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Sensitive Area Study, Buffering Averaging Plan & Wildlife
Analysis, Wetland Resources, Inc.,
February 24, 2014



Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

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**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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- 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).¹ 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, 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.

¹ 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).

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.

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
Total	14.9	0	22.65	22.65

TABLE 3: Existing Conditions Tributary to Wetland E1

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

TABLE 4: Equivalent Impervious Area

Basin	Basin Area acres	Forested Runoff Volume ac-ft	Equivalent Impervious Area ac	Stormwater Management Zone
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 ≥ 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+ 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

REFERENCES

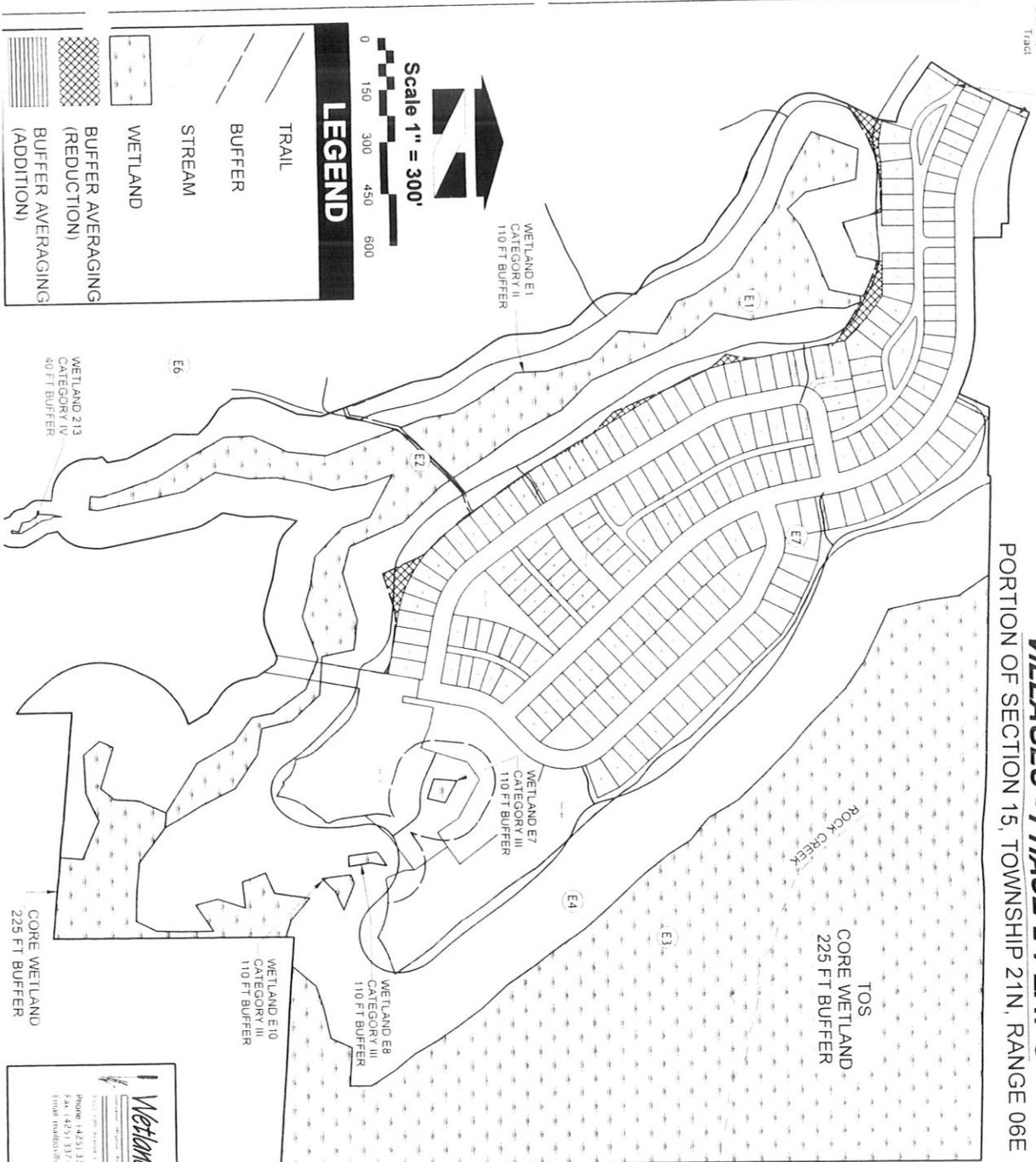
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Future Development Tract

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
- WETLAND AVERAGING (REDUCTION)
- WETLAND AVERAGING (ADDITION)



Buffer Averaging Table

Buffer Averaging (Addition)	27,950 sq ft
Buffer Averaging (Reduction)	2,117 sq ft
Net Buffer Gain	25,833 sq ft

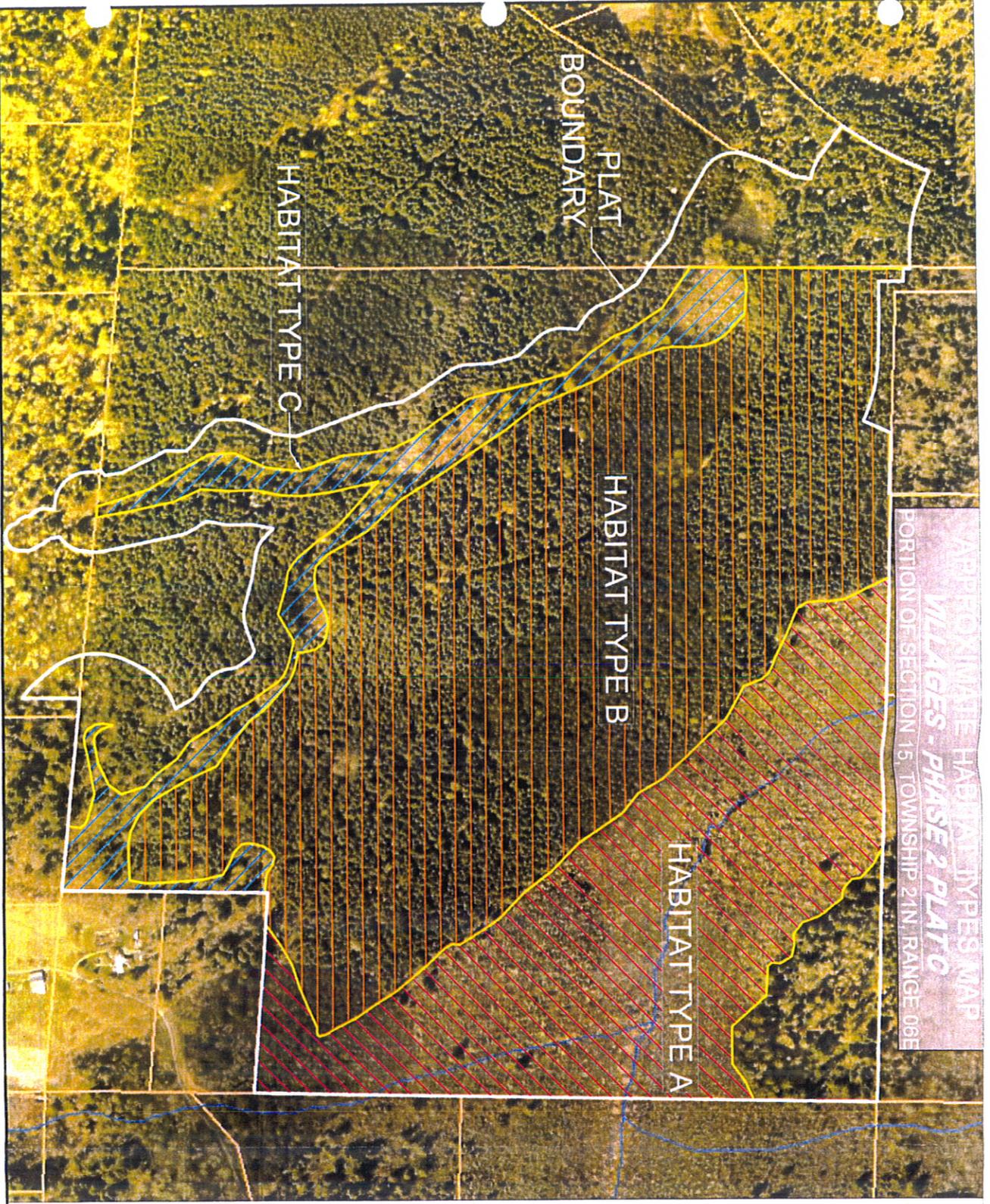
Wetland Resources, Inc.

3201 1st Avenue S.E., Walla Walla, WA 99157
 Phone: (425) 337-3174
 Fax: (425) 337-3043
 Email: info@wetlandresources.com

SENSITIVE AREA STUDY AND BUFFER AVERAGING 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

Sheel WRI, Ltd. P.C.
 Drawn by: R. M. VA
 Date: 2.18



APPROXIMATE HABITAT TYPES MAP
 VILLAGES - PHASE 2 PLAT C
 PORTION OF SECTION 15, TOWNSHIP 21N, RANGE 08E



LEGEND	
	HABITAT TYPE A
	HABITAT TYPE B
	HABITAT TYPE C

Wetland Resources, Inc.
 Phone: (425) 337-1174
 Fax: (425) 337-3445
 Email: frank@wetlandresources.com

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

BD Village Partners, LP
 40311 Coon Land
 10220 NE Ponds Drive, Suite 310
 Kirkland, WA 98035

