydric Soils List for Washington.

The Seattle series is made up of very poorly drained organic soils that formed in material derived primarily from sedges. These soils are in depressions and valleys on the glacial till plain and also in the river and stream valleys. Slopes are 0 to 1 percent. In a representative profile, the surface layer is black muck about 11 inches thick. It is underlain by dark reddish-brown, black, very dark brown, and dark-brown muck and mucky peat that extends to a depth of 60 inches or more. The subsurface layers are stratified mucky peat, muck, and peat that formed mostly from sedges. Where these soils adjoin mineral soils, some layers are 25 percent wood fragments. Some areas are up to 30 percent inclusions of Tukwilla soils, which are deep mucks, and Shalcar soils, which are shallow over a mineral substratum; and some areas are up to 15 percent inclusions of the wet Bellingham and Norma soils. Total inclusions do not exceed 30 percent. Permeability is moderate. There is a seasonal high water table at or near the surface. Available water capacity is high.

### **Hydrology Criteria**

As stated in the 2010 Regional Supplement, the "term wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season." It also explains "areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and chemically reducing conditions, respectively."

Additionally, the US Army Corps of Engineers 1987 Wetland Delineation Manual states that "areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days  $\geq 12.5$  percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas inundated or saturated between 5 and 12.5 percent of the growing season in most years may or may not be wetlands. Areas saturated to the surface for less than 5 percent of the growing season are non-wetlands." Field indicators were used to determine whether wetland hydrology parameters were met on the Phase 2 Plat C site.

## **BOUNDARY DETERMINATIONS**

### **Wetland Delineations**

Pursuant to Section 8.2.1 of The Villages MPD DA, the wetland delineations as outlined on the Constraints Map (Exhibit G to the DA) are deemed final and complete through the term of the DA. Therefore, this Sensitive Area Study does not revisit the boundaries of Wetlands E7, E8, E10, E1, TOS, or 213.

Note: Wetland Resources, Inc. has incorporated the original soils data summary sheets associated with the wetland delineations into the updated "US Army Corps of Engineers' Wetland Determination Data Form" for The Villages MPD Phase 2 Plat C (attached hereto), as requested during the Villages MPD Preliminary Plat 1A SEPA appeal hearing. Given that the wetland delineations (and the associated soils data) were approved by the City of Black

Diamond and deemed "final and complete" through the term of the DA, the attached soils data is provided for reference purposes only and is not subject to further review or verification.

### **Wetland Criteria**

The dominance of species rated "Facultative" and wetter meets the criteria for hydrophytic vegetation in areas mapped as wetland. The presence of low chroma, saturated soils suggest that reducing conditions are present long enough during the growing season to develop anaerobic conditions in the upper part of the soil horizon. These characteristics meet the criteria for wetland soils. The areas mapped as wetland were saturated in the upper part at the time of the investigation, and appear to be seasonally inundated and/or saturated to the surface for a consecutive number of days  $\geq 12.5$  percent of the growing season, thereby fulfilling wetland hydrology criteria.

### **Non-wetland Criteria**

Based on the lack of field indicators, it appears that the non-wetland areas of the Phase 2 Plat C site are saturated to the surface for less than 12.5 percent of the growing season, thereby not fulfilling wetland hydrology criteria.

### **Site Description**

The Phase 2 Plat C site is vegetated with 30 $\pm$  year-old managed, even-aged stand of Douglas fir and dense native shrub ground cover. There is an old logging road system on this site that is being used by unauthorized ATV users. The wetlands on and in the vicinity of the Phase 2 Plat C site are labeled as Wetlands E7, E8, E10, E1, TOS, and 213.

### **Wetland Areas**

The following is a list of dominant species identified within areas mapped as wetlands on this site: red alder (*Alnus rubra*, Fac), black cottonwood (*Populus balsamifera*, Fac), Western red cedar (*Thuja plicata*, Fac), Western hemlock (*Tsuga heterophylla*, FacU-), pacific willow (*Salix lucida*, FacW), salmonberry (*Rubus spectabilis*, Fac+), cascara (*Rhamnus purshiana*, Fac-), vine maple (*Acer circinatum*, Fac-), black twinberry (*Lonicera involucrata*, Fac+), hardhack (*Spiraea douglasii*, FacW), false lily-of-the-valley (*Maianthemum dilatatum*, Fac), Cooley's hedge-nettle (*Stachys cooleyae*, FacW), Carex species (*Carex sp.*, Fac-Obl), slough sedge (*Carex obnupta*, Obl), skunk cabbage (*Lysichiton americanum*, Obl), piggy-back plant (*Tolmiea menziesii*, Fac), sword fern (*Polystichum munitum*, FacU), and lady fern (*Athyrium filix-femina*, Fac).

The soil colors observed within the on-site wetlands include black (10YR 2/1), very dark gray (10YR 3/1), dark grayish brown (10YR 4/2) with redoximorphic features, very dark grayish brown (10YR 3/2) and dark grayish brown (2.5Y 4/2) with redoximorphic features. Soil textures are typically silt loam and gravelly silt loam with the exception of Wetland E1 and TOS, which contain organic soils. At the time of the November 1, 2013 site investigation, the soils were moist to saturated within the upper 12 inches.

### **Non-wetland Areas**

The following is a list of dominant species identified within areas mapped as non-wetlands: Douglas fir (*Pseudotsuga menziesii*, FacU), Western red cedar, Western hemlock, bitter cherry (*Prunus emarginata*, FacU), big leaf maple (*Acer macrophyllum*, FacU), cascara

(*Rhamnus purshiana*, Fac-), holly (*Ilex aquifolium*, FacU), salmonberry, Himalayan blackberry (*Rubus armeniacus*, FacU), vine maple, salal (*Gaultheria shallon*, FacU), Oregon grape (*Mahonia nervosa*, FacU), trailing blackberry (*Rubus ursinus*, FacU), herb-Robert (*Geranium robertianum*, Nol), sword fern (*Polystichum munitum*, FacU), bracken fern (*Pteridium aquilinum*, FacU) and lady fern (*Athyrium filix-femina*, Fac).

The soils underlying the areas mapped as non-wetlands on the Phase 2 Plat C site are typically very dark brown (10YR 2/2), dark brown (10YR 3/3) and brown (10YR 4/3). No redoximorphic features were observed within the soil samples. The soils have a silt loam, gravelly silt loam and Gravelly sandy loam texture. They were moist to dry during the site investigation. Based on these characteristics, wetland soils are not present within the areas mapped as non-wetland.

## WETLAND FUNCTIONS AND VALUES ASSESSMENT

### Methodology

The methodology for this functions and values assessment is based on professional opinion developed through past field analyses and interpretations. This assessment pertains specifically to the on-site wetland system, but is typical for assessments of similar systems throughout western Washington.

### Analysis

Hydrologic Control: Hydrologic control (flood control and water supply) is a very important function provided by wetlands. Due to their depressional characteristics, wetlands effectively function as natural water storage areas during periods of high precipitation/flooding, and are able to accumulate stormwater runoff. By storing water that otherwise might be channeled into open flow systems, wetlands can attenuate or modify potentially damaging effects of storm events, reducing erosion and peak flows to downstream systems. Additionally, the soils underlying wetlands are often less permeable, providing long-term storage of stormwater or floodflow and controlling baseflows of downstream systems. Wetlands with limited outlets store greater amounts of water than wetlands with unrestricted flow outlets. Forested areas are able to retain stormwater and help prevent soil erosion through hydrologic flows. Wetland vegetation stores excess stormwater that reaches the wetlands. This function is generally dictated by the size of the wetland and its topographic characteristics

Water Quality Improvements: Surface runoff during periods of precipitation increases the potential for sediments and pollutants to enter surface water. Wetlands improve water quality by acting as filters as water passes through them, trapping sediments and pollutants from surface water. Ponded areas within depressional wetlands also allow sediments to drop out of suspension, thereby increasing water quality. As development increases, the potential for polluted water to reach wetlands and streams also increases. Unnaturally high inputs of pollutants, which are often found in urbanized areas, along with the size of the

wetlands and the vegetation structure within them are the main limiting factors of this function.

Wildlife Habitat: Wetlands have potential to provide diverse habitat for aquatic, terrestrial, and avian species for: nesting, rearing, resting, cover, and foraging. Wildlife species are commonly dependent upon a variety of intermingled habitat types, including: wetlands, adjacent uplands, large bodies of water, and movement corridors between them. Human intrusion, including development within and adjacent to wetlands, and impacts to movement corridors are the most limiting factors for wildlife habitat functions.

#### Wetlands E7, E8, and E10

Wetlands E7, E8, and E10 are located in the southeastern portion of the Phase 2 Plat C site. These wetlands are small depressional features without outlets. Dominant vegetation in these wetlands includes: Douglas fir, salmonberry, piggy-back plant and slough sedge. These wetlands provide **low** levels of hydrologic control and water quality functions due to their moderate size and topography. Their size is somewhat mitigated by the lack of functional outlets. Habitat functions for these wetlands are also relatively moderate due to lack of habitat interspersions and their small size.

#### Wetland E1

Wetland E1 is located along the western boundary of the Phase 2 Plat C site. Wetland E1 is a large, forested wetland and is classified as depressional. This wetland is comprised of: red alder, black cottonwood, Sitka spruce, cascara, vine maple, salmonberry, false lily-of-the-valley, Cooley's hedge-nettle, Pacific bleeding heart and American brooklime. Areas of organic soils are present in this wetland. This wetland provides **moderate to high** levels of hydrologic control and water quality improvements due to its large size, dense woody species cover, and ability to store large volumes of stormwater. Its habitat functions are high as it is located within a relatively undeveloped vegetated corridor with moderate habitat diversity and habitat features.

#### Wetland TOS

Wetland TOS is located along the eastern boundary of the Phase 2 Plat C site. Wetland TOS is a large forested, scrub-shrub, and emergent depressional wetland. This wetland is part of the Jones Lake-Black Diamond Lake-Rock Creek Core Wetland System established by the City of Black Diamond. Vegetation in the wetland complex is comprised of: red alder, black cottonwood, Sitka spruce, cascara, willows, vine maple, salmonberry, and a variety of sedges and rushes. Areas of organic soils are present in this wetland. This wetland provides **moderate to high** levels of hydrologic control and water quality improvements due to its large size, dense woody species cover, and ability to store large volumes of stormwater. Its habitat functions are high as it is located within a relatively undeveloped, vegetated corridor with moderate habitat diversity and habitat features.

#### Wetland 213

Wetland 213 is located south of Wetland E1 in the southernmost portion of the Phase 2 Plat C site. It is a small depressional feature with semi-constrained outlet. Dominant vegetation in this wetland includes: Douglas fir, salmonberry, piggy-back plant and slough sedge. This wetland provides low levels of hydrologic control and water quality functions due to its small size and topography. Habitat functions for this wetland is also relatively moderate due to lack of habitat interspersion and its small size.

### WILDLIFE ANALYSIS

The Phase 2 Plat C site contains a wide range of habitat types and features spread over a large area. Upland habitats include coniferous, mixed and immature forest habitat. Wetland and riparian habitats within the Phase 2 Plat C site include forested and scrub-shrub wetlands. Snags, large woody debris and edge habitat, which are beneficial habitat features, are found throughout the Phase 2 Plat C site.

Because of the variety of habitats and features on the Phase 2 Plat C site, wildlife use is apparent throughout the site. A variety of avian, mammalian, reptilian, and amphibious species are expected to utilize these habitats. A detailed wildlife analysis was conducted for this project by *Wetlands and Wildlife, Inc.* in a report titled Wildlife Habitat Assessment Report – The Villages MPD Phase 2 Preliminary Plat C dated February 21, 2014 and is attached hereto.

No endangered, threatened, or sensitive plant species are known or are likely to occur on-site. No Federal or State listed endangered, threatened, or sensitive plant species were found during field surveys of the Phase 2 Plat C site.

### USE OF THIS REPORT

This Sensitive Area Study is supplied to BD Village Partners, LP as a means of determining on-site wetland conditions in accordance with Section 8.2.1 of the DA and BDMC Chapter 19.10 as set forth in Exhibit E to the DA. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions.

The laws applicable to wetlands are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the Applicant's attempt to comply with the laws now in effect.

The work for this report has conformed to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

*Wetland Resources, Inc.*

Scott Brainard, PWS  
*Principal Ecologist*

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Black Diamond Sensitive Area Ordinance, Chapter 19.10, Black Diamond, Washington. February 2009.

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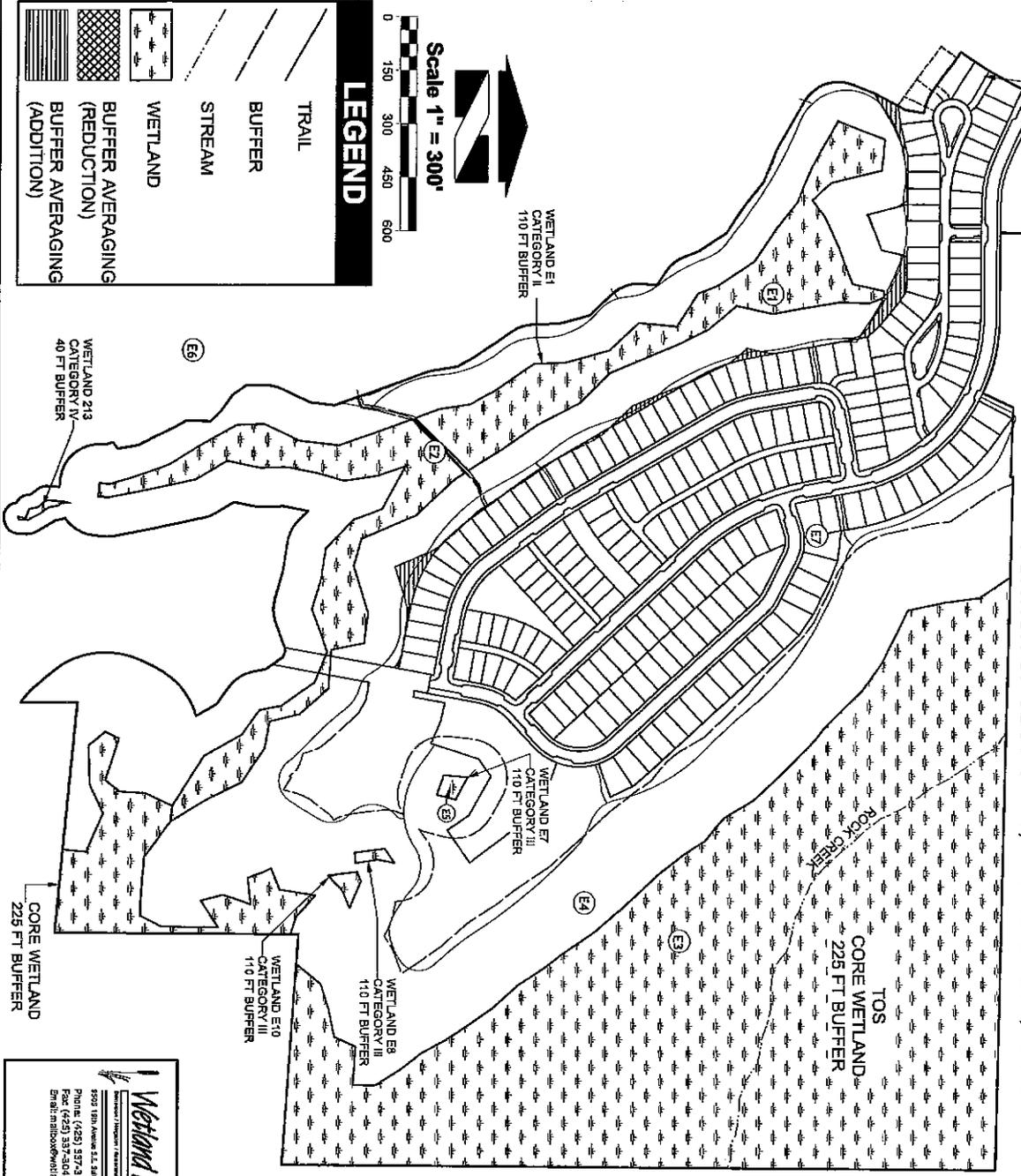
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Future  
Development  
Tract

# SENSITIVE AREA STUDY AND BUFFER AVERAGING MAP

## VILLAGES - PHASE 2 PLAT C

PORTION OF SECTION 15, TOWNSHIP 21N, RANGE 06E



**LEGEND**

- TRAIL
- BUFFER
- STREAM
- WETLAND
- BUFFER AVERAGING (REDUCTION)
- BUFFER AVERAGING (ADDITION)



**Wetland Resources, Inc.**  
 5505 18th Avenue S.E. Suite 108 Everett, Washington 98203  
 Phone: (425) 357-9174  
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 Email: mradlow@wetlandresources.com

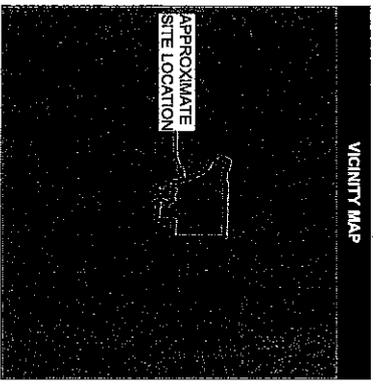
SENSITIVE AREA STUDY AND  
 BUFFER AVERAGING MAP  
**VILLAGES PHASE 2 PLAT C**  
 BLACK DIAMOND, WA

BD Villages Partners, LP  
 Attn: Colin Lund  
 10220 NE Robin Drive, Suite 310  
 Kirkland, WA 98033

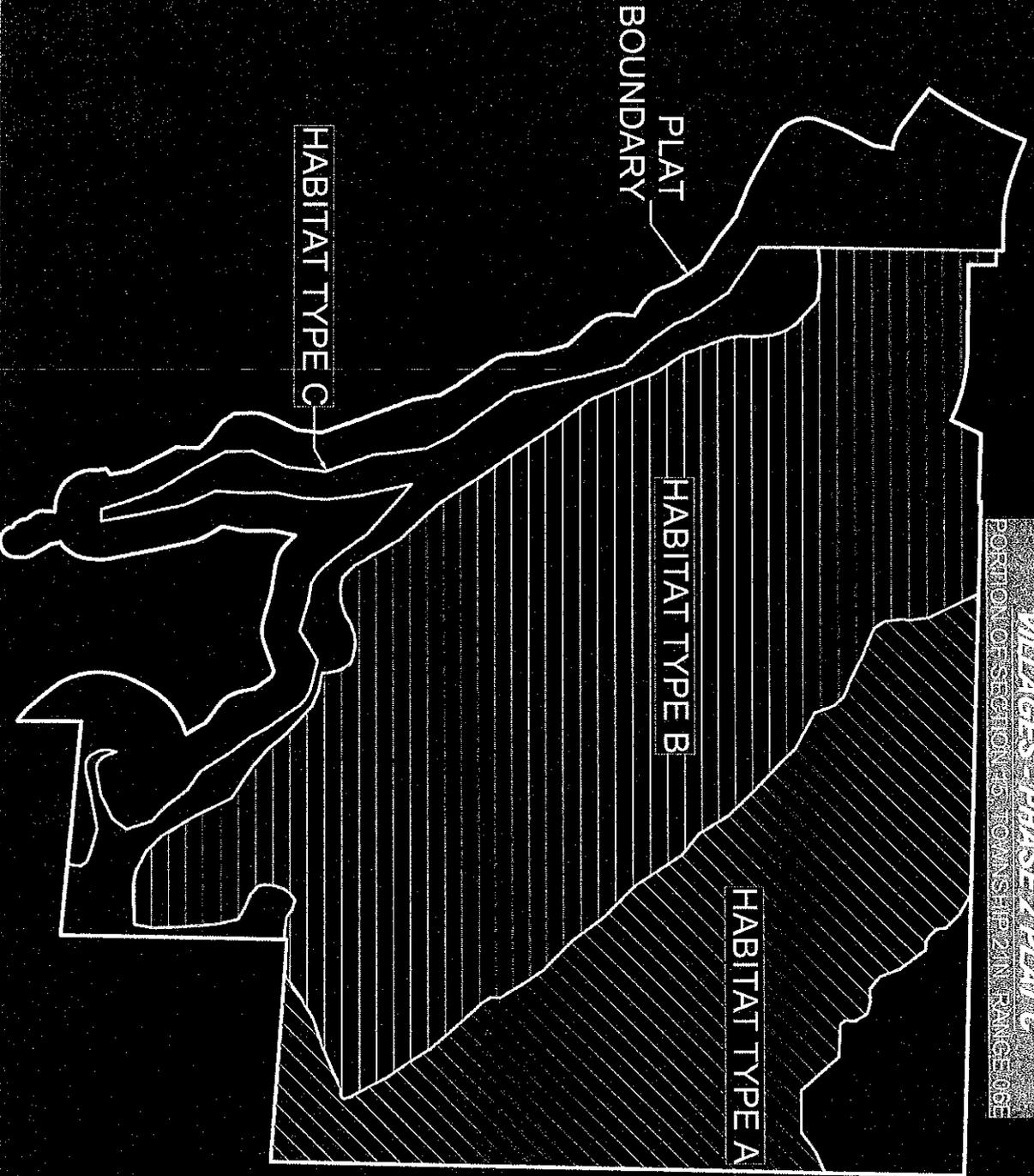
Sheet 1/2  
 WRI Job #08035  
 Drawn by: N. Whiting  
 Date: 2.18.2014  
 Rev. #1: 5/8/14

Buffer Averaging Table

Buffer Averaging (Addition)	26,222 sf
Buffer Averaging (Reduction)	2,716 sf
<b>Net Buffer Gain:</b>	<b>24,106 sf</b>



APPROXIMATE HABITAT TYPES MAP  
 VILLAGES - PHASE 2 PLAT C  
 PORTION OF SECTION 15, TOWNSHIP 21N, RANGE 00E



VICINITY MAP

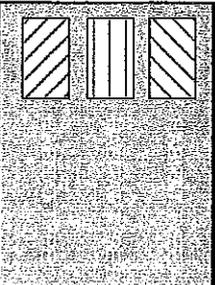
APPROXIMATE  
 SITE LOCATION



Scale 1" = 300'



LEGEND



**Metland Resources, Inc.**

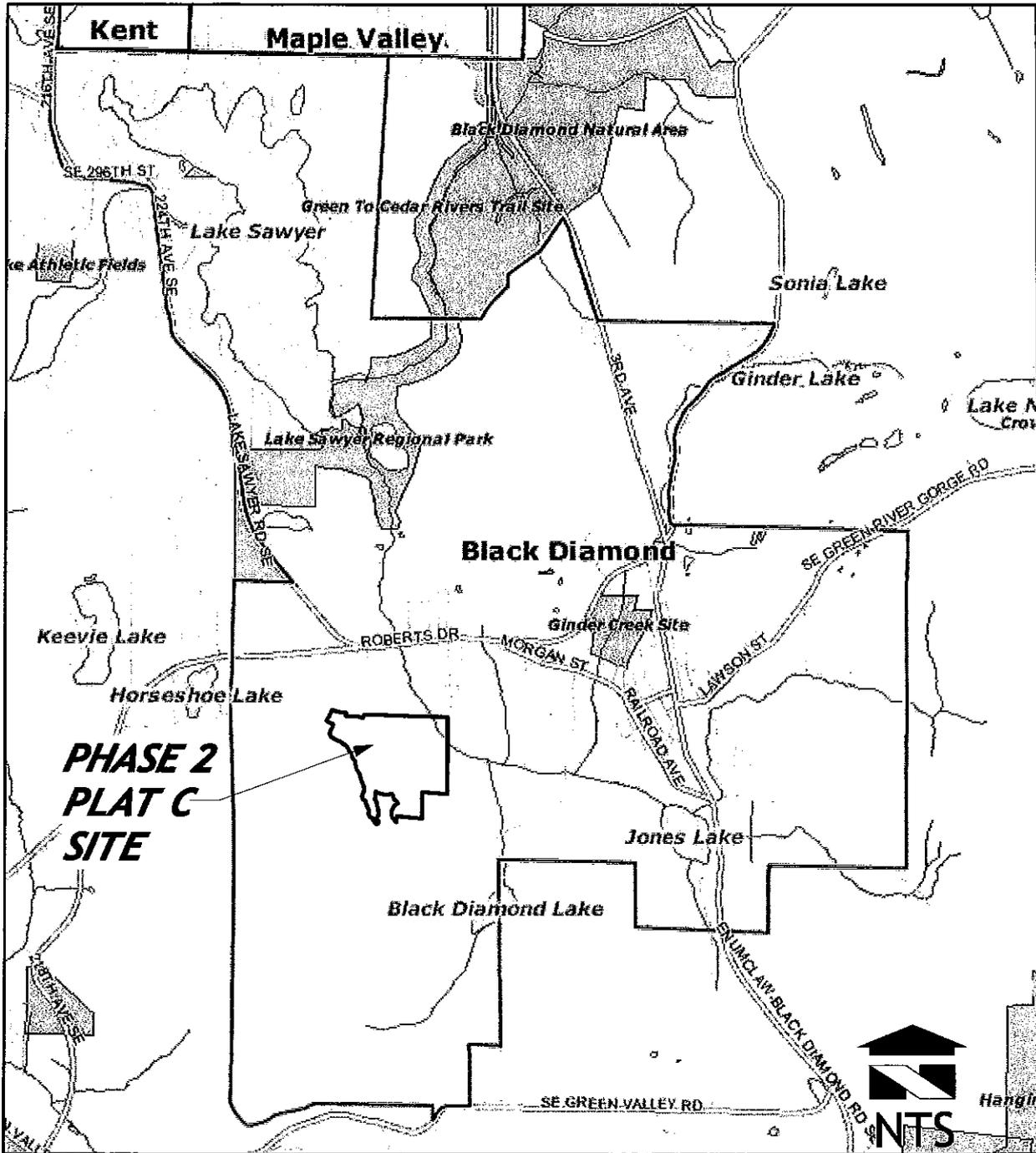
1000 1st Avenue, Suite 100, Everett, WA 98201  
 Phone: (425) 397-8174  
 Fax: (425) 397-8014  
 Email: info@metlandresources.com

APPROXIMATE HABITAT TYPES MAP  
 VILLAGES - PHASE 2 PLAT C  
 BLACK DIAMOND, WA

BD Village Partners, LP  
 Attn: Collin Lund  
 10220 NE Points Drive, Suite 310  
 Kirkland, WA 98033

Sheet 2/2  
 WRI Job #080935  
 Drawn By: N. Whiting  
 Date: 2.18.2014  
 Rev: 5.6.14

VICINITY MAP  
THE VILLAGES - PHASE 2 PLAT C



**Wetland Resources, Inc.**  
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VICINITY MAP  
THE VILLAGES - PHASE 2 PLAT C  
 CITY OF BLACK DIAMOND, WA

BD Villages Partners, LP  
 Attn: Colin Lund  
 10220 NE Points Dr, Suite 310  
 Kirkland, WA 98033

WRI Job # 08035  
 Drawn by: A. Bachman  
 Date: 2/24/2013  
 Rev: 5/6/14

## WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: The Villages Phase 2 Plat C City/County: Black Diamond Sampling Date: 1/06-6/08  
 Applicant/Owner: Bd Villages Partners, LP State: WA Sampling Point: E1  
 Investigator(s): SB, AB Section, Township, Range: 15, 21N, 06E  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): LRR-A Lat: 4° 18' 18.73" N Long: 122° 01' 27.17" W Datum: WGS 84  
 Soil Map Unit Name: Everett Gravelly Sandy Loam, 5 to 15 percent slopes NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: _____	

### VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Alnus rubra</u>	45	Y	Fac	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)
2. <u>Populus balsamifera</u>	30	Y	Fac	Total Number of Dominant Species Across All Strata: <u>6</u> (B)
3. <u>Picea sitchensis</u>	tr	N	Fac	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83.3%</u> (A/B)
4. _____				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B)  Prevalence Index = B/A = _____
75 = Total Cover				
<b>Sapling/Shrub Stratum (Plot size: _____)</b>				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Acer circinatum</u>	45	Y	Fac	
2. <u>Rubus spectabilis</u>	10	N	Fac	
3. <u>Frangula Purshiana</u>	5	N	Fac	
4. _____				
5. _____				
60 = Total Cover				
<b>Herb Stratum (Plot size: _____)</b>				
1. <u>Maianthemum dilatatum</u>	15	Y	Fac	
2. <u>Stachys chamissonis</u>	10	Y	FacW	
3. <u>Dicentra formosa</u>	10	Y	FacU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
35 = Total Cover				
<b>Woody Vine Stratum (Plot size: _____)</b>				
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks: _____				

**SOIL**

Sampling Point: E1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features			Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
0-16"	10 YR 2/1	100					Organic Silt Loam	
16-18"	10 YR 3/2	100					Silt Loam	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histic A (A1)	<input type="checkbox"/> Sandy Redox (S5)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

2 cm Muck (A10)  
 Red Parent Material (TF2)  
 Very Shallow Dark Surface (TF12)  
 Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	Secondary Indicators (2 or more required)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)  
 Drainage Patterns (B10)  
 Dry-Season Water Table (C2)  
 Saturation Visible on Aerial Imagery (C9)  
 Geomorphic Position (D2)  
 Shallow Aquitard (D3)  
 FAC-Neutral Test (D5)  
 Raised Ant Mounds (D6) (LRR A)  
 Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_  
 Saturation Present? Yes  No  Depth (inches): 0  
 (includes capillary fringe)

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region**

Project/Site: The Villages Phase 2 Plat C City/County: Black Diamond Sampling Date: 1/06-6/08  
 Applicant/Owner: Bd Villages Partners, LP State: WA Sampling Point: E2  
 Investigator(s): SB, AB Section, Township, Range: 15, 21N, 06E  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): LRR-A Lat: 4° 18' 18.73" N Long: 122° 01' 27.17" W Datum: WGS 84  
 Soil Map Unit Name: Everett Gravelly Sandy Loam, 5 to 15 percent slopes NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: _____	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Alnus rubra</u>	<u>45</u>	<u>Yes</u>	<u>Fac</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A)  Total Number of Dominant Species Across All Strata: <u>7</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u>Populus balsamifera</u>	<u>20</u>	<u>yes</u>	<u>Fac</u>	
3. <u>Frangula purshiana</u>	<u>tr</u>	<u>No</u>	<u>Fac</u>	
4. _____	<u>65</u>	<u>= Total Cover</u>		<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B)  Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Acer circinatum</u>	<u>30</u>	<u>Y</u>	<u>Fac</u>	
2. <u>Rubus Spectabilis</u>	<u>25</u>	<u>Y</u>	<u>Fac</u>	
3. _____				
4. _____				
5. _____	<u>55</u>	<u>= Total Cover</u>		
Herb Stratum (Plot size: _____)				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Maianthemum dilatatum</u>	<u>20</u>	<u>Y</u>	<u>Fac</u>	
2. <u>Stachys chamissonis</u>	<u>15</u>	<u>Y</u>	<u>FacW</u>	
3. <u>Veronica americana</u>	<u>10</u>	<u>Y</u>	<u>Obl</u>	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
Woody Vine Stratum (Plot size: _____)				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____				
2. _____				
% Bare Ground in Herb Stratum _____				
Remarks: _____				

**SOIL**

Sampling Point: E2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features			Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
0-18"	10 YR 2/1	100					Organic Silt	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

2 cm Muck (A10)  
 Red Parent Material (TF2)  
 Very Shallow Dark Surface (TF12)  
 Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<b>Primary Indicators (minimum of one required; check all that apply)</b>		<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): 0

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region**

Project/Site: The Villages Phase 2 Plat C City/County: Black Diamond Sampling Date: 1/06-6/08  
 Applicant/Owner: Bd Villages Partners, LP State: WA Sampling Point: E3  
 Investigator(s): SB, AB Section, Township, Range: 15, 21N, 06E  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): LRR-A Lat: 4° 18' 18.73" N Long: 122° 01' 27.17" W Datum: WGS 84  
 Soil Map Unit Name: Everett Gravelly Sandy Loam, 5 to 15 percent slopes NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: _____	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Tsuga heterophylla</u>	<u>tr</u>	<u>Y</u>	<u>FacU</u>	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)  Total Number of Dominant Species Across All Strata: <u>6</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83.33%</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width:100%; border: none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>0</u> (A)</td> <td><u>0</u> (B)</td> </tr> </table> Prevalence Index = B/A = _____	Total % Cover of:	Multiply by:	OBL species _____	x 1 = <u>0</u>	FACW species _____	x 2 = <u>0</u>	FAC species _____	x 3 = <u>0</u>	FACU species _____	x 4 = <u>0</u>	UPL species _____	x 5 = <u>0</u>	Column Totals: <u>0</u> (A)	<u>0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = <u>0</u>																	
FACW species _____	x 2 = <u>0</u>																	
FAC species _____	x 3 = <u>0</u>																	
FACU species _____	x 4 = <u>0</u>																	
UPL species _____	x 5 = <u>0</u>																	
Column Totals: <u>0</u> (A)	<u>0</u> (B)																	
<b>Sapling/Shrub Stratum (Plot size: _____)</b>																		
1. <u>Salix lasiandra</u>	<u>40</u>	<u>Y</u>	<u>FacW</u>															
2. <u>Cornus sericea</u>	<u>20</u>	<u>Y</u>	<u>FacW</u>															
3. <u>Spirea douglasii</u>	<u>20</u>	<u>Y</u>	<u>FacW</u>															
4. <u>Rubus spectabilis</u>	<u>10</u>	<u>N</u>	<u>Fac</u>															
5. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Herb Stratum (Plot size: _____)</b>																		
1. <u>Lysichiton americanum</u>	<u>20</u>	<u>Y</u>	<u>Obl</u>															
2. <u>Athyrium filix-femina</u>	<u>15</u>	<u>Y</u>	<u>Fac</u>															
3. <u>Glyceria elata</u>	<u>10</u>	<u>N</u>	<u>FacW</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Woody Vine Stratum (Plot size: _____)</b>																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
_____ = Total Cover																		
% Bare Ground in Herb Stratum _____																		
Remarks: _____																		

**SOIL**

Sampling Point: E3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features			Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
0- >18"	10 YR 2/1	100%					Muck	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input checked="" type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	Hydric Soil Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<b>Primary Indicators (minimum of one required; check all that apply)</b> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A) <input type="checkbox"/> Other (Explain in Remarks)	<b>Secondary Indicators (2 or more required)</b> <input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Raised Ant Mounds (D6) (LRR A) <input type="checkbox"/> Frost-Heave Hummocks (D7)
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<b>Field Observations:</b> Surface Water Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present?    Yes <input type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Saturation Present? (includes capillary fringe)    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): 0	Wetland Hydrology Present?    Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



**SOIL**

Sampling Point: E4

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features			Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
0-2"								Duff
2-18"	10 YR 4/4	100%					Gr Sa Lo	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