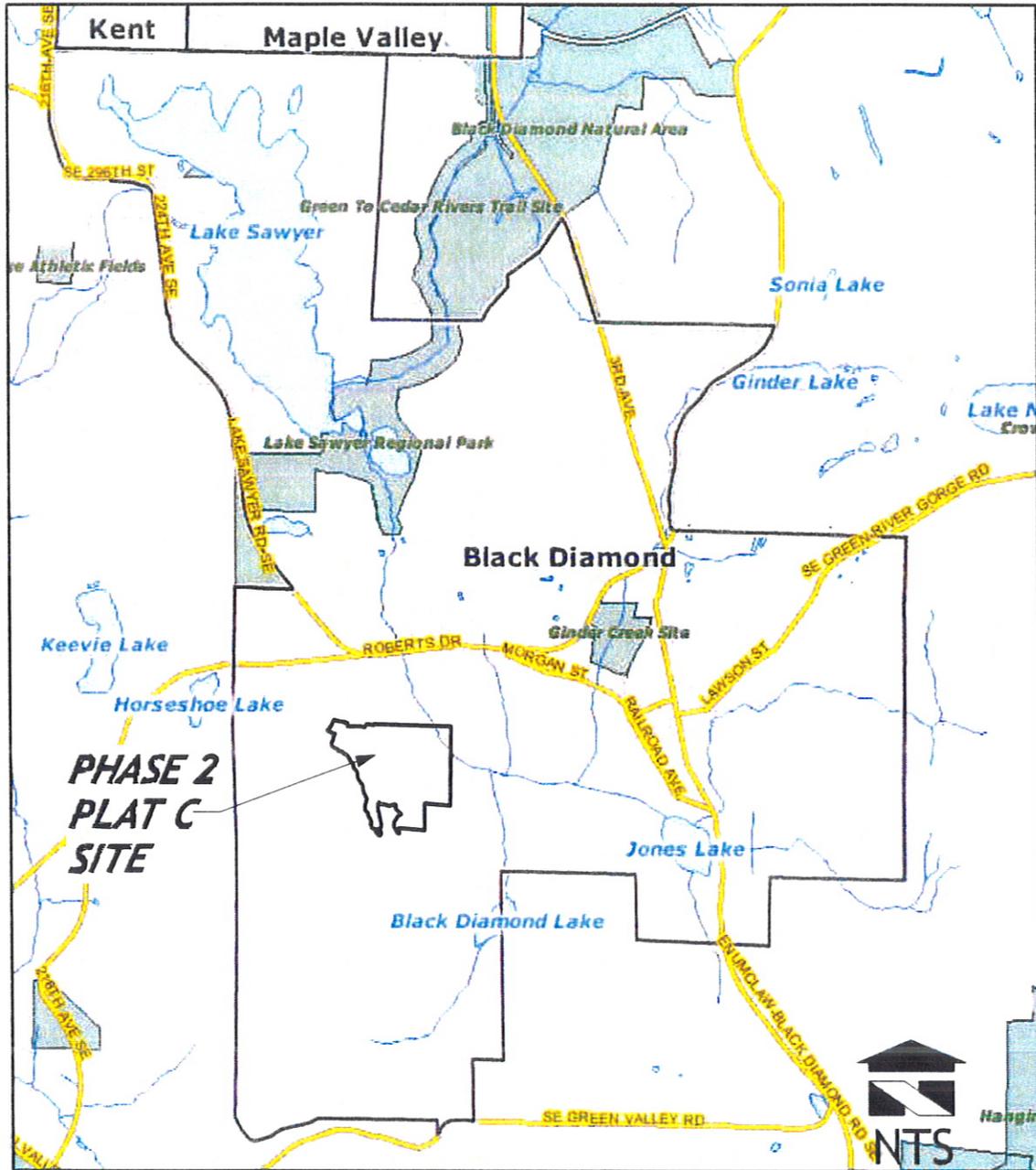
Sheet 2/2
 WPI Job #08035
 Drawn by: R. Johnson
 Date: 2/18/2014

ATTACHMENTS

SEE CURRENT
REPORT
for ATTACHMENTS

ATTACHMENTS

VICINITY MAP
THE VILLAGES - PHASE 2 PLAT C



Wetland Resources, Inc.
 Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance
 9505 19th Avenue S.E. Suite 106
 Everett, Washington 98208
 Phone: (425) 337-3174
 Fax: (425) 337-3045
 Email: mailbox@wetlandresources.com

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: 12/24/2013

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.

<u>Tree Stratum</u> (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) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83.3%</u> (A/B)
2. <u>Populus balsamifera</u>	30	Y	Fac	
3. <u>Picea sitchensis</u>	tr	N	Fac	
4. _____	_____	_____	_____	Prevalence Index worksheet: 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				
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				
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				
<u>Herb Stratum</u> (Plot size: _____)				
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				
<u>Woody Vine Stratum</u> (Plot size: _____)				
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 ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-16"	10 YR 2/1	100					Organic Silt Loam	
16-18"	10 YR 3/2	100					Silt Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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)	Indicators for Problematic Hydric Soils³:
<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)

³Indicators 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)		Secondary Indicators (2 or more required)
<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 <input type="checkbox"/> No <input type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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 _____	

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.

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Alnus rubra</u>	45	Yes	Fac	Dominance Test worksheet: 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>	20	yes	Fac															
3. <u>Frangula purshiana</u>	tr	No	Fac															
4. _____	_____	_____	_____															
65 = Total Cover				Prevalence Index worksheet: <table style="width:100%; border: none;"> <tr> <td style="text-align: right;">Total % Cover of:</td> <td style="text-align: left;">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)																	
<u>Sapling/Shrub Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Acer circinatum</u>	30	Y	Fac	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>														
2. <u>Rubus Spectabilis</u>	25	Y	Fac															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
55 = Total Cover																		
<u>Herb Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Maianthemum dilatatum</u>	20	Y	Fac	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														
2. <u>Stachys chamissonis</u>	15	Y	FacW															
3. <u>Veronica americana</u>	10	Y	Obl															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
45 = Total Cover																		
<u>Woody Vine Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
_____ = Total Cover																		
% 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			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹		
0-18"	10 YR 2/1	100				Organic Silt	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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)	Indicators for Problematic Hydric Soils³:
<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)

³Indicators 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)	Secondary Indicators (2 or more required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Raised Ant Mounds (D6) (LRR A)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Frost-Heave Hummocks (D7)
<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)	

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: 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.

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: _____)					
1. <u>Tsuga heterophylla</u>	<u>tr</u>	<u>Y</u>	<u>FacU</u>	Dominance Test worksheet: 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				Prevalence Index worksheet: 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>Salix lasiandra</u>	<u>40</u>	<u>Y</u>	<u>FacW</u>		Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
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					
Herb Stratum (Plot size: _____)					
1. <u>Lysichiton americanum</u>	<u>20</u>	<u>Y</u>	<u>Obl</u>		
2. <u>Athyrium felix-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					
Woody Vine Stratum (Plot size: _____)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
_____ = Total Cover					
% Bare Ground in Herb Stratum _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
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 ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0- >18"	10 YR 2/1	100%					Muck	

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

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

<input checked="" type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils³:
<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)

³Indicators 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 checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)	<u>Secondary Indicators (2 or more required)</u>
<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: E4
 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 type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: _____	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status															
Tree Stratum (Plot size: _____)																		
1. <u>Tsuga Heterophylla</u>	40	Y	FacU	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</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>43%</u> (A/B)														
2. <u>Pseudotsuga Menziesii</u>	40	Y	FacU															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
_____	80	= Total Cover																
Sapling/Shrub Stratum (Plot size: _____)																		
1. <u>Acer circinatum</u>	25	Y	Fac	Prevalence Index worksheet: <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)																	
2. <u>Rubus spectabilis</u>	20	Y	Fac															
3. <u>Samucus racemosa</u>	tr	n	Fac															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
Herb Stratum (Plot size: _____)																		
1. <u>Polystichum munitum</u>	30	Y	FacU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Maianthemum dilatatum</u>	15	Y	Fac															
3. <u>Dicentra formosa</u>	15	Y	FACU															
4. <u>Claytonia sibirica</u>	5	N	Fac															
5. <u>Hydrophyllum tenuipes</u>	5	N	Fac															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
Woody Vine Stratum (Plot size: _____)																		
1. <u>Rubus ursinus</u>	15	Y	FacU	Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>														
2. _____	_____	_____	_____															
% Bare Ground in Herb Stratum _____ = Total Cover																		
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 ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-2"								Duff
2-18"	10 YR 4/4	100%					Gr Sa Lo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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)	Indicators for Problematic Hydric Soils³:
<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)

³Indicators 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:

<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>
<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): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: _____)				
1. <u>Alnus rubra</u>	15	Y	Fac	Dominance Test worksheet: 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: _____)				
1. <u>Rubus spectabilis</u>	30	Y	Fac	Prevalence Index worksheet: 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 = _____
2. <u>Acer circinatum</u>	15	Y	Fac	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	45	=	Total Cover	
Herb Stratum (Plot size: _____)				
1. <u>Carex sp</u>	20	Y	Fac-Obl	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	_____	=	Total Cover	
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10"	10 YR 2/1	100					si lo	
10-18"	10 YR 3/1	100					si lo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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)	Indicators for Problematic Hydric Soils³: <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)
<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)	

³Indicators 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:

<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>
<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): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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: 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 type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input type="checkbox"/>
Remarks: _____	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status																																	
Tree Stratum (Plot size: _____)																																				
1. <u>Pseudotsuga menziesii</u>	40	Y	FacU	Dominance Test worksheet: 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																																				
Sapling/Shrub Stratum (Plot size: _____)																																				
1. <u>Ilex aquifolium</u>	tr	Y	FacU	Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td align="center">_____</td> <td align="center">x 1 =</td> <td align="center"><u>0</u></td> </tr> <tr> <td>FACW species</td> <td align="center">_____</td> <td align="center">x 2 =</td> <td align="center"><u>0</u></td> </tr> <tr> <td>FAC species</td> <td align="center">_____</td> <td align="center">x 3 =</td> <td align="center"><u>0</u></td> </tr> <tr> <td>FACU species</td> <td align="center">_____</td> <td align="center">x 4 =</td> <td align="center"><u>0</u></td> </tr> <tr> <td>UPL species</td> <td align="center">_____</td> <td align="center">x 5 =</td> <td align="center"><u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td align="center"><u>0</u></td> <td align="center">(A)</td> <td align="center"><u>0</u> (B)</td> </tr> <tr> <td align="center" colspan="4">Prevalence Index = B/A = _____</td> </tr> </table>	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 = _____			
Total % Cover of:		Multiply by:																																		
OBL species	_____	x 1 =	<u>0</u>																																	
FACW species	_____	x 2 =	<u>0</u>																																	
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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 = _____																																				
2. _____																																				
3. _____																																				
4. _____																																				
5. _____																																				
_____ = Total Cover																																				
Herb Stratum (Plot size: _____)																																				
1. <u>Polystichum munitum</u>	50	Y	FacU	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Wetland Non-Vascular Plants ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
2. _____																																				
3. _____																																				
4. _____																																				
5. _____																																				
6. _____																																				
7. _____																																				
8. _____																																				
9. _____																																				
10. _____																																				
11. _____																																				
50 = Total Cover																																				
Woody Vine Stratum (Plot size: _____)																																				
1. <u>Rubus ursinus</u>	10	Y	FacU	Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>																																
2. _____																																				
_____ = Total Cover																																				
% Bare Ground in Herb Stratum _____																																				
Remarks: _____																																				

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 ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-2"								Duff
2-18"	10 YR 4/3	100					Gr Sa Lo	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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)	Indicators for Problematic Hydric Soils³:
<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)

³Indicators 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 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"/> Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<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 No Depth (inches): _____

Water Table Present? Yes No Depth (inches): _____

Saturation Present? Yes No Depth (inches): _____ (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: 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.

<u>Tree Stratum</u> (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Pseudotsuga menziesii</u>	40	Y	FacU	Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)
2. <u>Tsuga heterophylla</u>	40	Y	FacU	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
4. _____				
_____ = Total Cover				
<u>Sapling/Shrub Stratum</u> (Plot size: _____)				Prevalence Index worksheet:
1. <u>Ilex aquifolium</u>	tr	Y	FacU	Total % Cover of: _____ Multiply by:
2. _____				OBL species _____ x 1 = <u>0</u>
3. _____				FACW species _____ x 2 = <u>0</u>
4. _____				FAC species _____ x 3 = <u>0</u>
5. _____				FACU species _____ x 4 = <u>0</u>
_____ = Total Cover				UPL species _____ x 5 = <u>0</u>
				Column Totals: <u>0</u> (A) <u>0</u> (B)
				Prevalence Index = B/A = _____
<u>Herb Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Indicators:
1. <u>Polystichum munitum</u>	50	Y	FacU	<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation
2. <u>Maianthemum dilatatum</u>	15	N	Fac	<input type="checkbox"/> Dominance Test is >50%
3. <u>Dicentra Formosa</u>	15	N	FacU	<input type="checkbox"/> Prevalence Index is ≤3.0 ¹
4. _____				<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)
5. _____				<input type="checkbox"/> Wetland Non-Vascular Plants ¹
6. _____				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
7. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
8. _____				
9. _____				
10. _____				
11. _____				
Y _____ = Total Cover				
<u>Woody Vine Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Present?
1. <u>Rubus ursinus</u>	10	Y	FacU	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum _____				
Remarks:				

SOIL

Sampling Point: E7

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

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

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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)	Indicators for Problematic Hydric Soils³:
<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)

³Indicators 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:

<u>Primary Indicators (minimum of one required; check all that apply)</u>		<u>Secondary Indicators (2 or more required)</u>
<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): _____	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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 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 ≥ 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

TOTAL score for Functions

57

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.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
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**

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

D Depressional and Flats Wetlands		Points
WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality		(only 1 score per box)
D	D 1. Does the wetland unit have the <u>potential</u> to improve water quality?	(see p.38)
D	D 1.1 Characteristics of surface water flows out of the wetland: <input type="checkbox"/> Unit is a depression with no surface water leaving it (no outlet) points = 3 <input type="checkbox"/> Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 <input checked="" type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 1 <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> Provide photo or drawing	Figure 1 1
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (<i>use NRCS definitions</i>) <input checked="" type="checkbox"/> YES points = 4 <input type="checkbox"/> NO points = 0	4
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) <input checked="" type="checkbox"/> Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 <input type="checkbox"/> Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 <input type="checkbox"/> Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 <input type="checkbox"/> Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	Figure 1 5
D	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> <input checked="" type="checkbox"/> Area seasonally ponded is > 1/2 total area of wetland points = 4 <input type="checkbox"/> Area seasonally ponded is > 1/4 total area of wetland points = 2 <input type="checkbox"/> Area seasonally ponded is < 1/4 total area of wetland points = 0 Map of Hydroperiods	Figure 1 4
D	Total for D 1	Add the points in the boxes above 14
D	D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. <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> <input type="checkbox"/> Grazing in the wetland or within 150 ft <input type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> Tilled fields or orchards within 150 ft of wetland <input type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input type="checkbox"/> Residential, urban areas, golf courses are within 150 ft of wetland <input type="checkbox"/> Wetland is fed by groundwater high in phosphorus or nitrogen <input type="checkbox"/> Other _____ <input type="checkbox"/> YES multiplier is 2 <input checked="" type="checkbox"/> NO multiplier is 1	(see p. 44) multiplier 1
D	TOTAL - Water Quality Functions	Multiply the score from D1 by D2 Add score to table on p. 1 14

D Depressional and Flats Wetlands		Points
HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation		(only 1 score per box)
D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?		(see p.46)
D	D 3.1 Characteristics of surface water flows out of the wetland unit <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
D	D 3.2 Depth of storage during wet periods <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
D	D 3.3 Contribution of wetland unit to storage in the watershed <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
D	Total for D 3 <i>Add the points in the boxes above</i>	8
D	D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. <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	(see p. 49) multiplier <u>2</u>
D	TOTAL - Hydrologic Functions Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	16

Wetland name or number E1

These questions apply to wetlands of all HGM classes.		Points (only 1 score per box)
HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat		
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?		
<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 1/4 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 >30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have >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>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 1/4 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>Figure 1</p> <p>2</p>
<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 ft². (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"/> > 19 species points = 2 <input checked="" type="checkbox"/> 5 - 19 species points = 1 <input type="checkbox"/> < 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>H 1.4. Interspersion of habitats (see p. 76) Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</p> <p><input type="checkbox"/> None = 0 points <input type="checkbox"/> Low = 1 point <input checked="" type="checkbox"/> Moderate = 2 points</p> <p><input type="checkbox"/> High = 3 points</p> <p>[riparian braided channels]</p> <p>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 1</p> <p>2</p>
<p>H 1.5. Special Habitat Features: (see p. 77) Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <p><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).</p> <p><input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland</p> <p><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)</p> <p><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown)</p> <p><input type="checkbox"/> At least 1/4 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)</p> <p><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</p> <p>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<p>3</p>
<p>H 1. TOTAL Score - potential for providing habitat Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	<p>10</p>

Comments

Wetland name or number E1

<p>H 2. Does the wetland unit have the opportunity to provide habitat for many species?</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 checked="" type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) Points = 5</p> <p><input type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4</p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. Points = 3</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3</p> <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> Heavy grazing in buffer. Points = 1</p> <p><input type="checkbox"/> Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) Points = 0.</p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. Points = 1</p> <p style="text-align: center;">Aerial photo showing buffers</p>	<p>Figure 1</p> <p style="text-align: center;">5</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? OR 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 (>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>

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

Wetland name or number E1

H 2.4 Wetland Landscape (<i>choose the one description of the landscape around the wetland that best fits</i>) (see p. 84)		
<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 with 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	
H 2. TOTAL Score - opportunity for providing habitat <i>Add the scores from H2.1, H2.2, H2.3, H2.4</i>		17
TOTAL for H 1 from page 14		10
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1		27

Wetland name or number E1

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	Category
SC 1.0 Estuarine wetlands (see p. 86) 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	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO go to SC 1.2	Cat. I <input type="checkbox"/>
SC 1.2 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 ¼ 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"/> Cat. I <input type="checkbox"/> Cat. II <input type="checkbox"/> Dual rating I/II

Wetland name or number E1

<p>SC 2.0 Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</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>	<p><input type="checkbox"/> Cat. I</p>
<p>SC 3.0 Bogs (see p. 87) Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <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 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 (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)? 2. <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>

Wetland name or number E1

<p>SC 4.0 Forested Wetlands (see p. 90) Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.</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"/> Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less 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>SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</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 (> 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>

Wetland name or number E1

<p>SC 6.0 Interdunal Wetlands (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 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>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</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 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 TWSHP: 21 RNGE: 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
TOTAL score for Functions	44

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"/>

Wetland name or number E7

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. <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 E7

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 E7

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 <input type="checkbox"/>
Slope + Depressional	Depressional <input type="checkbox"/>
Slope + Lake-fringe	Lake-fringe <input type="checkbox"/>
Depressional + Riverine along stream within boundary	Depressional <input type="checkbox"/>
Depressional + Lake-fringe	Depressional <input type="checkbox"/>
Salt Water Tidal Fringe and any other class of freshwater wetland	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.

D Depressional and Flats Wetlands		Points (only 1 score per box)
WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality		
D	D 1. Does the wetland unit have the <u>potential</u> to improve water quality?	(see p.38)
D	<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
D	<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
D	<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 >= 95% of area points = 5</p> <p><input checked="" type="checkbox"/> Wetland has persistent, ungrazed, vegetation >= 1/2 of area points = 3</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed vegetation >= 1/10 of area points = 1</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed vegetation <1/10 of area points = 0</p> <p style="text-align: right;">Map of Cowardin vegetation classes</p>	Figure ___ 3
D	<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 > 1/2 total area of wetland points = 4</p> <p><input type="checkbox"/> Area seasonally ponded is > 1/4 total area of wetland points = 2</p> <p><input checked="" type="checkbox"/> Area seasonally ponded is < 1/4 total area of wetland points = 0</p> <p style="text-align: right;">Map of Hydroperiods</p>	Figure ___ 0
D	Total for D 1 <i>Add the points in the boxes above</i>	6
D	<p>D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?</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
D	TOTAL - Water Quality Functions Multiply the score from D1 by D2 <i>Add score to table on p. 1</i>	6

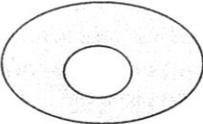
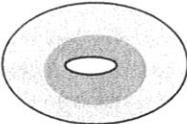
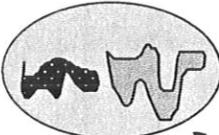
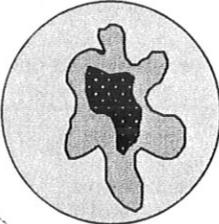
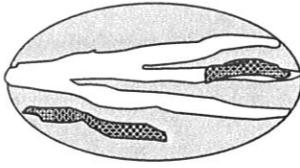
Wetland name or number E7

D Depressional and Flats Wetlands		Points (only 1 score per box)
HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation		
D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?		(see p.46)
D	<p>D 3.1 Characteristics of surface water flows out of the wetland unit</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 (If ditch is not permanently flowing treat unit as "intermittently flowing")</p> <p><input type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 0</p>	4
D	<p>D 3.2 Depth of storage during wet periods</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 < 3 ft from surface or bottom of outlet points = 5</p> <p><input type="checkbox"/> Marks are at least 0.5 ft to < 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
D	<p>D 3.3 Contribution of wetland unit to storage in the watershed</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
D	Total for D 3	<i>Add the points in the boxes above</i> 7
D	<p>D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?</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"/> YES multiplier is 2 <input type="checkbox"/> NO multiplier is 1</p>	(see p. 49) multiplier 2
D	TOTAL - Hydrologic Functions	Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i> 14

Wetland name or number E7

<i>These questions apply to wetlands of all HGM classes.</i>		Points (only 1 score per box)
HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat		
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?		
<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 checked="" type="checkbox"/> Emergent plants <input type="checkbox"/> Scrub/shrub (areas where shrubs have >30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have >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 </p> <p>Map of Cowardin vegetation classes</p>		<p>Figure ____</p> <p style="text-align: center;">2</p>
<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> <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 </p> <p style="text-align: right;">Map of hydroperiods</p>		<p>Figure ____</p> <p style="text-align: center;">2</p>
<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 ft². (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"/> > 19 species points = 2 <input checked="" type="checkbox"/> 5 - 19 species points = 1 <input type="checkbox"/> < 5 species points = 0 List species below if you want to: </p>		<p>Figure ____</p> <p style="text-align: center;">1</p>

Total for page 5

<p>H 1.4. Interspersion of habitats (see p. 76) Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</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: 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="font-size: small; 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> </u></p> <p style="text-align: center; font-size: 2em;">1</p>
<p>H 1.5. Special Habitat Features: (see p. 77) Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). <input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <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) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet turned grey/brown</i>) <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>) <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants <p style="font-size: x-small; margin-top: 5px;">NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<p style="text-align: center; font-size: 2em;">3</p>
<p>H 1. TOTAL Score - potential for providing habitat Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	<p style="font-size: 2em;">9</p>

Comments

<p>H 2. Does the wetland unit have the opportunity to provide habitat for many species?</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 checked="" type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) Points = 5</p> <p><input type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4</p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. Points = 3</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3</p> <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> Heavy grazing in buffer. Points = 1</p> <p><input type="checkbox"/> Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) Points = 0.</p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. Points = 1</p> <p style="text-align: center;">Aerial photo showing buffers</p>	<p>Figure <u> </u></p> <p style="text-align: center;">5</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? OR 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 (>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%; 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

Wetland name or number E7

<p>H 2.4 <u>Wetland Landscape</u> (choose the one 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> <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>	5
<p>H 2. TOTAL Score - opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4</p>	15
<p>TOTAL for H 1 from page 14</p>	9
<p>Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1</p>	24

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	Category
SC 1.0 Estuarine wetlands (see p. 86) 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	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO go to SC 1.2	Cat. I <input type="checkbox"/>
SC 1.2 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"/> Cat. I <input type="checkbox"/> Cat. II <input type="checkbox"/> Dual rating I/II

Wetland name or number E7

<p>SC 2.0 Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</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>	<input type="checkbox"/> Cat. I
<p>SC 3.0 Bogs (see p. 87) Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</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 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 (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?</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>SC 4.0 Forested Wetlands (see p. 90) Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.</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"/> Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less 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>SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</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 (> 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>

Wetland name or number E7

<p>SC 6.0 Interdunal Wetlands (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 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>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</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 >=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
TOTAL score for Functions	41

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"/>

Wetland name or number E8

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. <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**

Wetland name or number E8

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**

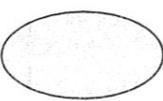
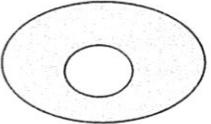
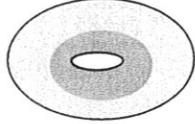
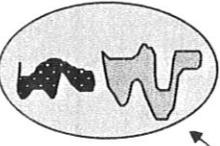
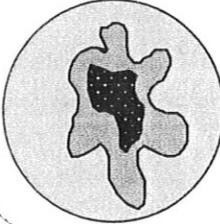
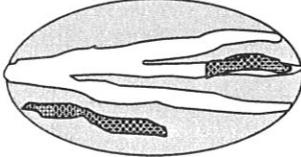
8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. **GO BACK AND IDENTIFY WHICH 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.