2 cm Muck (A10)  
 Red Parent Material (TF2)  
 Very Shallow Dark Surface (TF12)  
 Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<b>Primary Indicators (minimum of one required; check all that apply)</b>		<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

**Field Observations:**

Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	<b>Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></b>
Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: The Villages Phase 2 Plat C City/County: Black Diamond Sampling Date: 1/06-6/08  
 Applicant/Owner: Bd Villages Partners, LP State: WA Sampling Point: E5  
 Investigator(s): SB, AB Section, Township, Range: 15, 21N, 06E  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): LRR-A Lat: 4° 18' 18.73" N Long: 122° 01' 27.17" W Datum: WGS 84  
 Soil Map Unit Name: Everett Gravelly Sandy Loam, 5 to 15 percent slopes NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: _____	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Alnus rubra</u>	15	Y	Fac	Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A)  Total Number of Dominant Species Across All Strata: <u>4</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
15 = Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				<b>Prevalence index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B)  Prevalence Index = B/A = _____
1. <u>Rubus spectabilis</u>	30	Y	Fac	
2. <u>Acer circinatum</u>	15	Y	Fac	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
45 = Total Cover				
Herb Stratum (Plot size: _____)				<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Carex sp</u>	20	Y	Fac-Obl	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				<b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks: _____				

**SOIL**

Sampling Point: E5

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features			Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
0-10"	10 YR 2/1	100					si lo	
10-18"	10 YR 3/1	100					si lo	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

2 cm Muck (A10)  
 Red Parent Material (TF2)  
 Very Shallow Dark Surface (TF12)  
 Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)	
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		

Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)  
 Drainage Patterns (B10)  
 Dry-Season Water Table (C2)  
 Saturation Visible on Aerial Imagery (C9)  
 Geomorphic Position (D2)  
 Shallow Aquitard (D3)  
 FAC-Neutral Test (D5)  
 Raised Ant Mounds (D6) (LRR A)  
 Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present? Yes  No  Depth (inches): \_\_\_\_\_

Water Table Present? Yes  No  Depth (inches): \_\_\_\_\_

Saturation Present? (includes capillary fringe) Yes  No  Depth (inches): \_\_\_\_\_

Wetland Hydrology Present? Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region**

Project/Site: The Villages Phase 2 Plat C City/County: Black Diamond Sampling Date: 1/06-6/08  
 Applicant/Owner: Bd Villages Partners, LP State: WA Sampling Point: E6  
 Investigator(s): SB, AB Section, Township, Range: 15, 21N, 06E  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): LRR-A Lat: 4° 18' 18.73" N Long: 122° 01' 27.17" W Datum: WGS 84  
 Soil Map Unit Name: Everett Gravelly Sandy Loam, 5 to 15 percent slopes NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: _____	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Pseudotsuga menziesii</u>	40	Y	FacU	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)  Total Number of Dominant Species Across All Strata: <u>5</u> (B)  Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)														
2. <u>Tsuga heterophylla</u>	40	Y	FacU															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____ = Total Cover				<b>Prevalence Index worksheet:</b> <table style="width:100%; border:none;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>0</u> (A)</td> <td><u>0</u> (B)</td> </tr> </table> Prevalence Index = B/A = _____	Total % Cover of:	Multiply by:	OBL species _____	x 1 = <u>0</u>	FACW species _____	x 2 = <u>0</u>	FAC species _____	x 3 = <u>0</u>	FACU species _____	x 4 = <u>0</u>	UPL species _____	x 5 = <u>0</u>	Column Totals: <u>0</u> (A)	<u>0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = <u>0</u>																	
FACW species _____	x 2 = <u>0</u>																	
FAC species _____	x 3 = <u>0</u>																	
FACU species _____	x 4 = <u>0</u>																	
UPL species _____	x 5 = <u>0</u>																	
Column Totals: <u>0</u> (A)	<u>0</u> (B)																	
<b>Sapling/Shrub Stratum (Plot size: _____)</b>																		
1. <u>Ilex aquifolium</u>	tr	Y	FacU															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
_____ = Total Cover																		
<b>Herb Stratum (Plot size: _____)</b>																		
1. <u>Polystichum munitum</u>	50	Y	FacU															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
50 = Total Cover																		
<b>Woody Vine Stratum (Plot size: _____)</b>																		
1. <u>Rubus ursinus</u>	10	Y	FacU															
2. _____	_____	_____	_____															
_____ = Total Cover																		
% Bare Ground in Herb Stratum _____																		
Remarks: _____																		

**Hydrophytic Vegetation Indicators:**

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Wetland Non-Vascular Plants<sup>1</sup>

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes  No

**SOIL**

Sampling Point: E6

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features			Loc <sup>2</sup>	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>			
0-2"								Duff
2-18"	10 YR 4/3	100					Gr Sa Lo	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Depressions (F8)	

2 cm Muck (A10)  
 Red Parent Material (TF2)  
 Very Shallow Dark Surface (TF12)  
 Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**  
 Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present?    Yes     No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

**Primary Indicators (minimum of one required; check all that apply)**

<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Stunted or Stressed Plants (D1) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	

**Secondary Indicators (2 or more required)**

<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Frost-Heave Hummocks (D7)

**Field Observations:**

Surface Water Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____
Water Table Present?    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____
Saturation Present? (includes capillary fringe)    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): _____

Wetland Hydrology Present?    Yes     No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region**

Project/Site: The Villages Phase 2 Plat C City/County: Black Diamond Sampling Date: 1/06-6/08  
 Applicant/Owner: Bd Villages Partners, LP State: WA Sampling Point: E7  
 Investigator(s): SB, AB Section, Township, Range: 15, 21N, 06E  
 Landform (hillslope, terrace, etc.): \_\_\_\_\_ Local relief (concave, convex, none): \_\_\_\_\_ Slope (%): \_\_\_\_\_  
 Subregion (LRR): LRR-A Lat: 4° 18' 18.73" N Long: 122° 01' 27.17" W Datum: WGS 84  
 Soil Map Unit Name: Everett Gravelly Sandy Loam, 5 to 15 percent slopes NWI classification: \_\_\_\_\_

Are climatic / hydrologic conditions on the site typical for this time of year? Yes  No  (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present? Yes  No   
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: _____	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Pseudotsuga menziesii</u>	40	Y	FacU	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
2. <u>Tsuga heterophylla</u>	40	Y	FacU	
3. _____				
4. _____				
_____ = Total Cover				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FacU species _____ x 4 = <u>0</u> UPL species _____ x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Ilex aquifolium</u>	tr	Y	FacU	
2. _____				
3. _____				
4. _____				
5. _____				
_____ = Total Cover				
Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b> <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants <sup>1</sup> <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Polystichum munitum</u>	50	Y	FacU	
2. <u>Maianthemum dilatatum</u>	15	N	Fac	
3. <u>Dicentra Formosa</u>	15	N	FacU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
11. _____				
<u>Y</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Rubus ursinus</u>	10	Y	FacU	
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks: _____				



Wetland name or number E1

**WETLAND RATING FORM – WESTERN WASHINGTON**

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users  
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): E1 Date of site visit: 7.11.12/Rev.8.16.13

Rated by S. Brainard Trained by Ecology? Yes  No  Date of training 11.16.06

SEC: 15 TOWNSHIP: 21 RANGE: 06E 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  $\geq$ 70  
Category II = Score 51-69  
Category III = Score 30-50  
Category IV = Score < 30

Score for Water Quality Functions	14
Score for Hydrologic Functions	16
Score for Habitat Functions	27
<b>TOTAL score for Functions</b>	<b>57</b>

Category based on SPECIAL CHARACTERISTICS of wetland

I      II      Does not Apply

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

**II**

Summary of basic information about the wetland unit

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

**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.

<b>Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)</b>	<b>YES</b>	<b>NO</b>
<p>SP1. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.</p>		✓
<p>SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i> 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).</p>		✓
<p>SP3. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i></p>		✓
<p>SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i> 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.</p>	✓	

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.

## Classification of Wetland Units in Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?

NO – go to 2       YES – the wetland class is **Tidal Fringe**

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

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

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.

Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3       YES – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet both** of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

At least 30% of the open water area is deeper than 6.6 ft (2 m)?

NO – go to 4       YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

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

The wetland is on a slope (*slope can be very gradual*),

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded**?

*NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

NO - go to 5     YES – The wetland class is **Slope**

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

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

The overbank flooding occurs at least once every two years.

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

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

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

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

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

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

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

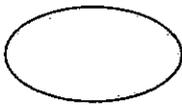
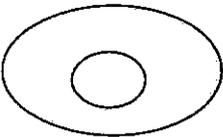
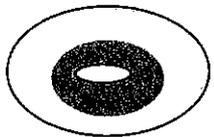
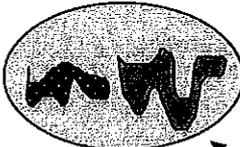
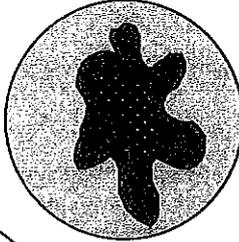
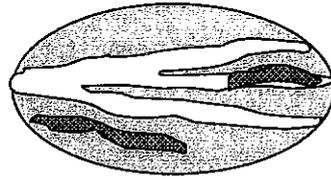
<i>HGM Classes within the wetland unit being rated</i>		<i>HGM Class to Use in Rating</i>	
Slope + Riverine	<input type="checkbox"/>	Riverine	<input type="checkbox"/>
Slope + Depressional	<input type="checkbox"/>	Depressional	<input type="checkbox"/>
Slope + Lake-fringe	<input type="checkbox"/>	Lake-fringe	<input type="checkbox"/>
Depressional + Riverine along stream within boundary	<input checked="" type="checkbox"/>	Depressional	<input checked="" type="checkbox"/>
Depressional + Lake-fringe	<input type="checkbox"/>	Depressional	<input type="checkbox"/>
Salt Water Tidal Fringe and any other class of freshwater wetland	<input type="checkbox"/>	Treat as ESTUARINE under wetlands with special characteristics	<input type="checkbox"/>

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

<b>D Depressional and Flats Wetlands</b>		<b>Points</b> (only 1 score per box)
<b>WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality</b>		
<b>D</b>	<b>D 1. Does the wetland unit have the <u>potential</u> to improve water quality?</b>	<i>(see p.38)</i>
<b>D</b>	<p>D 1.1 Characteristics of surface water flows out of the wetland:</p> <p><input type="checkbox"/> Unit is a depression with no surface water leaving it (no outlet) points = 3</p> <p><input type="checkbox"/> Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2</p> <p><input checked="" type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 1</p> <p><input type="checkbox"/> Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow <b>and no obvious natural outlet</b> and/or outlet is a man-made ditch points = 1 (<i>If ditch is not permanently flowing treat unit as "intermittently flowing"</i>)</p> <p style="text-align: right;">Provide photo or drawing</p>	Figure 1  1
<b>D</b>	<p>S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (<i>use NRCS definitions</i>)</p> <p><input checked="" type="checkbox"/> YES points = 4</p> <p><input type="checkbox"/> NO points = 0</p>	4
<b>D</b>	<p>D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class)</p> <p><input checked="" type="checkbox"/> Wetland has persistent, ungrazed, vegetation &gt; = 95% of area points = 5</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed, vegetation &gt; = 1/2 of area points = 3</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed vegetation &gt; = 1/10 of area points = 1</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed vegetation &lt; 1/10 of area points = 0</p> <p style="text-align: right;">Map of Cowardin vegetation classes</p>	Figure 1  5
<b>D</b>	<p>D1.4 Characteristics of seasonal ponding or inundation. <i>This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.</i></p> <p><input checked="" type="checkbox"/> Area seasonally ponded is &gt; ½ total area of wetland points = 4</p> <p><input type="checkbox"/> Area seasonally ponded is &gt; ¼ total area of wetland points = 2</p> <p><input type="checkbox"/> Area seasonally ponded is &lt; ¼ total area of wetland points = 0</p> <p style="text-align: right;">Map of Hydroperiods</p>	Figure 1  4
<b>D</b>	<b>Total for D 1</b>	<i>Add the points in the boxes above</i> 14
<b>D</b>	<p><b>D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?</b></p> <p>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. <i>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.</i></p> <p><input type="checkbox"/> Grazing in the wetland or within 150 ft</p> <p><input type="checkbox"/> Untreated stormwater discharges to wetland</p> <p><input type="checkbox"/> Tilled fields or orchards within 150 ft of wetland</p> <p><input type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging</p> <p><input type="checkbox"/> Residential, urban areas, golf courses are within 150 ft of wetland</p> <p><input type="checkbox"/> Wetland is fed by groundwater high in phosphorus or nitrogen</p> <p><input type="checkbox"/> Other _____</p> <p><input type="checkbox"/> YES multiplier is 2    <input checked="" type="checkbox"/> NO multiplier is 1</p>	<i>(see p. 44)</i>  multiplier  1
<b>D</b>	<b>TOTAL - Water Quality Functions</b>	Multiply the score from D1 by D2 <i>Add score to table on p. 1</i> 14

<b>D Depressional and Flats Wetlands</b>		<b>Points</b> (only 1 score per box)
<b>HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation</b>		
<b>D 3. Does the wetland unit have the potential to reduce flooding and erosion?</b>		<i>(see p.46)</i>
<b>D</b>	<b>D 3.1 Characteristics of surface water flows out of the wetland unit</b> <input type="checkbox"/> Unit is a depression with no surface water leaving it (no outlet) points = 4 <input type="checkbox"/> Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 <input type="checkbox"/> Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 <i>(If ditch is not permanently flowing treat unit as "intermittently flowing")</i> <input checked="" type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet ( <i>permanently flowing</i> ) points = 0	0
<b>D</b>	<b>D 3.2 Depth of storage during wet periods</b> <i>Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).</i> <input type="checkbox"/> Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 <input type="checkbox"/> The wetland is a "headwater" wetland points = 5 <input type="checkbox"/> Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 <input checked="" type="checkbox"/> Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 <input type="checkbox"/> Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 <input type="checkbox"/> Marks of ponding less than 0.5 ft points = 0	3
<b>D</b>	<b>D 3.3 Contribution of wetland unit to storage in the watershed</b> <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i> <input checked="" type="checkbox"/> The area of the basin is less than 10 times the area of unit points = 5 <input type="checkbox"/> The area of the basin is 10 to 100 times the area of the unit points = 3 <input type="checkbox"/> The area of the basin is more than 100 times the area of the unit points = 0 <input type="checkbox"/> Entire unit is in the FLATS class points = 5	5
<b>D</b>	<b>Total for D 3</b> <i>Add the points in the boxes above</i>	8
<b>D</b>	<b>D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?</b> Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following indicators of opportunity apply.</i> <input type="checkbox"/> Wetland is in a headwater of a river or stream that has flooding problems <input checked="" type="checkbox"/> Wetland drains to a river or stream that has flooding problems <input type="checkbox"/> Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems <input type="checkbox"/> Other _____ <input checked="" type="checkbox"/> YES multiplier is 2 <input type="checkbox"/> NO multiplier is 1	<i>(see p. 49)</i>  multiplier  2
<b>D</b>	<b>TOTAL - Hydrologic Functions</b> Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	16



<p><b>H 1.4. Interspersion of habitats</b> (see p. 76)                  Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p><input type="checkbox"/> None = 0 points</p> </div> <div style="text-align: center;">  <p><input type="checkbox"/> Low = 1 point</p> </div> <div style="text-align: center;">  <p><input checked="" type="checkbox"/> Moderate = 2 points</p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p><input type="checkbox"/> High = 3 points</p> </div> <div style="text-align: center;">  <p>[riparian braided channels]</p> </div> </div> <p style="text-align: center; margin-top: 10px;">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</p>	<p>Figure <u>1</u></p> <p style="text-align: center; font-size: 24px;">2</p>
<p><b>H 1.5. Special Habitat Features:</b> (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.</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt;4in. diameter and 6 ft long).</li> <li><input checked="" type="checkbox"/> Standing snags (diameter at the bottom &gt; 4 inches) in the wetland</li> <li><input type="checkbox"/> 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)</li> <li><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt;30degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet turned grey/brown</i>)</li> <li><input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</li> <li><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</li> </ul> <p style="text-align: center; font-size: small;">NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	3
<p><b>H 1. TOTAL Score</b> - potential for providing habitat                  Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	10

Comments

<p><b>H 2. Does the wetland unit have the opportunity to provide habitat for many species?</b></p> <p><b>H 2.1 Buffers</b> (see p. 80)  <i>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."</i></p> <p><input checked="" type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) <b>Points = 5</b></p> <p><input type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 50% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 25% circumference. <b>Points = 3</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for &gt; 50% circumference. <b>Points = 3</b></p> <p style="text-align: center;"><b>If buffer does not meet any of the criteria above</b></p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland &gt; 95% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for &gt;50% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> Heavy grazing in buffer. <b>Points = 1</b></p> <p><input type="checkbox"/> Vegetated buffers are &lt;2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) <b>Points = 0.</b></p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. <b>Points = 1</b></p> <p style="text-align: center;">Aerial photo showing buffers</p>	<p><b>Figure 1</b></p> <p style="font-size: 2em;">5</p>
<p><b>H 2.2 Corridors and Connections</b> (see p. 81)</p> <p>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? (<i>dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor</i>).</p> <p><input checked="" type="checkbox"/> YES = 4 points (go to H 2.3)      <input type="checkbox"/> NO = go to H 2.2.2</p> <p>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? <b>OR</b> a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?</p> <p><input type="checkbox"/> YES = 2 points (go to H 2.3)      <input type="checkbox"/> NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland:</p> <p><input type="checkbox"/> within 5 mi (8km) of a brackish or salt water estuary OR</p> <p><input type="checkbox"/> within 3 mi of a large field or pasture (&gt;40 acres) OR</p> <p><input type="checkbox"/> within 1 mi of a lake greater than 20 acres?</p> <p><input type="checkbox"/> YES = 1 point      <input type="checkbox"/> NO = 0 points</p>	<p>4</p>

WRI Re-evaluated question H2.1 and came to the same conclusion - Greater than 95% of the area within 330 feet of Wetland E1 is undisturbed.

Total for page 9

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <http://wdfw.wa.gov/hab/phslist.htm>)

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

- Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).
- Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).
- Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- Old-growth/Mature 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 than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
- Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).
- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).
- Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A*).
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
- 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.
- Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

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

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

3

<p><b>H 2.4 Wetland Landscape</b> (<i>choose the one description of the landscape around the wetland that best fits</i>) (<i>see p. 84</i>)</p>		
<p><input checked="" type="checkbox"/> 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. <span style="float: right;">points = 5</span></p>		5
<p><input type="checkbox"/> The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile <span style="float: right;">points = 5</span></p>		
<p><input type="checkbox"/> There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed <span style="float: right;">points = 3</span></p>		
<p><input type="checkbox"/> The wetland is Lake-fringe on a lake <b>with</b> disturbance and there are 3 other lake-fringe wetland within ½ mile <span style="float: right;">points = 3</span></p>		
<p><input type="checkbox"/> There is at least 1 wetland within ½ mile. <span style="float: right;">points = 2</span></p>		
<p><input type="checkbox"/> There are no wetlands within ½ mile. <span style="float: right;">points = 0</span></p>		
<p><b>H 2. TOTAL Score - opportunity for providing habitat</b> <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>		17
<p>TOTAL for H 1 from page 14</p>		10
<p><b>Total Score for Habitat Functions</b> – add the points for H 1, H 2 and record the result on p. 1</p>		27

**CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS**

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

<b>Wetland Type</b> <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	<b>Category</b>
<b>SC 1.0 Estuarine wetlands (see p. 86)</b> Does the wetland unit meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt. <input type="checkbox"/> YES = Go to SC 1.1                      NO <input checked="" type="checkbox"/> = Go to SC 2.0	
<b>SC 1.1</b> Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO go to SC 1.2	<b>Cat. I</b> <input type="checkbox"/>
<b>SC 1.2</b> Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO = Category II <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre. <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. <input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	<input type="checkbox"/> <b>Cat. I</b> <input type="checkbox"/> <b>Cat. II</b>  <input type="checkbox"/> <b>Dual rating I/II</b>

<p><b>SC 2.0 Natural Heritage Wetlands</b> (see p. 87)          Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? (this question is used to screen out most sites before you need to contact WNHP/DNR)          S/T/R information from Appendix D <input checked="" type="checkbox"/> or accessed from WNHP/DNR web site <input type="checkbox"/></p> <p>YES <input type="checkbox"/> – contact WNHP/DNR (see p. 79) and go to SC 2.2      NO <input checked="" type="checkbox"/></p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?  <input type="checkbox"/> YES = Category I      NO <input checked="" type="checkbox"/> not a Heritage Wetland</p>	<p><input type="checkbox"/> Cat. I</p>
<p><b>SC 3.0 Bogs</b> (see p. 87)          Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</p> <p>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 <input type="checkbox"/>      <input checked="" type="checkbox"/> No - go to Q. 2</p> <p>2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?  <input type="checkbox"/> Yes - go to Q. 3      <input checked="" type="checkbox"/> No - Is not a bog for purpose of rating</p> <p>3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the “bog” species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?  <input type="checkbox"/> Yes – Is a bog for purpose of rating      <input type="checkbox"/> No - go to Q. 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog.</p> <p>1. Is the unit forested (&gt; 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (&gt; 30% coverage of the total shrub/herbaceous cover)?</p> <p>2. <input type="checkbox"/> YES = Category I      No <input type="checkbox"/> Is not a bog for purpose of rating</p>	<p><input type="checkbox"/> Cat. I</p>

<p><b>SC 4.0 Forested Wetlands (see p. 90)</b></p> <p>Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> <b>Old-growth forests:</b> (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.</p> <p style="margin-left: 40px;">NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.</p> <p><input type="checkbox"/> <b>Mature forests:</b> (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.</p> <p><input type="checkbox"/> YES = Category I      NO <input checked="" type="checkbox"/> not a forested wetland with special characteristics</p>	<p>Cat. I <input type="checkbox"/></p>
<p><b>SC 5.0 Wetlands in Coastal Lagoons (see p. 91)</b></p> <p>Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</p> <p><input type="checkbox"/> The lagoon in which the wetland is located contains surface water that is saline or brackish (&gt; 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</p> <p><input type="checkbox"/> YES = Go to SC 5.1      NO <input checked="" type="checkbox"/> not a wetland in a coastal lagoon</p> <p><b>SC 5.1 Does the wetland meets all of the following three conditions?</b></p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74).</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 acre (4350 square feet)</p> <p style="margin-left: 40px;"><input type="checkbox"/> YES = Category I    <input type="checkbox"/> NO = Category II</p>	<p><input type="checkbox"/> Cat. I</p> <p><input type="checkbox"/> Cat. II</p>

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

Wetland name or number 213

**WETLAND RATING FORM – WESTERN WASHINGTON**

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users  
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): 213 Date of site visit: 11/1/2013

Rated by SB Trained by Ecology? Yes  No  Date of training 11/16/2006

SEC: 22 TOWNSHIP: 21 RANGE: 06 Is S/T/R in Appendix D? Yes  No

Map of wetland unit: Figure      Estimated size 2,156 SF

**SUMMARY OF RATING**

Category based on FUNCTIONS provided by wetland

I      II      III      IV

Category I = Score $\geq$ 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	4
Score for Habitat Functions	21
<b>TOTAL score for Functions</b>	<b>28</b>

Category based on SPECIAL CHARACTERISTICS of wetland

I      II      Does not Apply     

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

<b>IV</b>
-----------

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	<input type="checkbox"/>

**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.

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

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

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

## Classification of Wetland Units in Western Washington

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

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

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

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

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.  
Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3       YES – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet both** of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

At least 30% of the open water area is deeper than 6.6 ft (2 m)?

NO – go to 4       YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

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

The wetland is on a slope (*slope can be very gradual*),

The water flows through the wetland in one direction (**unidirectional**) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

NO - go to 5       YES – The wetland class is **Slope**

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

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

The overbank flooding occurs at least once every two years.

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

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

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

NO - go to 7  YES - The wetland class is **Depressional**

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

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

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

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

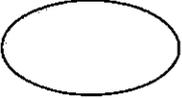
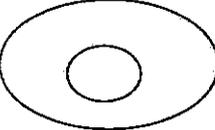
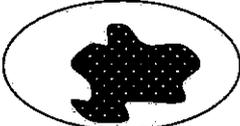
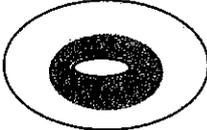
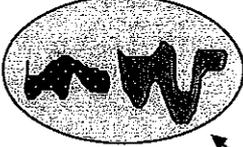
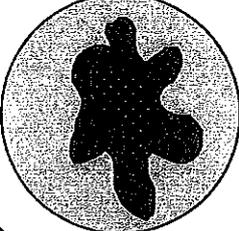
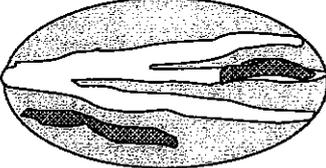
If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

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

<b>D Depressional and Flats Wetlands</b>		<b>Points</b> (only 1 score per box)
<b>HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation</b>		
<b>D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?</b>		<i>(see p.46)</i>
<b>D</b>	<p><b>D 3.1 Characteristics of surface water flows out of the wetland unit</b></p> <p><input type="checkbox"/> Unit is a depression with no surface water leaving it (no outlet) points = 4</p> <p><input checked="" type="checkbox"/> Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2</p> <p><input type="checkbox"/> Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow <b>and no obvious natural outlet</b> and/or outlet is a man-made ditch points = 1 <i>(If ditch is not permanently flowing treat unit as "intermittently flowing")</i></p> <p><input type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 0</p>	2
<b>D</b>	<p><b>D 3.2 Depth of storage during wet periods</b> <i>Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).</i></p> <p><input type="checkbox"/> Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7</p> <p><input type="checkbox"/> The wetland is a "headwater" wetland points = 5</p> <p><input type="checkbox"/> Marks of ponding between 2 ft to &lt; 3 ft from surface or bottom of outlet points = 5</p> <p><input type="checkbox"/> Marks are at least 0.5 ft to &lt; 2 ft from surface or bottom of outlet points = 3</p> <p><input type="checkbox"/> Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1</p> <p><input checked="" type="checkbox"/> Marks of ponding less than 0.5 ft points = 0</p>	0
<b>D</b>	<p><b>D 3.3 Contribution of wetland unit to storage in the watershed</b> <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i></p> <p><input type="checkbox"/> The area of the basin is less than 10 times the area of unit points = 5</p> <p><input type="checkbox"/> The area of the basin is 10 to 100 times the area of the unit points = 3</p> <p><input checked="" type="checkbox"/> The area of the basin is more than 100 times the area of the unit points = 0</p> <p><input type="checkbox"/> Entire unit is in the FLATS class points = 5</p>	0
<b>D</b>	<b>Total for D 3</b>	<i>Add the points in the boxes above</i> 2
<b>D</b>	<p><b>D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?</b> Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following indicators of opportunity apply.</i></p> <p><input type="checkbox"/> Wetland is in a headwater of a river or stream that has flooding problems</p> <p><input type="checkbox"/> Wetland drains to a river or stream that has flooding problems</p> <p><input checked="" type="checkbox"/> Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems</p> <p><input type="checkbox"/> Other _____</p> <p><input checked="" type="checkbox"/> YES multiplier is 2    <input type="checkbox"/> NO multiplier is 1</p>	<i>(see p. 49)</i>  multiplier  2
<b>D</b>	<b>TOTAL - Hydrologic Functions</b> Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	4

<b>These questions apply to wetlands of all HGM classes.</b>		<b>Points</b> <small>(only 1 score per box)</small>											
<b>HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat</b>													
<b>H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?</b>													
<p><b>H 1.1 <u>Vegetation structure</u> (see p. 72)</b>                      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.</p> <p> <input type="checkbox"/> Aquatic bed  <input type="checkbox"/> Emergent plants  <input type="checkbox"/> Scrub/shrub (areas where shrubs have &gt;30% cover)  <input checked="" type="checkbox"/> Forested (areas where trees have &gt;30% cover)                      If the unit has a forested class check if:  <input type="checkbox"/> 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:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> 4 structures or more</td> <td style="width: 60%; text-align: right;">points = 4</td> </tr> <tr> <td><input type="checkbox"/> 3 structures</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td><input type="checkbox"/> 2 structures</td> <td style="text-align: right;">points = 1</td> </tr> <tr> <td><input checked="" type="checkbox"/> 1 structure</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p>Map of Cowardin vegetation classes</p>	<input type="checkbox"/> 4 structures or more	points = 4	<input type="checkbox"/> 3 structures	points = 2	<input type="checkbox"/> 2 structures	points = 1	<input checked="" type="checkbox"/> 1 structure	points = 0	<p><b>Figure</b> _____</p> <p style="font-size: 2em;">0</p>				
<input type="checkbox"/> 4 structures or more	points = 4												
<input type="checkbox"/> 3 structures	points = 2												
<input type="checkbox"/> 2 structures	points = 1												
<input checked="" type="checkbox"/> 1 structure	points = 0												
<p><b>H 1.2. <u>Hydroperiods</u> (see p. 73)</b>                      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)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> Permanently flooded or inundated</td> <td style="width: 20%;"><input type="checkbox"/> 4 or more types present</td> <td style="width: 40%; text-align: right;">points = 3</td> </tr> <tr> <td><input type="checkbox"/> Seasonally flooded or inundated</td> <td><input type="checkbox"/> 3 types present</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> Occasionally flooded or inundated</td> <td><input checked="" type="checkbox"/> 2 types present</td> <td style="text-align: right;">point = 1</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturated only</td> <td><input type="checkbox"/> 1 type present</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p> <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland  <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland  <input type="checkbox"/> <b>Lake-fringe wetland = 2 points</b>  <input type="checkbox"/> <b>Freshwater tidal wetland = 2 points</b> </p> <p style="text-align: right;">Map of hydroperiods</p>	<input type="checkbox"/> Permanently flooded or inundated	<input type="checkbox"/> 4 or more types present	points = 3	<input type="checkbox"/> Seasonally flooded or inundated	<input type="checkbox"/> 3 types present	points = 2	<input checked="" type="checkbox"/> Occasionally flooded or inundated	<input checked="" type="checkbox"/> 2 types present	point = 1	<input checked="" type="checkbox"/> Saturated only	<input type="checkbox"/> 1 type present	points = 0	<p><b>Figure</b> _____</p> <p style="font-size: 2em;">1</p>
<input type="checkbox"/> Permanently flooded or inundated	<input type="checkbox"/> 4 or more types present	points = 3											
<input type="checkbox"/> Seasonally flooded or inundated	<input type="checkbox"/> 3 types present	points = 2											
<input checked="" type="checkbox"/> Occasionally flooded or inundated	<input checked="" type="checkbox"/> 2 types present	point = 1											
<input checked="" type="checkbox"/> Saturated only	<input type="checkbox"/> 1 type present	points = 0											
<p><b>H 1.3. <u>Richness of Plant Species</u> (see p. 75)</b>                      Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>. (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</p> <p style="text-align: center;">If you counted:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> &gt; 19 species</td> <td style="width: 60%; text-align: right;">points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> 5 - 19 species</td> <td style="text-align: right;">points = 1</td> </tr> <tr> <td><input type="checkbox"/> &lt; 5 species</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p>List species below if you want to:</p>	<input type="checkbox"/> > 19 species	points = 2	<input checked="" type="checkbox"/> 5 - 19 species	points = 1	<input type="checkbox"/> < 5 species	points = 0	<p><b>Figure</b> _____</p> <p style="font-size: 2em;">1</p>						
<input type="checkbox"/> > 19 species	points = 2												
<input checked="" type="checkbox"/> 5 - 19 species	points = 1												
<input type="checkbox"/> < 5 species	points = 0												

Total for page 2

<p><b>H 1.4. Interspersion of habitats</b> (see p. 76)                  Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p><input checked="" type="checkbox"/> None = 0 points</p> </div> <div style="text-align: center;">  <p><input type="checkbox"/> Low = 1 point</p> </div> <div style="text-align: center;">  <p><input type="checkbox"/> Moderate = 2 points</p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p><input type="checkbox"/> High = 3 points</p> </div> <div style="text-align: center;">  <p>[riparian braided channels]</p> </div> </div> <p style="text-align: center; margin-top: 10px;"><b>NOTE:</b> 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</p>	<p><b>Figure</b> _____</p> <p style="text-align: center; font-size: 24px;">0</p>
<p><b>H 1.5. Special Habitat Features:</b> (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.</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt;4in. diameter and 6 ft long).</li> <li><input checked="" type="checkbox"/> Standing snags (diameter at the bottom &gt; 4 inches) in the wetland</li> <li><input type="checkbox"/> 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)</li> <li><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt;30degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet turned grey/brown</i>)</li> <li><input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</li> <li><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</li> </ul> <p style="text-align: center; margin-top: 5px;"><i>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</i></p>	<p style="text-align: center; font-size: 24px;">3</p>
<p><b>H 1. TOTAL Score - potential for providing habitat</b>                  Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	<p style="font-size: 24px;">5</p>

**Comments**

<p><b>H 2. Does the wetland unit have the opportunity to provide habitat for many species?</b></p>	<p>Figure <u>    </u></p>
<p><b>H 2.1 Buffers</b> (see p. 80)  <i>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."</i></p> <p><input checked="" type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) <b>Points = 5</b></p> <p><input type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 50% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 25% circumference, . <b>Points = 3</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for &gt; 50% circumference. <b>Points = 3</b></p> <p style="text-align: center;"><b>If buffer does not meet any of the criteria above</b></p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland &gt; 95% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for &gt;50% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> Heavy grazing in buffer. <b>Points = 1</b></p> <p><input type="checkbox"/> Vegetated buffers are &lt;2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) <b>Points = 0.</b></p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. <b>Points = 1</b></p> <p style="text-align: center;">Aerial photo showing buffers</p>	<p>5</p>
<p><b>H 2.2 Corridors and Connections</b> (see p. 81)</p> <p>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? (<i>dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor</i>).</p> <p><input checked="" type="checkbox"/> YES = 4 points (go to H 2.3)      <input type="checkbox"/> NO = go to H 2.2.2</p> <p>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? <b>OR</b> a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?</p> <p><input type="checkbox"/> YES = 2 points (go to H 2.3)      <input type="checkbox"/> NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland:</p> <p><input type="checkbox"/> within 5 mi (8km) of a brackish or salt water estuary OR</p> <p><input type="checkbox"/> within 3 mi of a large field or pasture (&gt;40 acres) OR</p> <p><input type="checkbox"/> within 1 mi of a lake greater than 20 acres?</p> <p><input type="checkbox"/> YES = 1 point      <input type="checkbox"/> NO = 0 points</p>	<p>4</p>

Total for page 9

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <http://wdfw.wa.gov/hab/phslist.htm>)

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

- Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).
- Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (full descriptions in WDFW PHS report p. 152).
- Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- Old-growth/Mature 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 than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
- Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (full descriptions in WDFW PHS report p. 158).
- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (full descriptions in WDFW PHS report p. 161).
- Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
- 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.
- Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

- 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)

2

<p>H 2.4 <u>Wetland Landscape</u> (choose the <i>one</i> description of the landscape around the wetland that best fits) (see p. 84)</p>		
<p><input checked="" type="checkbox"/> 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</p>		5
<p><input type="checkbox"/> The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5</p>		
<p><input type="checkbox"/> There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3</p>		
<p><input type="checkbox"/> The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3</p>		
<p><input type="checkbox"/> There is at least 1 wetland within ½ mile. points = 2</p>		
<p><input type="checkbox"/> There are no wetlands within ½ mile. points = 0</p>		
<p><b>H 2. TOTAL Score - opportunity for providing habitat</b>  <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>		16
<p>TOTAL for H 1 from page 14</p>		5
<p><b>Total Score for Habitat Functions</b> – add the points for H 1, H 2 and record the result on p. 1</p>		21



<p><b>SC 2.0 Natural Heritage Wetlands</b> (<i>see p. 87</i>)                  Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? (<i>this question is used to screen out most sites before you need to contact WNHP/DNR</i>)                  S/T/R information from Appendix D <input checked="" type="checkbox"/> or accessed from WNHP/DNR web site <input type="checkbox"/></p> <p>YES <input type="checkbox"/> – contact WNHP/DNR (see p. 79) and go to SC 2.2      NO <input checked="" type="checkbox"/></p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?  <input type="checkbox"/> YES = Category I      NO <input checked="" type="checkbox"/> not a Heritage Wetland</p>	<input type="checkbox"/> Cat. I
<p><b>SC 3.0 Bogs</b> (<i>see p. 87</i>)                  Does the wetland unit (<b>or any part of the unit</b>) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 <input type="checkbox"/>      <input checked="" type="checkbox"/> No - go to Q. 2</p> <p>2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?  <input type="checkbox"/> Yes - go to Q. 3      <input checked="" type="checkbox"/> No - Is not a bog for purpose of rating</p> <p>3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the “bog” species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?  <input type="checkbox"/> Yes – Is a bog for purpose of rating      <input type="checkbox"/> No - go to Q. 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog.</p> <p>1. Is the unit forested (&gt; 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (&gt; 30% coverage of the total shrub/herbaceous cover)?</p> <p>2. <input type="checkbox"/> YES = Category I      No <input type="checkbox"/> Is not a bog for purpose of rating</p>	<input type="checkbox"/> Cat. I

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

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

Wetland name or number E10

### WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users  
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): E10 Date of site visit: 11/1/2013

Rated by SB Trained by Ecology? Yes  No  Date of training 11/06

SEC: 15 TOWNSHIP: 21 RANGE: 06 Is S/T/R in Appendix D? Yes  No

Map of wetland unit: Figure \_\_\_\_\_ Estimated size 4,325 Square Feet

## SUMMARY OF RATING

### Category based on FUNCTIONS provided by wetland

I \_\_\_ II \_\_\_ III  IV \_\_\_

Category I = Score $\geq 70$
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score $< 30$

Score for Water Quality Functions	6
Score for Hydrologic Functions	14
Score for Habitat Functions	21
<b>TOTAL score for Functions</b>	<b>41</b>

### Category based on SPECIAL CHARACTERISTICS of wetland

I \_\_\_ II \_\_\_ Does not Apply \_\_\_

**Final Category** (choose the “highest” category from above)

III
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### 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	<input type="checkbox"/>

**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.

<b>Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)</b>	<b>YES</b>	<b>NO</b>
<p>SP1. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i></p> <p>For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.</p>		✓
<p>SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i></p> <p>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).</p>		✓
<p>SP3. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i></p>		✓
<p>SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i></p> <p>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.</p>		✓

*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.