D Depressional and Flats Wetlands		Points (only 1 score per box)
WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality		
D	D 1. Does the wetland unit have the <u>potential</u> to improve water quality?	(see p.38)
D	<p>D 1.1 Characteristics of surface water flows out of the wetland:</p> <input checked="" type="checkbox"/> Unit is a depression with no surface water leaving it (no outlet) points = 3 <input type="checkbox"/> Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 <input type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 1 <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> Provide photo or drawing	Figure ___ 3
D	<p>S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic (<i>use NRCS definitions</i>)</p> <input type="checkbox"/> YES points = 4 <input checked="" type="checkbox"/> NO points = 0	0
D	<p>D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class)</p> <input type="checkbox"/> Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 <input checked="" type="checkbox"/> Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 <input type="checkbox"/> Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 <input type="checkbox"/> Wetland has persistent, ungrazed vegetation < 1/10 of area points = 0 Map of Cowardin vegetation classes	Figure ___ 3
D	<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> <input type="checkbox"/> Area seasonally ponded is > 1/2 total area of wetland points = 4 <input type="checkbox"/> Area seasonally ponded is > 1/4 total area of wetland points = 2 <input checked="" type="checkbox"/> Area seasonally ponded is < 1/4 total area of wetland points = 0 Map of Hydroperiods	Figure ___ 0
D	Total for D 1	Add the points in the boxes above 6
D	<p>D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. <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> <input type="checkbox"/> Grazing in the wetland or within 150 ft <input type="checkbox"/> Untreated stormwater discharges to wetland <input type="checkbox"/> Tilled fields or orchards within 150 ft of wetland <input type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input type="checkbox"/> Residential, urban areas, golf courses are within 150 ft of wetland <input type="checkbox"/> Wetland is fed by groundwater high in phosphorus or nitrogen <input type="checkbox"/> Other _____ <input type="checkbox"/> YES multiplier is 2 <input checked="" type="checkbox"/> NO multiplier is 1	(see p. 44) multiplier 1
D	TOTAL - Water Quality Functions	Multiply the score from D1 by D2 Add score to table on p. 1 6

D Depressional and Flats Wetlands		Points (only 1 score per box)
HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation		
D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?		<i>(see p. 46)</i>
D	<p>D 3.1 Characteristics of surface water flows out of the wetland unit</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
D	<p>D 3.2 Depth of storage during wet periods</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 < 3 ft from surface or bottom of outlet points = 5</p> <p><input type="checkbox"/> Marks are at least 0.5 ft to < 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
D	<p>D 3.3 Contribution of wetland unit to storage in the watershed</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
D	Total for D 3 <i>Add the points in the boxes above</i>	7
D	<p>D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?</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"/> YES multiplier is 2 <input type="checkbox"/> NO multiplier is 1</p>	multiplier 2
D	TOTAL - Hydrologic Functions Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	14

<p>H 1.4. Interspersion of habitats (see p. 76) Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</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: 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 _____</p> <p style="text-align: center; font-size: 2em;">0</p>
<p>H 1.5. Special Habitat Features: (see p. 77) Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). <input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <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) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet turned grey/brown</i>) <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>) <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants <p style="font-size: x-small;">NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	3
<p>H 1. TOTAL Score - potential for providing habitat Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	6

Comments

<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (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)</p> <p>Which of the following priority habitats are within 330ft (100m) of the wetland unit? <i>NOTE: the connections do not have to be relatively undisturbed.</i></p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.</p> <p><input checked="" type="checkbox"/> Old-growth/Mature forests: (<u>Old-growth west of Cascade crest</u>) 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. (<u>Mature forests</u>) 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.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> If wetland has 3 or more priority habitats = 4 points</p> <p><input type="checkbox"/> If wetland has 2 priority habitats = 3 points</p> <p><input checked="" type="checkbox"/> If wetland has 1 priority habitat = 1 point <input type="checkbox"/> No habitats = 0 points</p> <p><i>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)</i></p>	<p>1</p>
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Wetland name or number E8

<p>H 2.4 <u>Wetland Landscape</u> (choose the one 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> <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>	5
<p>H 2. TOTAL Score - opportunity for providing habitat <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>Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1</p>	21

Wetland name or number E8

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	Category
<p>SC 1.0 Estuarine wetlands (see p. 86)</p> <p>Does the wetland unit meet the following criteria for Estuarine wetlands?</p> <p><input type="checkbox"/> The dominant water regime is tidal.</p> <p><input type="checkbox"/> Vegetated, and</p> <p><input type="checkbox"/> With a salinity greater than 0.5 ppt.</p> <p><input type="checkbox"/> YES = Go to SC 1.1 NO <input checked="" type="checkbox"/> =Go to SC 2.0</p>	
<p>SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?</p> <p><input type="checkbox"/> YES = Category I <input type="checkbox"/> NO go to SC 1.2</p>	<p>Cat. I <input type="checkbox"/></p>
<p>SC 1.2 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"/> Cat. I</p> <p><input type="checkbox"/> Cat. II</p> <p><input type="checkbox"/> Dual rating I/II</p>

<p>SC 2.0 Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</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)</p> <p>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?</p> <p><input type="checkbox"/> YES = Category I NO <input checked="" type="checkbox"/> not a Heritage Wetland</p>	<p><input type="checkbox"/> Cat. I</p>
<p>SC 3.0 Bogs (see p. 87) Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</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?</p> <p><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)?</p> <p><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 (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?</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>SC 4.0 Forested Wetlands (see p. 90) Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.</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 an "OR" so old-growth forests do not necessarily have to have trees of this diameter.</p> <p><input type="checkbox"/> Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less 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>SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</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 (> 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>

Wetland name or number E8

<p>SC 6.0 Interdunal Wetlands (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 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>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</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 >=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

TOTAL score for Functions

41

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"/>

Wetland name or number E10

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. <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**

Wetland name or number E10

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

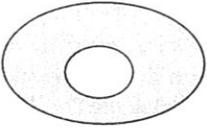
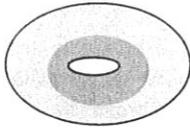
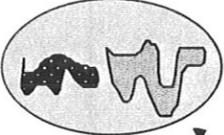
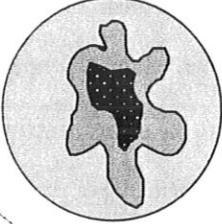
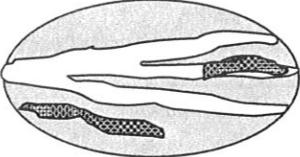
If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

D Depressional and Flats Wetlands		Points
WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality		(only 1 score per box)
D	D 1. Does the wetland unit have the <u>potential</u> to improve water quality?	(see p.38)
D	<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>(If ditch is not permanently flowing treat unit as "intermittently flowing")</p> <p style="text-align: right;">Provide photo or drawing</p>	Figure ___ 3
D	<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
D	<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 >= 95% of area points = 5</p> <p><input checked="" type="checkbox"/> Wetland has persistent, ungrazed, vegetation >= 1/2 of area points = 3</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed vegetation >= 1/10 of area points = 1</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed vegetation <1/10 of area points = 0</p> <p style="text-align: right;">Map of Cowardin vegetation classes</p>	Figure ___ 3
D	<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 > 1/2 total area of wetland points = 4</p> <p><input type="checkbox"/> Area seasonally ponded is > 1/4 total area of wetland points = 2</p> <p><input checked="" type="checkbox"/> Area seasonally ponded is < 1/4 total area of wetland points = 0</p> <p style="text-align: right;">Map of Hydroperiods</p>	Figure ___ 0
D	Total for D 1	Add the points in the boxes above 6
D	<p>D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?</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
D	TOTAL - Water Quality Functions	Multiply the score from D1 by D2 Add score to table on p. 1 6

D Depressional and Flats Wetlands		Points
HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation		(only 1 score per box)
D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?		(see p. 46)
D	<p>D 3.1 Characteristics of surface water flows out of the wetland unit</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 (If ditch is not permanently flowing treat unit as "intermittently flowing")</p> <p><input type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet (<i>permanently flowing</i>) points = 0</p>	4
D	<p>D 3.2 Depth of storage during wet periods</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 < 3 ft from surface or bottom of outlet points = 5</p> <p><input type="checkbox"/> Marks are at least 0.5 ft to < 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
D	<p>D 3.3 Contribution of wetland unit to storage in the watershed</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
D	Total for D 3	<i>Add the points in the boxes above</i> 7
D	<p>D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?</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"/> YES multiplier is 2 <input type="checkbox"/> NO multiplier is 1</p>	(see p. 49) multiplier 2
D	TOTAL - Hydrologic Functions	Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i> 14

These questions apply to wetlands of all HGM classes.	Points (only 1 score per box)																								
HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat																									
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?																									
<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 >30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have >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: Map of Cowardin vegetation classes </p> <table style="margin-left: auto; margin-right: 0;"> <tr><td><input type="checkbox"/> 4 structures or more</td><td>points = 4</td></tr> <tr><td><input type="checkbox"/> 3 structures</td><td>points = 2</td></tr> <tr><td><input checked="" type="checkbox"/> 2 structures</td><td>points = 1</td></tr> <tr><td><input type="checkbox"/> 1 structure</td><td>points = 0</td></tr> </table>	<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 ____</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%;"> <tr> <td><input type="checkbox"/> Permanently flooded or inundated</td> <td><input type="checkbox"/> 4 or more types present</td> <td>points = 3</td> </tr> <tr> <td><input type="checkbox"/> Seasonally flooded or inundated</td> <td><input type="checkbox"/> 3 types present</td> <td>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>point = 1</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturated only</td> <td><input type="checkbox"/> 1 type present</td> <td>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"/> 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 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"/> Lake-fringe wetland = 2 points			<input type="checkbox"/> Freshwater tidal wetland = 2 points			<p>Figure ____</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"/> Lake-fringe wetland = 2 points																									
<input type="checkbox"/> Freshwater tidal wetland = 2 points																									
<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 ft². (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: auto; margin-right: 0;"> <tr><td><input type="checkbox"/> > 19 species</td><td>points = 2</td></tr> <tr><td><input checked="" type="checkbox"/> 5 - 19 species</td><td>points = 1</td></tr> <tr><td><input type="checkbox"/> < 5 species</td><td>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>Figure ____</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 3

<p>H 1.4. Interspersion of habitats (see p. 76) Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</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: 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="font-size: small; 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 ____</p> <p style="text-align: center; font-size: 2em;">0</p>
<p>H 1.5. Special Habitat Features: (see p. 77) Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). <input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <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) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) <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) <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants <p style="font-size: x-small; margin-top: 5px;">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>H 1. TOTAL Score - potential for providing habitat Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	<p style="font-size: 2em; border: 2px dashed black;">6</p>

Comments

<p>H 2. Does the wetland unit have the opportunity to provide habitat for many species?</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 checked="" type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) Points = 5</p> <p><input type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4</p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. Points = 3</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3</p> <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> Heavy grazing in buffer. Points = 1</p> <p><input type="checkbox"/> Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) Points = 0.</p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. Points = 1</p> <p style="text-align: center;">Aerial photo showing buffers</p>	<p>Figure ____</p> <p style="text-align: center;">5</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? OR 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 (>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

<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (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)</p> <p>Which of the following priority habitats are within 330ft (100m) of the wetland unit? <i>NOTE: the connections do not have to be relatively undisturbed.</i></p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.</p> <p><input checked="" type="checkbox"/> Old-growth/Mature forests: (<u>Old-growth west of Cascade crest</u>) 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. (<u>Mature forests</u>) 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.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> If wetland has 3 or more priority habitats = 4 points</p> <p><input type="checkbox"/> If wetland has 2 priority habitats = 3 points</p> <p><input checked="" type="checkbox"/> If wetland has 1 priority habitat = 1 point <input type="checkbox"/> No habitats = 0 points</p> <p><i>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)</i></p>	<p>1</p>
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Wetland name or number E10

<p>H 2.4 <u>Wetland Landscape</u> (choose the one 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> <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>		5
<p>H 2. TOTAL Score - opportunity for providing habitat Add the scores from H2.1, H2.2, H2.3, H2.4</p>		15
<p>TOTAL for H 1 from page 14</p>		6
<p>Total Score for Habitat Functions – 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.

Wetland Type <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	Category
SC 1.0 Estuarine wetlands (see p. 86) 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	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO go to SC 1.2	Cat. I <input type="checkbox"/>
SC 1.2 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"/> Cat. I <input type="checkbox"/> Cat. II <input type="checkbox"/> Dual rating I/II

Wetland name or number E10

<p>SC 2.0 Natural Heritage Wetlands (<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 (<i>see p. 79</i>) 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>SC 3.0 Bogs (<i>see p. 87</i>) 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 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 (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?</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>SC 4.0 Forested Wetlands (see p. 90) Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.</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"/> Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less 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>SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</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 (> 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>

Wetland name or number E10

<p>SC 6.0 Interdunal Wetlands (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 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>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</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 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 \geq 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
TOTAL score for Functions	91

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	✓
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"/>

Wetland name or number TOS

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. <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**

Wetland name or number TOS

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.

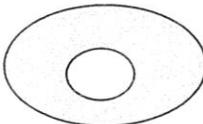
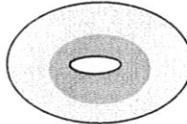
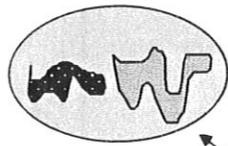
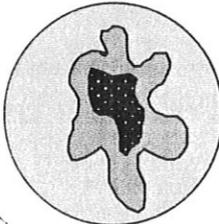
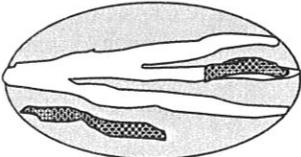
Wetland name or number TOS

R Riverine and Freshwater Tidal Fringe Wetlands		Points (only 1 score per box)
HYDROLOGIC FUNCTIONS - Indicators that wetland functions to reduce flooding and stream erosion		
	R 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	(see p.54)
R	<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 - <10 points = 4 <input type="checkbox"/> If the ratio is 1 - <5 points = 2 <input type="checkbox"/> If the ratio is < 1 points = 1</p> <p style="text-align: right;">Aerial photo or map showing average widths</p>	Figure ____ 9
R	<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. (polygons need to have >90% cover at person height NOT Cowardin classes):</i></p> <p><input checked="" type="checkbox"/> Forest or shrub for >1/3 area OR herbaceous plants > 2/3 area points = 7 <input type="checkbox"/> Forest or shrub for > 1/10 area OR herbaceous plants > 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
R	<i>Add the points in the boxes above</i>	16
R	<p>R 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion? Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. <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>	(see p.57) multiplier 2
R	TOTAL - Hydrologic Functions Multiply the score from R 3 by R 4 <i>Add score to table on p. 1</i>	32

Comments

These questions apply to wetlands of all HGM classes.		Points (only 1 score per box)																							
HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat																									
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?																									
<p>H 1.1 <u>Vegetation structure</u> (see p. 72) <i>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.</i></p> <p> <input type="checkbox"/> Aquatic bed <input checked="" type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub (areas where shrubs have >30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have >30% cover) <i>If the unit has a forested class check if:</i> <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 <i>Add the number of vegetation structures that qualify. If you have:</i> </p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input checked="" type="checkbox"/> 4 structures or more</td> <td style="width: 30%;">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> <p>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>Figure ____</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>H 1.2. <u>Hydroperiods</u> (see p. 73) <i>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)</i></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input checked="" type="checkbox"/> Permanently flooded or inundated</td> <td style="width: 30%;"><input checked="" type="checkbox"/> 4 or more types present</td> <td style="width: 30%;">points = 3</td> </tr> <tr> <td><input checked="" type="checkbox"/> Seasonally flooded or inundated</td> <td><input type="checkbox"/> 3 types present</td> <td>points = 2</td> </tr> <tr> <td><input checked="" type="checkbox"/> Occasionally flooded or inundated</td> <td><input type="checkbox"/> 2 types present</td> <td>point = 1</td> </tr> <tr> <td><input checked="" type="checkbox"/> Saturated only</td> <td><input type="checkbox"/> 1 type present</td> <td>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"/> <i>Lake-fringe wetland = 2 points</i></td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> <i>Freshwater tidal wetland = 2 points</i></td> <td></td> <td></td> </tr> </table> <p>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"/> <i>Lake-fringe wetland = 2 points</i>			<input type="checkbox"/> <i>Freshwater tidal wetland = 2 points</i>			<p>Figure ____</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																							
<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"/> <i>Lake-fringe wetland = 2 points</i>																									
<input type="checkbox"/> <i>Freshwater tidal wetland = 2 points</i>																									
<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 ft². (<i>different patches of the same species can be combined to meet the size threshold</i>) <i>You do not have to name the species.</i> <i>Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle</i> If you counted: <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;"><input checked="" type="checkbox"/> > 19 species</td> <td style="width: 30%;">points = 2</td> </tr> <tr> <td><input type="checkbox"/> 5 - 19 species</td> <td>points = 1</td> </tr> <tr> <td><input type="checkbox"/> < 5 species</td> <td>points = 0</td> </tr> </table> List species below if you want to: </p>	<input checked="" type="checkbox"/> > 19 species	points = 2	<input type="checkbox"/> 5 - 19 species	points = 1	<input type="checkbox"/> < 5 species	points = 0	<p>Figure ____</p> <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>H 1.4. Interspersion of habitats (see p. 76) Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.</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"/> High = 3 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"/> None = 0 points </div> <div style="text-align: center;">  <input checked="" type="checkbox"/> High = 3 points </div> <div style="text-align: center;">  <input type="checkbox"/> Moderate = 2 points [riparian braided channels] </div> </div> <p>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 ___</p> <p>3</p>
<p>H 1.5. Special Habitat Features (see p. 77) Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). <input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <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) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) <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) <input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants <p>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<p>2</p>
<p>H 1. TOTAL Score - potential for providing habitat Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	<p>14</p>

Comments

H 2. Does the wetland unit have the opportunity to provide habitat for many species?		
<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 >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) Points = 5</p> <p><input checked="" type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4</p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. Points = 3</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3</p> <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> Heavy grazing in buffer. Points = 1</p> <p><input type="checkbox"/> Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) Points = 0.</p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. Points = 1</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? OR 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 (>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 8

Wetland name or number TOS

<p>H 2.3 <u>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)</u></p> <p>Which of the following priority habitats are within 330ft (100m) of the wetland unit? <i>NOTE: the connections do not have to be relatively undisturbed.</i></p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).</p> <p><input type="checkbox"/> Biodiversity Areas and Corridors: Areas of habitat that are relatively important to various species of native fish and wildlife (<i>full descriptions in WDFW PHS report p. 152</i>).</p> <p><input type="checkbox"/> Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.</p> <p><input checked="" type="checkbox"/> Old-growth/Mature forests: (<u>Old-growth west of Cascade crest</u>) 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. (<u>Mature forests</u>) 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.</p> <p><input type="checkbox"/> Oregon white Oak: Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (<i>full descriptions in WDFW PHS report p. 158</i>).</p> <p><input checked="" type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> Westside Prairies: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (<i>full descriptions in WDFW PHS report p. 161</i>).</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input type="checkbox"/> Nearshore: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (<i>full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A</i>).</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input checked="" type="checkbox"/> If wetland has 3 or more priority habitats = 4 points</p> <p><input type="checkbox"/> If wetland has 2 priority habitats = 3 points</p> <p><input type="checkbox"/> If wetland has 1 priority habitat = 1 point <input type="checkbox"/> No habitats = 0 points</p> <p><i>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)</i></p>	4
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Wetland name or number TOS

<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> <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>		5
<p>H 2. TOTAL Score - opportunity for providing habitat <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>Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1</p>		31

Wetland name or number TOS

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

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

Wetland Type <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	Category
SC 1.0 Estuarine wetlands (see p. 86) 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 type="checkbox"/> = Go to SC 2.0	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO go to SC 1.2	Cat. I <input type="checkbox"/>
SC 1.2 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"/> Cat. I <input type="checkbox"/> Cat. II <input type="checkbox"/> Dual rating I/II

Wetland name or number TOS

<p>SC 2.0 Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</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/TR 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"/> Cat. I
<p>SC 3.0 Bogs (see p. 87) Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</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 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 (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?</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

Wetland name or number TOS

<p>SC 4.0 Forested Wetlands (see p. 90) Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.</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"/> Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less 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>SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</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 (> 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>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>

Wetland name or number TOS

<p>SC 6.0 Interdunal Wetlands (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</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>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</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>

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 >=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
TOTAL score for Functions	28

Category based on SPECIAL CHARACTERISTICS of wetland

I II Does not Apply

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

IV

Summary of basic information about the wetland unit

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

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
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**

Wetland name or number 213

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 <input type="checkbox"/>
Slope + Depressional	Depressional <input type="checkbox"/>
Slope + Lake-fringe	Lake-fringe <input type="checkbox"/>
Depressional + Riverine along stream within boundary	Depressional <input type="checkbox"/>
Depressional + Lake-fringe	Depressional <input type="checkbox"/>
Salt Water Tidal Fringe and any other class of freshwater wetland	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.