## Classification of Wetland Units in Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?

NO – go to 2       YES – the wetland class is **Tidal Fringe**

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

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

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.

Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3       YES – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet both** of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

At least 30% of the open water area is deeper than 6.6 ft (2 m)?

NO – go to 4       YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

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

The wetland is on a slope (*slope can be very gradual*),

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

NO - go to 5     YES – The wetland class is **Slope**

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

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

The overbank flooding occurs at least once every two years.

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

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

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

NO - go to 7  YES - The wetland class is **Depressional**

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

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

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

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

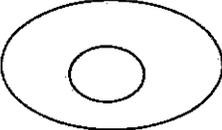
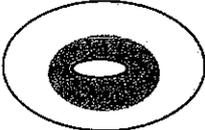
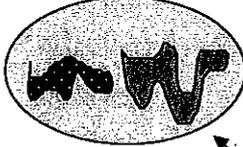
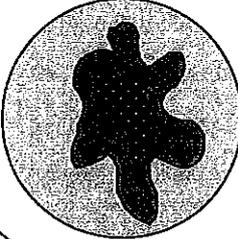
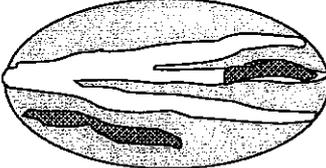
If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

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

<b>D Depressional and Flats Wetlands</b>		<b>Points</b> (only 1 score per box)
<b>HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation</b>		
<b>D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?</b>		<i>(see p.46)</i>
<b>D</b>	<p><b>D 3.1 Characteristics of surface water flows out of the wetland unit</b></p> <p><input checked="" type="checkbox"/> Unit is a depression with no surface water leaving it (no outlet) points = 4</p> <p><input type="checkbox"/> Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2</p> <p><input type="checkbox"/> Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow <b>and no obvious natural outlet</b> and/or outlet is a man-made ditch points = 1 <i>(If ditch is not permanently flowing treat unit as "intermittently flowing")</i></p> <p><input type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 0</p>	4
<b>D</b>	<p><b>D 3.2 Depth of storage during wet periods</b></p> <p><i>Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).</i></p> <p><input type="checkbox"/> Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7</p> <p><input type="checkbox"/> The wetland is a "headwater" wetland points = 5</p> <p><input type="checkbox"/> Marks of ponding between 2 ft to &lt; 3 ft from surface or bottom of outlet points = 5</p> <p><input type="checkbox"/> Marks are at least 0.5 ft to &lt; 2 ft from surface or bottom of outlet points = 3</p> <p><input type="checkbox"/> Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1</p> <p><input checked="" type="checkbox"/> Marks of ponding less than 0.5 ft points = 0</p>	0
<b>D</b>	<p><b>D 3.3 Contribution of wetland unit to storage in the watershed</b></p> <p><i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i></p> <p><input type="checkbox"/> The area of the basin is less than 10 times the area of unit points = 5</p> <p><input checked="" type="checkbox"/> The area of the basin is 10 to 100 times the area of the unit points = 3</p> <p><input type="checkbox"/> The area of the basin is more than 100 times the area of the unit points = 0</p> <p><input type="checkbox"/> Entire unit is in the FLATS class points = 5</p>	3
<b>D</b>	<b>Total for D 3</b> <i>Add the points in the boxes above</i>	<b>7</b>
<b>D</b>	<p><b>D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?</b></p> <p>Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur.</p> <p><i>Note which of the following indicators of opportunity apply.</i></p> <p><input type="checkbox"/> Wetland is in a headwater of a river or stream that has flooding problems</p> <p><input type="checkbox"/> Wetland drains to a river or stream that has flooding problems</p> <p><input checked="" type="checkbox"/> Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems</p> <p><input type="checkbox"/> Other _____</p> <p><input checked="" type="checkbox"/> <b>YES</b> multiplier is 2    <input type="checkbox"/> <b>NO</b> multiplier is 1</p>	<i>(see p. 49)</i>  multiplier  2
<b>D</b>	<b>TOTAL - Hydrologic Functions</b> Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	<b>14</b>

<b>These questions apply to wetlands of all HGM classes.</b>		<b>Points</b> (only 1 score per box)											
<b>HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat</b>													
<b>H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?</b>													
<p>H 1.1 <u>Vegetation structure</u> (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.</p> <p> <input type="checkbox"/> Aquatic bed  <input type="checkbox"/> Emergent plants  <input type="checkbox"/> Scrub/shrub (areas where shrubs have &gt;30% cover)  <input checked="" type="checkbox"/> Forested (areas where trees have &gt;30% cover)                      If the unit has a forested class check if:  <input checked="" type="checkbox"/> 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:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> 4 structures or more</td> <td style="width: 60%; text-align: right;">points = 4</td> </tr> <tr> <td><input type="checkbox"/> 3 structures</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> 2 structures</td> <td style="text-align: right;">points = 1</td> </tr> <tr> <td><input type="checkbox"/> 1 structure</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p>Map of Cowardin vegetation classes</p>	<input type="checkbox"/> 4 structures or more	points = 4	<input type="checkbox"/> 3 structures	points = 2	<input checked="" type="checkbox"/> 2 structures	points = 1	<input type="checkbox"/> 1 structure	points = 0	<p>Figure <u>    </u></p> <p style="font-size: 2em;">1</p>				
<input type="checkbox"/> 4 structures or more	points = 4												
<input type="checkbox"/> 3 structures	points = 2												
<input checked="" type="checkbox"/> 2 structures	points = 1												
<input type="checkbox"/> 1 structure	points = 0												
<p>H 1.2. <u>Hydroperiods</u> (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)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> Permanently flooded or inundated</td> <td style="width: 20%;"><input type="checkbox"/> 4 or more types present</td> <td style="width: 40%; text-align: right;">points = 3</td> </tr> <tr> <td><input type="checkbox"/> Seasonally flooded or inundated</td> <td><input type="checkbox"/> 3 types present</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> Occasionally flooded or inundated</td> <td><input checked="" type="checkbox"/> 2 types present</td> <td style="text-align: right;">point = 1</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturated only</td> <td><input type="checkbox"/> 1 type present</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p> <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland  <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland  <input type="checkbox"/> <b>Lake-fringe wetland = 2 points</b>  <input type="checkbox"/> <b>Freshwater tidal wetland = 2 points</b> </p> <p style="text-align: right;">Map of hydroperiods</p>	<input type="checkbox"/> Permanently flooded or inundated	<input type="checkbox"/> 4 or more types present	points = 3	<input type="checkbox"/> Seasonally flooded or inundated	<input type="checkbox"/> 3 types present	points = 2	<input checked="" type="checkbox"/> Occasionally flooded or inundated	<input checked="" type="checkbox"/> 2 types present	point = 1	<input checked="" type="checkbox"/> Saturated only	<input type="checkbox"/> 1 type present	points = 0	<p>Figure <u>    </u></p> <p style="font-size: 2em;">1</p>
<input type="checkbox"/> Permanently flooded or inundated	<input type="checkbox"/> 4 or more types present	points = 3											
<input type="checkbox"/> Seasonally flooded or inundated	<input type="checkbox"/> 3 types present	points = 2											
<input checked="" type="checkbox"/> Occasionally flooded or inundated	<input checked="" type="checkbox"/> 2 types present	point = 1											
<input checked="" type="checkbox"/> Saturated only	<input type="checkbox"/> 1 type present	points = 0											
<p>H 1.3. <u>Richness of Plant Species</u> (see p. 75)                      Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>. (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:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> &gt; 19 species</td> <td style="width: 60%; text-align: right;">points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> 5 - 19 species</td> <td style="text-align: right;">points = 1</td> </tr> <tr> <td><input type="checkbox"/> &lt; 5 species</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p>List species below if you want to:</p>	<input type="checkbox"/> > 19 species	points = 2	<input checked="" type="checkbox"/> 5 - 19 species	points = 1	<input type="checkbox"/> < 5 species	points = 0	<p style="font-size: 2em;">1</p>						
<input type="checkbox"/> > 19 species	points = 2												
<input checked="" type="checkbox"/> 5 - 19 species	points = 1												
<input type="checkbox"/> < 5 species	points = 0												

Total for page      3

<p><b>H 1.4. Interspersion of habitats (see p. 76)</b>                  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.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p><input checked="" type="checkbox"/> None = 0 points</p> </div> <div style="text-align: center;">  <p><input type="checkbox"/> Low = 1 point</p> </div> <div style="text-align: center;">  <p><input type="checkbox"/> Moderate = 2 points</p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p><input type="checkbox"/> High = 3 points</p> </div> <div style="text-align: center;">  <p>[riparian braided channels]</p> </div> </div> <p><b>NOTE:</b> 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</p>	<p>Figure _____</p> <p style="text-align: center; font-size: 2em;">0</p>
<p><b>H 1.5. Special Habitat Features: (see p. 77)</b>                  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.</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt;4in. diameter and 6 ft long).</li> <li><input checked="" type="checkbox"/> Standing snags (diameter at the bottom &gt; 4 inches) in the wetland</li> <li><input type="checkbox"/> 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)</li> <li><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt;30degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet turned grey/brown</i>)</li> <li><input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</li> <li><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</li> </ul> <p><i>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</i></p>	3
<p><b>H 1. TOTAL Score - potential for providing habitat</b>                  Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	6

**Comments**

<p><b>H 2. Does the wetland unit have the opportunity to provide habitat for many species?</b></p> <p><b>H 2.1 Buffers (see p. 80)</b>  <i>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."</i></p> <p><input checked="" type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) <b>Points = 5</b></p> <p><input type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 50% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 25% circumference, . <b>Points = 3</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for &gt; 50% circumference. <b>Points = 3</b></p> <p style="text-align: center;"><b>If buffer does not meet any of the criteria above</b></p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland &gt; 95% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for &gt;50% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> Heavy grazing in buffer. <b>Points = 1</b></p> <p><input type="checkbox"/> Vegetated buffers are &lt;2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) <b>Points = 0.</b></p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. <b>Points = 1</b></p> <p style="text-align: center;">Aerial photo showing buffers</p>	<p><b>Figure</b> <u>    </u></p> <p style="text-align: center; font-size: 24pt;">5</p>
<p><b>H 2.2 Corridors and Connections (see p. 81)</b></p> <p>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? (<i>dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor</i>).</p> <p><input checked="" type="checkbox"/> YES = 4 points (go to H 2.3)      <input type="checkbox"/> NO = go to H 2.2.2</p> <p>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? <b>OR</b> a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above?</p> <p><input type="checkbox"/> YES = 2 points (go to H 2.3)      <input type="checkbox"/> NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland:</p> <p><input type="checkbox"/> within 5 mi (8km) of a brackish or salt water estuary OR</p> <p><input type="checkbox"/> within 3 mi of a large field or pasture (&gt;40 acres) OR</p> <p><input type="checkbox"/> within 1 mi of a lake greater than 20 acres?</p> <p><input type="checkbox"/> YES = 1 point      <input type="checkbox"/> NO = 0 points</p>	<p style="text-align: center; font-size: 24pt;">4</p>

Total for page   9

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <http://wdfw.wa.gov/hab/phslist.htm>)

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

- Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).
- Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).
- Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- Old-growth/Mature 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 than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
- Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).
- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).
- Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A*).
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
- 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.
- Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

- 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

<p><b>H 2.4 Wetland Landscape</b> (<i>choose the one description of the landscape around the wetland that best fits</i>) (see p. 84)</p> <p><input checked="" type="checkbox"/> 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. <span style="float: right;">points = 5</span></p> <p><input type="checkbox"/> The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile <span style="float: right;">points = 5</span></p> <p><input type="checkbox"/> There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed <span style="float: right;">points = 3</span></p> <p><input type="checkbox"/> The wetland is Lake-fringe on a lake <b>with</b> disturbance and there are 3 other lake-fringe wetland within ½ mile <span style="float: right;">points = 3</span></p> <p><input type="checkbox"/> There is at least 1 wetland within ½ mile. <span style="float: right;">points = 2</span></p> <p><input type="checkbox"/> There are no wetlands within ½ mile. <span style="float: right;">points = 0</span></p>	5
<p><b>H 2. TOTAL Score - opportunity for providing habitat</b> <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	15
<p>TOTAL for H 1 from page 14</p>	6
<p><b>Total Score for Habitat Functions</b> – add the points for H 1, H 2 and record the result on p. 1</p>	21

**CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS**

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

<b>Wetland Type</b> <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	<b>Category</b>
<b>SC 1.0 Estuarine wetlands (see p. 86)</b> Does the wetland unit meet the following criteria for Estuarine wetlands? <input type="checkbox"/> The dominant water regime is tidal, <input type="checkbox"/> Vegetated, and <input type="checkbox"/> With a salinity greater than 0.5 ppt. <input type="checkbox"/> YES = Go to SC 1.1                      NO <input checked="" type="checkbox"/> =Go to SC 2.0	
<b>SC 1.1</b> Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO go to SC 1.2	<b>Cat. I</b> <input type="checkbox"/>
<b>SC 1.2</b> Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO = Category II <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre. <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. <input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	<input type="checkbox"/> <b>Cat. I</b> <input type="checkbox"/> <b>Cat. II</b> <input type="checkbox"/> <b>Dual rating I/II</b>

<p><b>SC 2.0 Natural Heritage Wetlands (see p. 87)</b>                  Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? <i>(this question is used to screen out most sites before you need to contact WNHP/DNR)</i>                  S/T/R information from Appendix D <input checked="" type="checkbox"/> or accessed from WNHP/DNR web site <input type="checkbox"/></p> <p>YES <input type="checkbox"/> – contact WNHP/DNR (see p. 79) and go to SC 2.2                      NO <input checked="" type="checkbox"/></p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species?  <input type="checkbox"/> YES = Category I    NO <input checked="" type="checkbox"/> not a Heritage Wetland</p>	<input type="checkbox"/> Cat. I
<p><b>SC 3.0 Bogs (see p. 87)</b>                  Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 <input type="checkbox"/>                      <input checked="" type="checkbox"/> No - go to Q. 2</p> <p>2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?  <input type="checkbox"/> Yes - go to Q. 3                      <input checked="" type="checkbox"/> No - Is not a bog for purpose of rating</p> <p>3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the “bog” species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?  <input type="checkbox"/> Yes – Is a bog for purpose of rating    <input type="checkbox"/> No - go to Q. 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog.</p> <p>1. Is the unit forested (&gt; 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (&gt; 30% coverage of the total shrub/herbaceous cover)?</p> <p>2. <input type="checkbox"/> YES = Category I    No <input type="checkbox"/> Is not a bog for purpose of rating</p>	<input type="checkbox"/> Cat. I

<p><b>SC 4.0 Forested Wetlands (see p. 90)</b>                  Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> <b>Old-growth forests:</b> (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.</p> <p style="margin-left: 40px;">NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.</p> <p><input type="checkbox"/> <b>Mature forests:</b> (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.</p> <p><input type="checkbox"/> YES = Category I                      NO <input checked="" type="checkbox"/> not a forested wetland with special characteristics</p>	<p><b>Cat. I</b> <input type="checkbox"/></p>
<p><b>SC 5.0 Wetlands in Coastal Lagoons (see p. 91)</b>                  Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</p> <p><input type="checkbox"/> The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks</p> <p><input type="checkbox"/> The lagoon in which the wetland is located contains surface water that is saline or brackish (&gt; 0.5 ppt) during most of the year in at least a portion of the lagoon (<i>needs to be measured near the bottom</i>)</p> <p><input type="checkbox"/> YES = Go to SC 5.1                      NO <input checked="" type="checkbox"/> not a wetland in a coastal lagoon</p> <p><b>SC 5.1 Does the wetland meets all of the following three conditions?</b></p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74).</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland is larger than 1/10 acre (4350 square feet)</p> <p style="margin-left: 40px;"><input type="checkbox"/> YES = Category I    <input type="checkbox"/> NO = Category II</p>	<p><input type="checkbox"/> <b>Cat. I</b></p> <p><input type="checkbox"/> <b>Cat. II</b></p>

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

Wetland name or number E7

### WETLAND RATING FORM – WESTERN WASHINGTON

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users  
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): E7 Date of site visit: 11/1/2013

Rated by SB Trained by Ecology? Yes  No  Date of training 11/06

SEC: 15 TOWNSHIP: 21 RANGE: 06 Is S/T/R in Appendix D? Yes  No

Map of wetland unit: Figure      Estimated size 3,800 Square Feet

## SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I      II      III  IV     

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

Score for Water Quality Functions	6
Score for Hydrologic Functions	14
Score for Habitat Functions	24
<b>TOTAL score for Functions</b>	<b>44</b>

Category based on SPECIAL CHARACTERISTICS of wetland

I      II      Does not Apply     

III

**Final Category** (choose the “highest” category from above)

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	

**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.

<b>Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)</b>	<b>YES</b>	<b>NO</b>
<p>SP1. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.</p>		✓
<p>SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i> 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).</p>		✓
<p>SP3. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i></p>		✓
<p>SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i> 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.</p>		✓

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.

## Classification of Wetland Units in Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?

NO – go to 2       YES – the wetland class is **Tidal Fringe**

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

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

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.

Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3       YES – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet both** of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

At least 30% of the open water area is deeper than 6.6 ft (2 m)?

NO – go to 4       YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

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

The wetland is on a slope (*slope can be very gradual*),

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

NO - go to 5     YES – The wetland class is **Slope**

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

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

The overbank flooding occurs at least once every two years.

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

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

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

NO - go to 7  YES - The wetland class is **Depressional**

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

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

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

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

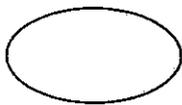
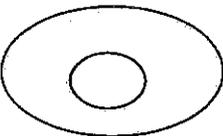
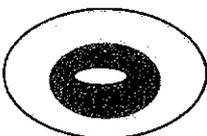
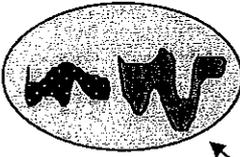
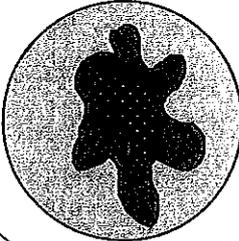
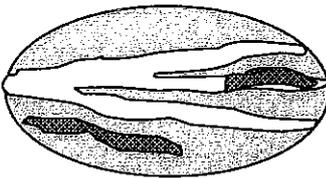
If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

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

<b>D Depressional and Flats Wetlands</b>		<b>Points</b> (only 1 score per box)
<b>HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation</b>		
<b>D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?</b>		<i>(see p.46)</i>
<b>D</b>	<b>D 3.1 Characteristics of surface water flows out of the wetland unit</b> <input checked="" type="checkbox"/> Unit is a depression with no surface water leaving it (no outlet) points = 4 <input type="checkbox"/> Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 <input type="checkbox"/> Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 <i>(If ditch is not permanently flowing treat unit as "intermittently flowing")</i> <input type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet ( <i>permanently flowing</i> ) points = 0	4
<b>D</b>	<b>D 3.2 Depth of storage during wet periods</b> <i>Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).</i> <input type="checkbox"/> Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 <input type="checkbox"/> The wetland is a "headwater" wetland points = 5 <input type="checkbox"/> Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 <input type="checkbox"/> Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 <input type="checkbox"/> Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 <input checked="" type="checkbox"/> Marks of ponding less than 0.5 ft points = 0	0
<b>D</b>	<b>D 3.3 Contribution of wetland unit to storage in the watershed</b> <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i> <input type="checkbox"/> The area of the basin is less than 10 times the area of unit points = 5 <input checked="" type="checkbox"/> The area of the basin is 10 to 100 times the area of the unit points = 3 <input type="checkbox"/> The area of the basin is more than 100 times the area of the unit points = 0 <input type="checkbox"/> Entire unit is in the FLATS class points = 5	3
<b>D</b>	<b>Total for D 3</b> <i>Add the points in the boxes above</i>	<b>7</b>
<b>D</b>	<b>D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?</b> Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following indicators of opportunity apply.</i> <input type="checkbox"/> Wetland is in a headwater of a river or stream that has flooding problems <input type="checkbox"/> Wetland drains to a river or stream that has flooding problems <input checked="" type="checkbox"/> Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems <input type="checkbox"/> Other _____ <input checked="" type="checkbox"/> YES multiplier is 2 <input type="checkbox"/> NO multiplier is 1	<i>(see p. 49)</i>  multiplier  2
<b>D</b>	<b>TOTAL - Hydrologic Functions</b> Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	<b>14</b>

<b>These questions apply to wetlands of all HGM classes.</b>		<b>Points</b> (only 1 score per box)											
<b>HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat</b>													
<b>H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?</b>													
<p><b>H 1.1. <u>Vegetation structure</u> (see p. 72)</b>                      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.</p> <p> <input type="checkbox"/> Aquatic bed  <input checked="" type="checkbox"/> Emergent plants  <input type="checkbox"/> Scrub/shrub (areas where shrubs have &gt;30% cover)  <input checked="" type="checkbox"/> Forested (areas where trees have &gt;30% cover)                      If the unit has a forested class check if:  <input checked="" type="checkbox"/> 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:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> 4 structures or more</td> <td style="width: 60%; text-align: right;">points = 4</td> </tr> <tr> <td><input checked="" type="checkbox"/> 3 structures</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td><input type="checkbox"/> 2 structures</td> <td style="text-align: right;">points = 1</td> </tr> <tr> <td><input type="checkbox"/> 1 structure</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p>Map of Cowardin vegetation classes</p>	<input type="checkbox"/> 4 structures or more	points = 4	<input checked="" type="checkbox"/> 3 structures	points = 2	<input type="checkbox"/> 2 structures	points = 1	<input type="checkbox"/> 1 structure	points = 0	<p><b>Figure</b> _____</p> <p style="font-size: 2em;">2</p>				
<input type="checkbox"/> 4 structures or more	points = 4												
<input checked="" type="checkbox"/> 3 structures	points = 2												
<input type="checkbox"/> 2 structures	points = 1												
<input type="checkbox"/> 1 structure	points = 0												
<p><b>H 1.2. <u>Hydroperiods</u> (see p. 73)</b>                      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)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> Permanently flooded or inundated</td> <td style="width: 20%;"><input type="checkbox"/> 4 or more types present</td> <td style="width: 40%; text-align: right;">points = 3</td> </tr> <tr> <td><input checked="" type="checkbox"/> Seasonally flooded or inundated</td> <td><input checked="" type="checkbox"/> 3 types present</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> Occasionally flooded or inundated</td> <td><input type="checkbox"/> 2 types present</td> <td style="text-align: right;">point = 1</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturated only</td> <td><input type="checkbox"/> 1 type present</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p> <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland  <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland  <input type="checkbox"/> <b>Lake-fringe wetland = 2 points</b>  <input type="checkbox"/> <b>Freshwater tidal wetland = 2 points</b> </p> <p style="text-align: right;">Map of hydroperiods</p>	<input type="checkbox"/> Permanently flooded or inundated	<input type="checkbox"/> 4 or more types present	points = 3	<input checked="" type="checkbox"/> Seasonally flooded or inundated	<input checked="" type="checkbox"/> 3 types present	points = 2	<input checked="" type="checkbox"/> Occasionally flooded or inundated	<input type="checkbox"/> 2 types present	point = 1	<input checked="" type="checkbox"/> Saturated only	<input type="checkbox"/> 1 type present	points = 0	<p><b>Figure</b> _____</p> <p style="font-size: 2em;">2</p>
<input type="checkbox"/> Permanently flooded or inundated	<input type="checkbox"/> 4 or more types present	points = 3											
<input checked="" type="checkbox"/> Seasonally flooded or inundated	<input checked="" type="checkbox"/> 3 types present	points = 2											
<input checked="" type="checkbox"/> Occasionally flooded or inundated	<input type="checkbox"/> 2 types present	point = 1											
<input checked="" type="checkbox"/> Saturated only	<input type="checkbox"/> 1 type present	points = 0											
<p><b>H 1.3. <u>Richness of Plant Species</u> (see p. 75)</b>                      Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>. (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</p> <p style="text-align: center;">If you counted:</p> <p>List species below if you want to:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> &gt; 19 species</td> <td style="width: 60%; text-align: right;">points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> 5 - 19 species</td> <td style="text-align: right;">points = 1</td> </tr> <tr> <td><input type="checkbox"/> &lt; 5 species</td> <td style="text-align: right;">points = 0</td> </tr> </table>	<input type="checkbox"/> > 19 species	points = 2	<input checked="" type="checkbox"/> 5 - 19 species	points = 1	<input type="checkbox"/> < 5 species	points = 0	<p style="font-size: 2em;">1</p>						
<input type="checkbox"/> > 19 species	points = 2												
<input checked="" type="checkbox"/> 5 - 19 species	points = 1												
<input type="checkbox"/> < 5 species	points = 0												

Total for page 5

<p><b>H 1.4. Interspersion of habitats (see p. 76)</b>                  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.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p><input type="checkbox"/> None = 0 points</p> </div> <div style="text-align: center;">  <p><input checked="" type="checkbox"/> Low = 1 point</p> </div> <div style="text-align: center;">  <p><input type="checkbox"/> Moderate = 2 points</p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p><input type="checkbox"/> High = 3 points</p> </div> <div style="text-align: center;">  <p>[riparian braided channels]</p> </div> </div> <p><b>NOTE:</b> 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</p>	<p>Figure <u>    </u></p> <p style="text-align: center; font-size: 24px;">1</p>
<p><b>H 1.5. Special Habitat Features: (see p. 77)</b>                  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.</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt;4in. diameter and 6 ft long).</li> <li><input checked="" type="checkbox"/> Standing snags (diameter at the bottom &gt; 4 inches) in the wetland</li> <li><input type="checkbox"/> 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)</li> <li><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt;30degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet turned grey/brown</i>)</li> <li><input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</li> <li><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</li> </ul> <p><i>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</i></p>	<p style="text-align: center; font-size: 24px;">3</p>
<p><b>H 1. TOTAL Score - potential for providing habitat</b>                  Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	<p style="font-size: 24px; border: 2px dashed black;">9</p>

**Comments**

<p><b>H 2. Does the wetland unit have the opportunity to provide habitat for many species?</b></p>	
<p><b>H 2.1 Buffers</b> (see p. 80)  <i>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."</i></p> <p><input checked="" type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) <b>Points = 5</b></p> <p><input type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 50% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 25% circumference, . <b>Points = 3</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for &gt; 50% circumference. <b>Points = 3</b></p> <p style="text-align: center;"><b>If buffer does not meet any of the criteria above</b></p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland &gt; 95% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for &gt;50% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> Heavy grazing in buffer. <b>Points = 1</b></p> <p><input type="checkbox"/> Vegetated buffers are &lt;2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) <b>Points = 0.</b></p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. <b>Points = 1</b></p> <p style="text-align: center;">Aerial photo showing buffers</p>	<p>Figure <u>    </u></p> <p style="text-align: center;">5</p>
<p><b>H 2.2 Corridors and Connections</b> (see p. 81)</p> <p>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? (<i>dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor</i>).</p> <p><input checked="" type="checkbox"/> YES = 4 points (go to H 2.3)      <input type="checkbox"/> NO = go to H 2.2.2</p> <p>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? <b>OR</b> a <b>Lake-fringe</b> wetland, if it does not have an undisturbed corridor as in the question above?</p> <p><input type="checkbox"/> YES = 2 points (go to H 2.3)      <input type="checkbox"/> NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland:</p> <p><input type="checkbox"/> within 5 mi (8km) of a brackish or salt water estuary OR</p> <p><input type="checkbox"/> within 3 mi of a large field or pasture (&gt;40 acres) OR</p> <p><input type="checkbox"/> within 1 mi of a lake greater than 20 acres?</p> <p><input type="checkbox"/> YES = 1 point      <input type="checkbox"/> NO = 0 points</p>	<p style="text-align: center;">4</p>

Total for page 9

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <http://wdfw.wa.gov/hab/phslist.htm>)

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

- Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).
- Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).
- Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- Old-growth/Mature 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 than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
- Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).
- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).
- Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A*).
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
- 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.
- Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

- 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

<p><b>H 2.4 Wetland Landscape</b> (<i>choose the one description of the landscape around the wetland that best fits</i>) (see p. 84)</p> <p><input checked="" type="checkbox"/> 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. <span style="float: right;">points = 5</span></p> <p><input type="checkbox"/> The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile <span style="float: right;">points = 5</span></p> <p><input type="checkbox"/> There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed <span style="float: right;">points = 3</span></p> <p><input type="checkbox"/> The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile <span style="float: right;">points = 3</span></p> <p><input type="checkbox"/> There is at least 1 wetland within ½ mile. <span style="float: right;">points = 2</span></p> <p><input type="checkbox"/> There are no wetlands within ½ mile. <span style="float: right;">points = 0</span></p>	5
<p><b>H 2. TOTAL Score - opportunity for providing habitat</b> <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	15
<p>TOTAL for H 1 from page 14</p>	9
<p><b>Total Score for Habitat Functions</b> – add the points for H 1, H 2 and record the result on p. 1</p>	24



<p><b>SC 2.0 Natural Heritage Wetlands (see p. 87)</b>          Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? <i>(this question is used to screen out most sites before you need to contact WNHP/DNR)</i>          S/T/R information from Appendix D <input checked="" type="checkbox"/> or accessed from WNHP/DNR web site <input type="checkbox"/></p> <p>YES <input type="checkbox"/> – contact WNHP/DNR (see p. 79) and go to SC 2.2      NO <input checked="" type="checkbox"/></p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?  <input type="checkbox"/> YES = Category I      NO <input checked="" type="checkbox"/> not a Heritage Wetland</p>	<input type="checkbox"/> Cat. I
<p><b>SC 3.0 Bogs (see p. 87)</b>          Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 <input type="checkbox"/>      <input checked="" type="checkbox"/> No - go to Q. 2</p> <p>2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?  <input type="checkbox"/> Yes - go to Q. 3      <input checked="" type="checkbox"/> No - Is not a bog for purpose of rating</p> <p>3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the “bog” species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?  <input type="checkbox"/> Yes – Is a bog for purpose of rating      <input type="checkbox"/> No - go to Q. 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog.</p> <p>1. Is the unit forested (&gt; 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (&gt; 30% coverage of the total shrub/herbaceous cover)?</p> <p>2. <input type="checkbox"/> YES = Category I      No <input type="checkbox"/> Is not a bog for purpose of rating</p>	<input type="checkbox"/> Cat. I

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

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

Wetland name or number E8

### WETLAND RATING FORM – WESTERN WASHINGTON

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

Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): E8 Date of site visit: 11/1/2013

Rated by SB Trained by Ecology? Yes  No  Date of training 11/06

SEC: 15 TOWNSHIP: 21 RANGE: 06 Is S/T/R in Appendix D? Yes  No

Map of wetland unit: Figure \_\_\_\_\_ Estimated size 2,940 Square Feet

## SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I \_\_\_ II \_\_\_ III  IV \_\_\_

Category I = Score $\geq 70$
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score $< 30$

Score for Water Quality Functions	6
Score for Hydrologic Functions	14
Score for Habitat Functions	21
<b>TOTAL score for Functions</b>	<b>41</b>

Category based on SPECIAL CHARACTERISTICS of wetland

I \_\_\_ II \_\_\_ Does not Apply \_\_\_

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

**III**

Summary of basic information about the wetland unit

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

**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.

<b>Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)</b>	<b>YES</b>	<b>NO</b>
<p>SP1. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.</p>		✓
<p>SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i> 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).</p>		✓
<p>SP3. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i></p>		✓
<p>SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i> 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.</p>		✓

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.