D Depressional and Flats Wetlands		Points
WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality		(only 1 score per box)
D	D 1. Does the wetland unit have the <u>potential</u> to improve water quality?	(see p.38)
D	<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 and no obvious natural outlet and/or outlet is a man-made ditch points = 1</p> <p>(If ditch is not permanently flowing treat unit as "intermittently flowing")</p> <p style="text-align: right;">Provide photo or drawing</p>	Figure ___ 2
D	<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
D	<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 >= 95% of area points = 5</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed, vegetation >= 1/2 of area points = 3</p> <p><input checked="" type="checkbox"/> Wetland has persistent, ungrazed vegetation >= 1/10 of area points = 1</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed vegetation <1/10 of area points = 0</p> <p style="text-align: right;">Map of Cowardin vegetation classes</p>	Figure ___ 1
D	<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 > 1/2 total area of wetland points = 4</p> <p><input type="checkbox"/> Area seasonally ponded is > 1/4 total area of wetland points = 2</p> <p><input checked="" type="checkbox"/> Area seasonally ponded is < 1/4 total area of wetland points = 0</p> <p style="text-align: right;">Map of Hydroperiods</p>	Figure ___ 0
D	Total for D 1 <i>Add the points in the boxes above</i>	3
D	<p>D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?</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
D	TOTAL - Water Quality Functions Multiply the score from D1 by D2 <i>Add score to table on p. 1</i>	3

D Depressional and Flats Wetlands		Points (only 1 score per box)
HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation		
D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?		<i>(see p.46)</i>
D	<p>D 3.1 Characteristics of surface water flows out of the wetland unit</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 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>	2
D	<p>D 3.2 Depth of storage during wet periods</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 < 3 ft from surface or bottom of outlet points = 5</p> <p><input type="checkbox"/> Marks are at least 0.5 ft to < 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
D	<p>D 3.3 Contribution of wetland unit to storage in the watershed</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 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
D	Total for D 3	<i>Add the points in the boxes above</i> 2
D	<p>D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?</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"/> YES multiplier is 2 <input type="checkbox"/> NO multiplier is 1</p>	<i>(see p. 49)</i> multiplier 2
D	TOTAL - Hydrologic Functions	Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i> 4

These questions apply to wetlands of all HGM classes.		Points <small>(only 1 score per box)</small>																							
HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat																									
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?																									
<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 >30% cover) <input checked="" type="checkbox"/> Forested (areas where trees have >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: 30%; 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>Figure <u> </u></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>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: 45%;"><input type="checkbox"/> Permanently flooded or inundated</td> <td style="width: 30%;"><input type="checkbox"/> 4 or more types present</td> <td style="width: 25%; 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"/> 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>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"/> Lake-fringe wetland = 2 points			<input type="checkbox"/> Freshwater tidal wetland = 2 points			<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																							
<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																									
<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 ft². (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>If you counted:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 45%;"><input type="checkbox"/> > 19 species</td> <td style="width: 30%; 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"/> < 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>Figure <u> </u></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>H 1.4. <u>Interspersion of habitats</u> (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> <p><input checked="" type="checkbox"/> None = 0 points <input type="checkbox"/> Low = 1 point <input type="checkbox"/> Moderate = 2 points</p> <p><input type="checkbox"/> High = 3 points</p> <p>[riparian braided channels]</p> <p>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 ____</p> <p>0</p>
<p>H 1.5. <u>Special Habitat Features</u>: (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> <p><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).</p> <p><input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland</p> <p><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)</p> <p><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown)</p> <p><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)</p> <p><input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants</p> <p>NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<p>3</p>
<p align="right">H 1. TOTAL Score - potential for providing habitat Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	<p align="center">5</p>

Comments

H 2. Does the wetland unit have the opportunity to provide habitat for many species?		
<p>H 2.1 Buffers (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 >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) Points = 5</p> <p><input type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4</p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. Points = 3</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3</p> <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> Heavy grazing in buffer. Points = 1</p> <p><input type="checkbox"/> Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) Points = 0.</p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. Points = 1</p> <p style="text-align: center;">Aerial photo showing buffers</p>		<p>Figure ____</p> <p style="text-align: center;">5</p>
<p>H 2.2 Corridors and Connections (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? OR 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 (>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%; 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

Wetland name or number 213

<p>H 2.4 <u>Wetland Landscape</u> (<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. points = 5</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 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>	5
<p>H 2. TOTAL Score - opportunity for providing habitat <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>Total Score for Habitat Functions – 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.

Wetland Type <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	Category
SC 1.0 Estuarine wetlands (see p. 86) 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	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO go to SC 1.2	Cat. I <input type="checkbox"/>
SC 1.2 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"/> Cat. I <input type="checkbox"/> Cat. II <input type="checkbox"/> Dual rating I/II

<p>SC 2.0 Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</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>SC 3.0 Bogs (see p. 87) Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <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 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 (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?</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>SC 4.0 Forested Wetlands (see p. 90) Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.</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"/> Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less 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>SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</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 (> 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>

Wetland name or number 213

<p>SC 6.0 Interdunal Wetlands (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 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>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</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>



WETLANDS & WILDLIFE
Environmental Consulting

**WILDLIFE HABITAT ASSESSMENT REPORT
THE VILLAGES MPD PHASE 2 PRELIMINARY PLAT C
LOCATED IN THE CITY OF BLACK DIAMOND, WASHINGTON**

PREPARED FOR:

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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 27th and November 29th. 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)¹, 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

¹ 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,

A handwritten signature in black ink, appearing to read "Scott Spooner", with a stylized flourish at the end.

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.

SalmonScape. 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. 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. 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. 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. 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. 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.

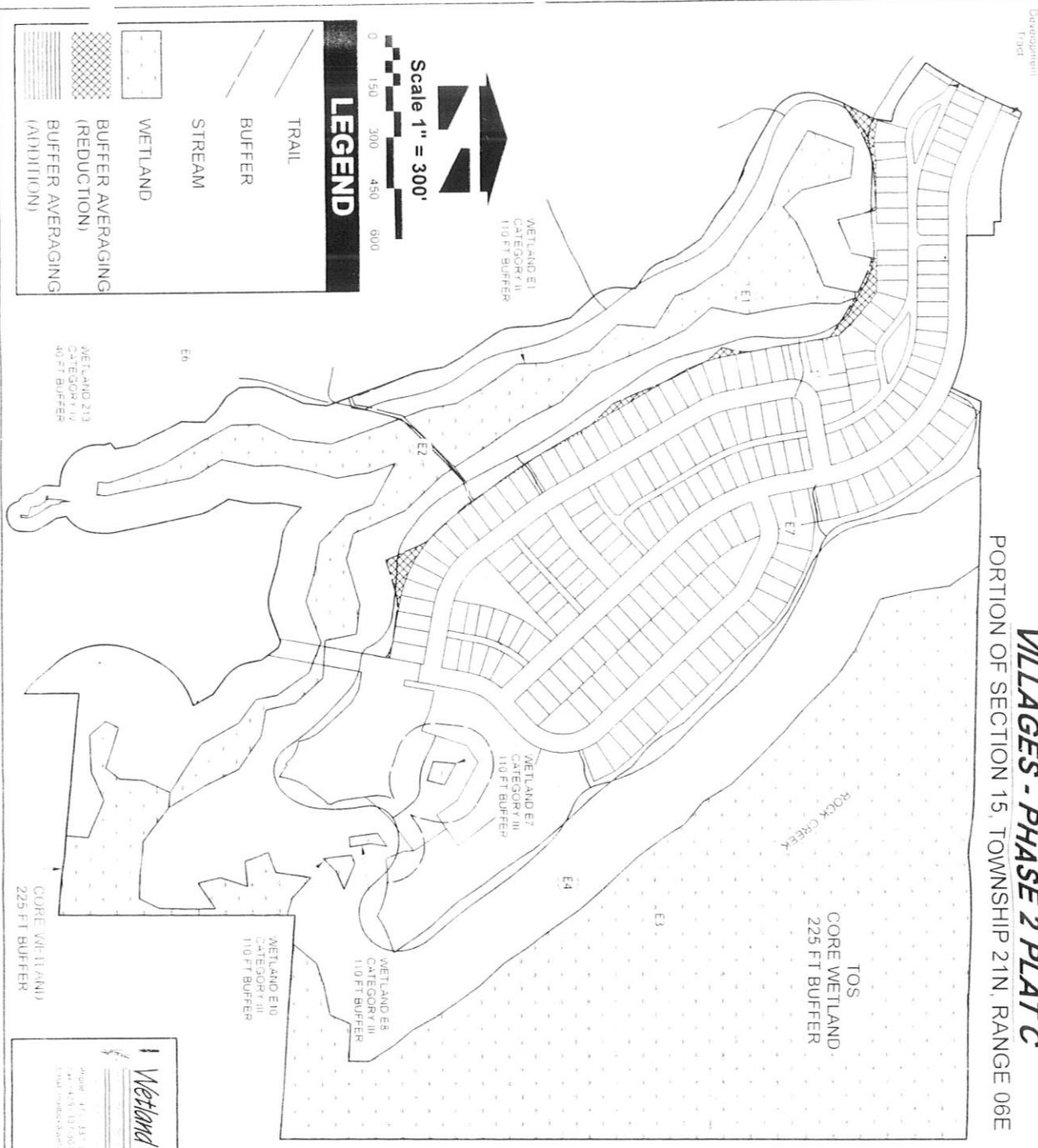
Washington State Department of Fish and Wildlife. Priority Habitats and Species map (PHS on the Web) for Section 21, Township 21 North, Range 06 East. <http://wdfw.wa.gov/mapping/phs/>.

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

VICINITY MAP



APPROXIMATE
SITE LOCATION



buffer averaging "addition"
 buffer averaging "reduction"
 buffer averaging "reduction"
 Wet Buffer Dam

Wetland Resources, Inc.
 10000 1st St. SE
 Everett, WA 98203
 Phone: 425.331.1171
 Fax: 425.331.0013
 Email: info@wetlandresources.com

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

BC Village Partners LP
 Attn: Colin Lund
 10720 NE Fourth Street, Suite 310
 Kirkland, WA 98033

Sheet 1 of 2
 WRI Job #040455
 Drawn By: R. Smith
 Date: 2/18/2014



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



LEGEND	
	HABITAT TYPE A
	HABITAT TYPE B
	HABITAT TYPE C

Wetland Resources, Inc.
 3005 1st Ave. SE, Everett, WA 98203
 Phone: (425) 337-3174
 Fax: (425) 337-3043
 Email: randy@wetlandresources.com

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

BD Village Partners, LP
 Attn: Cain Lund
 10220 I/E Points Drive, Suite 310
 Kirkland, WA 98033

Sheet
 W81 Jan 2012
 Drawn by: TN, JRE
 Date: 1/18/12



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

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.

A handwritten signature in black ink, appearing to read "Andrew Williamson", written over a horizontal line.

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

A handwritten signature in black ink, appearing to read "Stacey Welsh", written over a horizontal line.

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

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

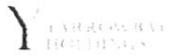
Stacey,

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



Wetland Resources, Inc.