### Classification of Wetland Units in Western Washington

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

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

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?  YES – **Freshwater Tidal Fringe**     NO – **Saltwater Tidal Fringe (Estuarine)**  
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for Riverine wetlands. If it is Saltwater Tidal Fringe it is rated as an Estuarine wetland. Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term “Estuarine” wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p. ).*

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

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

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

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

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

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

The overbank flooding occurs at least once every two years.

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

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

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

NO - go to 7  YES - The wetland class is **Depressional**

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

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

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

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

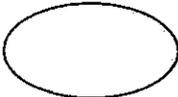
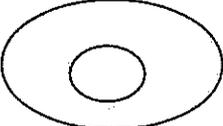
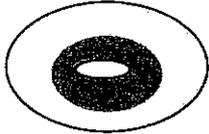
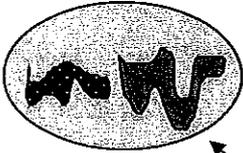
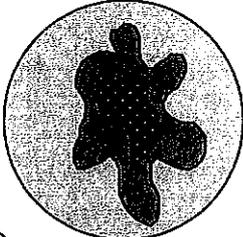
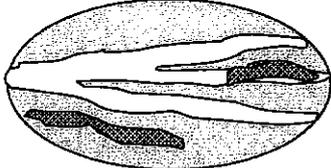
If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

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

<b>D Depressional and Flats Wetlands</b>		<b>Points</b> (only 1 score per box)
<b>HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation</b>		
<b>D 3. Does the wetland unit have the potential to reduce flooding and erosion?</b>		<i>(see p.46)</i>
<b>D</b>	<p><b>D 3.1 Characteristics of surface water flows out of the wetland unit</b></p> <p><input checked="" type="checkbox"/> Unit is a depression with no surface water leaving it (no outlet) points = 4</p> <p><input type="checkbox"/> Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2</p> <p><input type="checkbox"/> Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 <i>(If ditch is not permanently flowing treat unit as "intermittently flowing")</i></p> <p><input type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 0</p>	4
<b>D</b>	<p><b>D 3.2 Depth of storage during wet periods</b> <i>Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).</i></p> <p><input type="checkbox"/> Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7</p> <p><input type="checkbox"/> The wetland is a "headwater" wetland points = 5</p> <p><input type="checkbox"/> Marks of ponding between 2 ft to &lt; 3 ft from surface or bottom of outlet points = 5</p> <p><input type="checkbox"/> Marks are at least 0.5 ft to &lt; 2 ft from surface or bottom of outlet points = 3</p> <p><input type="checkbox"/> Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1</p> <p><input checked="" type="checkbox"/> Marks of ponding less than 0.5 ft points = 0</p>	0
<b>D</b>	<p><b>D 3.3 Contribution of wetland unit to storage in the watershed</b> <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i></p> <p><input type="checkbox"/> The area of the basin is less than 10 times the area of unit points = 5</p> <p><input checked="" type="checkbox"/> The area of the basin is 10 to 100 times the area of the unit points = 3</p> <p><input type="checkbox"/> The area of the basin is more than 100 times the area of the unit points = 0</p> <p><input type="checkbox"/> Entire unit is in the FLATS class points = 5</p>	3
<b>D</b>	<b>Total for D 3</b> <i>Add the points in the boxes above</i>	7
<b>D</b>	<p><b>D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?</b> Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following indicators of opportunity apply.</i></p> <p><input type="checkbox"/> Wetland is in a headwater of a river or stream that has flooding problems</p> <p><input type="checkbox"/> Wetland drains to a river or stream that has flooding problems</p> <p><input checked="" type="checkbox"/> Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems</p> <p><input type="checkbox"/> Other _____</p> <p><input checked="" type="checkbox"/> YES multiplier is 2    <input type="checkbox"/> NO multiplier is 1</p>	<i>(see p. 49)</i>  multiplier  2
<b>D</b>	<b>TOTAL - Hydrologic Functions</b> Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	14

<b>These questions apply to wetlands of all HGM classes.</b>		<b>Points</b> (only 1 score per box)																							
<b>HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat</b>																									
<b>H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?</b>																									
<p><b>H 1.1. <u>Vegetation structure</u> (see p. 72)</b>            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.</p> <p> <input type="checkbox"/> Aquatic bed  <input type="checkbox"/> Emergent plants  <input type="checkbox"/> Scrub/shrub (areas where shrubs have &gt;30% cover)  <input checked="" type="checkbox"/> Forested (areas where trees have &gt;30% cover)            If the unit has a forested class check if:  <input checked="" type="checkbox"/> 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:         </p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> 4 structures or more</td> <td style="width: 60%; text-align: right;">points = 4</td> </tr> <tr> <td><input type="checkbox"/> 3 structures</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> 2 structures</td> <td style="text-align: right;">points = 1</td> </tr> <tr> <td><input type="checkbox"/> 1 structure</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p>Map of Cowardin vegetation classes</p>	<input type="checkbox"/> 4 structures or more	points = 4	<input type="checkbox"/> 3 structures	points = 2	<input checked="" type="checkbox"/> 2 structures	points = 1	<input type="checkbox"/> 1 structure	points = 0	<p><b>Figure</b> _____</p> <p style="font-size: 2em;">1</p>																
<input type="checkbox"/> 4 structures or more	points = 4																								
<input type="checkbox"/> 3 structures	points = 2																								
<input checked="" type="checkbox"/> 2 structures	points = 1																								
<input type="checkbox"/> 1 structure	points = 0																								
<p><b>H 1.2. <u>Hydroperiods</u> (see p. 73)</b>            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)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> Permanently flooded or inundated</td> <td style="width: 20%;"><input type="checkbox"/> 4 or more types present</td> <td style="width: 40%; text-align: right;">points = 3</td> </tr> <tr> <td><input type="checkbox"/> Seasonally flooded or inundated</td> <td><input type="checkbox"/> 3 types present</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> Occasionally flooded or inundated</td> <td><input checked="" type="checkbox"/> 2 types present</td> <td style="text-align: right;">point = 1</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturated only</td> <td><input type="checkbox"/> 1 type present</td> <td style="text-align: right;">points = 0</td> </tr> <tr> <td><input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> <b>Lake-fringe wetland = 2 points</b></td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> <b>Freshwater tidal wetland = 2 points</b></td> <td></td> <td></td> </tr> </table> <p style="text-align: right;">Map of hydroperiods</p>	<input type="checkbox"/> Permanently flooded or inundated	<input type="checkbox"/> 4 or more types present	points = 3	<input type="checkbox"/> Seasonally flooded or inundated	<input type="checkbox"/> 3 types present	points = 2	<input checked="" type="checkbox"/> Occasionally flooded or inundated	<input checked="" type="checkbox"/> 2 types present	point = 1	<input checked="" type="checkbox"/> Saturated only	<input type="checkbox"/> 1 type present	points = 0	<input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland			<input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland			<input type="checkbox"/> <b>Lake-fringe wetland = 2 points</b>			<input type="checkbox"/> <b>Freshwater tidal wetland = 2 points</b>			<p><b>Figure</b> _____</p> <p style="font-size: 2em;">1</p>
<input type="checkbox"/> Permanently flooded or inundated	<input type="checkbox"/> 4 or more types present	points = 3																							
<input type="checkbox"/> Seasonally flooded or inundated	<input type="checkbox"/> 3 types present	points = 2																							
<input checked="" type="checkbox"/> Occasionally flooded or inundated	<input checked="" type="checkbox"/> 2 types present	point = 1																							
<input checked="" type="checkbox"/> Saturated only	<input type="checkbox"/> 1 type present	points = 0																							
<input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland																									
<input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland																									
<input type="checkbox"/> <b>Lake-fringe wetland = 2 points</b>																									
<input type="checkbox"/> <b>Freshwater tidal wetland = 2 points</b>																									
<p><b>H 1.3. <u>Richness of Plant Species</u> (see p. 75)</b>            Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>. (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:         </p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input type="checkbox"/> &gt; 19 species</td> <td style="width: 60%; text-align: right;">points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> 5 - 19 species</td> <td style="text-align: right;">points = 1</td> </tr> <tr> <td><input type="checkbox"/> &lt; 5 species</td> <td style="text-align: right;">points = 0</td> </tr> </table> <p>List species below if you want to:</p>	<input type="checkbox"/> > 19 species	points = 2	<input checked="" type="checkbox"/> 5 - 19 species	points = 1	<input type="checkbox"/> < 5 species	points = 0	<p style="font-size: 2em;">1</p>																		
<input type="checkbox"/> > 19 species	points = 2																								
<input checked="" type="checkbox"/> 5 - 19 species	points = 1																								
<input type="checkbox"/> < 5 species	points = 0																								

Total for page 3

<p><b>H 1.4. Interspersion of habitats</b> (see p. 76)                  Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p><input checked="" type="checkbox"/> None = 0 points</p> </div> <div style="text-align: center;">  <p><input type="checkbox"/> Low = 1 point</p> </div> <div style="text-align: center;">  <p><input type="checkbox"/> Moderate = 2 points</p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p><input type="checkbox"/> High = 3 points</p> </div> <div style="text-align: center;">  <p>[riparian braided channels]</p> </div> </div> <p><b>NOTE:</b> 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</p>	<p>Figure <u>    </u></p> <p style="text-align: center; font-size: 24px;">0</p>
<p><b>H 1.5. Special Habitat Features:</b> (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.</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt;4in. diameter and 6 ft long).</li> <li><input checked="" type="checkbox"/> Standing snags (diameter at the bottom &gt; 4 inches) in the wetland</li> <li><input type="checkbox"/> 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)</li> <li><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt;30degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet turned grey/brown</i>)</li> <li><input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</li> <li><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</li> </ul> <p><i>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</i></p>	3
<p><b>H 1. TOTAL Score - potential for providing habitat</b>                  Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	6

**Comments**

<p><b>H 2. Does the wetland unit have the opportunity to provide habitat for many species?</b></p> <p><b>H 2.1 Buffers</b> (see p. 80)  <i>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."</i></p> <p><input checked="" type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) <b>Points = 5</b></p> <p><input type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 50% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 25% circumference, . <b>Points = 3</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for &gt; 50% circumference. <b>Points = 3</b></p> <p style="text-align: center;"><b>If buffer does not meet any of the criteria above</b></p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland &gt; 95% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for &gt;50% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> Heavy grazing in buffer. <b>Points = 1</b></p> <p><input type="checkbox"/> Vegetated buffers are &lt;2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) <b>Points = 0.</b></p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. <b>Points = 1</b></p> <p style="text-align: center;">Aerial photo showing buffers</p>	<p><b>Figure</b> <u>    </u></p> <p style="text-align: center; font-size: 2em;">5</p>
<p><b>H 2.2 Corridors and Connections</b> (see p. 81)</p> <p>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? (<i>dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor</i>).</p> <p><input checked="" type="checkbox"/> YES = 4 points (go to H 2.3)      <input type="checkbox"/> NO = go to H 2.2.2</p> <p>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? <b>OR</b> a <b>Lake-fringe</b> wetland, if it does not have an undisturbed corridor as in the question above?</p> <p><input type="checkbox"/> YES = 2 points (go to H 2.3)      <input type="checkbox"/> NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland:</p> <p><input type="checkbox"/> within 5 mi (8km) of a brackish or salt water estuary OR</p> <p><input type="checkbox"/> within 3 mi of a large field or pasture (&gt;40 acres) OR</p> <p><input type="checkbox"/> within 1 mi of a lake greater than 20 acres?</p> <p><input type="checkbox"/> YES = 1 point      <input type="checkbox"/> NO = 0 points</p>	<p style="text-align: center; font-size: 2em;">4</p>

Total for page 9

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <http://wdfw.wa.gov/hab/phslist.htm>)

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

- Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).
  - Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).
  - Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
  - Old-growth/Mature 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 than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
  - Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).
  - Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
  - Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).
  - Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
  - Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A*).
  - Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
  - Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
  - 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.
  - Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.
- 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

<p><b>H 2.4 Wetland Landscape</b> (<i>choose the one description of the landscape around the wetland that best fits</i>) (<i>see p. 84</i>)</p>		
<input checked="" type="checkbox"/> 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	5
<input type="checkbox"/> The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile	points = 5	
<input type="checkbox"/> There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed	points = 3	
<input type="checkbox"/> The wetland is Lake-fringe on a lake <b>with</b> disturbance and there are 3 other lake-fringe wetland within ½ mile	points = 3	
<input type="checkbox"/> There is at least 1 wetland within ½ mile.	points = 2	
<input type="checkbox"/> There are no wetlands within ½ mile.	points = 0	
<p><b>H 2. TOTAL Score - opportunity for providing habitat</b>  <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>		15
<p>TOTAL for H 1 from page 14</p>		6
<p><b>Total Score for Habitat Functions</b> – add the points for H 1, H 2 and record the result on p. 1</p>		21

**CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS**

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

<b>Wetland Type</b> <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	<b>Category</b>
<p><b>SC 1.0 Estuarine wetlands (see p. 86)</b>                      Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p> <input type="checkbox"/> The dominant water regime is tidal,  <input type="checkbox"/> Vegetated, and  <input type="checkbox"/> With a salinity greater than 0.5 ppt.  <input type="checkbox"/> YES = Go to SC 1.1                      NO <input checked="" type="checkbox"/> =Go to SC 2.0                 </p>	
<p><b>SC 1.1</b> Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?  <input type="checkbox"/> YES = Category I                      <input type="checkbox"/> NO go to SC 1.2</p>	<p><b>Cat. I</b>  <input type="checkbox"/></p>
<p><b>SC 1.2</b> Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO = Category II</p> <p> <input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre.  <input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.  <input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.                 </p>	<p> <input type="checkbox"/> <b>Cat. I</b>  <input type="checkbox"/> <b>Cat. II</b>  <input type="checkbox"/> <b>Dual rating I/II</b> </p>

<p><b>SC 2.0 Natural Heritage Wetlands</b> (<i>see p. 87</i>)                  Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? (<i>this question is used to screen out most sites before you need to contact WNHP/DNR</i>)                  S/T/R information from Appendix D <input checked="" type="checkbox"/> or accessed from WNHP/DNR web site <input type="checkbox"/></p> <p>YES <input type="checkbox"/> – contact WNHP/DNR (see p. 79) and go to SC 2.2                      NO <input checked="" type="checkbox"/></p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?  <input type="checkbox"/> YES = Category I    NO <input checked="" type="checkbox"/> not a Heritage Wetland</p>	<input type="checkbox"/> Cat. I
<p><b>SC 3.0 Bogs</b> (<i>see p. 87</i>)                  Does the wetland unit (<b>or any part of the unit</b>) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 <input type="checkbox"/>                      <input checked="" type="checkbox"/> No - go to Q. 2</p> <p>2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?  <input type="checkbox"/> Yes - go to Q. 3                      <input checked="" type="checkbox"/> No - Is not a bog for purpose of rating</p> <p>3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the “bog” species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?  <input type="checkbox"/> Yes – Is a bog for purpose of rating    <input type="checkbox"/> No - go to Q. 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog.</p> <p>1. Is the unit forested (&gt; 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (&gt; 30% coverage of the total shrub/herbaceous cover)?</p> <p>2. <input type="checkbox"/> YES = Category I    No <input type="checkbox"/> Is not a bog for purpose of rating</p>	<input type="checkbox"/> Cat. I

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

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

Wetland name or number TOS

**WETLAND RATING FORM – WESTERN WASHINGTON**

Version 2 - Updated July 2006 to increase accuracy and reproducibility among users  
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Villages TOS Date of site visit: 11/1/2013

Rated by S.Brainard Trained by Ecology? Yes  No  Date of training 11/06

SEC: 15 TOWNSHIP: 21 RANGE: 06 Is S/T/R in Appendix D? Yes  No

Map of wetland unit: Figure      Estimated size 43.2 Acres (on-site portion)

**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	28
Score for Hydrologic Functions	32
Score for Habitat Functions	31
<b>TOTAL score for Functions</b>	<b>91</b>

Category based on SPECIAL CHARACTERISTICS of wetland

I  II  Does not Apply

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

I

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics	Wetland HGM Class used for Rating	
Estuarine	Depressional	
Natural Heritage Wetland	Riverine	<input checked="" type="checkbox"/>
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	<input type="checkbox"/>

**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.

<b>Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)</b>	<b>YES</b>	<b>NO</b>
<p>SP1. <i>Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?</i> For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.</p>		✓
<p>SP2. <i>Has the wetland unit been documented as habitat for any State listed Threatened or Endangered animal species?</i> 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).</p>		✓
<p>SP3. <i>Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?</i></p>	✓	
<p>SP4. <i>Does the wetland unit have a local significance in addition to its functions?</i> 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.</p>	✓	

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.

## Classification of Wetland Units in Western Washington

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

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?

NO – go to 2       YES – the wetland class is **Tidal Fringe**

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

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

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.

Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3       YES – The wetland class is **Flats**

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

3. Does the entire wetland unit **meet both** of the following criteria?

The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;

At least 30% of the open water area is deeper than 6.6 ft (2 m)?

NO – go to 4       YES – The wetland class is **Lake-fringe (Lacustrine Fringe)**

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

The wetland is on a slope (*slope can be very gradual*),

The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.

The water leaves the wetland **without being impounded**?

NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*

NO - go to 5       YES – The wetland class is **Slope**

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

- The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river
- The overbank flooding occurs at least once every two years.

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

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

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

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

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

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

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

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

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

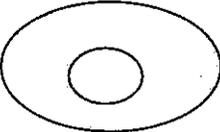
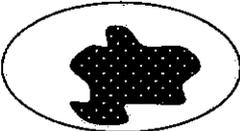
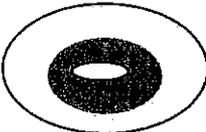
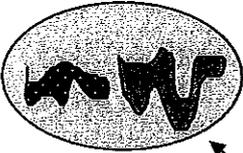
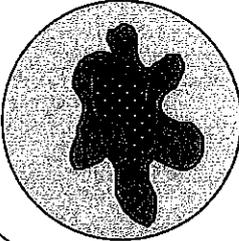
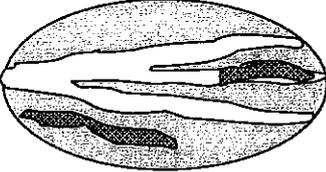


<b>R Riverine and Freshwater Tidal Fringe Wetlands</b>		<b>Points</b> (only 1 score per box)
<b>HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion</b>		
	<b>R 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?</b>	<i>(see p.54)</i>
<b>R</b>	<p>R 3.1 Characteristics of the overbank storage the unit provides:  <i>Estimate the average width of the wetland unit perpendicular to the direction of the flow and the width of the stream or river channel (distance between banks). Calculate the ratio: (average width of unit)/(average width of stream between banks).</i></p> <p><input checked="" type="checkbox"/> If the ratio is more than 20 points = 9  <input type="checkbox"/> If the ratio is between 10 – 20 points = 6  <input type="checkbox"/> If the ratio is 5 - &lt;10 points = 4  <input type="checkbox"/> If the ratio is 1 - &lt;5 points = 2  <input type="checkbox"/> If the ratio is &lt; 1 points = 1</p> <p style="text-align: right;">Aerial photo or map showing average widths</p>	Figure ___  9
<b>R</b>	<p>R 3.2 Characteristics of vegetation that slow down water velocities during floods: <i>Treat large woody debris as "forest or shrub". Choose the points appropriate for the best description.</i> (polygons need to have &gt;90% cover at person height NOT Cowardin classes):</p> <p><input checked="" type="checkbox"/> Forest or shrub for &gt;1/3 area OR herbaceous plants &gt; 2/3 area points = 7  <input type="checkbox"/> Forest or shrub for &gt; 1/10 area OR herbaceous plants &gt; 1/3 area points = 4  <input type="checkbox"/> Vegetation does not meet above criteria points = 0</p> <p style="text-align: right;">Aerial photo or map showing polygons of different vegetation types</p>	Figure ___  7
<b>R</b>	<i>Add the points in the boxes above</i>	16
<b>R</b>	<p><b>R 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?</b>            Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. <i>Note which of the following conditions apply.</i></p> <p><input type="checkbox"/> There are human structures and activities downstream (roads, buildings, bridges, farms) that can be damaged by flooding.  <input checked="" type="checkbox"/> There are natural resources downstream (e.g. salmon redds) that can be damaged by flooding  <input type="checkbox"/> Other _____</p> <p><i>(Answer NO if the major source of water to the wetland is controlled by a reservoir or the wetland is tidal fringe along the sides of a dike)</i></p> <p><input checked="" type="checkbox"/> YES multiplier is 2    <input type="checkbox"/> NO multiplier is 1</p>	<i>(see p.57)</i>      multiplier  2
<b>R</b>	<b>TOTAL - Hydrologic Functions</b> Multiply the score from R 3 by R 4 <i>Add score to table on p. 1</i>	32

**Comments**

<b>These questions apply to wetlands of all HGM classes.</b> <b>HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat</b>		<b>Points</b> <small>(only 1 score per box)</small>																							
<b>H 1. Does the wetland unit have the potential to provide habitat for many species?</b>																									
<p><b>H 1.1 Vegetation structure (see p. 72)</b>                      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.</p> <p> <input type="checkbox"/> Aquatic bed  <input checked="" type="checkbox"/> Emergent plants  <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have &gt;30% cover)  <input checked="" type="checkbox"/> Forested (areas where trees have &gt;30% cover)                      If the unit has a forested class check if:  <input checked="" type="checkbox"/> 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:  <table style="margin-left: 20px; border: none;"> <tr> <td style="padding-right: 10px;"><input checked="" type="checkbox"/> 4 structures or more</td> <td style="padding-right: 10px;">points = 4</td> </tr> <tr> <td><input type="checkbox"/> 3 structures</td> <td>points = 2</td> </tr> <tr> <td><input type="checkbox"/> 2 structures</td> <td>points = 1</td> </tr> <tr> <td><input type="checkbox"/> 1 structure</td> <td>points = 0</td> </tr> </table>                     Map of Cowardin vegetation classes                 </p>	<input checked="" type="checkbox"/> 4 structures or more	points = 4	<input type="checkbox"/> 3 structures	points = 2	<input type="checkbox"/> 2 structures	points = 1	<input type="checkbox"/> 1 structure	points = 0	<p><b>Figure</b> _____</p> <p style="font-size: 2em;">4</p>																
<input checked="" type="checkbox"/> 4 structures or more	points = 4																								
<input type="checkbox"/> 3 structures	points = 2																								
<input type="checkbox"/> 2 structures	points = 1																								
<input type="checkbox"/> 1 structure	points = 0																								
<p><b>H 1.2. Hydroperiods (see p. 73)</b>                      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)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"><input checked="" type="checkbox"/> Permanently flooded or inundated</td> <td style="width: 50%;"><input checked="" type="checkbox"/> 4 or more types present</td> <td style="width: 10%; text-align: right;">points = 3</td> </tr> <tr> <td><input checked="" type="checkbox"/> Seasonally flooded or inundated</td> <td><input type="checkbox"/> 3 types present</td> <td style="text-align: right;">points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> Occasionally flooded or inundated</td> <td><input type="checkbox"/> 2 types present</td> <td style="text-align: right;">point = 1</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturated only</td> <td><input type="checkbox"/> 1 type present</td> <td style="text-align: right;">points = 0</td> </tr> <tr> <td><input checked="" type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Lake-fringe wetland = 2 points</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Freshwater tidal wetland = 2 points</td> <td></td> <td></td> </tr> </table> <p style="text-align: right;">Map of hydroperiods</p>	<input checked="" type="checkbox"/> Permanently flooded or inundated	<input checked="" type="checkbox"/> 4 or more types present	points = 3	<input checked="" type="checkbox"/> Seasonally flooded or inundated	<input type="checkbox"/> 3 types present	points = 2	<input checked="" type="checkbox"/> Occasionally flooded or inundated	<input type="checkbox"/> 2 types present	point = 1	<input checked="" type="checkbox"/> Saturated only	<input type="checkbox"/> 1 type present	points = 0	<input checked="" type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland			<input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland			<input type="checkbox"/> Lake-fringe wetland = 2 points			<input type="checkbox"/> Freshwater tidal wetland = 2 points			<p><b>Figure</b> _____</p> <p style="font-size: 2em;">3</p>
<input checked="" type="checkbox"/> Permanently flooded or inundated	<input checked="" type="checkbox"/> 4 or more types present	points = 3																							
<input checked="" type="checkbox"/> Seasonally flooded or inundated	<input type="checkbox"/> 3 types present	points = 2																							
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<input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland																									
<input type="checkbox"/> Lake-fringe wetland = 2 points																									
<input type="checkbox"/> Freshwater tidal wetland = 2 points																									
<p><b>H 1.3. Richness of Plant Species (see p. 75)</b>                      Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>. (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:                      List species below if you want to:</p> <table style="margin-left: 20px; border: none;"> <tr> <td style="padding-right: 10px;"><input checked="" type="checkbox"/> &gt; 19 species</td> <td style="padding-right: 10px;">points = 2</td> </tr> <tr> <td><input type="checkbox"/> 5 - 19 species</td> <td>points = 1</td> </tr> <tr> <td><input type="checkbox"/> &lt; 5 species</td> <td>points = 0</td> </tr> </table>	<input checked="" type="checkbox"/> > 19 species	points = 2	<input type="checkbox"/> 5 - 19 species	points = 1	<input type="checkbox"/> < 5 species	points = 0	<p style="font-size: 2em;">2</p>																		
<input checked="" type="checkbox"/> > 19 species	points = 2																								
<input type="checkbox"/> 5 - 19 species	points = 1																								
<input type="checkbox"/> < 5 species	points = 0																								

Total for page 9

<p><b>H 1.4. Interspersion of habitats</b> (see p. 76)                  Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <input type="checkbox"/> None = 0 points                 </div> <div style="text-align: center;">   <input type="checkbox"/> Low = 1 point                 </div> <div style="text-align: center;">   <input type="checkbox"/> Moderate = 2 points                 </div> <div style="text-align: center;">   <input type="checkbox"/> Moderate = 2 points                 </div> </div> <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 20px;"> <div style="text-align: center;">   <input type="checkbox"/> Low = 1 point                 </div> <div style="text-align: center;">   <input checked="" type="checkbox"/> High = 3 points                 </div> <div style="text-align: center;">                   [riparian braided channels]             </div> </div> <p><b>NOTE:</b> 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</p>	<p>Figure _____</p> <p style="text-align: center; font-size: 24pt;">3</p>
<p><b>H 1.5. Special Habitat Features:</b> (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.</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt;4in. diameter and 6 ft long).</li> <li><input checked="" type="checkbox"/> Standing snags (diameter at the bottom &gt; 4 inches) in the wetland</li> <li><input type="checkbox"/> 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)</li> <li><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt;30degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet turned grey/brown</i>)</li> <li><input type="checkbox"/> At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated. (<i>structures for egg-laying by amphibians</i>)</li> <li><input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</li> </ul> <p><i>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</i></p>	<p style="text-align: center; font-size: 24pt;">2</p>
<p><b>H 1. TOTAL Score</b> - potential for providing habitat                  Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	14

**Comments**

<p><b>H 2. Does the wetland unit have the opportunity to provide habitat for many species?</b></p>	
<p>H 2.1 <u>Buffers</u> (see p. 80)  <i>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."</i></p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) <b>Points = 5</b></p> <p><input checked="" type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 50% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt;95% circumference. <b>Points = 4</b></p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water &gt; 25% circumference. <b>Points = 3</b></p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for &gt; 50% circumference. <b>Points = 3</b></p> <p style="text-align: center;"><b>If buffer does not meet any of the criteria above</b></p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland &gt; 95% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for &gt;50% circumference. Light to moderate grazing, or lawns are OK. <b>Points = 2</b></p> <p><input type="checkbox"/> Heavy grazing in buffer. <b>Points = 1</b></p> <p><input type="checkbox"/> Vegetated buffers are &lt;2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) <b>Points = 0.</b></p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. <b>Points = 1</b></p> <p style="text-align: center;">Aerial photo showing buffers</p>	<p>Figure ____</p> <p style="text-align: center;">4</p>
<p>H 2.2 <u>Corridors and Connections</u> (see p. 81)</p> <p>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? (<i>dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor</i>).</p> <p><input checked="" type="checkbox"/> YES = 4 points (go to H 2.3)      <input type="checkbox"/> NO = go to H 2.2.2</p> <p>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? <b>OR</b> a <b>Lake-fringe</b> wetland, if it does not have an undisturbed corridor as in the question above?</p> <p><input type="checkbox"/> YES = 2 points (go to H 2.3)      <input type="checkbox"/> NO = H 2.2.3</p> <p>H 2.2.3 Is the wetland:</p> <p><input type="checkbox"/> within 5 mi (8km) of a brackish or salt water estuary <b>OR</b></p> <p><input type="checkbox"/> within 3 mi of a large field or pasture (&gt;40 acres) <b>OR</b></p> <p><input type="checkbox"/> within 1 mi of a lake greater than 20 acres?</p> <p><input type="checkbox"/> YES = 1 point      <input type="checkbox"/> NO = 0 points</p>	<p style="text-align: center;">4</p>

Total for page 8

H 2.3 Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <http://wdfw.wa.gov/hab/phslist.htm>)

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

- Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).
- Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).
- Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- Old-growth/Mature 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 than 100%; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
- Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).
- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).
- Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A*).
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
- 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.
- Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

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

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

4

<p>H 2.4 <b>Wetland Landscape</b> (<i>choose the one description of the landscape around the wetland that best fits</i>) (see p. 84)</p> <p><input checked="" type="checkbox"/> 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. <span style="float: right;">points = 5</span></p> <p><input type="checkbox"/> The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile <span style="float: right;">points = 5</span></p> <p><input type="checkbox"/> There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed <span style="float: right;">points = 3</span></p> <p><input type="checkbox"/> The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile <span style="float: right;">points = 3</span></p> <p><input type="checkbox"/> There is at least 1 wetland within ½ mile. <span style="float: right;">points = 2</span></p> <p><input type="checkbox"/> There are no wetlands within ½ mile. <span style="float: right;">points = 0</span></p>	5
<p><b>H 2. TOTAL Score - opportunity for providing habitat</b> <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	17
<p>TOTAL for H 1 from page 14</p>	14
<p><b>Total Score for Habitat Functions</b> – add the points for H 1, H 2 and record the result on p. 1</p>	31

**CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS**

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

<b>Wetland Type</b> <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	<b>Category</b>
<p><b>SC 1.0 Estuarine wetlands (see p. 86)</b></p> <p>Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal,  <input type="checkbox"/> Vegetated, and  <input type="checkbox"/> With a salinity greater than 0.5 ppt.  <input type="checkbox"/> YES = Go to SC 1.1                      NO <input type="checkbox"/> = Go to SC 2.0</p>	
<p><b>SC 1.1</b> Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?</p> <p><input type="checkbox"/> YES = Category I                      <input type="checkbox"/> NO go to SC 1.2</p>	<p><b>Cat. I</b>  <input type="checkbox"/></p>
<p><b>SC 1.2</b> Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO = Category II</p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre.</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p>	<p><input type="checkbox"/> <b>Cat. I</b>  <input type="checkbox"/> <b>Cat. II</b>    <input type="checkbox"/> <b>Dual rating I/II</b></p>

<p><b>SC 2.0 Natural Heritage Wetlands</b> (<i>see p. 87</i>)                  Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? (<i>this question is used to screen out most sites before you need to contact WNHP/DNR</i>)                  S/T/R information from Appendix D <input type="checkbox"/> or accessed from WNHP/DNR web site <input type="checkbox"/></p> <p>YES <input type="checkbox"/> – contact WNHP/DNR (see p. 79) and go to SC 2.2                      NO <input type="checkbox"/></p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?  <input type="checkbox"/> YES = Category I    NO <input type="checkbox"/> not a Heritage Wetland</p>	<input type="checkbox"/> <b>Cat. I</b>
<p><b>SC 3.0 Bogs</b> (<i>see p. 87</i>)                  Does the wetland unit (<b>or any part of the unit</b>) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 <input type="checkbox"/>                      <input type="checkbox"/> No - go to Q. 2</p> <p>2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?  <input type="checkbox"/> Yes - go to Q. 3                      <input type="checkbox"/> No - Is not a bog for purpose of rating</p> <p>3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the “bog” species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?  <input type="checkbox"/> Yes – Is a bog for purpose of rating    <input type="checkbox"/> No - go to Q. 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16” deep. If the pH is less than 5.0 and the “bog” plant species in Table 3 are present, the wetland is a bog.</p> <p>1. Is the unit forested (&gt; 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (&gt; 30% coverage of the total shrub/herbaceous cover)?</p> <p>2. <input type="checkbox"/> YES = Category I    No <input type="checkbox"/> Is not a bog for purpose of rating</p>	<input type="checkbox"/> <b>Cat. I</b>

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

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

# City of Black Diamond Sensitive Areas Ordinance

*Best Available Science Review and  
Recommendations for Code Update*

## Summary and Recommendations

*Prepared for*

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## ACRONYMS

BAS	Best Available Science
BDMC	Black Diamond Municipal Code
BMPs	best management practices
CAO	critical areas ordinance
CARAs	critical aquifer recharge areas
CMZ	channel migration zone
CTED	Washington State Office of Community Trade and Economic Development
DNR	Department of Natural Resources
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	evolutionarily significant unit
FEMA	Federal Emergency Management Agency
FWHCAs	fish and wildlife habitat conservation areas
GIS	Geographic Information System
GMA	Growth Management Act
LWD	large woody debris
NMFS	National Marine Fisheries Service
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
PHS	Priority Habitat and Species
SASSI	Washington State salmon and steelhead stock inventory
SMA	Shoreline Management Act
SMP	Shoreline Master Program
SPTH	site-potential tree height
SWPPP	Stormwater Pollution Prevention Plan
TES	threatened, endangered, or sensitive
TIA	total impervious surface
UGAs	Urban Growth Areas
USFWS	United States Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WHPAs	Wellhead protection areas
WRIA	Water Resource Inventory Area

## 1. SUMMARY OF FINDINGS

This report summarizes the findings in the City of Black Diamond Sensitive Areas Best Available Science Studies prepared for the City by Parametrix Inc. in September 2008.

The general findings are:

- The City of Black Diamond and its Urban Growth Area (UGA) include most of the Lake Sawyer watershed.
- Lake Sawyer is a particularly sensitive and fragile lake because of its large area and relatively small watershed. In the past, the lake has been adversely impacted by nutrient loading. The lake is vulnerable to degradation as a result of urbanization.
- A landscape analysis of a variety of factors affecting ecological functions has identified the large stream wetland complexes of the Rock Creek, Jones Lake/Jones Creek and Black Diamond Lake/Black Diamond Creek as the areas within the UGA with the most intensive concentration of ecological processes that positively contribute to water quality of Lake Sawyer.
- Other streams and wetlands play an important part in ecological processes, but since most of them flow into the Rock Creek, Jones Lake/Jones Creek and Black Diamond Lake/Black Diamond Creek, their role is subsidiary.
- The Rock Creek, Jones Lake/Jones Creek and Black Diamond Lake/Black Diamond Creek area also provides the most productive aquatic and terrestrial wildlife habitats in the UGA with the most intensive concentration of ecological processes that positively contribute to water quality of Lake Sawyer.
- The City of Black Diamond and its Urban Growth Area (UGA) is a small part of, and a relatively small contributor to the ecological functions and values of the larger Green River watershed and the smaller Soos Creek and Covington Creek subbasins in which it is primarily located.
- Geologically hazardous areas (including coal mine hazards) and critical aquifer recharge areas are a concern, but can largely be addressed on a case-by-case basis.

The recommendations for management of Sensitive Areas in City of Black Diamond and its Urban Growth Area are:

- The City should focus protection on the areas with the most important ecological functions - the "core" stream and wetland complexes of the Rock Creek, Jones Lake/Jones Creek and Black Diamond Lake/Black Diamond Creek and provide those areas with the greatest protection indicated as the "Core" area in Figure 1-1.
- The second priority in preservation should be the wetland complexes at the headwaters of Ginder Creek, Lawson Creek and other tributaries that provide an important water supply to the larger system.
- Other streams and wetlands in the area provide important ecological functions and should be protected.

Some flexibility can be provided in development regulations to areas other than the core stream and wetland complexes of the Rock Creek, Jones Lake/Jones Creek and Black Diamond Lake/Black Diamond Creek. Regulations that allow reduction of buffer areas by transferring buffers to the areas providing a greater complex of ecological functions are especially appropriate.





## 2. BEST AVAILABLE SCIENCE

### 2.1 WHAT IS BEST AVAILABLE SCIENCE

As defined in Washington Administrative Code (WAC) 365-195-905, Best Available Science (BAS) means current scientific information derived from research, monitoring, inventory, survey, modeling, assessment, synthesis, and expert opinion that is:

- Logical and reasonable
- Based on quantitative analysis
- Peer reviewed
- Used in the appropriate context
- Based on accepted methods
- Well referenced.

In some instances the GMA and its regulations constrain the choice of science that can be used to designate or protect a particular resource (e.g., local governments are required to use the definition of wetlands found in RCW 36.70A.030.21). In other cases, there may be a range of options that are supported by science (e.g., wetland buffer widths necessary to protect functions).

The State legislature and the Growth Management Hearings Boards have defined critical area “protection” to mean preservation of critical area “structure, function, and value.” Local governments are not required to protect all functions and values of all critical areas, but are required to achieve “no net loss” of critical area functions and values across the jurisdictional landscape. Local governments are also required to develop regulations that reduce hazards associated with some types of critical areas, including geologically hazardous areas and frequently flooded areas. The standard of protection is to prevent adverse impacts to critical areas, to mitigate adverse impacts, and/or reduce risks associated with hazard areas.

This document and the Technical Appendixes that accompany it provide a summary of scientific studies related to designating and protecting critical areas, including habitat for anadromous fish species, as defined by the GMA. The information provides a basis for recommended changes and additions to the City of Black Diamond critical areas regulations in Ordinance 474 adopted in 1993. It is not intended to provide an exhaustive summary of all science available for all critical areas. The information reviewed is pertinent to City of Black Diamond, applicable to the types of critical areas present, and is believed to be the best available scientific information.

### 2.2 HOW IS THIS REPORT ORGANIZED

The analysis of Critical Areas in Black Diamond focused on ecological functions of wetlands, streams, habitat and aquifers and the hazards associated with geologic feature and, abandoned coal mines. The ecological analysis included two levels:

- The planning context, including state statutes and county and local plans
- A Landscape analysis that looked at ecological functions on a sub-watershed scale and addresses two main questions:
  - Which geographic areas are important for key ecological processes?

### 3.3 CITY SETTING

The City of Black Diamond is located in central western Washington State and encompasses approximately 5.9 square miles with a population of 4,120 (Figure 3-1, Vicinity Map). The Green River Valley lines the City to the south and east, and the City of Maple Valley is located to the north. The western edge of the City and UGA south of Lake Sawyer is generally along the alignment of 228th Avenue SE.

The vast majority of the City of Black Diamond's Urban Growth Area (UGA) is located in the Green/Duwamish River watershed (WRIA 9). Within the Green River watershed, the city drains into two distinct sub-basins:

- The Lower Green River/Soos Creek/Covington Creek subbasin, of which the Lake Sawyer sub-basin is part.
- The Middle Green River/Crisp Creek sub-basin.
- With the exception of two small portions of the UGA streams in the City drain to the Lake Sawyer/Covington Creek ("Lake Sawyer") subwatershed. Mapped streams located in the City include Covington Creek, Rock Creek, Ginder Creek, Black Diamond Lake Creek, Lawson Creek, Ravensdale Creek, and Jones Lake Creek. Rock Creek and Ravensdale Creek are the two primary tributaries to Lake Sawyer; Covington Creek, only a small portion of which is located in the City, is the only outlet for the lake. Several of the aforementioned streams support anadromous species.

A small portions of Green River/Crisp Creek sub-basin also is located in the city's UGA. (Figure 3-2). The portions of this basin located in the City do not have mapped streams and do not support anadromous species.

Lake 12 to the northeast of the current city limits is within the UGA and provides the headwaters of a separate stream named Rock Creek which drains into the Cedar River. To prevent confusion, this stream is referred to as the "Cedar River tributary Rock Creek."

Black Diamond is located at the edge of the King County Urban Growth Boundary. The City and King County have an existing agreement (the Black Diamond Urban Growth Area Agreement) that outlines a mutually acceptable Urban Growth Area boundary for the City of Black Diamond and conditions under which these areas may be annexed into the City. The UGA Agreement covers 792 acres of land. Following annexation, 593 of these acres can be developed and 189 acres would be preserved as open space. The area involved in the agreement is also referred to as the Potential Annexation Area (PAA) to distinguish them from the Lake Sawyer and Black Diamond Lake areas, also in the City's UGA (Figure 3-3).

### 3.4 COMPREHENSIVE PLAN

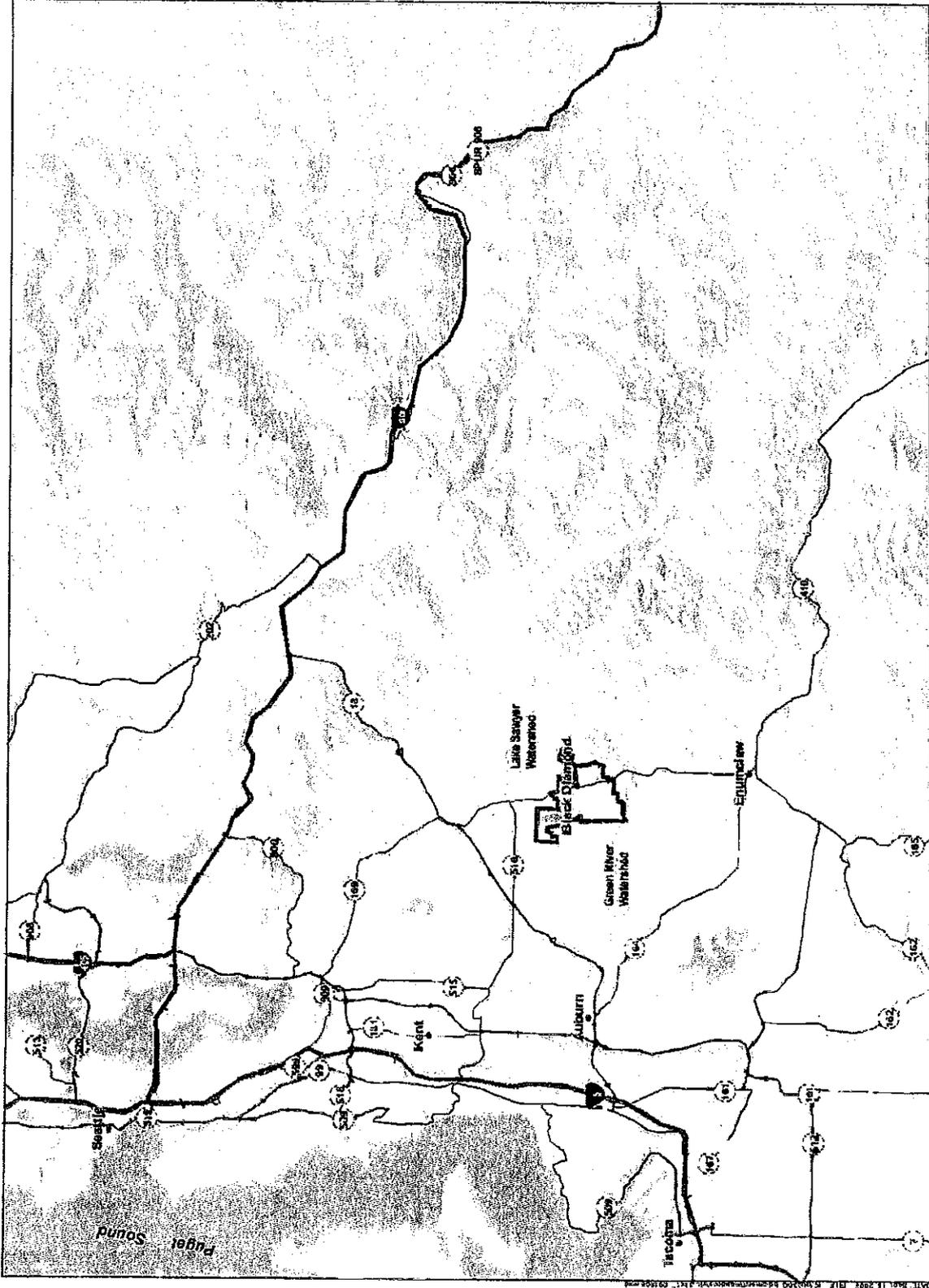
The City of Black Diamond adopted its current Comprehensive Plan in 1996. The City is currently updating that plan and issued a draft in March 2008 which is expected to be adopted in late 2008 (Figure 3-4 and Figure 3-5).

#### 3.4.1 King County, Countywide Planning Policies

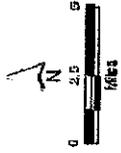
The City's Comprehensive Plan must be consistent with the King County Countywide Planning Policies (CCP) that provide the basis for designating Urban Growth Areas (UGA) throughout the county. King County policies provide specific policies that recognize the particular setting and challenges of rural communities. Specific relevant policies include:



**Legend**  
 Black Diamond  
 UGA Boundary

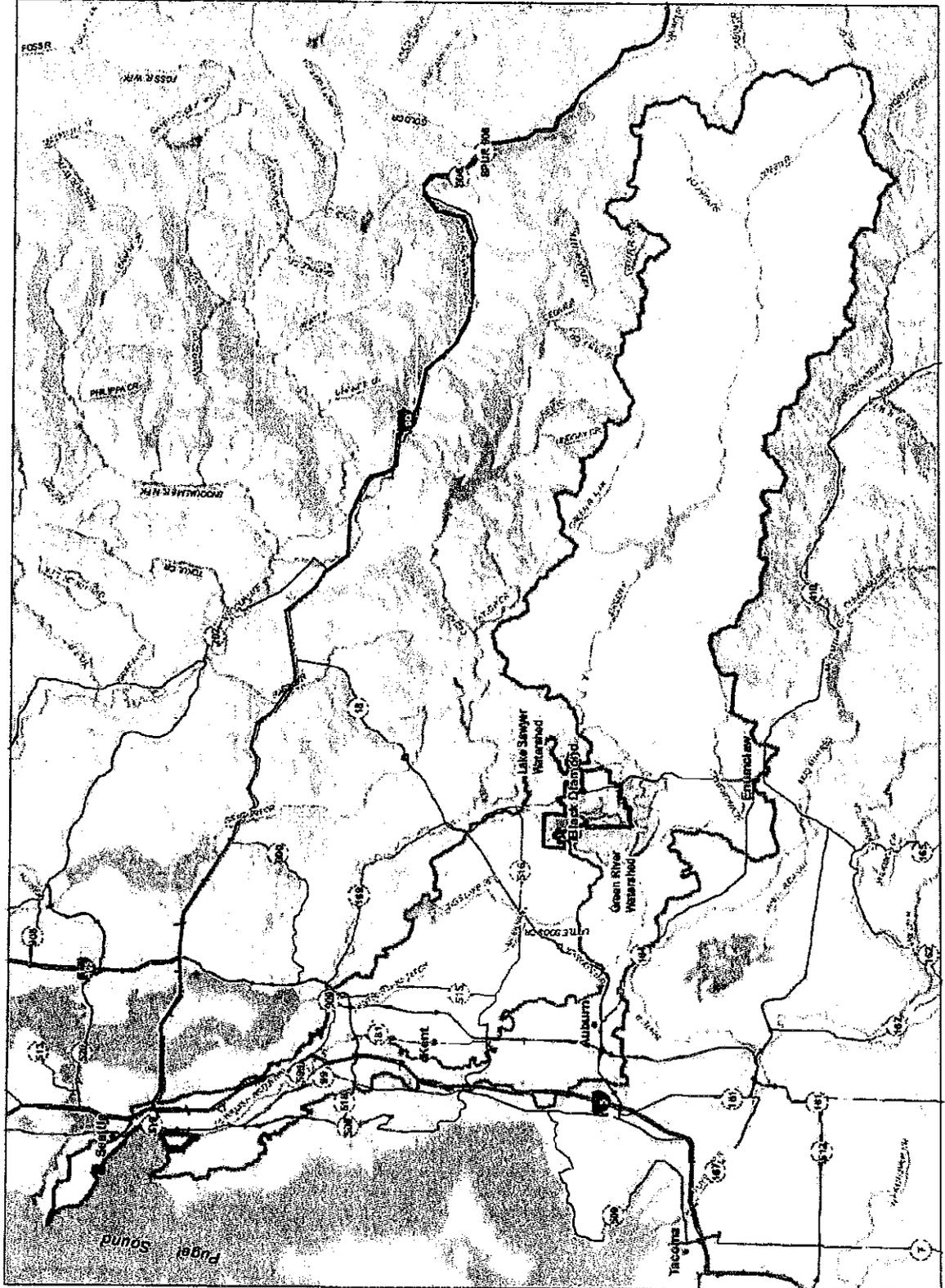


Parametrix  
**Figure 3-1**  
 Vicinity Map



Legend

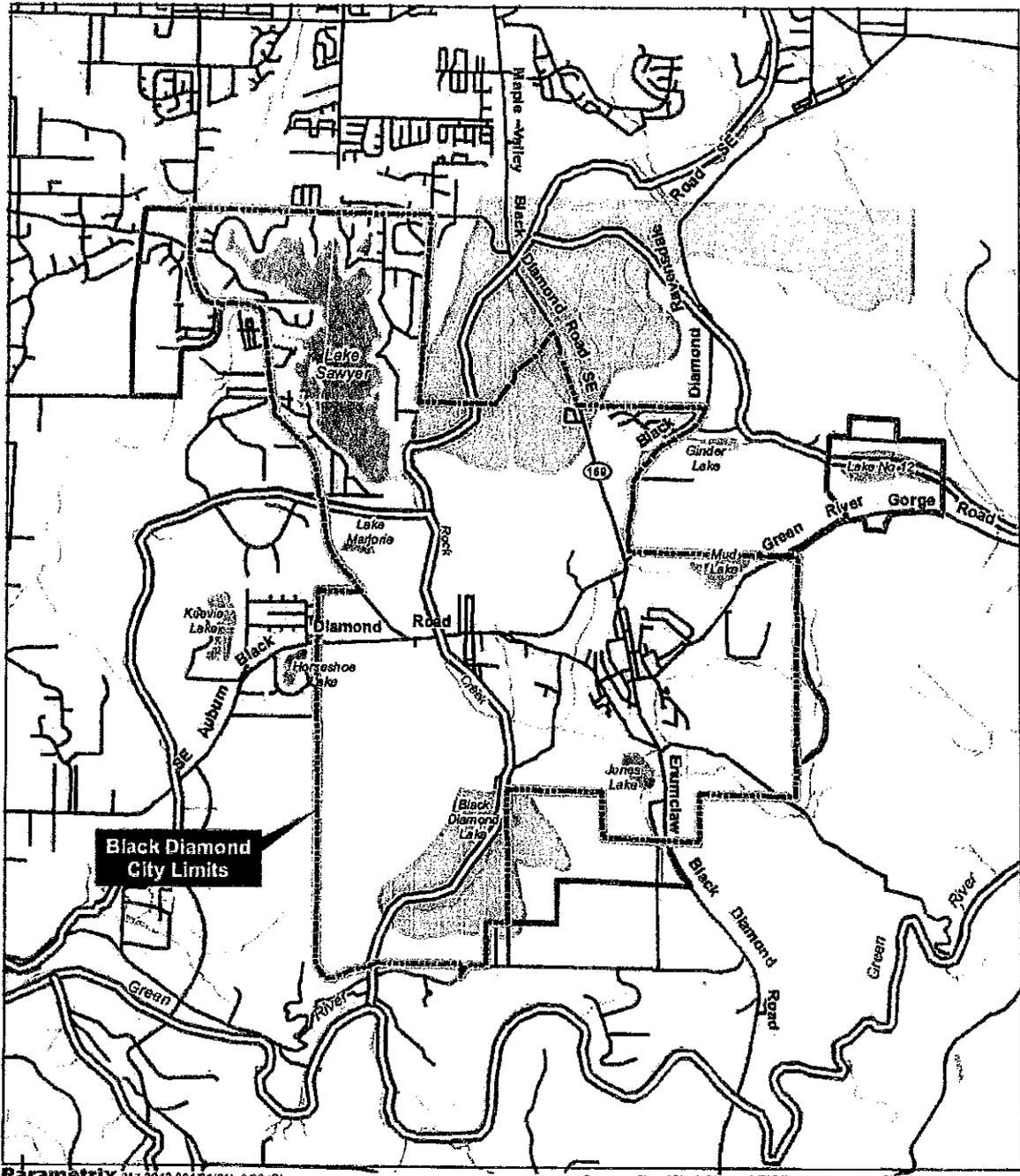
-  Duwamish - Green River Watershed
-  Black Diamond UGA Boundary
-  Lake Sawyer Watershed
-  Green River Watershed



DATE: 11/11/2014 10:58:11 AM

Figure 3-2  
Vicinity Watersheds





Parametrix 217-3043-00401(01) 8/08 (B)

Sources: City of Black Diamond (2006); King County (2007); Jones & Stokes (2008)

- Road
- ▭ City Limits
- - - Urban Growth Area (UGA)
- ▭ Parcel Boundary
- ▬▬▬ King County Wildlife Habitat Network
- ▨ Study Area for Potential Fish and Wildlife Habitat Conservation Area

**Figure 3-5**  
**Black Diamond**  
**Comprehensive Plan,**  
**Wildlife Habitat Network**



It is one in which the best available science is essential to an accurate decision about what policies and regulations are necessary to mitigate and will in fact mitigate the environmental effects of new development.”

This approach is reflected in Growth Management Hearings Board cases:

GMA, the practicality of the science and the fiscal impact must be balanced by a local government in determining how to designate and protect CAs. The scientific evidence must be contained within the record but also must be practical and economically feasible. CCNRC v. Clark County 96-2-0017 (Final Decision and Order, 12-6-96)

## 4. LANDSCAPE-SCALE ANALYSIS

This section summarizes the results of the landscape-scale analysis found in Technical Appendix A. The study based generally on the approach in “Protecting Aquatic Ecosystems: A Guide for Puget Sound Planners to Understand Watershed Processes” developed by the Washington State Department of Ecology (Stanley et al. 2005). The approach addresses two main questions:

- Which geographic areas are important for key landscape processes?
- Have human activities in the important areas altered the key processes?

The landscape-scale analysis helps integrate ecosystem processes into sensitive areas assessment and planning (Hruby et al. 2005). The analysis also considers aquatic processes and functions at multiple scales when developing plans for protecting or restoring sensitive areas. (Gove et al. 2001).

### 4.1 CONTRIBUTING AREA

The contributing area is the portion of land where surface water, groundwater, and water-borne materials flow into the streams, lakes, or other aquatic resources within the subwatershed, and where key processes influence aquatic functions (Stanley et al. 2005). For this study, we defined the contributing area on several scales:

- The Green River/Soos Creek/Covington Creek basin
- The Lake Sawyer sub-basin
- The Middle Green River/Crisp Creek sub-basin
- The Rock Creek/Cedar River sub-basin

These contributing areas are shown in Figure 3-2. Watersheds are primarily oriented to surface water. As discussed below, local groundwater movement cuts across surface water basins and generally flows in a westerly direction.

#### 4.1.1 Green River Basin

All of the Black Diamond Urban Growth Area (UGA) is in the Green River Basin. The UGA is located within in the middle portion of the Green/Duwamish River watershed and is in two sub-basins as shown in Figure 4-1:

- The Covington Creek sub-basin flows into the Soos Creek sub-basin, which then flows into the Green River at about river mile 33.

#### **4.1.4 Middle Green River Creek/Crisp Creek**

The Crisp Creek watershed is tributary to the Middle Green River and drains roughly 3,200 acres. The creek originates from several groundwater springs, including Keta Creek Springs and a 20-acre bog northwest of Kievee Lake (Kerwin and Nelson, 2000; Muckleshoot Indian Tribe, March 1992). The creek is about 3 miles long and enters the Green River at about River Mile 40. Two lakes, Horseshoe Lake and Keevie Lake, are located within the Crisp Creek basin. Approximately 17 percent of the drainage area is within the Black Diamond UGA.

The land use and land cover in the upper Crisp Creek watershed are characterized by second growth commercial forest lands. Downstream of the commercial timberlands the riparian area becomes wider with mostly deciduous trees. The lower reach of the creek includes several farms and a few single-family homes.

Crisp Creek provides spawning and rearing habitat for coho, chinook, chum and winter steelhead (Kerwin and Nelson, 2000) and serves as the water supply for the Keta Creek Hatchery, operated by the Muckleshoot Indian Tribe. The hatchery rears and releases chum, coho, chinook, and winter steelhead (released off-station).

#### **4.1.5 Rock Creek Tributary to the Cedar River**

The Rock Creek watershed originates at Lake 12 is tributary to the Cedar River and drains roughly 32 square miles. The 9.5 mile long Rock Creek has been identified as the highest quality remaining tributary habitat in the lower Cedar River (King County 1997). The stream supports chinook, coho, sockeye and steelhead salmon, as well as cutthroat trout and a variety of other species. The near natural conditions of the creek provide spawning habitat and a variety of lifecycle habitats for a wide range of species, largely due to the intact riparian forests. (King County 1993) A large portion of the water basin has been protected by the Black Diamond Area Open Space Protection Agreement. The only portion of the sub-basin in the Black Diamond UGA is Lake 12.

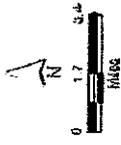
### **4.2 KEY LANDSCAPE PROCESSES**

Landscape (or ecosystem) processes and functions are complex, interrelated, and work on multiple temporal and spatial scales.

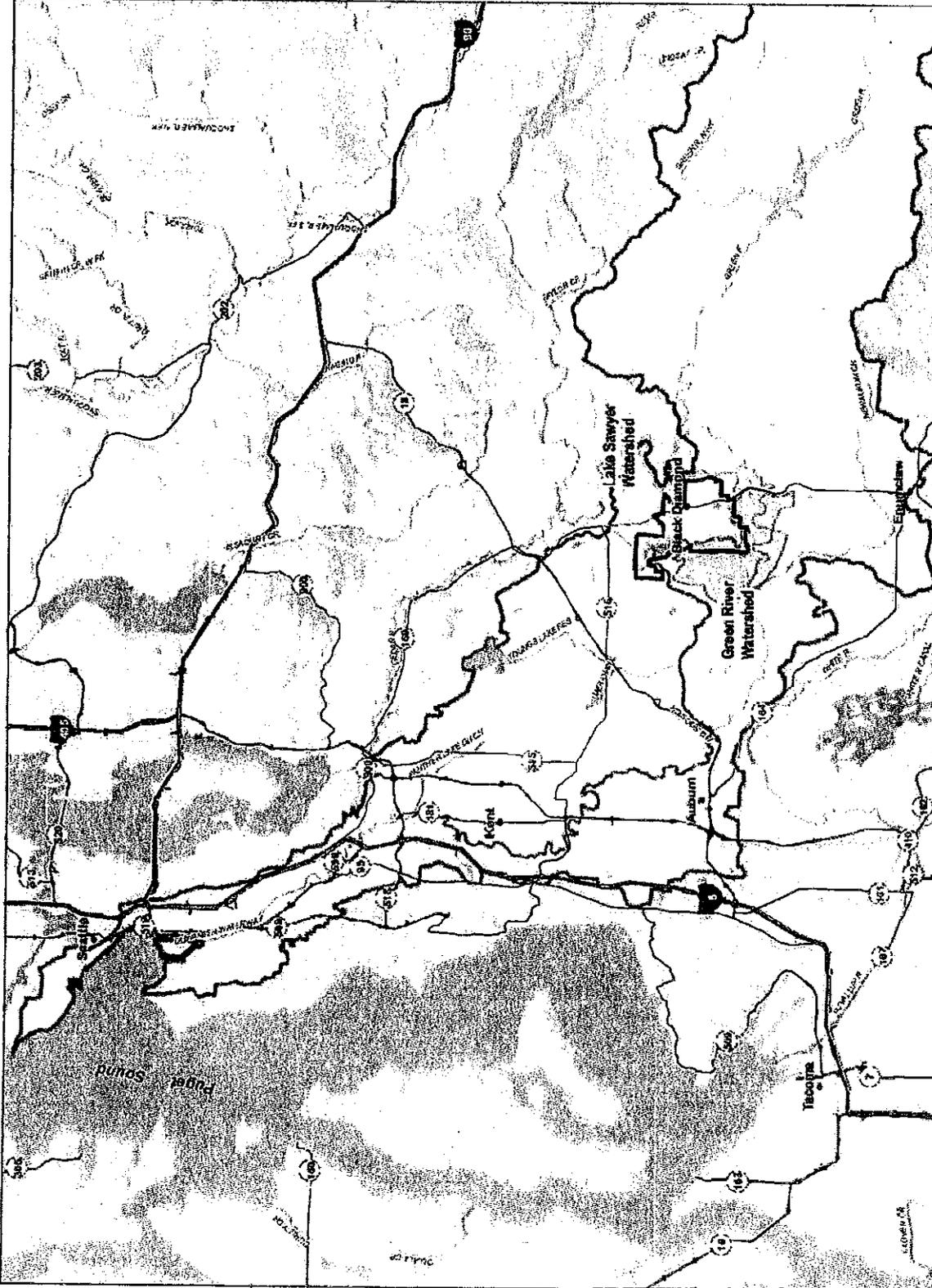
Watershed physical processes deliver, transport, store, and remove materials from the ecosystem thereby affecting the structure and biological functions of river and lake shorelines. The movement of water, sediment, chemicals, and organic material occur throughout the landscape, but these processes occur at varying intensities depending on local geologic and climate conditions. The following section describes ecosystem processes, the mechanisms through which and identifies areas most important for supporting those processes. This section summarizes conditions broadly across the entire study area.

Key processes important for maintaining aquatic resources such as streams, lakes, and wetlands are (Beechie et al. 2003):

Parametrix



- Legend**
- Duwamish - Green River Watershed
  - Black Diamond UGA Boundary
  - Lake Sawyer Watershed
  - Green River Watershed
  - Rock Creek Tributary to Cedar River



Date Shown: 2/9 County USE, WA UGR

**Figure 4-1**  
**Vicinity Watersheds**

Sensitive Area Ordinance Update  
City of Black Diamond, WA



- **Hydrology** (surface and ground water) The cycling of water through the ecosystem is dependent on geologic and climate controls such as slope, elevation, precipitation type and amount, soil permeability, and storage potential on the surface (landform) and underground (soil porosity).
- **Sediment** The cycling of sediment through the ecosystem is dependent on geologic and climate controls such as slope, land cover, soil cohesion, precipitation duration and intensity, and storage potential determined by landform. Also important are interactions with the hydrologic process which is a vehicle for both sediment delivery and transport. Therefore, many of the alterations to the hydrologic process also directly and indirectly affect the sediment process. Important areas for sediment storage are the same as those described for water. Depressional areas such as lakes, wetlands, and floodplains allow for the precipitation of suspended sediment in slack water.

**Water Quality** The delivery and elements and compounds in water bodies is highly dependent on water and sediment processes that provide a vehicle for dissolved and adsorbed materials to be transported. These mechanisms for delivery result in a balance in natural systems that are often disturbed by human activity. Storage of materials that affect water quality is similar to those for sediment, where adsorbed compounds such as phosphorus, nitrogen, and toxins can be deposited and potentially removed via biotic uptake. In addition, wetlands with mineral soils are important areas where dissolved phosphorus can undergo adsorption and storage.

- **Organic Matter** Organic materials include living organisms and the carbon-based material they leave behind after dying, including coarse woody debris, finer woody debris, and detritus. These elements are important for the cycling of energy and nutrients in aquatic ecosystems, including storage, transport, and chemical transformation (Naiman 2001). In addition, downed trees play a significant role in the aquatic ecosystems of the Pacific Northwest. Large woody debris (LWD) significantly influences the geomorphic form and ecological functioning of streams. In a natural system, LWD provides organic material to aquatic ecosystems and is considered a principal factor in forming stream structure and associated habitat characteristics (e.g., pools and riffles). Riparian vegetation is the key source of LWD.
- **Other Processes** Other secondary processes have less widespread but important influences on overall ecological function in shorelines, including heat/light inputs, biotic interactions, and habitat connectivity.

Each landscape process influences and may impair ecological functions. For example, erosion and mass wasting determine sediment inputs to aquatic systems, while other mechanisms act to store or transport the delivered sediment through the system. These mechanisms are associated with specific areas (referred to as important areas) on the landscape that exhibit certain characteristics (geology, vegetation, and land use). The relationship between processes, mechanisms, and important areas is summarized in Table 4-1.

groundwater discharge. The rate, distance, and volume of water movement across the landscape vary for each of these water sources, and this variability desynchronizes flows.

The local watersheds that feed the Lake Sawyer sub-basin are primarily dependent on rain and groundwater interflow. The area is too low in elevation to receive a substantial component of snow. Rains come primarily in the winter, and summers tend to be dry. On a seasonal basis, approximately 50 percent of the annual precipitation falls in the four month period October through January, and about seventy-five percent in the six months between October and March (King Co 2002).

General conclusions about the hydrology of the Black Diamond UGA include:

- Most of the streams in the UGAs are smaller, headwater systems. The majority of the mechanisms that affect their use by aquatic species, including anadromous fish, are related to processes within the UGA.
- Large portions of the UGA currently are undeveloped and therefore have relatively intact hydrologic processes.
- Urban land use (namely the addition of impervious surfaces and clearing of native vegetation) has the greatest potential to alter watershed hydrology. Therefore increasing urbanized areas, construction activities, road networks, and land clearing within the City and UGA would negatively alter watershed hydrology and directly impact usage of study area streams by aquatic species, including anadromous fish.
- An important feature of all the streams in the area is that they either originate in large wetland complexes or have substantial wetlands along the watercourse. These wetland complexes are an essential element of the hydrology, particularly for low flow periods. The local sources of recharge to these wetlands is fundamental in maintaining their functions and warrants both Sensitive Area regulations and stormwater controls, including Low Impact Development. The importance of these factors is discussed in the following sections.

#### **4.2.2 Vegetation**

The plant cover over a landscape or on a site influences the interaction of water and surficial geology. Plants perform a number of important functions that control the distribution of water, including:

- Intercepting precipitation, which decreases water's available energy for sediment transport;
- Recirculating water through transpiration, which may, in turn, influence local climatic conditions;
- Providing shade, which moderates temperatures and humidity near the ground's surface;
- Stabilizing soil structure with their roots; and
- Providing organic input, nutrient enrichment, and habitat structure.

Vegetation has a crucial role in the hydrologic cycle by affecting the rate at which water reaches the surface by providing a physical barrier that reduces the force of raindrops hitting the surface and also by intercepting, storing and releasing water at a reduced rate.

#### 4.2.4 Organic Matter and LWD Inputs

Organic matter, often in the form of leaf litter and other plant detritus, is the basis of the food web and largely determines productivity in aquatic and terrestrial systems. Riparian areas are important areas for organic and heat/light processes. Organic inputs provide nutrients and structure to the substrate and are an important food source for microbes, invertebrates, vertebrates, and plants (Sheldon et al. 2003). If abundant enough, organic matter may be the principal component of organic soils (peat, muck). Originating as plant and animal matter, organics may be imported to an aquatic site by surface waters or may originate in-situ. Land Cover and Land Use are shown in Figures 4-3 and 4-4.

Most stream reaches (and associated riparian areas) within the study area are important sources of organic matter and LWD. These include all streams in the Lake Sawyer subwatershed except Ginder Creek, whose riparian area is heavily developed. The mainstems of Rock Creek and Ravensdale Creek, as well as their tributaries (except Ginder Creek), are particularly important for the delivery of organic matter and LWD to portions of the system that support anadromous fish, including the mainstems of Rock and Ravensdale Creeks as well as Lake Sawyer, Covington Creek, and Jones Lake.

In summary, as with water quality, the majority of the mechanisms (including delivery of organic material and LWD) that affect the use of Lake Sawyer subwatershed streams for aquatic species, including anadromous fish, are related to processes within the City and its UGA. In contrast, the majority of the mechanisms that affect the use of streams within the Green River subwatershed are located outside of the City and its UGA limits, with the exception of any processes related to Horseshoe Lake and possibly Keevie Lake.

#### 4.2.5 Water Quality

Important areas for water quality processes are:

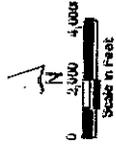
- depressional wetlands,
- floodplains, and
- hyporheic zones.

Wetlands, floodplains and hyporheic zones affect nutrient cycling (nitrogen and phosphorous), oxygen, pH, temperature and turbidity as well as pathogens and toxins (metals, hydrocarbons, pesticides). Wetlands store surface water, which traps sediment and facilitates phosphorus removal and contaminant absorption, uptake and storage. Denitrification and adsorption occurs in wetlands, particularly those with alternating reducing and oxidizing conditions or organic or clay soils. Wetlands can also be important phosphorous sinks because they trap and store sediment (Sheldon et al. 2003); particularly depressional wetlands with constructed outlets are conducive to standing water. Areas important for sediment storage such as floodplains and lakes are also important phosphorus sinks.

Figure 4-5 indicates the floodplains within the study area. Figure 4-6 indicates mapped wetlands,

These figures and data indicate that the wetland areas crucial to water quality functions include

- The large riparian wetland complexes located along Rock, Ravensdale, Ginder, and Black Diamond Lake Creeks, particularly those along Rock and Ravensdale Creeks.