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

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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*



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.ecw.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 Perteeet 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 coastal training program. Data from those using the rating system indicates that users make fewer errors when trained. The variability in scores among those trained is about 10% (+ or - 5 points). The error among those not trained is + 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 identifies 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 answer the questions from aerial photos, using binoculars, or any other additional information. DO NOT RATE ONLY THE PART TO WHICH YOU HAVE ACCESS. Note your lack of access on the data form and note which questions are based on interpretation of secondary 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

Subject: FW: Wetland Rating Questions

From: Hruby, Tom (ECY) [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

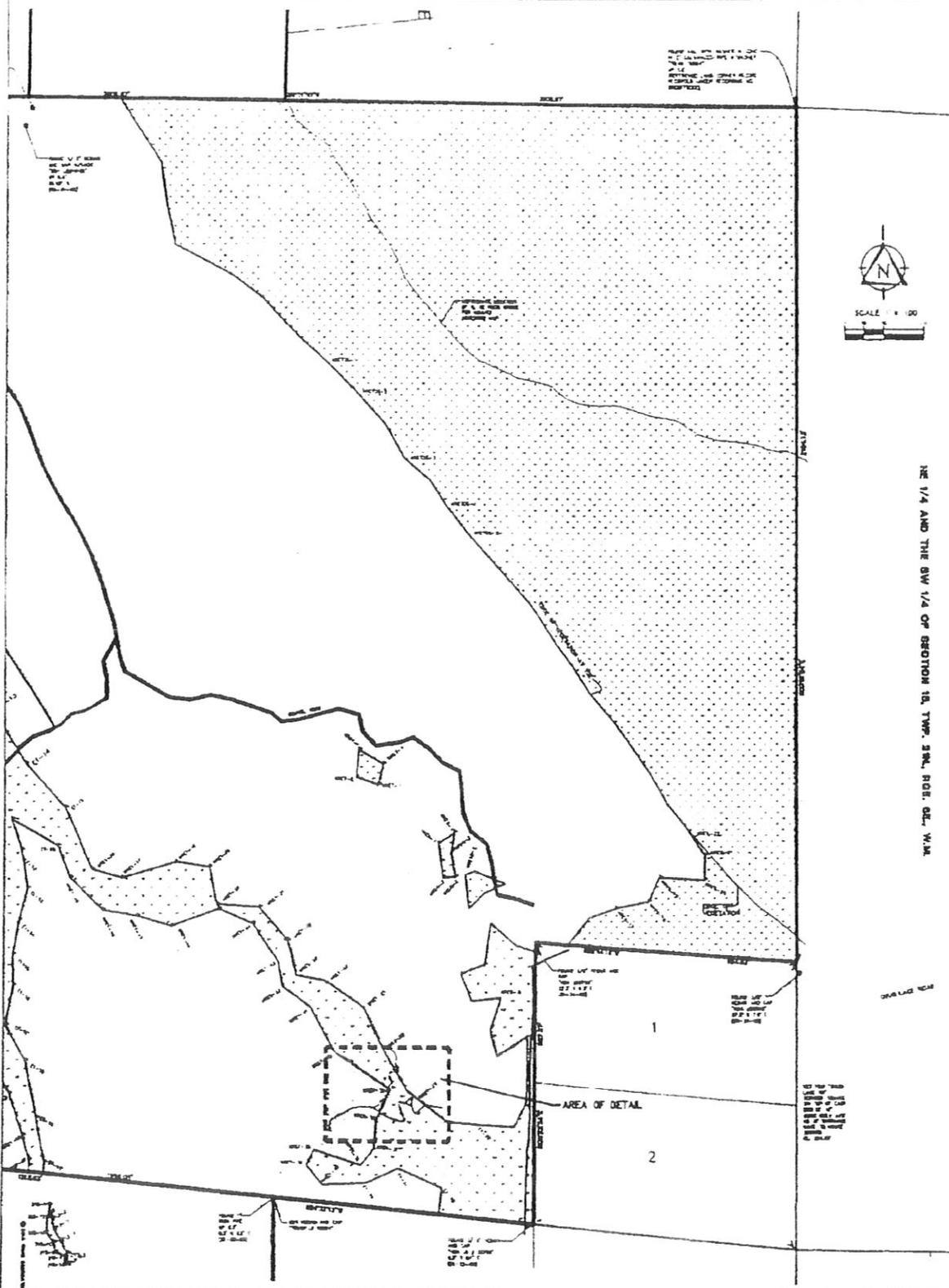
If I read your description correctly, what you describe is a headwater system with water flowing from the wetland in two directions. Based on our guidance one could separate the wetland into two units for rating because there is a major change in the water regime (water flows in two directions). The 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.

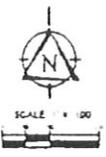
Tom

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

PROJECT: 10-001, 7-2
CITY OF BLACK SAMOND, WETLAND DRAINAGE BASIN EXHIBIT



NE 1/4 AND THE SW 1/4 OF SECTION 16, TWP. 38N, R02E, Q1W, W.M.



WETLAND DRAINAGE BASIN EXHIBIT

THE VILLAGES

CITY OF BLACK SAMOND

DRAWN BY: [Name]

DATE: 10-001

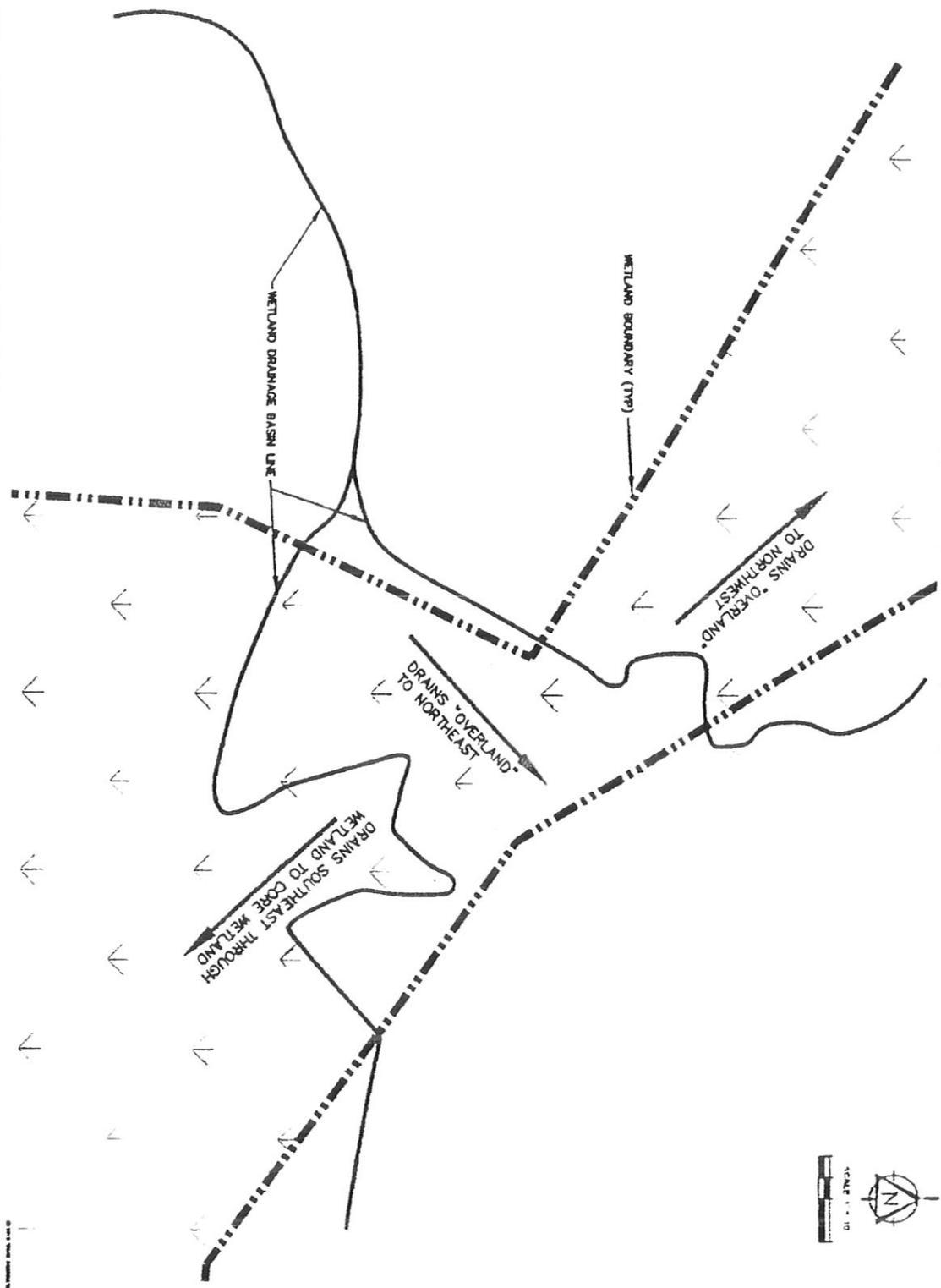
SCALE: 1" = 100'

PROJECT: 10-001, 7-2

10-001

7-2

TRAMP



NE 1/4 AND THE SW 1/4 OF SECTION 14, TWP. 39N., RGE. 8E., W.1M.

WETLAND DRAINAGE BASIN EXHIBIT

THE VILLAGES

WASHINGTON

SCALE 1" = 10'

DATE: 10-01-01

2-2

PROJECT:	WETLAND DRAINAGE BASIN EXHIBIT
DATE:	10-01-01
SCALE:	1" = 10'
PROJECT NO.:	10-001
DATE:	2-2



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 Perteet), 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 Perteet 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 Perteet 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**.

Wetland Resources, Inc.