Legend

- Black Diamond
- UGA Boundary
- Lakes Sawyer
- Watershed
- Green River/Crisp
- Creek Watershed
- State Highway
- Road
- Water Body
- Stream

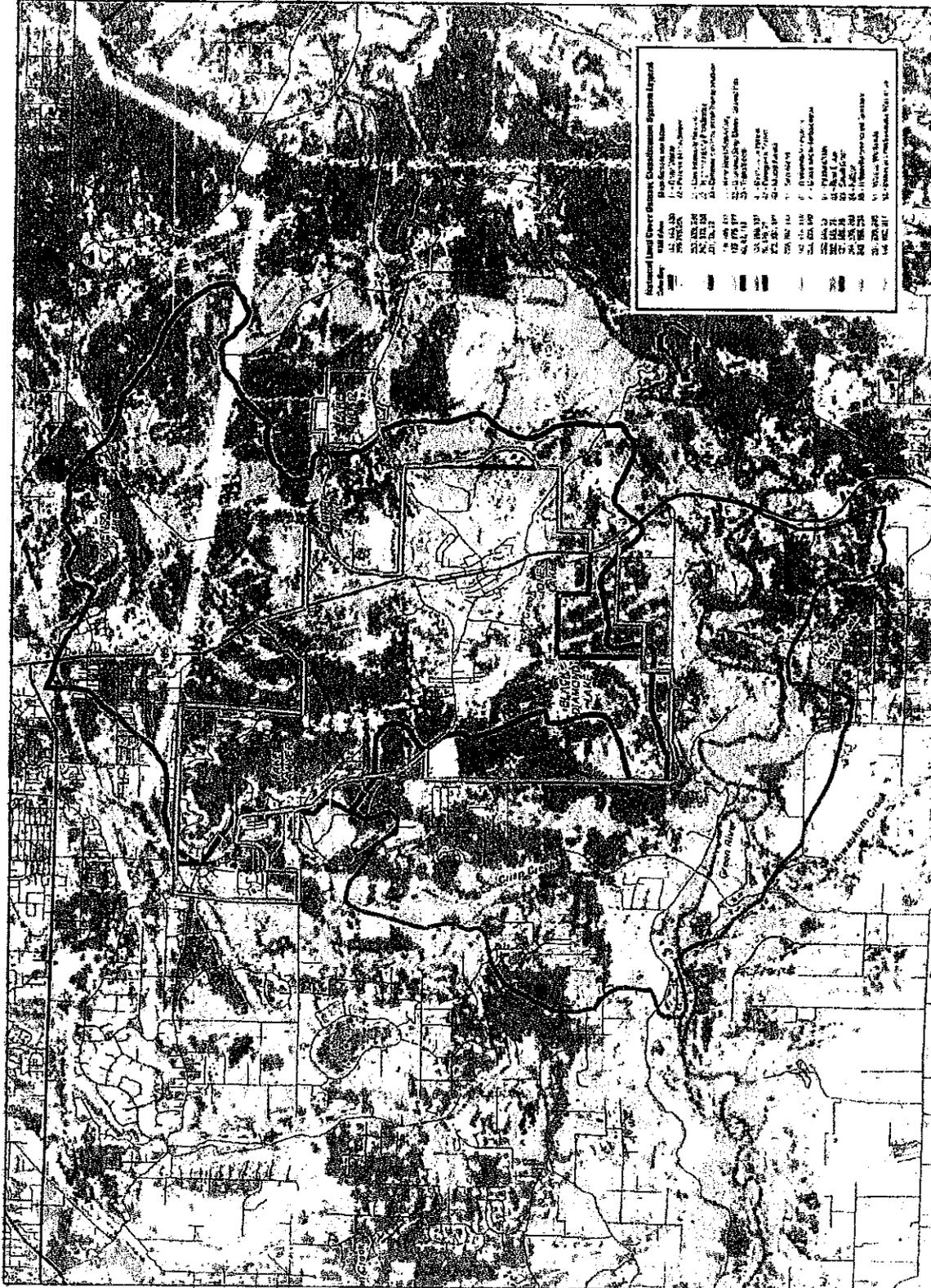
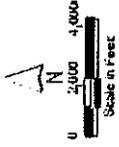


Figure 4-3  
Land Cover

Prepared by: WACON CONSULTANTS  
DATE: July 1, 2008



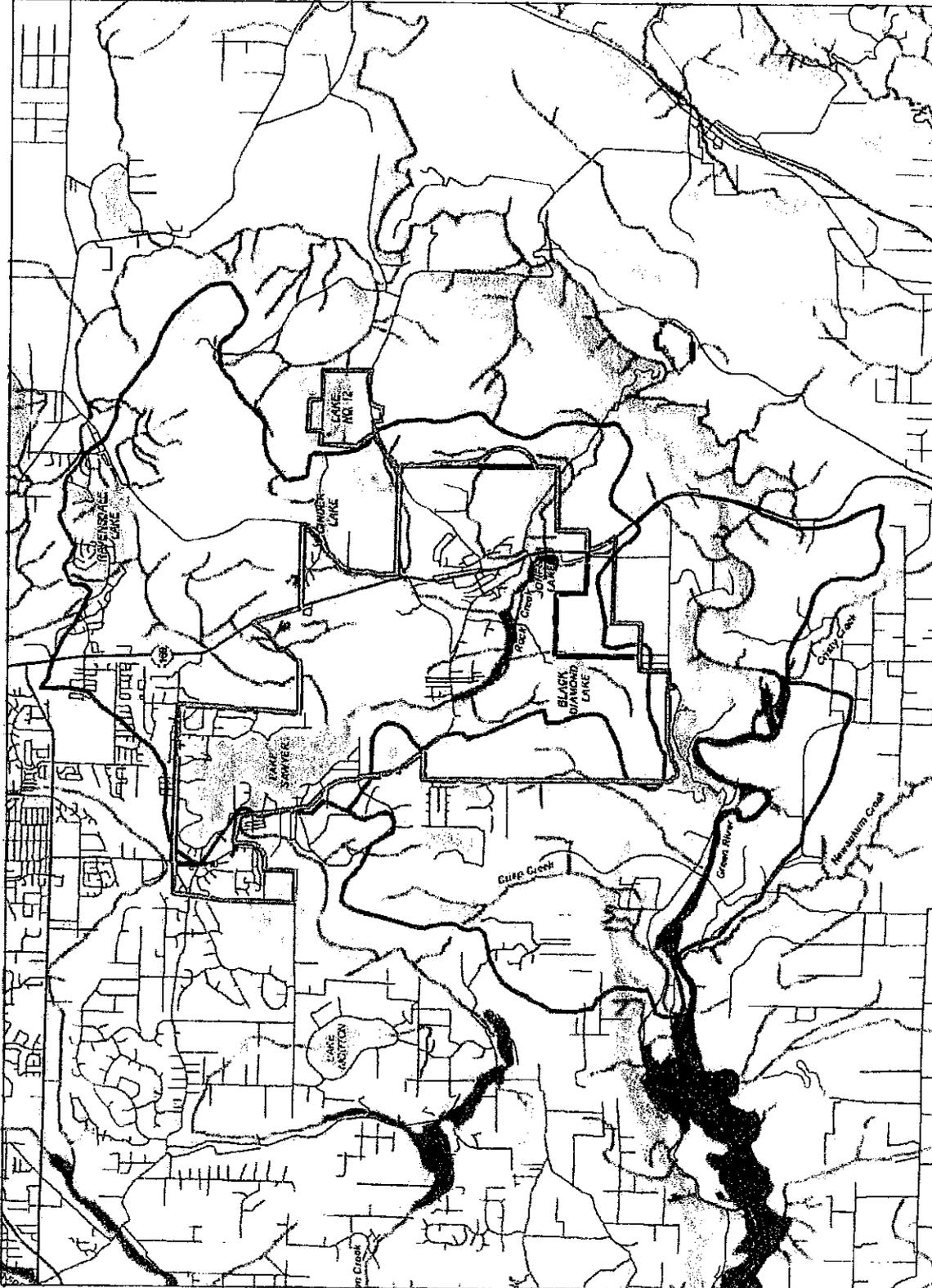


- Legend
- Black Diamond
  - UGA Boundary
  - Lake Sawyer Watershed
  - Green River/Crisp Creek Watershed
  - Slate Highway
  - Road
  - Water Body
  - Stream
  - 100 Year Floodplain
  - Floodway

DATE: 11/11/2011

Figure 4-5  
FEMA Floodplain

Sensitive Area Ordinance Update  
City of Black Diamond, WA



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- Jones Lake/Creek Wetlands Jones Lake is a dystrophic lake, characterized by relatively high concentrations of acidic organic materials in solution. Such lakes generally form in conjunction with associated wetlands, particularly bogs and peat deposits that provide a unique ecological environment in which the acidity of the water retards the processes of bacterial breakdown that would otherwise recycle nutrients. This results in a departure from the normal eutrophic life cycle of lakes and wetlands. Jones Lake and Creek wetlands can be considered an extension of the larger system along Rock Creek to the west.
- Black Diamond Lake/Creek Wetlands Wetlands associated with Black Diamond Lake and Black Diamond Creek are characterized as a forested wetland, and more particularly as a bog. The King County Wetland Inventory identifies the wetlands associated with Black Diamond Lake and the upstream and downstream reaches of Black Diamond Creek as unique/outstanding. The Black Diamond Lake and its associated world-class bog have been extensively researched by the Nature Conservancy and represent a valuable natural asset for the City. The low elevation riparian wetland associated with Black Diamond Lake is also considered a high quality wetland ecosystem.
- Ginder Lake, Ginder Creek, and Lake Sonia Wetlands Wetlands associated with Ginder Lake and Ginder Creek are mapped by the NWI as emergent and forested wetlands. Wetlands surrounding the lake (possibly the lake itself) and associated with the creek were given a preliminary Category II rating under the Ecology wetland rating system (City of Black Diamond 2008).

Wetlands associated with Lake Sonia are mapped by the NWI as emergent and scrub/shrub wetlands. These wetlands are located outside of the City of Black Diamond UGA; it is unknown whether they were preliminarily rated using the Ecology wetland rating system as part of the City's preliminary wetland and stream inventory conducted in 1991. The King County Wetland Inventory identifies the wetlands around Lake Sonia as unique/outstanding.
- Ravensdale Lake/Creek Wetlands Wetlands associated with Ravensdale Lake and Ravensdale Creek are important to the function of the stream and Lake Sawyer. These wetlands are predominantly located outside of the City of Black Diamond UGA and are mapped by the NWI as emergent, forested, and scrub/shrub wetlands. Ravensdale Creek has a disproportionately high discharge-to-drainage area ratio, likely due to a high level of groundwater recharge. Although its drainage area is about half that of Rock Creek's drainage area, Ravensdale Creek has an estimated summer low-flow season discharge about 3 times greater than that of Rock Creek. Phosphorus concentrations during the low flow season in Ravensdale Creek are relatively high due to naturally occurring phosphorus-rich groundwater.
- Lake 12 Wetlands associated with Lake 12 are mapped by the NWI as forested and scrub/shrub wetlands. These wetlands are predominantly located outside of the City of Black Diamond limits but within the UGA. The wetland complex extends about a mile downstream of Lake 12 and provides important habitat, as well as flood desynchronization and water quality functions., the functions of the wetlands related to water quality are likely to become more important in the future. Wetlands associated with the lake shoreline also have the potential to provide shoreline protection functions.

*nebulosus*), smallmouth bass (*Micropterus dolomieu*), and largemouth bass (*Micropterus salmoides*).

As stated previously, most streams within the Black Diamond UGA drain to either the Lake Sawyer subwatershed or Middle Green River subwatershed. However, only a small portion of Covington Creek (the outlet for Lake Sawyer) is located within the City and UGA limits, i.e., the vast majority of this creek falls outside of the study area. Additionally, a portion of the UGA provides infiltration and groundwater recharge to the Middle Green River and Crisp Creek.

For these reasons, general descriptions of the character of Covington Creek and the Green River are presented in this landscape-scale analysis section. Detailed descriptions of aquatic resources located within the City and/or UGA are presented in Technical Appendix A of this report.

### 5.3 TERRESTRIAL HABITAT

The undeveloped areas within the Black Diamond UGA provide a variety of habitat types for the full range of species that inhabit the Puget Sound Lowland. Urbanization will convert much of this area for human activities. These areas will generally be lost as productive habitat for most species.

Habitat corridors are an approach that land managers and regulatory agencies have implemented to address impacts on wildlife habitats and species within human-influenced environments. Habitat corridors are contiguous, vegetated, conduits that connect habitat patches to other patches or larger landscape habitat components and prevent isolation of habitat. Corridor establishment attempts to mimic in a managed landscape some of the biologic processes that occur in animal movement in natural landscapes.

The functions of corridors may be as conduits to provide movement or may provide habitat functions, if wide enough and vegetated (Rosenberg et. al. 1997). The functions generally provided by corridors include:

- Providing a conduit for animals to move between one habitat patch and another on a daily or seasonal basis, without providing substantial habitat functions. Such habitats may be relatively narrower than habitat patches;
- Reducing species extinction rates by ensuring that populations or individuals are not isolated from others in the landscape as well as redoing detrimental genetic effects of isolated populations such as inbreeding and random genetic drift;
- Providing increased foraging habitat for a variety of species, if large enough;
- Providing an avenue for vegetative communities to maintain reproduction viability and colonize new areas particularly species carried in animal feces;

King County has designated Wildlife Habitat Networks that are designed to link wildlife habitat found within sensitive areas, their buffers, priority habitats, trails, parks or open space. The network is designed to provide for wildlife movement and alleviate the effects of habitat fragmentation. The county specifies that the corridor should be 300 feet wide, although it may be reduced to 150 feet where necessary. The city has designated the King County Habitat Network as well as a "Study Area for Potential Fish and Wildlife Habitat Conservation Area" in its Comprehensive Plan, as shown in Figure 3-5.

Combining habitat corridors with the core area for water and wetland functions including the entire Lake Sawyer/Rock Creeks /Jones Lake and Jones Lake Creek corridor as well as the

related to a rating system that attempts to characterize the ecological functions and values provided by each discrete resource occurrence. A similar approach tends to focus on individual occurrences and the case-by-assessment of hazard and risk in the case of geological hazards, frequently flooded areas and aquifer recharge areas.

This approach that looks at discrete occurrences contrasts somewhat with the interpretation of the statutory mandate to “protect” these areas. Several Growth Management Hearings Board and court cases have provided clarification that is succinctly described as follows:

The Act's requirement to protect critical areas, particularly wetlands and fish and wildlife habitat conservation areas means that the values and functions of such ecosystems must be maintained. While local governments have the discretion to adopt development regulations that may result in localized impacts upon, or even the loss of, some critical areas, such flexibility must be wielded sparingly and carefully for good cause, and in no case result in a net loss of the value and functions of such ecosystems within a watershed or other functional catchment area [Tulalip Tribes of Washington (Tulalip I) v. Snohomish County, CPSGMHB Case No. 96-3-0029)].

The “landscape analysis” approach outlined in Section 4, above, is one approach to analyze fish and wildlife habitat and wetlands on a watershed or catchment basis that provides a more integrated view of the inter-relationships between these resources.

### 6.1.1 Restrictions on use and alteration

Natural systems, such as wetlands and streams typically cannot provide an inter-related web of ecological functions if human intervention displaces or alters key features of the system. The most obvious human alteration is displacement. Filling a wetland eliminates virtually all functions and values provided. Culverting or piping a stream may have similar effects, although upstream and downstream portions of the stream may retain important functions.

Alteration that is less complete than displacement may interrupt important functions. For example, the removal and modification of riparian and aquatic vegetation, placement of the bulkhead structure and associated fill and removal of woody debris have the following effects:

- Increases flow velocities and change in the natural stream dynamics that produce substrate and other conditions for fish spawning and rearing;
- Increases in flow that increase bank erosion and downstream deposition that alters the substrate and other conditions for fish spawning and rearing;
- changes in wave action on lakes that alters substrate and other processes;
- loss of organic input (e.g., tree litter, LWD, insects) within the a stream or lake's littoral zone;
- loss of shade and temperature attenuation provided by large vegetation;
- displacement of physical aquatic and terrestrial habitat;

Generally, regulations for wetland, streams and lakes seek to prohibit most human alterations. Activities generally allowed are limited and commonly include:

- Utilities that can cross streams or wetlands either overhead or in buried (or bored) pipelines that produce minimal disturbance of ecological functions during operation.
- Essential public facilities, such as roads, that sometimes must cross water bodies to connect two points.

- Maintaining natural functions related to water quality, including removing sediment generated by natural processes and removing nutrients such as phosphorous and nitrogen;
- Maintaining the microclimate in upland areas, that influence the functions of wetlands and aquatic habitats, as well as the vegetation complexity of upland habitat;
- Maintaining adjacent habitat and wetland functions that are essential to certain stages of populations (such as the need for amphibians to spend part of their lifecycle in water);
- Maintaining an area sufficient for populations to be maintained in all their lifestages;

A scientific literature review indicates that the buffer width necessary to protect a given habitat function or group of functions depends upon numerous site-specific factors. These factors include the plant community (i.e., type of plant species present, density of plants, and age of vegetation community), aspect, slope, and soil type, as well as adjacent land use. The body of science indicates that the appropriate buffer width for a given ecological function is specific to the environmental setting and functions to be achieved by that buffer (Castelle and Johnson 2000).

A summary of specific functions provided in buffer areas for aquatic and wetland ecological functions are provided in the tables below

**Table 6-1. Generalized Comparison of Functions of Riparian Buffer Widths Aquatic Ecological Functions**

Stream Function	Buffer Width				
	15 Feet <sup>1</sup>	50 Feet	150 Feet	300 Feet	600 Feet
Microclimate	X	X	N	P	F
Wildlife Habitat	X	N	P	P	F
LWD Recruitment	X	N	P	F	F
Pollutant Removal	N	N	P	P	F
Sediment Filtration	X	N	P	F	F
Water Temperature	X	N	F	F	F
Organic Litter	X	P	F	F	F
Bank Stability	X	F	F	F	F

**KEY**

F = Buffer width fully supports/maintains stream function

P = Buffer width partially supports/maintains stream function

N = Buffer width nominally supports/maintains stream function

X = Buffer does not adequately support/maintain stream function

**Table 6-2. Generalization of Various Wetland Buffer Widths on Functions Provided**

Buffer Functions Provided	Range of Buffer Widths					
	25-50 ft.	50-100 ft.	100-150 ft.	150-200 ft.	200-250 ft.	250-300 ft.
Habitat:	L	L/M	M	M/H	M/H	H
Habitat connectivity						
Amphibians:						

those cases, impacts from outside the buffer are usually larger in scope and require other mitigation.

- Proximity impacts such as noise and light can disrupt feeding, breeding, and sleeping habits of wildlife and introduce predation from pets.

The table below summarizes the major impacts of human activities and the extent to which they can be addressed by buffers of other mitigating measures.

**Table 6-3. Examples of Impacts to from Adjacent Human Use**

Examples of Disturbance	Activities and Uses that Cause Disturbances	Examples of Measures to Minimize Impacts
<b>Hydrologic Impacts</b> <ul style="list-style-type: none"> <li>• Impervious surfaces</li> <li>• Increased runoff</li> <li>• Decreased infiltration</li> <li>• Stream erosion</li> <li>• Change in hydroperiod</li> </ul>	<ul style="list-style-type: none"> <li>• Impervious surfaces                             <ul style="list-style-type: none"> <li>○ Parking lots</li> <li>○ Roads</li> <li>○ Building roofs</li> </ul> </li> <li>• Vegetation alteration                             <ul style="list-style-type: none"> <li>○ Lawns</li> <li>○ Landscaping</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Buffers can provide an area in which these processes continue, their effectiveness depends on total area</li> <li>• Provide vegetated open space in development to retain functions</li> <li>• Infiltrate runoff</li> <li>• Provide stormwater detention and treatment for roads and existing adjacent development.</li> <li>• Prevent channelized flow from areas that directly enters the resource or buffer.</li> </ul>
<b>Toxic runoff*</b>	<ul style="list-style-type: none"> <li>• Impervious surfaces                             <ul style="list-style-type: none"> <li>○ Parking lots</li> <li>○ Roads</li> <li>○ Building roofs</li> </ul> </li> <li>• Lawns and Landscaping                             <ul style="list-style-type: none"> <li>○ Fertilizers</li> <li>○ Herbicides &amp; pesticides</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Buffers can provide filtering</li> <li>• Buffers can provide treatment, depending on width and vegetation</li> <li>• Route all new, untreated runoff away from resource</li> <li>• Limit use of chemicals for vegetation/native plants/integrated pest management.</li> </ul>
<b>Lights</b>	<ul style="list-style-type: none"> <li>• Parking lots</li> <li>• Street lights</li> <li>• Building lights</li> <li>• Car lights</li> </ul>	<ul style="list-style-type: none"> <li>• Buffers can interrupt and reduce, if adequate width and vegetation cover</li> <li>• Direct lights away from resource</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>• Roads</li> <li>• Residential areas</li> <li>• Parks</li> <li>• Commercial and Public areas</li> <li>• Manufacturing processes</li> </ul>	<ul style="list-style-type: none"> <li>• Buffers can interrupt and reduce, if adequate width and vegetation cover</li> <li>• Locate activity that generates noise away from resource</li> </ul>
<b>Predation from pets</b>	<ul style="list-style-type: none"> <li>• Residential areas</li> </ul>	<ul style="list-style-type: none"> <li>• Buffers are effective only if they are large enough to provide refuge and reduce the predator to prey interactions</li> <li>• Buffers can provide habitat for predators like coyotes that reduce domestic animal intrusion</li> <li>• Fence buffers and resources</li> <li>• Fence or otherwise limit pet access to resources and buffers</li> </ul>
<b>Dust</b>	<ul style="list-style-type: none"> <li>• Construction sites</li> </ul>	<ul style="list-style-type: none"> <li>• Buffers can interrupt and reduce, if adequate width and vegetation cover</li> <li>• Use best management practices to control dust.</li> </ul>

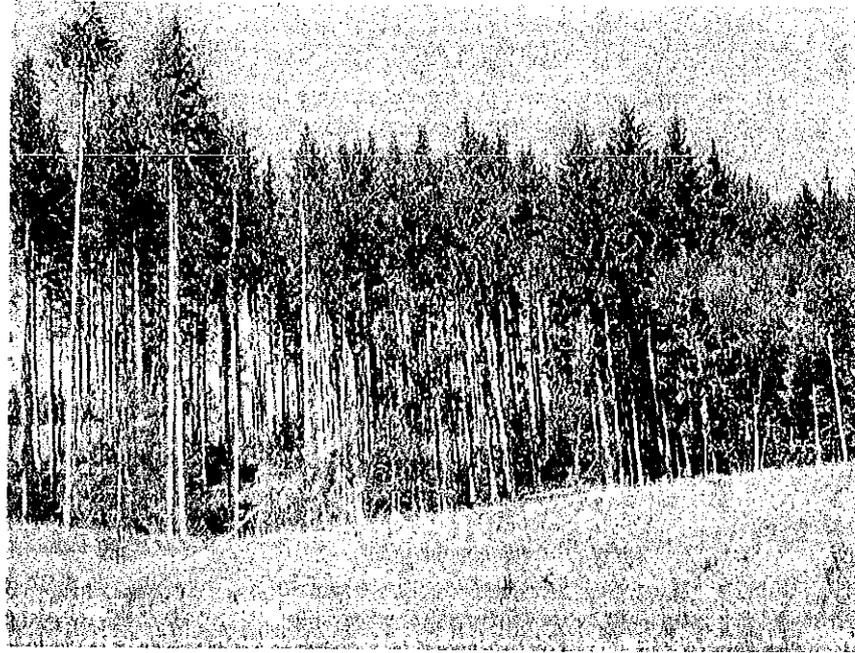


Figure 6-2. Forest Edge of Cleared Forest

## 6.2 “NO HARM” REGULATORY SYSTEM

This type of regulatory system is best known in Washington State in its application to agricultural use in Skagit County. The approach was endorsed in challenges heard by the Growth Management Hearings Board for Western Washington and the Washington State Supreme Court (*Swinomish v Skagit* 2006). The “no harm” approach may be regarded as an “adaptive management” approach to protecting critical areas. As provided in the GMA regulations, in this approach critical areas regulations are “treated as experiments that are purposefully monitored and evaluated to determine whether they are effective and, if not, how they should be improved to increase their effectiveness.” (WAC 365-195-920(2)).

In determining that the requirement under the GMA to “protect” critical areas is met when local governments prevent new harm to critical areas in reference to protecting fish habitat in agricultural areas the Growth Management Hearings Board and the court both agreed that elements essential to such a program include adequate monitoring, benchmarks, and the ability to require changes to the program if benchmarks are not achieved. In assessing the difference between a prescriptive approach such as buffers and a “no harm” approach, the court held that local governments must either be certain that their critical areas regulations will prevent harm or be prepared to recognize and respond effectively to any unforeseen harm that arises.

Implementation of a “no harm” approach in undeveloped portions of the Black Diamond Urban Growth Area (UGA) are not likely to be effective in allowing future development. It would be difficult to meet a “no harm” standard in the conversion of second growth forests to a variety of urban uses. The application of a “no harm” standard to existing uses and land use patterns is more practical. Such an approach has been included in regulations recently adopted by the City of Black Diamond. Such programs also may include provisions to

Data already compiled and described above appear sufficient to support determination of aquifer susceptibility and vulnerability in the City of Black Diamond. Aquifer recharge areas may be identified largely by surficial soils and categorized for sensitivity based on "DRASTIC - A Standardized System for Evaluated Groundwater Pollution Potential Using Hydrogeologic Settings" (Aller et al. June 1987, US Environmental Protection Agency, Publication Number 600287035).

Wellhead protection areas (WHPAs) designated by water purveyors (as required by WAC 246-290-145) and mapped by Ecology (2006) should be added to the City's aquifer recharge area map, showing the 10-year ground-water travel-time area to each well or well field. Superposition of all designated WHPAs illustrates where aquifers are currently used for water supply. The mapping should be updated periodically to allow for additions and deletions of specific water wells. These data should be checked with State of Washington Department of Health and King County Health Department records.

## **7. SUMMARY**

### **7.1 FINDINGS**

The following findings summarize the discussion above and in the more detailed analysis in the Technical Appendixes on individual resources:

1. The majority of Black Diamond and its Urban Growth Area (UGA) are located in the Lake Sawyer subwatershed. Lake Sawyer is an extremely sensitive resource due to its large water area and small tributary watershed. It is especially sensitive to eutrophication from additional nutrients.
2. The streams and lakes in the area provide important habitat for anadromous fish, resident fish, other aquatic species and a range of terrestrial species.
3. Due to the largely undeveloped status of the UGA, many of these resources have relatively intact riparian areas, extensive wetlands, and relatively good water quality and instream habitat. Additionally, many of these areas provide numerous process-intensive functions that contribute to the overall productivity of the subwatershed. The maintenance of these functions throughout the UGA will be essential to maintaining ecological functions and values within Lake Sawyer. The lake has a relatively small watershed and will be extremely sensitive to changes brought on by urbanization.
4. The processes that occur within the City and its UGA have a relatively smaller impact on the larger Green River/Soos Creek/Covington Creek watershed simply because it is a small contributing area.
5. The processes that occur in the portion of the UGA in the Middle Green River/Crisp Creek watershed primarily are related to groundwater recharge. The City and its Urban Growth Area provide fewer process-intensive functions contributing to the overall productivity of that subwatershed, but may be important to processes that occur in the nearby Horseshoe Lake and possibly Keevie Lake.
6. The Rock Creek/Jones Lake/Jones Creek corridor has the largest concentration of sensitive features that affect landscape function, including a large complex of wetlands that provides flood desynchronization, water storage, and a variety of nutrient control functions essential to the health of the watershed and provide the most important aquatic and terrestrial habitat areas. This area has the potential to provide the greatest

1. The Rock Creek/Jones Lake/Jones Creek corridor and the Black Diamond Lake/Stream corridors and the associated wetland complexes should be recognized as a core area that provides a variety of water supply, water quality, and habitat functions. These functions are essential to the preservation of water quality in Lake Sawyer, and to continue to provide the rich ecological functions of these systems. To function as wildlife corridors, they should extend to Ravensdale Creek to the north and the UGA boundaries to the east and west. They should be preserved with a minimum buffer width of 225 feet and requirements for adjacent uses to incorporate measures to reduce proximity impacts from noise, light and glare, stormwater and predation from pets. These corridors also should extend to the boundaries of adjacent steep slopes and may be widened where possible through a transfer of a portion of the buffer area from lower priority stream complexes.
2. Large wetland complexes at the headwaters of Ginder Creek Lawson Creek, Mud Creek and the Rock Creek tributary to the Cedar River that provide important inputs of water to the core through surface and groundwater should be preserved with buffers of 225 feet.
3. Wetlands outside of the core wetland complexes and the headwaters of Ginder Creek and Lawson Creek provide important hydrologic functions. Their ability to provide productive wildlife habitat for a variety of species will be limited by future urbanization. It is appropriate for the city to recognize tradeoffs between Urban Growth area goals of providing for housing and economic development by lower standards of protection. In recognition of their lower productivity, opportunities for transfer of buffer area to the core wetland system also are appropriate to provide the greatest variety of functions in that central location.

Recommended buffers are found in Table 7-1:

**Table 7-1. Recommended Wetland Buffers**

Wetland Category	CORE and Headland	Standard Buffer	Minimum Buffer with Transfer to Core Wetland Complex
Category IV	225 feet	50 feet	30 feet
Category III	225 feet	80 feet	50 feet
Category II	225 feet	150 feet	100 feet
Category I	225 feet	180 feet	125 feet

These buffer reductions, however, should be considered only when adjacent lands and adjacent development have appropriate natural and built features to protect wetland functions. These should include:

- (a) The buffer must have topographic and vegetation characteristics that ensure adequate function, including intact soils, limited topographic slope and dense native vegetation, including understory.
- (b) Adjacent land use should not include high intensity uses such as commercial, industrial or high intensity multi-family and also should avoid high intensity recreational uses such as sports fields that have considerable loadings of fertilizers

Buffer reductions, however, should be considered only when adjacent lands and adjacent development have appropriate natural and built features to protect wetland functions. The elements outlined above for buffer reduction for wetlands should also be implemented for these buffer reductions.

7. Geological hazards should be recognized and addressed on a case by case basis. Where feasible, slopes adjacent to wetlands and streams should be incorporated into buffers to provide a more effective overall buffer system.
8. Coal mine hazards should be recognized. High risk areas should be left undeveloped, unless mitigation can assure the reduction of risk to acceptable levels. Public facilities generally should avoid high risk areas. Lower risk areas should be assessed to assure that risks are mitigated, including risks to buildings from settlement.
9. Critical aquifer recharge areas are generally in the moderate risk range and can be effectively addressed by regulation of activities most likely to discharge hazardous materials and through protection of wellhead areas.
10. To recognize existing lots that cannot comply with the recommended buffers. Provisions are made for:
  - Allocation of a certain amount of disturbance as a "reasonable use" for existing residential lots
  - A broader "reasonable use" provision reviewed on a case-by-case basis for other uses
  - A sliding scale based on lot depth for buffers
  - Provision for enhancement of setbacks and buffers to reduce impacts to adjacent resources. As properties are re-developed, provisions should be included to enhance buffers.

## 8. REFERENCES

References are found in the accompanying Technical Appendixes to this summary.



**WETLANDS & WILDLIFE**  
Environmental Consulting

WILDLIFE HABITAT ASSESSMENT REPORT  
FOR THE VILLAGE OF MARYHILL AND A PRELIMINARY PLAN  
LOCATED IN THE COUNTY OF SNOHOMISH, WASHINGTON

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Provided to *Wetland Resources, Inc.* on:  
February 21, 2014

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## INTRODUCTION AND BRIEF SITE DESCRIPTION

*Wetlands & Wildlife, Inc.* was retained as a sub-contractor to *Wetland Resources, Inc.* for the purpose of completing a Wildlife Habitat Assessment on the subject property (The Villages MPD Phase 2 Preliminary Plat C site). This Wildlife Habitat Assessment was completed to determine if any wildlife habitat used by special status wildlife species exists on the subject site. *Wetlands & Wildlife, Inc.* conducted the on-site Wildlife Habitat Assessment on 11/27/2013 and 11/29/2013. The review area for this Wildlife Habitat Assessment encompasses the areas within The Villages MPD Phase 2 Preliminary Plat C boundary as depicted on the attached Approximate Habitat Types Map, Sheet 2/2.

The Property Owner and Applicant for the proposed project is BD Village Partners, LP. Site access to the subject property is gained from Roberts Drive, an existing public roadway, located northwest of the subject property. Per information gained from The Villages MPD Phase 2 Plat C Preliminary Plat Project Narrative dated November 8, 2013, the Villages MPD Phase 2 Plat C preliminary plat site is located approximately 1.3 miles west of the intersection of Roberts Drive and SR 169, south of Roberts Drive. The preliminary plat site is located generally within the southeast quarter and portions of the southwest quarter of Section 15, Township 21 North, Range 6 East, and includes very limited areas of the northwest quarter of the northeast quarter of Section 22, Township 21 North, Range 6 East, all within the City limits of Black Diamond, Washington. The preliminary plat is situated on approximately 136 acres consisting of the following King County Tax Parcels: 152106-9108, 152106-9096 and 222106-9004.

The property owner is currently in the design and planning phase of a potential future residential development on the subject property. *Wetlands & Wildlife, Inc.* reviewed the Sensitive Area Study and Buffer Averaging Map, Sheet 1/2 dated 2/18/2014 which was prepared by *Wetland Resources, Inc.* This habitat assessment was conducted independent of a specific development proposal, and the intent was to examine the existing wildlife habitat provided by the current site characteristics. Therefore, the findings discussed in this report should remain applicable regardless of any specific development proposal.

## BRIEF DESCRIPTION OF PROPOSED PROJECT

The Applicant proposes to subdivide 3 existing tax parcels (152106-9108, 152106-9096 and 222106-9004) subject to a Lot Line Adjustment submitted to the City concurrently with this preliminary plat application into 203 lots and 5 Future Development Tracts under the provisions of Title 17 of the Black Diamond Municipal Code as set forth in Exhibit E to The Villages MPD Development Agreement dated December 12, 2011 (KC Recording No. 20120130000655) as amended by the First Minor Amendment dated June 22, 2012 (KC Recording No. 20120906000762) and the Second Minor Amendment dated August 8, 2012 (KC Recording No. 20120906000763) ("The Villages MPD Development Agreement"). Twenty additional tracts are provided to allow for utility, access, parks and open space uses, and sensitive areas. Located within these three tax parcels are two Villages MPD Development Parcels (V28 and V29). The total preliminary plat, identified as The Villages MPD Phase 2 Plat C comprises approximately 136 acres.

The 203 lots will range from a minimum size of 3,150 square feet (sf) to a maximum size of 8,547 sf. The average lot size is 4,528 sf. The plat's 203 lots are comprised entirely of detached single family alley and

front loaded lots. The front loaded lots are located adjacent to wetland buffers, where it is impractical to provide alley lots or in areas where topography makes it difficult to provide alley lots in a reasonable manner. This proposed preliminary plat application includes one phase (not including Future Development tracts). Future Development tracts will undergo additional site planning and review under separate applications. Please see The Villages MPD Phase 2 Plat C Preliminary Plat Project Narrative dated 11/08/2013 for further information regarding the proposal associated with the project site.

### **STATEMENT OF QUALIFICATIONS TO COMPLETE THIS WILDLIFE HABITAT ASSESSMENT**

The following provides a brief overview of my experience and credentials to conduct this Wildlife Habitat Assessment. I am the Founder, Owner, and Principal Wetland and Wildlife Ecologist of *Wetlands & Wildlife, Inc.* I attended the University of Montana where I graduated cum laude with a degree in Wildlife Biology. As of 2014, I have 13 years of direct experience as a professional Biologist/Ecologist in western Washington and 17 years of overall experience completing natural resource assessments among many different ecosystems across the western United States. I have worked as a professional Biologist/Ecologist for federal, state, and county environmental agencies, as well as several private environmental consulting firms with specialties in wildlife habitat, wetlands, streams, rivers, and lakes. In my 17 years of experience, I have specialized in review of proposed land use and building development permit applications as they pertain to Critical Areas (wetlands, rivers, streams, lakes, and habitats of protected fish and wildlife species). I gained much of that experience while employed as a Senior Ecologist for King County DDES and a Regulatory Biologist for Snohomish County PDS.

I received certifications from the Washington Department of Fish and Wildlife for terrestrial wildlife habitat assessments and wildlife surveys of special status wildlife species in Washington. I have 17 years of direct experience conducting wildlife habitat assessments and surveys of special status wildlife species (protected per federal and state laws) in the western United States. I have been selected as the technical expert by local jurisdictions to provide 3rd-party reviews of the recently adopted (2010) FEMA Floodplain Habitat Assessments and applicable Critical Areas Regulations. Over the past 17 years, I have conducted over 1,300 different biological / ecological assessments on properties with many habitat types and zoning designations, from small, urban properties (0.25 acres) to large, rural properties (up to 2,000 acres in size).

### **METHODOLOGIES OF WILDLIFE HABITAT ASSESSMENT**

The purpose of this Wildlife Habitat Assessment was to identify any Wildlife Habitat Conservation Areas or Wildlife Habitat Networks designated by the City of Black Diamond Critical Areas Ordinance per BDMC 19.10.300 through BDMC 19.10.340 (set forth as Exhibit E to The Villages MPD Development Agreement) on the site. The purpose of this wildlife habitat assessment was to satisfy the requirements outlined in BDMC 19.10.335 related to habitats other than fish and wildlife habitat conservation areas, and the methodologies used are consistent with such assessments. Note that the purpose of this assessment was related to potential wildlife habitat and was not intended to represent a wildlife survey for particular species.

*Wetlands & Wildlife, Inc.* conducted site visits to complete this Wildlife Habitat Assessment on 11/27/2013

and 11/29/2013. Based on information gained from site research, *Wetlands & Wildlife, Inc.* conducted on-site habitat assessments and evaluations among many different portions of the site from 7:00 a.m. until approximately 2:00 p.m. on November 27<sup>th</sup> and November 29<sup>th</sup>. We evaluated specific habitats and locations to determine if protected wildlife habitat such as Wildlife Habitat Conservation Areas (WHCA's) exist on-site. *Wetlands & Wildlife, Inc.* traversed the majority of the property in locations with the highest probability to contain protected wildlife habitat to examine the evidence of wildlife use. *Wetlands & Wildlife, Inc.* also recorded audible and visual detections of wildlife species. Both audible and visual detections were recorded, and species detections were only recorded once to document use of the site, consistent with the criteria for a wildlife habitat assessment as opposed to a wildlife survey. *Wetlands & Wildlife, Inc.* also examined the on-site habitat for evidence of mammal use including scat, tracks, trails, bedding areas, scratch marks, tree rubbings, bone piles, and hair deposits.

*Wetlands & Wildlife, Inc.* reviewed the online version of SalmonScape and Priority Habitat and Species (PHS) maps provided by the Washington Department to Fish and Wildlife (WDFW)<sup>1</sup>, and researched public information available on King County's iMAP system.

## RESULTS AND FINDINGS OF WILDLIFE HABITAT ASSESSMENT

### On-site Sensitive Areas:

Please view the Sensitive Area Study and Buffer Averaging Map (Sheet 1/2) dated 2/18/2014 and prepared by *Wetland Resources, Inc.* for a depiction of sensitive areas on the project site. As shown on Sheet 1/2, regulated sensitive areas exist among the western, southern and eastern portion of the project site. A large contiguous wetland exists among the eastern portion of the project site, and Rock Creek is located among this large wetland system, as shown on King County's iMAP system, StreamNet, and SalmonScape maps. Rock Creek is hydrologically connected to Lake Sawyer which is located off-site to the north of the subject property, as well as Jones Lake which is located off-site and southeast of the property (identified on King County's iMAP system, StreamNet, and SalmonScape). An unnamed tributary splits southwest from Rock Creek and is hydrologically connected to an off-site lake located south of the property. Based on review of the StreamNet, SalmonScape and PHS maps, Rock Creek provides habitat for anadromous fish species, including coho salmon (*Oncorhynchus clarkii*) and resident coast cutthroat (*Oncorhynchus kisutch*). This area is located within Habitat Type A described below.

### Description of On-site Habitat Types:

Please view the Approximate Habitat Types Map (Sheet 2/2) dated 2/18/2014 for the approximate locations of different habitat types which were located on the subject site. Based on this assessment, three general habitat types exist on the subject property. Those habitat types are labeled A, B, and C on the associated map and are described in further detail below:

#### Habitat Type A:

As depicted on Sheet 2 of 2, Habitat Type A includes a ponded wetland that encompasses a large portion

<sup>1</sup> The PHS maps reviewed for this wildlife habitat assessment are not included as exhibits in this report, because those maps contain sensitive data regarding special-status fish and wildlife species that WDFW does not allow *Wetlands & Wildlife, Inc.* to distribute.

of the northeastern corner of the subject property extending down to the south eastern corner of the property. Habitat Type A is an extensive open-water wetland dominated by pacific willow (*Salix lucida*), with mature western hemlock (*Tsuga heterophylla*) trees along the wetland edge. The shrub layer and understory among Habitat Type A is dominated by red-osier dogwood (*Cornus sericea*) and hardhack (*Spiraea douglasii*), and also includes skunk cabbage (*Lysichiton americanum*), salmonberry (*Rubus spectabilis*), lady fern (*Athyrium filix-femina*) and tall mannagrass (*Glyceria elata*). The majority of the wetland does not contain live trees except for pacific willows, but contains several large standing snags. This may be due to a change in hydrologic regime which created wetter conditions than when the trees originally thrived in the wetland. Although the interior portions of the large wetland lack a dominance of living trees, the standing snags and large woody debris among the wetland provide excellent habitat for species such as woodpeckers that rely on snags for foraging opportunities. The margin / boundary of the wetland and surrounding protective buffer areas contain trees which appear to be approximately 30 - 40 years in age.

#### Habitat Type B:

As depicted on Sheet 2 of 2, Habitat Type B encompasses a long linear central portion of the subject property located from the northwestern corner of the property to the southeastern corner. Habitat Type B is dominated by moderately dense even age stand estimated to be 30 to 40 years old. Habitat Type B is dominated by tree species western hemlock and Douglas fir (*Pseudotsuga menziesii*). The shrub layer and understory among Habitat Type B is dominated by sword fern (*Polystichum munitum*) and vine maple (*Acer circinatum*), but also includes salmonberry, trailing blackberry (*Rubus ursinus*), red elderberry (*Sambucus racemosa*), false lily-of-the-valley (*Maianthemum dilatatum*), pacific bleeding heart (*Dicentra formosa*), and pacific waterleaf (*Hydrophyllum tenuipes*). Among this habitat type, a few large woody debris piles were located during our assessment which would provide habitat for a variety of terrestrial species. These large woody debris piles were likely a result of downed trees from wind throw, but the large woody debris piles provide structural variation for wildlife habitat.

#### Habitat Type C:

As depicted on Sheet 2 of 2, Habitat Type C encompasses a long linear wetland that extends from the southeastern corner of the subject property to the northwestern corner. Habitat Type C is an open wetland with ponded water in places, consisting of mature trees such as red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), sitka spruce (*Picea sitchensis*) and cascara buckthorn (*Rhamnus purshiana*) along the wetlands edge. The understory and shrub layer consisted of vine maple, salmonberry, false lily-of-the-valley, coastal hedgenettle (*Stachys cooleyae*), and pacific bleeding heart. There are large standing snags dispersed throughout this wetland. Even though the interior portions of the wetland lack living trees, the standing snags and large woody debris among the wetland provide excellent habitat for species such as woodpeckers and passerine birds.

#### On-site Priority Habitat Areas:

The City of Black Diamond Critical Areas Ordinance regulates Fish and Wildlife Conservation Areas pursuant to BDMC 19.10.300 through BDMC 19.10.340. Per BDMC 19.10.310 A, a Core Stream and Wetland Complex is defined as "The streams, lakes, ponds and wetland complex associated with Rock Creek, Jones Lake, Jones Creek, Black Diamond Lake, Black Diamond Creek, and Ravensdale Creek are designated as the Core Stream and Wetland Complex." A section of Rock Creek and associated wetland

encompass the eastern section of the subject property. Per BDMC 19.10.325 C, Core Stream and Wetland Complex buffers shall be "a minimum of 225 feet for all streams within the core area, except for the north side of the Rock Creek complex between Roberts Drive and State Route 169 where the buffer shall be a minimum of 185 feet."

The WDFW maintains a list of Priority Habitat types which are considered to be priorities for conservation and management. Priority habitats are habitat types or elements with unique or significant value to a diverse assemblage of species. The subject property contains the following Priority Habitats:

- Biodiversity Areas and Corridors (due to the Wildlife Habitat Network mapped by King County)
- Riparian Habitat
- Freshwater Wetlands
- Instream Habitat
- Snags and Logs

Based on review of the Sensitive Area Study and Buffer Averaging Map dated 2/18/2014 (Sheet 1/2), the on-site priority habitat areas mentioned above are located among the regulated sensitive areas or their associated buffers and will therefore be protected as part of the project proposal.

The online Priority Habitats and Species (PHS) maps provided by WDFW depict three specific Priority Habitats located among and near the subject property. The large wetland in the eastern section of the property is mapped and identified as a priority aquatic habitat. The wetland and a surrounding protective wetland buffer will remain undisturbed as required per the City of Black Diamond Critical Areas Ordinance. The second priority habitat identified on the online PHS map for this vicinity is a Regular Concentration Area for Roosevelt elk (*Cervus elaphus roosevelti*). Regular Concentration Areas, as defined by the WDFW PHS information, are those "areas that are commonly or traditionally used by a group of animals on a seasonal or year-round basis". The third priority habitat is located approximately 1 mile generally north of the subject property and consists of two bald eagle nest sites located near the southern extent of Lake Sawyer.

**Discussion Regarding Wildlife Species Protection:**

Per BDMC 19.10.310 B, other Fish and Wildlife Conservation Areas are defined as "Areas outside of the Core Stream and Wetland Complex include areas within the City which state or federally designated endangered, threatened, and sensitive species have know primary association, including,"

- 1) The Washington State Department of Fish and Wildlife Priority Habitats and Species Recommendations for Species and Habitats for:
  - a. Endangered species listed at WAC 232-12-014
  - b. Threatened species listed at WAC 232-12-001
  - c. Sensitive species listed at WAC 232-12-011
- 2) Bald Eagle habitat pursuant at WAC 232-12-292
- 3) Endangered or threatened species listed in accordance with the federal Endangered Species Act together with the areas with which they have primary association.
- 4) State natural are preserves and natural resource conservation areas.

- 5) Waters of the state as defined in RCW 77.55.011, and RCW 90.56.010 including shorelines of the state as defined in RCW 90.58.010
  - 6) Naturally occurring ponds under twenty acres and their submerged aquatic beds that provide fish or wildlife habitat
  - 7) Lakes, ponds, streams, and rivers planted with game fish by a government or tribal entity
- C. Habitats and species of local importance as may be determined by the city.

**Wildlife Species Detections or Evidence of Use among the On-Site Habitat:**

*Wetlands & Wildlife, Inc.* detected a total of 13 different bird species on-site and evidence of use by 5 mammal species. The number of species detected in November (outside of the breeding and nesting season) indicates that the site contains habitat which is used by a wide variety of wildlife species. Similar to most habitat types in western Washington, seasonal variation of wildlife use among this site is expected. In particular, *Wetlands & Wildlife, Inc.* predicts that the site provides habitat for additional passerine birds during the breeding and nesting seasons which migrate out of the area during fall and winter months. The habitat among the large wetland and surrounding buffer areas in the eastern portion of the project site provides the highest quality avian habitat on-site. The vegetation present in and near this large wetland provides a diverse interspersed of habitats, thus increasing the amount of "edge" habitat which many species prefer over other habitats. In particular, the large wetland among the eastern portion of the property provides ample thermal cover, hiding cover, foraging opportunities, and readily available water sources in close proximity. Rock Creek and associated wetland (Habitat Type A) found on the subject property are designated as a Core Stream and Wetland Complex protected by the City of Black Diamond Critical Areas Ordinance. Although the middle of the wetland located on the eastern section of the property is impassible for terrestrial wildlife due to deep ponded water, the outer edges of the wetland and adjacent buffer areas provide abundant wildlife habitat that will be protected by the City's Critical Areas Ordinance due to those areas being regulated sensitive areas. While no visual or audible detections of elk occurred during the on-site habitat assessment, the site does portray evidence of use by elk as described below.

**Discussion Regarding Use of On-Site Habitat by Elk:**

As discussed above, the property is mapped as being within a Regular Concentration Area for Roosevelt elk. This habitat assessment confirmed that Roosevelt elk do use the habitat on the site. No audible or visual detections of elk occurred while conducting this assessment. However, *Wetlands & Wildlife, Inc.* found evidence of elk use in a variety of forms including the following: 1) browsing evidence; 2) droppings/scat; 3) tracks; and 4) a network of trails. Based on observations during the assessment, it appears that the elk slightly use the property and evidence of concentrated use by elk is located primarily near the wetland boundaries or within the protected buffers associated with the wetlands. The protective buffer associated with the long linear wetland located in the western portion of the property includes a network of trails used by elk and more regular scat occurrence. This network of concentrated trails indicates regular use and movement of elk throughout those portions of the site. This network of trails is primarily located within the wetland buffer areas and the wetland buffer will be maintained in its current condition during any proposed development (as shown on the Sensitive Area Study and Buffer Averaging Map, Sheet 1/2). In addition, within the boundary of The Villages MPD Phase 2 Plat C, wildlife corridors identified by King County Wildlife Networks are protected as part of Wetland TOS (Core Wetland Complex), so they will be permanently protected to allow for the ongoing use by wildlife. The City of Black Diamond Sensitive Areas Ordinance, Best Available Science Review, Parametrix 2008 (referred to herein as the

"BAS document") defines habitat corridors on page 46 as "contiguous, vegetated, dispersal conduits of variable length and width that connect isolated habitat patches to other patches or larger landscape habitat components and prevent isolation of habitat". The BAS document further explains on page 46 that these corridors are specifically designed and located "to provide for wildlife movement and alleviate the effects of habitat fragmentation." As discussed on pages 57 and 58 of the BAS document, and as depicted on the King County Wildlife Habitat Network Map, the City's Critical Areas Ordinance and The Villages MPD established wildlife corridors to provide connectivity between key environment features such as the Core Wetland Complex, priority habitats, and other critical areas within the City. For example, a 300-foot-wide wildlife corridor from the western edge of the Core Wetland Complex to the City's western boundary was established by The Villages MPD Condition of Approval No. 125. This 300-foot-wide wildlife corridor is depicted on the Constraints Map, which is set forth as Exhibit G to The Villages MPD Development Agreement.

### **SUMMARY AND RECOMMENDATIONS RELATED TO THIS WILDLIFE HABITAT ASSESSMENT**

*Wetlands & Wildlife, Inc.* found no indication of active breeding sites or evidence of breeding / nesting use by any federal or state special-status wildlife species within the subject property during this wildlife habitat assessment.

The subject property does provide habitat for a wide variety of wildlife species, primarily due to the overall size of the property, the landscape context, the interspersed habitat types, and presence of multiple habitat requirements (thermal cover, hiding cover, foraging opportunities, and water) in relatively close proximity.

The on-site habitat provides evidence of use by elk. Similar to many large mammals, elk typically require large tracts of contiguous habitat corridors to thrive and often display aversion to areas which are highly used by humans. In *Wetlands & Wildlife, Inc.*'s professional opinion, the permanent protection of the 300-foot-wide wildlife corridor, along with the permanent protection of the wetlands and wetland buffers within the subject property, will be adequate to maintain habitat among the movement corridors used most frequently by elk and other wildlife species that currently utilize the on-site habitats.

### **LIMITATIONS AND USE OF THIS REPORT**

This Wildlife Habitat Assessment Report is supplied to *Wetland Resources, Inc.* and is intended to aid in the design and planning phase for a potential future development plan on the subject property. Please note that the purpose and focus of this assessment was to identify documented or potential wildlife habitat conservation areas and wildlife habitat networks, with an emphasis on vegetative conditions and habitat connectivity provided by the property. The report and field work are intended as an assessment of the vegetative conditions and landscape context among the subject property which may provide habitat conditions for special-status wildlife species. As described in this report, no habitats of primary association for threatened or endangered wildlife species were located on the project site, and none are expected to be located on the project site. Therefore, a wildlife survey was not completed and this report and associated

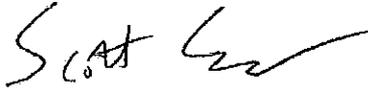
field work are not intended to represent a wildlife survey for any particular species or individuals of a species. As discussed previously in the report, seasonal variation of wildlife use among this site is expected. Therefore, absence of a species or lack of a detection related to any species in any particular month should not be construed to suggest that a given species doesn't utilize the on-site habitats during a different portion of the year.

*Wetlands & Wildlife, Inc.* did not evaluate the site for the presence, extent, classification, or regulatory implications of any other Critical Areas types (e.g. wetlands, aquatic areas, or geologic hazard areas) which are also regulated by the City of Black Diamond Critical Areas Ordinance.

The work for this report has conformed to the standard of care employed by professional ecologists in the Puget Sound region. While *Wetlands & Wildlife, Inc.* upheld professional industry standards when completing this review, the information included in this report does not guarantee approval by any federal, state, and/or local permitting agencies. Therefore, *Wetlands & Wildlife, Inc.* does not recommend commencing any activity which requires a permit on the property until all appropriate permits have been obtained.

If any questions arise regarding this assessment or report, please contact me directly at (425) 337-6450.

Regards,



Scott Spooner  
Owner / Principal Wetland & Wildlife Ecologist  
*Wetlands & Wildlife, Inc.*

## REFERENCES AND LITERATURE REVIEWED

City of Black Diamond Code. Sections 19.10.300 through 19.10.340: Critical Areas. City of Black Diamond, Washington.

King County iMAP: Interactive Mapping Tool. Administered by the King County GIS Center. <http://www.kingcounty.gov/operations/gis/Maps/iMAP.aspx>. Website last visited on December 9, 2013.

Peterson, R.T. 1990. Peterson Field Guide to Western Birds. Houghton Mifflin Company, New York, NY.

SalmonScope. Interactive Mapping website administered by the Washington Department of Fish and Wildlife. <http://wdfw.wa.gov/mapping/salmonscape/index.html>. Website last visited on December 9, 2013.

StreamNet. Fish Data for the Northwest. Administered by the Pacific States Marine Fisheries Commission. <http://www.streamnet.org/>. Website last visited on December 9, 2013.

Washington State Department of Fish and Wildlife. Priority Habitats and Species List. Aquatic Habitats. [http://wdfw.wa.gov/conservation/phs/list/2008/2008-sept\\_aquatic\\_habitats.pdf](http://wdfw.wa.gov/conservation/phs/list/2008/2008-sept_aquatic_habitats.pdf). Website last visited on December 9, 2013.

Washington State Department of Fish and Wildlife. Priority Habitats and Species List. Definitions. [http://wdfw.wa.gov/conservation/phs/list/2008/phs\\_definitions.pdf](http://wdfw.wa.gov/conservation/phs/list/2008/phs_definitions.pdf). Website last visited on December 9, 2013.

Washington State Department of Fish and Wildlife. Priority Habitats and Species List. Habitat Features. [http://wdfw.wa.gov/conservation/phs/list/2008/2008-sept\\_habitat\\_features.pdf](http://wdfw.wa.gov/conservation/phs/list/2008/2008-sept_habitat_features.pdf). Website last visited on December 9, 2013.

Washington State Department of Fish and Wildlife. Priority Habitats and Species List. Large Ungulates. [http://wdfw.wa.gov/conservation/phs/list/2008/2008-sept\\_large\\_ungulates.pdf](http://wdfw.wa.gov/conservation/phs/list/2008/2008-sept_large_ungulates.pdf). Website last visited on December 9, 2013.

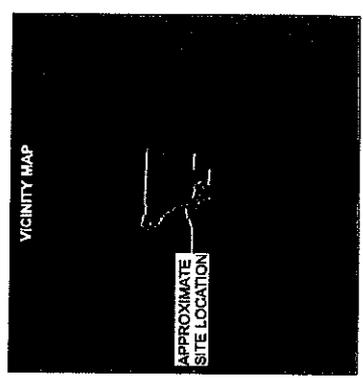
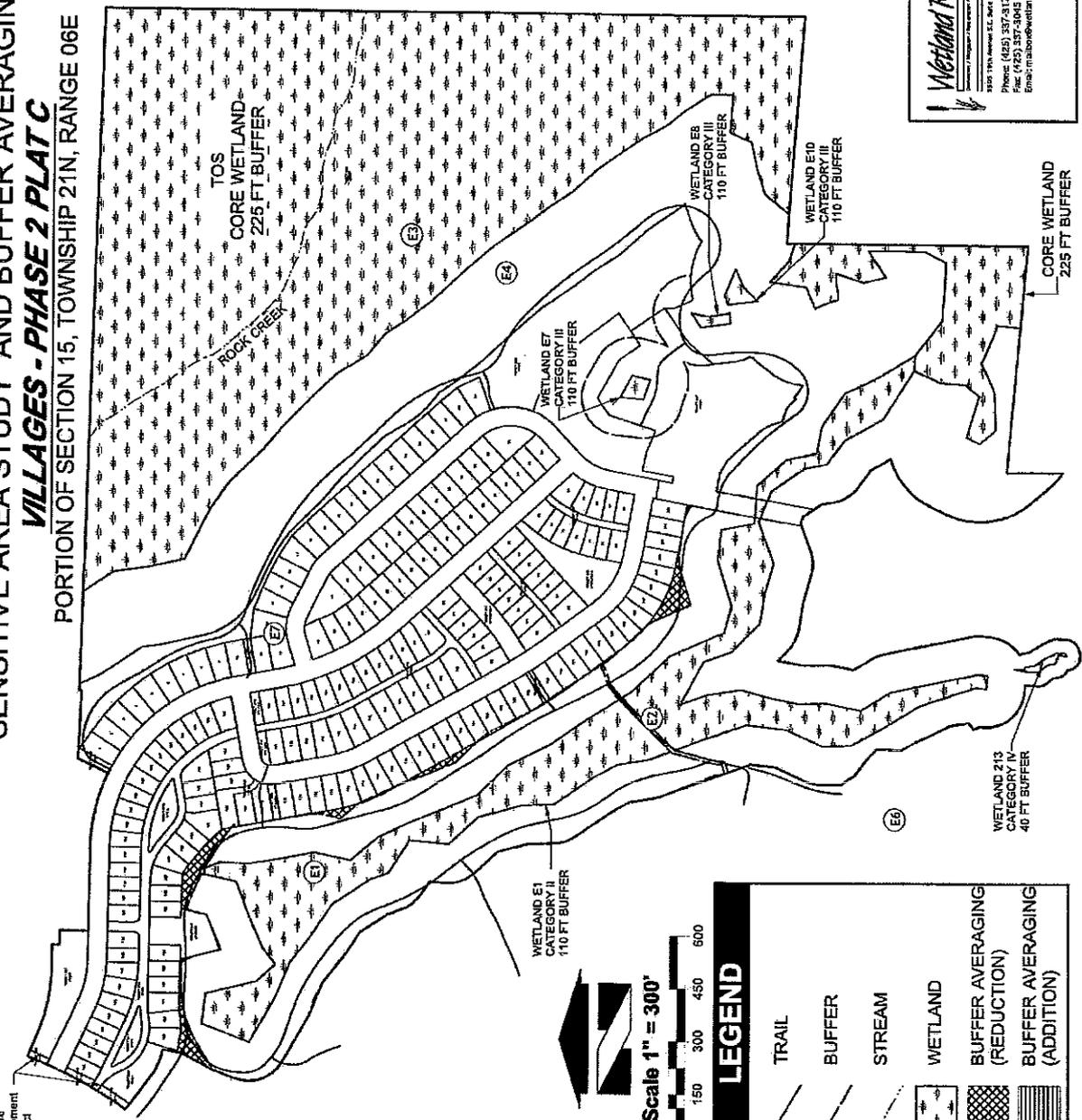
Washington State Department of Fish and Wildlife. Priority Habitats and Species List. Terrestrial Habitats. [http://wdfw.wa.gov/conservation/phs/list/2008/2008-sept\\_terrestrial\\_habitats.pdf](http://wdfw.wa.gov/conservation/phs/list/2008/2008-sept_terrestrial_habitats.pdf). Website last visited on December 9, 2013.

Washington State Department of Fish and Wildlife. Species of Concern List. Priority Habitats and Species List. <http://wdfw.wa.gov/conservation/endangered/lists/search.php?searchby=AnimalType&search=Bird&orderby=CommonName>. Website last visited on December 9, 2013.

Washington State Department of Fish and Wildlife. Priority Habitats and Species map (PHS on the Web) for Section 21, Township 21 North, Range 06 East. <http://wdfw.wa.gov/mapping/phs/>.

**SENSITIVE AREA STUDY AND BUFFER AVERAGING MAP**  
**VILLAGES - PHASE 2 PLAT C**  
 PORTION OF SECTION 15, TOWNSHIP 21N, RANGE 06E

Future  
 Development  
 Tract



Buffer Averaging Table

	Buffer Averaging (Addition)	27,860 sf
	Buffer Averaging (Reduction)	2,117 sf
	Net Buffer Gain	25,743 sf



Scale 1" = 300'



**LEGEND**

	TRAIL
	BUFFER
	STREAM
	WETLAND
	BUFFER AVERAGING (REDUCTION)
	BUFFER AVERAGING (ADDITION)

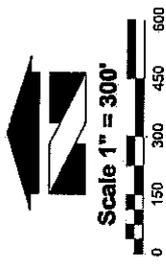
**Wetland Resources, Inc.**  
 1000 17th Avenue, S.E., Suite 200, Federal Way, WA 98003  
 Phone: (206) 835-8774  
 Fax: (206) 835-8045  
 Email: malone@wetlandresources.com

SENSITIVE AREA STUDY AND  
 BUFFER AVERAGING MAP  
**VILLAGES, PHASE 2 PLAT C**  
 BLACK DIAMOND, WA

Sheet 1/2  
 WRI Job #08035  
 Drawn By: N. Whiting  
 Date: 2.18.2014

ED Village Partners, LP  
 Attn: Colin Lund  
 10220 NE Points Drive, Suite 310  
 Kirkland, WA 98033

APPROXIMATE HABITAT TYPES MAP  
**VILLAGES - PHASE 2 PLAT C**  
 PORTION OF SECTION 15, TOWNSHIP 21N, RANGE 06E



**LEGEND**

[Diagonal hatching, top-left to bottom-right]	[Diagonal hatching, top-right to bottom-left]
[Horizontal hatching]	[Diagonal hatching, top-left to bottom-right]

**Westland Resources, Inc.**  
 4923 19th Avenue S.E., Suite 111, Bothell, WA 98012  
 Phone: (425) 397-3174  
 Fax: (425) 397-3045  
 Email: info@westlandresources.com

**APPROXIMATE HABITAT TYPES MAP**  
**VILLAGES - PHASE 2 PLAT C**  
 BLACK DIAMOND, WA

BD Village Partners, LP  
 Attn: Colin Lund  
 10220 NE Points Drive, Suite 310  
 Kirkland, WA 98033

Sheet 2/2  
 WRI Job #08035  
 Drawn by: N. Whiting  
 Date: 2.18.2014



# CITY OF BLACK DIAMOND

Physical Address: 24301 Roberts Drive  
Mailing Address: PO Box 599  
Black Diamond, WA 98010

Phone: (360) 886-5700  
Fax: (360) 886-2592  
[www.ci.blackdiamond.wa.us](http://www.ci.blackdiamond.wa.us)

## MEMORANDUM

Date: August 22, 2013

To: File PLN11-0001

From: MDRT

Re: Approval of the Wetland E1 re-evaluation of Class II designation & proper segregation for The Villages MPD Phase 1A Preliminary Plat

Pursuant to the Hearing Examiner's preliminary plat condition of approval #87/SEPA Mitigation Measure No. 4 on The Villages MPD Phase 1A Preliminary Plat, the Master Developer submitted a letter regarding the Wetland Classification for Wetland E1 on June 19, 2013. Next, the MDRT responded with comments on the document on July 15, 2013. The Master Developer provided a resubmittal package on August 1, 2013. The MDRT reviewed the resubmittal and the MDRT wetland consultant, Perteet, determined that, the rationale for segregating the unit of Wetland E1 to be rated separately is acceptable and in accordance with provisions for separating wetland units based on discernible changes in wetland hydrology described in the published guidance for the Ecology Wetland Rating System. The Class II designation is valid.

The Wetland E1 re-evaluation of Class II designation & proper segregation for The Villages MPD Phase 1A Preliminary Plat materials have been reviewed by the Designated Officials and by the contracted Master Development Review Team (MDRT) wetland consultant (Perteet).

Based on the advice and expertise of Perteet, the undersigned Designated Officials hereby approve the Wetland E1 re-evaluation of Class II designation & proper segregation for The Villages MPD Phase 1A Preliminary Plat.

Andrew Williamson, Designated Official  
Executive Director Econ Dev & Eng Svcs

Stacey Welsh, Designated Official  
Community Development Director

## Stacey Welsh

---

**From:** Jason Walker <jwalker@perteet.com>  
**Sent:** Friday, August 09, 2013 6:07 PM  
**To:** Stacey Welsh  
**Subject:** RE: Wetland E1 Classification Resubmittal Package

Hi Stacey,

The response provided by the applicant dated July 30, 2013 adequately addresses comments in my memo from July 12, 2013, satisfying Condition of Approval #87. Thank you.

**Jason Walker, ASLA, PWS**  
Environmental and Community Planning Manager

**Perteet Inc.**  
425.252.7700  
1.800.615.9900 fax: 425.339.6018 www.perteet.com  
2707 Colby Avenue, Ste 900, Everett, WA 98201

---

**From:** Stacey Welsh [<mailto:SWelsh@ci.blackdiamond.wa.us>]  
**Sent:** Friday, August 02, 2013 10:51 AM  
**To:** Jason Walker  
**Subject:** FW: Wetland E1 Classification Resubmittal Package

Jason,

Please review and confirm whether Condition of Approval #87 of The Villages MPD Phase 1A Preliminary Plat has been satisfied. See you on Monday.

Thank you,

Stacey Welsh, AICP  
Community Development Director  
City of Black Diamond  
PO Box 599  
Black Diamond, WA 98010  
360-886-5710  
[swelsh@ci.blackdiamond.wa.us](mailto:swelsh@ci.blackdiamond.wa.us)

---

**From:** Angela Hill [<mailto:ahill@oakpointe.com>]  
**Sent:** Thursday, August 01, 2013 4:04 PM  
**To:** Stacey Welsh  
**Cc:** Colin Lund - Yarrow Bay Holdings  
**Subject:** Wetland E1 Classification Resubmittal Package

Stacey,

Attached is the Wetland E1 Classification resubmittal package from WRI dated July 30, 2013 in response to the City's July 15, 2013 review letter.

Please let me know if you have any questions.

Thank you,  
Angela

Angela Hill  
Project Coordinator



10220 NE Points Drive, Suite 310  
Kirkland, WA 98033  
(425) 898-2121 direct  
(425) 898-2139 fax  
[www.yarrowbayholdings.com](http://www.yarrowbayholdings.com)



# Wetland Resources, Inc.

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E.  
Suite 106  
Everett, Washington 98208  
(425) 337-3174  
Fax (425) 337-3045

July 30, 2013

Stacey Welsh  
Community Development Director  
City of Black Diamond  
24301 Roberts Drive  
Black Diamond, WA 98010

**RE: Response to 7/15/13 Review Comments on The Villages MPD Phase 1A  
Preliminary Plat – Wetland Classification for Wetland E1**

Dear Ms. Welsh,

*Wetland Resources, Inc.* submitted to the City of Black Diamond a letter regarding the wetland classification for Wetland E1 (dated June 14, 2013) in response Condition of Approval # 87 of the City of Black Diamond Hearing Examiner's decision on The Villages MPD Preliminary Plat 1A. In response to the submitted Wetland Classification letter, a memorandum prepared by Jason Walker of Perteet (dated July 12, 2013) was sent to the Applicant. The memorandum arrived as an enclosure within a City of Black Diamond review comment letter (dated July 15, 2013). Perteet's review comment letter requested a minor modification to the original Wetland Classification letter. This letter shall serve as a formal response to Perteet's Wetland Classification for Wetland E1 review comments only. The following narrative re-states all original review comments (indented and italicized), and provides a response that includes a reference to the location in the Wetland Classification letter where the revision can be found.

Response to Perteet July 12, 2013 memorandum review comments

- 1. The rationale for segregating the unit of Wetland E1 to be rated separately is acceptable and in accordance with the provisions for separating wetland units based on discernible changes in wetland hydrology described in the published guidance for the Ecology Wetland Rating System.*

Response:

Noted No change requested.

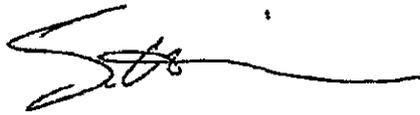
- 2. Revise and omit the reference to a 110' buffer for Wetland E1 on Page 2 of the letter. Disputing the approved buffer dimensions or arguing for a reduction in buffer width is not applicable to the purpose of this response which must specifically address Condition of Approval #87 of the City of Black Diamond*

*Hearing Examiner's decision of the Villages MPD Preliminary Plat 1A. The 225' buffer for Wetland E1 shall be utilized as the standard buffer for Wetland E1.*

Response:

Page 2 of the Wetland Classification letter has been revised to clarify that the buffer for Wetland E1 is 225 feet for the limited purpose of Preliminary Plat 1A. All references to a 110-foot buffer for Wetland E1 on the Wetland Classification letter have been removed.

*Wetland Resources, Inc.*

A handwritten signature in black ink, appearing to read 'S. Brainard', with a long horizontal line extending to the right.

Scott Brainard, PWS  
*Principal Ecologist*

# Wetland Resources, Inc.

Delineation Mitigation Restoration Habitat Creation / Permit Assistance

9505 19th Avenue S.E.  
Suite 106  
Everett, Washington 98208  
(425) 337-3174  
Fax (425) 337-3045

July 30, 2013

BD Village Partners, LP  
Attn: Colin Lund  
10220 NE Points Dr., Suite 310  
Kirkland, WA 98033

## **Re: Wetland Classification for Wetland E1**

Dear Mr. Lund,

As required by Condition of Approval # 87 of the City of Black Diamond Hearing Examiner's decision on The Villages MPD Preliminary Plat 1A, Wetland Resources, Inc. (WRI) has conducted the following analysis to determine whether Wetland E1 was properly segregated from the Core wetland complex under the guidelines of the City's adopted and applicable wetland classification manual.

The City of Black Diamond Sensitive Areas Ordinance (SAO), BDMC 19.10.210 (B)(2) identifies Washington State Wetland Rating System for Western Washington, revised August 2004 (Ecology Publication #04-06-025), hereinafter referred to as the Rating System, as the specific methodology for categorizing wetlands within the City. This is not only the required methodology within the City, but it is also considered best available science in Western Washington ([www.ecy.wa.gov/programs/sea/wetlands/bas](http://www.ecy.wa.gov/programs/sea/wetlands/bas)).

As noted on page 55 of the City of Black Diamond Hearing Examiner's decision on The Villages MPD Preliminary Plat 1A (attached hereto), "Dr. Cook references a reputable wetland ratings manual as unambiguously prohibiting the segregation of a wetland from a larger wetland complex unless the wetland is in a valley." While WRI agrees that there is a reputable wetland rating manual (the Rating System), we disagree that the only time wetland units can be segregated is if they are located within a valley. Furthermore, there is no definition of "valley" within the City's SAO, their BAS document, or the Rating System. The Merriam-Webster online dictionary defines valley as: "1.a. an elongate depression of the earth's surface usually between ranges of hills or mountains; 1.b. an area drained by a river and its tributaries; 2. a low point or condition". Clearly the elongate depression that is Wetland E1 is located between hills and is in a low point in the topography, and would therefore meet the definition of valley.

As noted on page 12 of the Rating System (attached hereto), "The guiding principal for separating a vegetated wetland into different units for the purpose of rating is changes in the

water regime of the wetlands. Boundaries between the different units should be set at the point where the volume, flow (emphasis added), or velocity of the water changes abruptly, whether created by natural or human-made features". This is further clarified in email correspondence from the primary author of the Rating System, Tom Hruby to Jason Walker of Perrett (attached hereto), which states "Based on our guidance one could separate the wetland into two units for rating because the[sic] there is a major change in the water regime (water flows in two directions)".

The Applicant has conducted a detailed topographic survey of Wetland E1 and the surrounding contributing basins (attached hereto). As shown on the attached map, a clear distinction between basins has been made based on the direction of flow. The basins identified as flowing to the northwest and northeast directly contribute hydrology to Wetland E1, while the basin identified as flowing to the southeast contributes hydrology to the Core wetland complex. Via the topographic survey, hydrology has been clearly shown flowing in different directions.

Based on the guidance established in the Rating System, corresponding email from the Rating System's primary author Tom Hruby, and the detailed topographic survey of Wetland E1 conducted by the Applicant, a separation between Wetland E1 and the Core wetland complex unit is appropriate for the purposes of categorization. The Applicant has voluntarily agreed to the Category II designation for Wetland E1 with a 225' buffer for the limited purpose of Preliminary Plat 1A.

If you have any questions or need further information, please feel free to contact me at 425.337.3174.

Sincerely,



*Wetland Resources, Inc.*  
Scott Brainard, PWS  
Principal Wetland Ecologist

Dismissed by Order on Dismissal, Ex. 123, as moot.

**M. Potential Wetland Impacts Haven't Been Sufficiently Analyzed.**

**Findings of Fact:**

1. Overview of Appeal Issues. In their appeal statement, the SEPA Appellants assert that impacts to wetlands have not been sufficiently assessed. They note that Perceet had determined that the Villages FEIS did not adequately address wetland impacts and that this issue should be addressed during implementing project review.
2. Roadway Impact. The only specific impact to wetlands cited by the SEPA Appellants is an encroachment of Ash Ave SE and SE Dogwood St to the building setback line of wetland T. This was also a concern shared by the Muckleshoot Tribe in its SEPA comments on the proposal. Dr. Cooke noted that it's not possible to build a road without equipment getting into areas adjacent to it. 11/1/12 Tr at 179-80. She also noted that vehicles would park along the shoulder in the setback.

It is determined that construction of the road within the building setback line will not create any probable significant adverse environmental impacts. This finding is based upon the City's development standards, the project design and project conditions. As noted by the Applicant during the hearing, BDMC 19.10.160(D)(4) authorizes roads to be built within building setback lines. See 11/1/12 Tr at 148-49. An MDNS condition and Villages MPD COA 117 require split rail fencing along wetland boundaries. Scott Brainard testified that silt fencing will be required by the City's stormwater regulations to prevent erosion impacts during construction. 11/2/12 Tr at 55. As testified by Bill Shields, it is possible to build and design a road without encroaching into an adjoining wetland setback. 11/1/12 Tr at 197. As noted in a declaration from Scott Brainard, a sidewalk will separate the Ash and Dogwood streets from the setback line, eliminating the potential for the buffer area to serve as a road shoulder. See Ex. 143, att 1.

3. Classification of E1. The classification of Wetland E1 as a Category II wetland may be erroneous. This improper classification may result in probable significant adverse environmental impacts. A mitigation measure will be added to the MDNS requiring re-evaluation of the classification for Wetland E1.

The administrative record does not support the classification of wetland E1 as a Category II wetland. As discussed in the general findings of fact, Dr. Cooke references a reputable wetland ratings manual as unambiguously prohibiting the segregation of a wetland from a larger wetland complex unless the wetland is in a valley. The Applicant and City do not dispute this and only counter that the issue is moot because the buffer required for the wetland is the same as a Category I wetland. Even with the substantial weight given to the SEPA responsible official, it cannot be determined that the wetland classification is correct. Dr. Cooke is a highly qualified wetland scientist. Her conclusions on this issue are what she claims to be based upon unambiguous guidelines in a reputable ratings

if the ground is covered with snow or the surface water is frozen. If this is the case at the time a wetland is being rated, it may be necessary to revisit the site later.

### Experience and Qualifications Needed

It is important that the person completing the rating have experience and/or education in the identification of natural wetland features, indicators of wetland function, vegetation classes, and some ability to distinguish between different plant species. We recommend that qualified wetland consultants or wetland experts be used to rate most sites, particularly the larger and more complex ones. This will help ensure that results are repeatable.

Comment [3]: We also highly recommend that anyone using the rating system take the two day training provided by the Department of Ecology through their central training program. Data for those using the rating system indicates that users make fewer errors when trained. The variability in scores among those trained is about 10% (4 or 5 points). The error among those not trained is 7- or 15 points.

### Identifying the Boundaries of Wetlands for Rating

First, determine the location and approximate boundaries of the wetland during the site visit. A surveyed delineation of the wetland, however, is not necessary to complete data collection, unless this information is required for another part of your project or the size becomes an issue in determining the category (e.g. >1 acre estuarine or > 1 acre mature or old-growth forest). It is often useful to have a map or aerial photograph on which the approximate boundaries of the wetland can be drawn. This boundary, however, will need to be verified in the field. A determination of the boundary that is not verified by a field survey may result in a different rating. This is especially true in forested wetlands where the boundaries are difficult to determine from aerial photographs.

Comment [4]: It is highly recommended that you submit aerial photos or drawings of the site. The updated field form documents the information that should be included on aerial photos or maps and submitted with the form.

The entire wetland within the delineated boundary is to be rated. Small areas within a wetland (such as the footprint of an impact) cannot be rated separately. The rating method is not sensitive enough, or complex enough, to allow division of a wetland into sub-units based on level of disturbance, property lines, or vegetation patterns. Furthermore, users of the rating system are not asked to subdivide a wetland into different (hydrogeomorphic [HGM] classes (see p. 24) as is done in the function assessment methods. A wetland with several wetland classes within its boundary is treated as one class for the purpose of rating. The second page of the rating form provides guidance on how to classify wetlands having several HGM classes within its boundary.

Comment [5]: If you do not have access to the entire site you should do the best you can to survey the wetland from aerial photos, using boundaries of any other additional information. DO NOT RATE ONLY THE PART TO WHICH YOU HAVE ACCESS. Make your best estimate on the data form and note what questions are based on interpretation of telemetry data.

### Identifying Boundaries of Large Contiguous Wetlands in Valleys

Wetlands can often form large contiguous areas that extend over hundreds of acres. This is especially true in river valleys where there is some surface water connection between all areas of the floodplain. In these situations the initial task is to identify the wetland "unit" that will be rated. For the purposes of the rating system, a large contiguous area of wetland can be divided into smaller units using the criteria described below.

The guiding principle for separating a vegetated wetland into different units for the purpose of rating is changes in the water regime of the wetland. Boundaries between different units should be set at the point where the volume, flow, or velocity of the water changes abruptly, whether created by natural or human-made features. The following sections describe some common situations that might occur. The criteria for separating wetlands into different units for rating are based on the observations made during the field work undertaken to calibrate both the rating system and the methods for assessing wetland functions. They reflect the collective judgment of the teams of wetland experts

Jason Walker

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Subject: FW: Wetland Rating Questions

From: Hruby, Tom (ECY) [mailto:[thru461@ecy.wa.gov](mailto:thru461@ecy.wa.gov)]  
Sent: Thursday, July 05, 2012 1:23 PM  
To: Jason Walker  
Subject: RE: Wetland Rating Questions

Jason,

"Abrupt" in the context of the description is relative and depends on local conditions. Generally it means the rate of change of an environmental characteristic is at least 2-3 times higher than the gradient in the surrounding landscape. For example a stream may have an average slope of 2%. An abrupt change in the stream slope would therefore be 4-6%. However, if the average slope is 4-6%, the slope would have to be 8-12% to be considered an abrupt change.

Tom

Tom Hruby, PhD, PWS  
Senior Ecologist  
Washington State Department of Ecology  
PO Box 47600  
Olympia WA 98504  
(360) 407-7274  
[tom.hruby@ecy.wa.gov](mailto:tom.hruby@ecy.wa.gov)

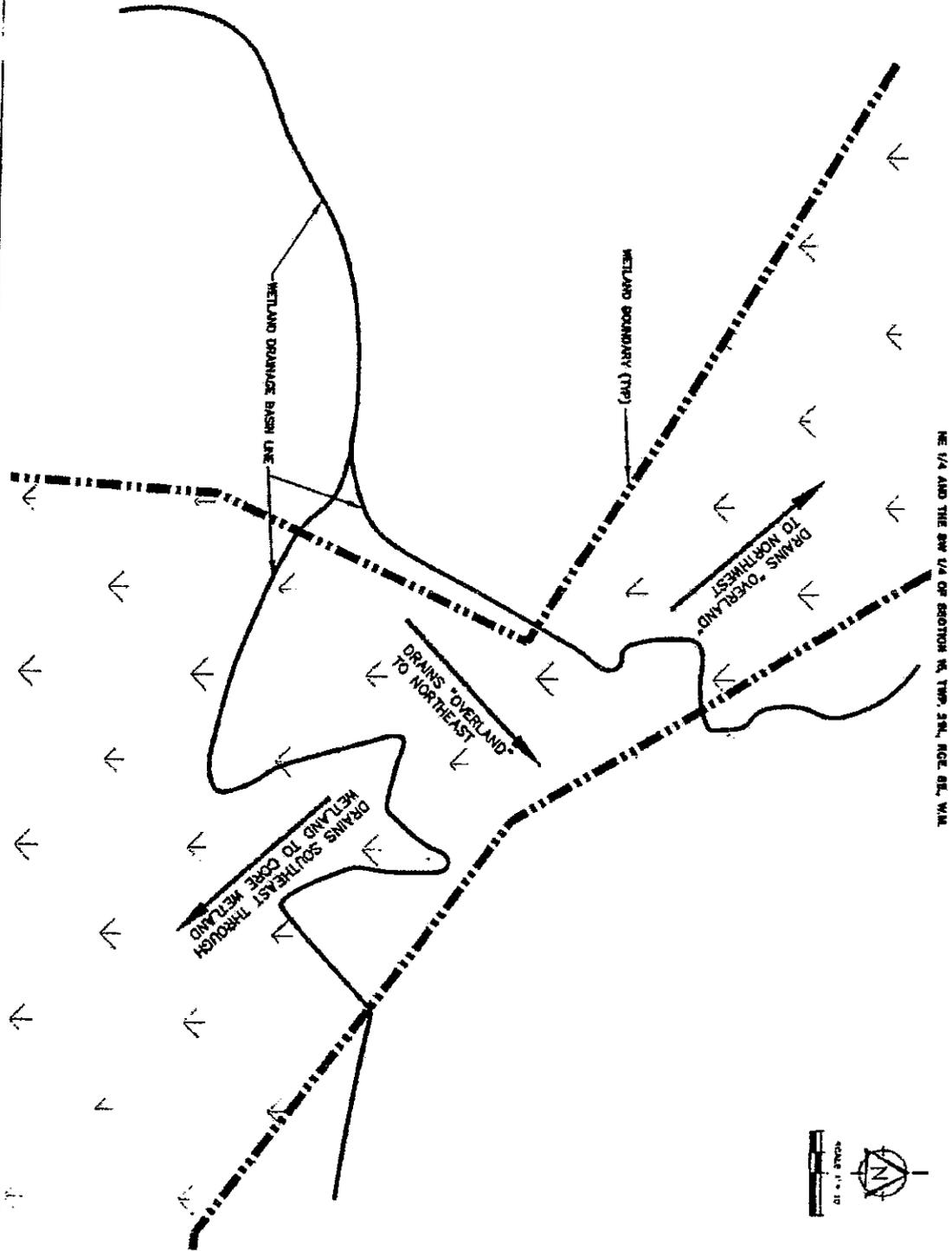
If I read your description correctly, what you describe is a headwater system with water flowing from the wetland in two directions. Based on our guidance one could separate the wetland into two units for rating because there is a major change in the water regime (water flows in two directions). The practical issue however is where to draw the boundary; one that is legally and scientifically defensible. If you can identify the boundary where the water direction changes flow to an accuracy of 5-10 ft then you can separate the wetland into two units. This may require a detailed topographic survey, lidar, or some other measurements such as piezometer readings across the boundary.

This is similar to the problem we face in wetlands with different HGM classes within one delineated boundary. We recommend the wetland be rated as one unit because it is very difficult to identify a legally defensible boundary. When we took wetland experts into the field we were unable to agree on the boundary during just one site visit. The boundaries drawn by different scientists were off by more than 100ft. We ask you to rate the entire wetland as one unit because we could not identify any simple indicators that would allow you to draw an accurate boundary. Drawing a boundary between two units is possible but may take detailed monitoring of water levels for at least a year.

Tom

Tom Hruby, PhD, PWS  
Senior Ecologist  
Washington State Department of Ecology  
PO Box 47600  
Olympia WA 98504





NE 1/4 AND THE SW 1/4 OF SECTION NO. 10P, 2N, 3E, B2, WA.

<p>DATE: 10-01-2001 PROJECT: 10-001 SHEET: 2 of 2</p>	<p>WETLAND DRAINAGE BASIN EXHIBIT</p> <p><b>THE VILLAGES</b></p> <p>CITY OF BLACK DIAMOND, WASHINGTON</p>	<p>TRMAP</p> <p>WASHINGTON</p>
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# Wetland Resources, Inc.

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E.  
Suite 106  
Everett, Washington 98208  
(425) 337-3174  
Fax (425) 337-3045

October 15, 2013

Stacey Welsh  
Community Development Director  
City of Black Diamond  
24301 Roberts Drive  
Black Diamond, WA 98010

**RE: Re-Evaluation of the DOE Wetland Rating Form for Wetland E1**

Dear Ms. Welsh,

*Wetland Resources, Inc.* (WRI) conducted a site visit on August 16, 2013 with MDRT staff (Andrew Williamson), the MDRT's environmental consultant (Jason Walker of Pertect), and representatives from Yarrow Bay. The primary issue that was investigated during this site visit related to the presence or absence of a permanent or intermittent stream within Wetland E1. During the site visit, WRI and Pertect mutually agreed that a permanently flowing or intermittently flowing stream hydroperiod does not exist within the boundary of Wetland E1. As a result, WRI has updated the DOE Wetland Rating Form for Wetland E1 and has summarized its rationale for doing so below. The updated DOE Wetland Rating Form for Wetland E1 is also attached hereto for your ease of reference.

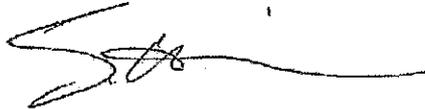
During the August 16, 2013 site visit, a small dry channel was observed, which indicated flowing water within the boundary of Wetland E1. This channel was a maximum of 4 feet wide and 70 feet long with a maximum area of 280 square feet. Per the guidance established on page 73 of the *Washington State Wetland Rating System for Western Washington, Hruby 2004*, a "hydroperiod" must cover more than 10 percent of the wetland or be  $\frac{1}{4}$  acre in order to count as a water regime. The channel within Wetland E1 equated to a maximum area of 280 square feet, which is significantly less than  $\frac{1}{4}$  acre or 10 percent of Wetland E1. Since the channel within Wetland E1 does not qualify as a perennial or intermittent stream hydroperiod, the total point count for question **H.1.2 (Hydroperiods)** is **2 points**. This correction also has an impact on the answer to question **H.1.4 (Interspersion of Habitats)**. Since no stream hydroperiod is present and the boundary between the identified vegetation classes is relatively smooth, the habitat interspersion within Wetland E1 is **moderate**.

At the request of Jason Walker of Pertect during the August 16, 2013 site visit, WRI collected soil samples and had them lab tested for overall organic content. Based on the lab tests, it has been determined that organic soils are present with the boundary of Wetland E1. This results in an increase in the score for question **S.1.2** from 0 to **4 points**.

As a result of the two field-verified changes and the lab-verified change discussed above, the total point value for Wetland E1 on the DOE Wetland Rating Form is **57**, including a habitat score of **27 points**. Based on these point values, Wetland E1 is classified as a Category II wetland with a moderate habitat score. Under BDMC 19.10.230, Category II wetlands with habitat scores between 20 and 28 are designated **110-foot protective buffers**. Therefore, the buffers adjacent to Wetland E1 should be designated at 110 feet.

If you have any questions or comments, please feel free to contact me directly.

*Wetland Resources, Inc.*

A handwritten signature in black ink, appearing to read 'S. Brainard', with a long horizontal line extending to the right.

Scott Brainard, PWS  
*Principal Ecologist*

Wetland name or number E1

**WETLAND RATING FORM – WESTERN WASHINGTON**  
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users  
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): E1 Date of site visit: 7.11.12/Rev.8.16.13

Rated by S. Brainard Trained by Ecology? Yes  No  Date of training 11.16.06

SEC: 15 TWSHP: 21 RNGE: 06E 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 $\geq 70$
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score $< 30$

Score for Water Quality Functions	14
Score for Hydrologic Functions	16
Score for Habitat Functions	27
<b>TOTAL score for Functions</b>	<b>57</b>

Category based on **SPECIAL CHARACTERISTICS** of wetland

I      II      Does not Apply

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

II
----

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics	Wetland HGM Class used for Rating	
Estuarine	Depressional	<input checked="" type="checkbox"/>
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	<input checked="" type="checkbox"/>

Wetland name or number E1

**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.

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

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

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

Wetland name or number E1

## 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 E1

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

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

The overbank flooding occurs at least once every two years.

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

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

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

NO - go to 7  YES - The wetland class is **Depressional**

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

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

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

<i>HGM Classes within the wetland unit being rated</i>		<i>HGM Class to Use in Rating</i>	
Slope + Riverine	<input type="checkbox"/>	Riverine	<input type="checkbox"/>
Slope + Depressional	<input type="checkbox"/>	Depressional	<input type="checkbox"/>
Slope + Lake-fringe	<input type="checkbox"/>	Lake-fringe	<input type="checkbox"/>
Depressional + Riverine along stream within boundary	<input checked="" type="checkbox"/>	Depressional	<input checked="" type="checkbox"/>
Depressional + Lake-fringe	<input type="checkbox"/>	Depressional	<input type="checkbox"/>
Salt Water Tidal Fringe and any other class of freshwater wetland	<input type="checkbox"/>	Treat as ESTUARINE under wetlands with special characteristics	<input type="checkbox"/>

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

Wetland name or number E1

<b>D Depressional and Flats Wetlands</b>		<b>Points</b> (only 1 score per box)
<b>WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality</b>		
<b>D</b>	<b>D 1. Does the wetland unit have the <u>potential</u> to improve water quality?</b> <i>(see p. 38)</i>	
<b>D</b>	<p><b>D 1.1 Characteristics of surface water flows out of the wetland:</b></p> <p><input type="checkbox"/> Unit is a depression with no surface water leaving it (no outlet) points = 3</p> <p><input type="checkbox"/> Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2</p> <p><input checked="" type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 1</p> <p><input type="checkbox"/> Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 <i>(If ditch is not permanently flowing treat unit as "intermittently flowing")</i></p> <p style="text-align: right;">Provide photo or drawing</p>	Figure 1  1
<b>D</b>	<p><b>S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic</b> <i>(use NRCS definitions)</i></p> <p><input checked="" type="checkbox"/> YES points = 4</p> <p><input type="checkbox"/> NO points = 0</p>	4
<b>D</b>	<p><b>D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class)</b></p> <p><input checked="" type="checkbox"/> Wetland has persistent, ungrazed, vegetation &gt;= 95% of area points = 5</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed, vegetation &gt;= 1/2 of area points = 3</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed vegetation &gt;= 1/10 of area points = 1</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed vegetation &lt;1/10 of area points = 0</p> <p style="text-align: right;">Map of Cowardin vegetation classes</p>	Figure 1  5
<b>D</b>	<p><b>D1.4 Characteristics of seasonal ponding or inundation.</b> <i>This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.</i></p> <p><input checked="" type="checkbox"/> Area seasonally ponded is &gt; 1/2 total area of wetland points = 4</p> <p><input type="checkbox"/> Area seasonally ponded is &gt; 1/4 total area of wetland points = 2</p> <p><input type="checkbox"/> Area seasonally ponded is &lt; 1/4 total area of wetland points = 0</p> <p style="text-align: right;">Map of Hydroperiods</p>	Figure 1  4
<b>D</b>	<b>Total for D 1</b> <i>Add the points in the boxes above</i>	14
<b>D</b>	<p><b>D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?</b> <i>(see p. 44)</i></p> <p>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. <i>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.</i></p> <p><input type="checkbox"/> Grazing in the wetland or within 150 ft</p> <p><input type="checkbox"/> Untreated stormwater discharges to wetland</p> <p><input type="checkbox"/> Tilled fields or orchards within 150 ft of wetland</p> <p><input type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging</p> <p><input type="checkbox"/> Residential, urban areas, golf courses are within 150 ft of wetland</p> <p><input type="checkbox"/> Wetland is fed by groundwater high in phosphorus or nitrogen</p> <p><input type="checkbox"/> Other</p> <p><input type="checkbox"/> YES multiplier is 2    <input checked="" type="checkbox"/> NO multiplier is 1</p>	multiplier  1
<b>D</b>	<b>TOTAL - Water Quality Functions</b> <i>Multiply the score from D1 by D2</i> <i>Add score to table on p. 1</i>	14

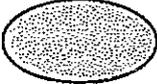
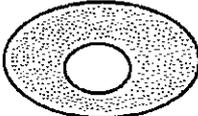
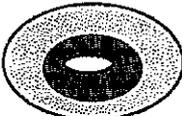
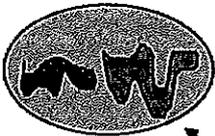
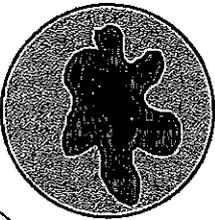
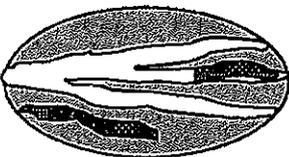
Wetland name or number E1

<b>D Depressional and Flats Wetlands</b>		<b>Points</b>
<b>HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation</b>		<small>(only 1 score per box)</small>
<b>D 3. Does the wetland unit have the potential to reduce flooding and erosion?</b>		<i>(see p. 46)</i>
<b>D</b>	<b>D 3.1 Characteristics of surface water flows out of the wetland unit</b> <input type="checkbox"/> Unit is a depression with no surface water leaving it (no outlet) points = 4 <input type="checkbox"/> Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 <input type="checkbox"/> Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow and no obvious natural outlet and/or outlet is a man-made ditch points = 1 <i>(If ditch is not permanently flowing treat unit as "intermittently flowing")</i> <input checked="" type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet ( <i>permanently flowing</i> ) points = 0	0
<b>D</b>	<b>D 3.2 Depth of storage during wet periods</b> <i>Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).</i> <input type="checkbox"/> Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 <input type="checkbox"/> The wetland is a "headwater" wetland points = 5 <input type="checkbox"/> Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 <input checked="" type="checkbox"/> Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 <input type="checkbox"/> Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 <input type="checkbox"/> Marks of ponding less than 0.5 ft points = 0	3
<b>D</b>	<b>D 3.3 Contribution of wetland unit to storage in the watershed</b> <i>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</i> <input checked="" type="checkbox"/> The area of the basin is less than 10 times the area of unit points = 5 <input type="checkbox"/> The area of the basin is 10 to 100 times the area of the unit points = 3 <input type="checkbox"/> The area of the basin is more than 100 times the area of the unit points = 0 <input type="checkbox"/> Entire unit is in the FLATS class points = 5	5
<b>D</b>	<b>Total for D 3</b> <i>Add the points in the boxes above</i>	<b>8</b>
<b>D</b>	<b>D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?</b> <i>(see p. 49)</i> Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <i>Note which of the following indicators of opportunity apply.</i> <input type="checkbox"/> Wetland is in a headwater of a river or stream that has flooding problems <input checked="" type="checkbox"/> Wetland drains to a river or stream that has flooding problems <input type="checkbox"/> Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems <input type="checkbox"/> Other _____ <input checked="" type="checkbox"/> YES multiplier is 2 <input type="checkbox"/> NO multiplier is 1	multiplier <u>2</u>
<b>D</b>	<b>TOTAL - Hydrologic Functions</b> Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	<b>16</b>

Wetland name or number E1

<i>These questions apply to wetlands of all HGM classes.</i>		<b>Points</b> (only 1 score per box)
<b>HABITAT FUNCTIONS</b> - Indicators that unit functions to provide important habitat		
<b>H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?</b>		
<p><b>H 1.1. <u>Vegetation structure</u> (see p. 72)</b>            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.</p> <p> <input type="checkbox"/> Aquatic bed  <input type="checkbox"/> Emergent plants  <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have &gt;30% cover)  <input checked="" type="checkbox"/> Forested (areas where trees have &gt;30% cover)            If the unit has a forested class check if:  <input checked="" type="checkbox"/> 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:  <input type="checkbox"/> 4 structures or more points = 4  <input checked="" type="checkbox"/> 3 structures points = 2  <input type="checkbox"/> 2 structures points = 1  <input type="checkbox"/> 1 structure points = 0            Map of Cowardin vegetation classes         </p>		<p>Figure 1</p> <p>2</p>
<p><b>H 1.2. <u>Hydroperiods</u> (see p. 73)</b>            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)</p> <p> <input type="checkbox"/> Permanently flooded or inundated  <input checked="" type="checkbox"/> Seasonally flooded or inundated  <input checked="" type="checkbox"/> Occasionally flooded or inundated  <input checked="" type="checkbox"/> Saturated only  <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland  <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland  <input type="checkbox"/> Lake-fringe wetland = 2 points  <input type="checkbox"/> Freshwater tidal wetland = 2 points            Map of hydroperiods         </p> <p style="text-align: right;"> <input type="checkbox"/> 4 or more types present points = 3  <input checked="" type="checkbox"/> 3 types present points = 2  <input type="checkbox"/> 2 types present point = 1  <input type="checkbox"/> 1 type present points = 0         </p>		<p>Figure 1</p> <p>2</p>
<p><b>H 1.3. <u>Richness of Plant Species</u> (see p. 75)</b>            Count the number of plant species in the wetland that cover at least 10 ft<sup>2</sup>. (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:  <input type="checkbox"/> &gt; 19 species points = 2  <input checked="" type="checkbox"/> 5 - 19 species points = 1  <input type="checkbox"/> &lt; 5 species points = 0            List species below if you want to:</p> <p>A seasonal stream was observed within a small portion of the wetland. It was approximately 4 feet wide for a maximum distance of 70 feet. This is significantly less than the 10% or 1/4 required to meet the water regime type identified in H.1.2.</p>		<p>1</p>

Total for page 5

<p><b>H 1.4. Interspersion of habitats</b> (see p. 76)                  Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p><input type="checkbox"/> None = 0 points</p> </div> <div style="text-align: center;">  <p><input type="checkbox"/> Low = 1 point</p> </div> <div style="text-align: center;">  <p><input checked="" type="checkbox"/> Moderate = 2 points</p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p><input type="checkbox"/> High = 3 points</p> </div> <div style="text-align: center;">  <p>[riparian braided channels]</p> </div> </div> <p style="text-align: center; font-size: small;">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</p>	<p>Figure <u>1</u></p> <p style="text-align: center; font-size: 2em;">2</p>
<p><b>H 1.5. Special Habitat Features:</b> (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.</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (&gt;4in. diameter and 6 ft long).</li> <li><input checked="" type="checkbox"/> Standing snags (diameter at the bottom &gt; 4 inches) in the wetland</li> <li><input type="checkbox"/> 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)</li> <li><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (&gt;30degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown)</li> <li><input type="checkbox"/> 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)</li> <li><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</li> </ul> <p style="font-size: x-small;">NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<p style="font-size: 2em;">3</p>
<p><b>H 1. TOTAL Score</b> - potential for providing habitat                  Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	<p style="font-size: 2em;">10</p>

Comments



H 2.3 Near or adjacent to other priority habitats listed by WDFW (see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report <http://wdfw.wa.gov/hab/phslist.htm>)

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

**Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).

**Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).

**Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

**Old-growth/Mature 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 than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.

**Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).

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

**Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).

**Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

**Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A*).

**Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

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

**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.

**Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

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

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

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

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

3

Wetland name or number E1

<p><b>H 2.4 Wetland Landscape</b> (<i>choose the one description of the landscape around the wetland that best fits</i>) (see p. 84)</p> <p><input checked="" type="checkbox"/> 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. <span style="float: right;">points = 5</span></p> <p><input type="checkbox"/> The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile <span style="float: right;">points = 5</span></p> <p><input type="checkbox"/> There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed <span style="float: right;">points = 3</span></p> <p><input type="checkbox"/> The wetland is Lake-fringe on a lake with disturbance and there are 3 other lake-fringe wetland within ½ mile <span style="float: right;">points = 3</span></p> <p><input type="checkbox"/> There is at least 1 wetland within ½ mile. <span style="float: right;">points = 2</span></p> <p><input type="checkbox"/> There are no wetlands within ½ mile. <span style="float: right;">points = 0</span></p>	5
<p><b>H 2. TOTAL Score - opportunity for providing habitat</b> <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i></p>	17
<p>TOTAL for H 1 from page 14</p>	10
<p><b>Total Score for Habitat Functions</b> – add the points for H 1, H 2 and record the result on p. 1</p>	27

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**CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS**

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

<b>Wetland Type</b> <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	<b>Category</b>
<p><b>SC 1.0 Estuarine wetlands (see p. 86)</b></p> <p>Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal,  <input type="checkbox"/> Vegetated, and  <input type="checkbox"/> With a salinity greater than 0.5 ppt.  <input type="checkbox"/> YES = Go to SC 1.1                      NO <input checked="" type="checkbox"/> = Go to SC 2.0</p>	
<p><b>SC 1.1</b> Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?</p> <p><input type="checkbox"/> YES = Category I                      <input type="checkbox"/> NO go to SC 1.2</p>	<p><b>Cat. I</b>  <input type="checkbox"/></p>
<p><b>SC 1.2</b> Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO = Category II</p> <p><input type="checkbox"/> The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native <i>Spartina</i> spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of <i>Spartina</i> would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of <i>Spartina</i> in determining the size threshold of 1 acre.</p> <p><input type="checkbox"/> At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.</p> <p><input type="checkbox"/> The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.</p>	<p><input type="checkbox"/> <b>Cat. I</b>  <input type="checkbox"/> <b>Cat. II</b>  <input type="checkbox"/> <b>Dual rating I/II</b></p>

Wetland name or number E1

<p><b>SC 2.0 Natural Heritage Wetlands (see p. 87)</b> Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</p> <p>SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? (<i>this question is used to screen out most sites before you need to contact WNHP/DNR</i>) S/T/R information from Appendix D <input checked="" type="checkbox"/> or accessed from WNHP/DNR web site <input type="checkbox"/></p> <p>YES <input type="checkbox"/> - contact WNHP/DNR (see p. 79) and go to SC 2.2      NO <input checked="" type="checkbox"/></p> <p>SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as a site with state threatened or endangered plant species? <input type="checkbox"/> YES = Category I      NO <input checked="" type="checkbox"/> not a Heritage Wetland</p>	<p><input type="checkbox"/> Cat. I</p>
<p><b>SC 3.0 Bogs (see p. 87)</b> Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p>1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 <input type="checkbox"/>      <input checked="" type="checkbox"/> No - go to Q. 2</p> <p>2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond? <input type="checkbox"/> Yes - go to Q. 3      <input checked="" type="checkbox"/> No - Is not a bog for purpose of rating</p> <p>3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)? <input type="checkbox"/> Yes - Is a bog for purpose of rating      <input type="checkbox"/> No - go to Q. 4</p> <p>NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.</p> <p>1. Is the unit forested (&gt; 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (&gt; 30% coverage of the total shrub/herbaceous cover)?</p> <p>2. <input type="checkbox"/> YES = Category I      No <input type="checkbox"/> Is not a bog for purpose of rating</p>	<p><input type="checkbox"/> Cat. I</p>

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

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