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

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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 Perteet), 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 Perteet 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 Perteet 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 flourish 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 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 >=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

TOTAL score for Functions

57

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"/>

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.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
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**

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"/>

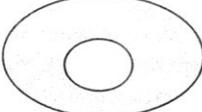
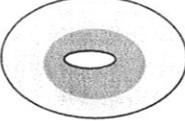
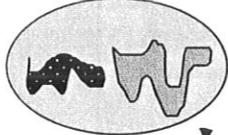
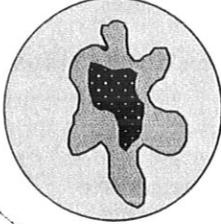
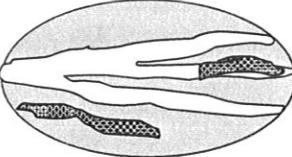
If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number E1

D Depressional and Flats Wetlands		Points
WATER QUALITY FUNCTIONS - Indicators that the wetland unit functions to improve water quality		(only 1 score per box)
D	D 1. Does the wetland unit have the <u>potential</u> to improve water quality?	(see p.38)
D	<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 and no obvious natural outlet and/or outlet is a man-made ditch points = 1 (If ditch is not permanently flowing treat unit as "intermittently flowing")</p> <p style="text-align: right;">Provide photo or drawing</p>	Figure 1 1
D	<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
D	<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 >= 95% of area points = 5</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed, vegetation >= 1/2 of area points = 3</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed vegetation >= 1/10 of area points = 1</p> <p><input type="checkbox"/> Wetland has persistent, ungrazed vegetation <1/10 of area points = 0</p> <p style="text-align: right;">Map of Cowardin vegetation classes</p>	Figure 1 5
D	<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 checked="" type="checkbox"/> Area seasonally ponded is > 1/2 total area of wetland points = 4</p> <p><input type="checkbox"/> Area seasonally ponded is > 1/4 total area of wetland points = 2</p> <p><input type="checkbox"/> Area seasonally ponded is < 1/4 total area of wetland points = 0</p> <p style="text-align: right;">Map of Hydroperiods</p>	Figure 1 4
D	Total for D 1	<i>Add the points in the boxes above</i> 14
D	<p>D 2. Does the wetland unit have the <u>opportunity</u> to improve water quality?</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
D	TOTAL - Water Quality Functions	Multiply the score from D1 by D2 <i>Add score to table on p. 1</i> 14

Wetland name or number E1

D Depressional and Flats Wetlands		Points
HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation		(only 1 score per box)
D 3. Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?		(see p. 46)
D	<p>D 3.1 Characteristics of surface water flows out of the wetland unit</p> <p><input 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 (If ditch is not permanently flowing treat unit as "intermittently flowing")</p> <p><input checked="" type="checkbox"/> Unit has an unconstricted, or slightly constricted, surface outlet (permanently flowing) points = 0</p>	0
D	<p>D 3.2 Depth of storage during wet periods</p> <p>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).</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 < 3 ft from surface or bottom of outlet points = 5</p> <p><input checked="" type="checkbox"/> Marks are at least 0.5 ft to < 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 type="checkbox"/> Marks of ponding less than 0.5 ft points = 0</p>	3
D	<p>D 3.3 Contribution of wetland unit to storage in the watershed</p> <p>Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.</p> <p><input checked="" 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 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>	5
D	Total for D 3 <i>Add the points in the boxes above</i>	8
D	<p>D 4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion?</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>Note which of the following indicators of opportunity apply.</p> <p><input type="checkbox"/> Wetland is in a headwater of a river or stream that has flooding problems</p> <p><input checked="" type="checkbox"/> Wetland drains to a river or stream that has flooding problems</p> <p><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</p> <p><input type="checkbox"/> Other _____</p> <p><input checked="" type="checkbox"/> YES multiplier is 2 <input type="checkbox"/> NO multiplier is 1</p>	(see p. 49) multiplier <u>2</u>
D	TOTAL - Hydrologic Functions Multiply the score from D 3 by D 4 <i>Add score to table on p. 1</i>	16

<p>H 1.4. Interspersion of habitats (see p. 76)</p> <p>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;">  <p><input type="checkbox"/> High = 3 points</p> </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;">  </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>H 1.5. Special Habitat Features: (see p. 77)</p> <p>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"> <input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long). <input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 inches) in the wetland <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) <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet turned grey/brown) <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) <input checked="" type="checkbox"/> Invasive plants cover less than 25% of the wetland area in each stratum of plants <p style="font-size: small; margin-top: 5px;">NOTE: The 20% stated in early printings of the manual on page 78 is an error.</p>	<p style="text-align: center; font-size: 24px;">3</p>
<p>H 1. TOTAL Score - potential for providing habitat Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5</p>	<p style="font-size: 24px;">10</p>

Comments

Wetland name or number E1

<p>H 2. Does the wetland unit have the opportunity to provide habitat for many species?</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 checked="" type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer. (relatively undisturbed also means no-grazing, no landscaping, no daily human use) Points = 5</p> <p><input type="checkbox"/> 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. Points = 4</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. Points = 4</p> <p><input type="checkbox"/> 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference. Points = 3</p> <p><input type="checkbox"/> 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. Points = 3</p> <p style="text-align: center;">If buffer does not meet any of the criteria above</p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. Points = 2</p> <p><input type="checkbox"/> Heavy grazing in buffer. Points = 1</p> <p><input type="checkbox"/> Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland) Points = 0.</p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. Points = 1</p> <p style="text-align: center;">Aerial photo showing buffers</p>	<p>Figure 1</p> <p style="text-align: center;">5</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</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? OR 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 (>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>

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

Wetland name or number E1

<p>H 2.3 <u>Near or adjacent to other priority habitats listed by WDFW</u> (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)</p> <p>Which of the following priority habitats are within 330ft (100m) of the wetland unit? <i>NOTE: the connections do not have to be relatively undisturbed.</i></p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.4 ha (1 acre).</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> Herbaceous Balds: Variable size patches of grass and forbs on shallow soils over bedrock.</p> <p><input type="checkbox"/> Old-growth/Mature forests: (<u>Old-growth west of Cascade crest</u>) 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. (<u>Mature forests</u>) 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.</p> <p><input type="checkbox"/> 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).</p> <p><input checked="" type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> 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).</p> <p><input checked="" type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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).</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6 m (25 ft) high and occurring below 5000 ft.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> If wetland has 3 or more priority habitats = 4 points</p> <p><input checked="" type="checkbox"/> If wetland has 2 priority habitats = 3 points</p> <p><input type="checkbox"/> If wetland has 1 priority habitat = 1 point <input type="checkbox"/> No habitats = 0 points</p> <p><i>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)</i></p>	3
---	---

Wetland name or number E1

<p>H 2.4 <u>Wetland Landscape</u> (choose the one 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> <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>		5
<p>H 2. TOTAL Score - opportunity for providing habitat <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>Total Score for Habitat Functions – 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.

Wetland Type <i>Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.</i>	Category
SC 1.0 Estuarine wetlands (see p. 86) 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	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? <input type="checkbox"/> YES = Category I <input type="checkbox"/> NO go to SC 1.2	Cat. I <input type="checkbox"/>
SC 1.2 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"/> Cat. I <input type="checkbox"/> Cat. II <input type="checkbox"/> Dual rating I/II

Wetland name or number E1

<p>SC 2.0 Natural Heritage Wetlands (see p. 87) Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.</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>	<input type="checkbox"/> Cat. I
<p>SC 3.0 Bogs (see p. 87) Does the wetland unit (or any part of the unit) meet both the criteria for soils and vegetation in bogs? Use the key below to identify if the wetland is a bog. If you answer yes you will still need to rate the wetland based on its functions.</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 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 (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann’s spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover (> 30% coverage of the total shrub/herbaceous cover)?</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>SC 4.0 Forested Wetlands (see p. 90) Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? <i>If you answer yes you will still need to rate the wetland based on its functions.</i></p> <p><input type="checkbox"/> Old-growth forests: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.</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"/> Mature forests: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less 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>SC 5.0 Wetlands in Coastal Lagoons (see p. 91) Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?</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 (> 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>

Wetland name or number E1

<p>SC 6.0 Interdunal Wetlands (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 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>Category of wetland based on Special Characteristics</p> <p>Choose the "highest" rating if wetland falls into several categories, and record on p. 1.</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>

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).

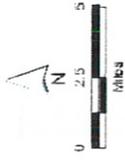
3.4 COMPREHENSIVE PLAN

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).

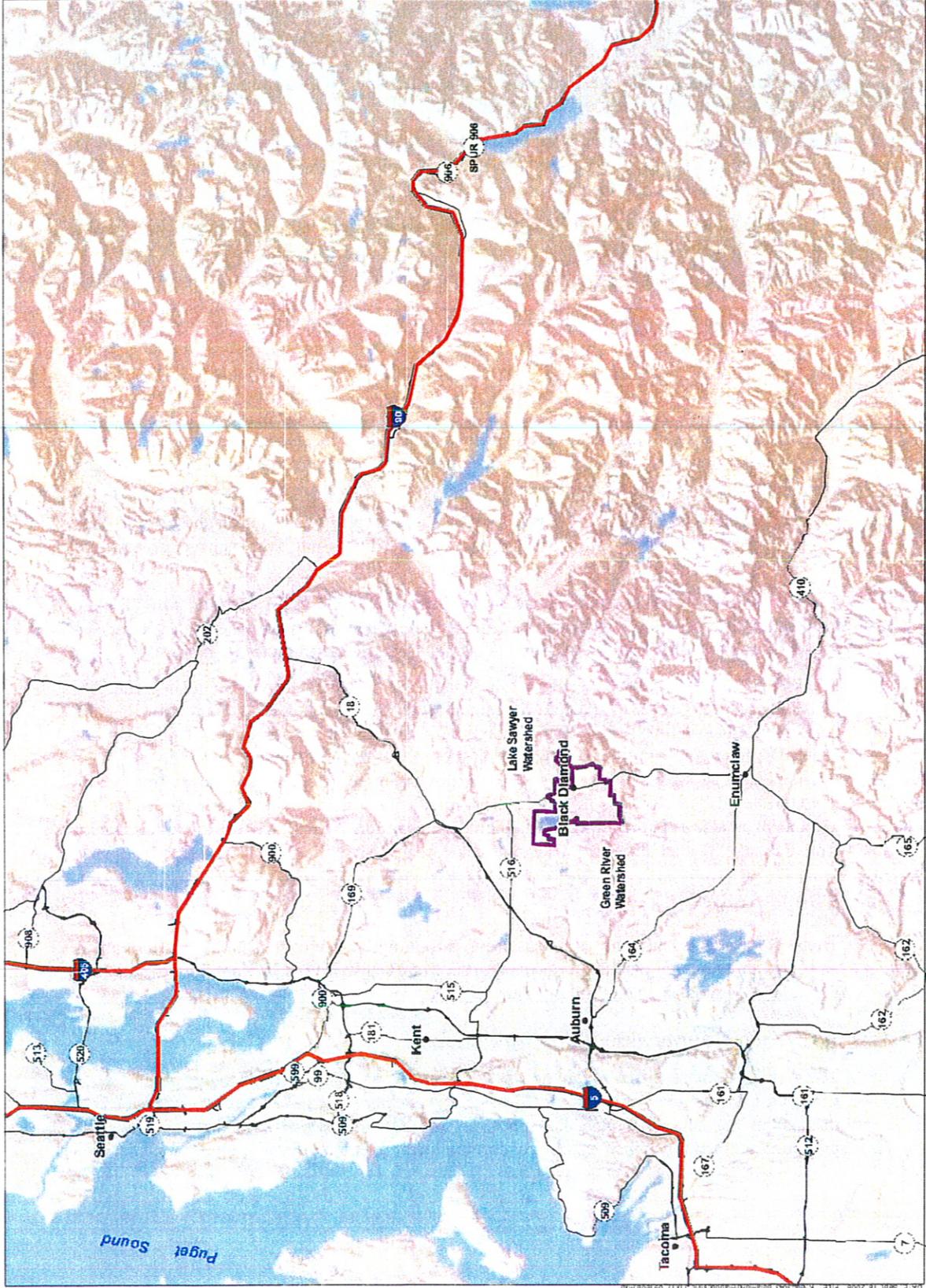
3.4.1 King County, Countywide Planning Policies

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:

Parametrix



Legend
Black Diamond
UGA Boundary

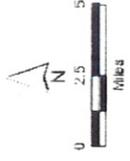


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Figure 3-1
Vicinity Map

Sensitive Area Ordinance Update
City of Black Diamond, WA

Parametrix



- Legend**
- ▬ Duwamish - Green River Watershed
 - Black Diamond
 - USA Boundary
 - Lake Sawyer Watershed
 - Green River Watershed

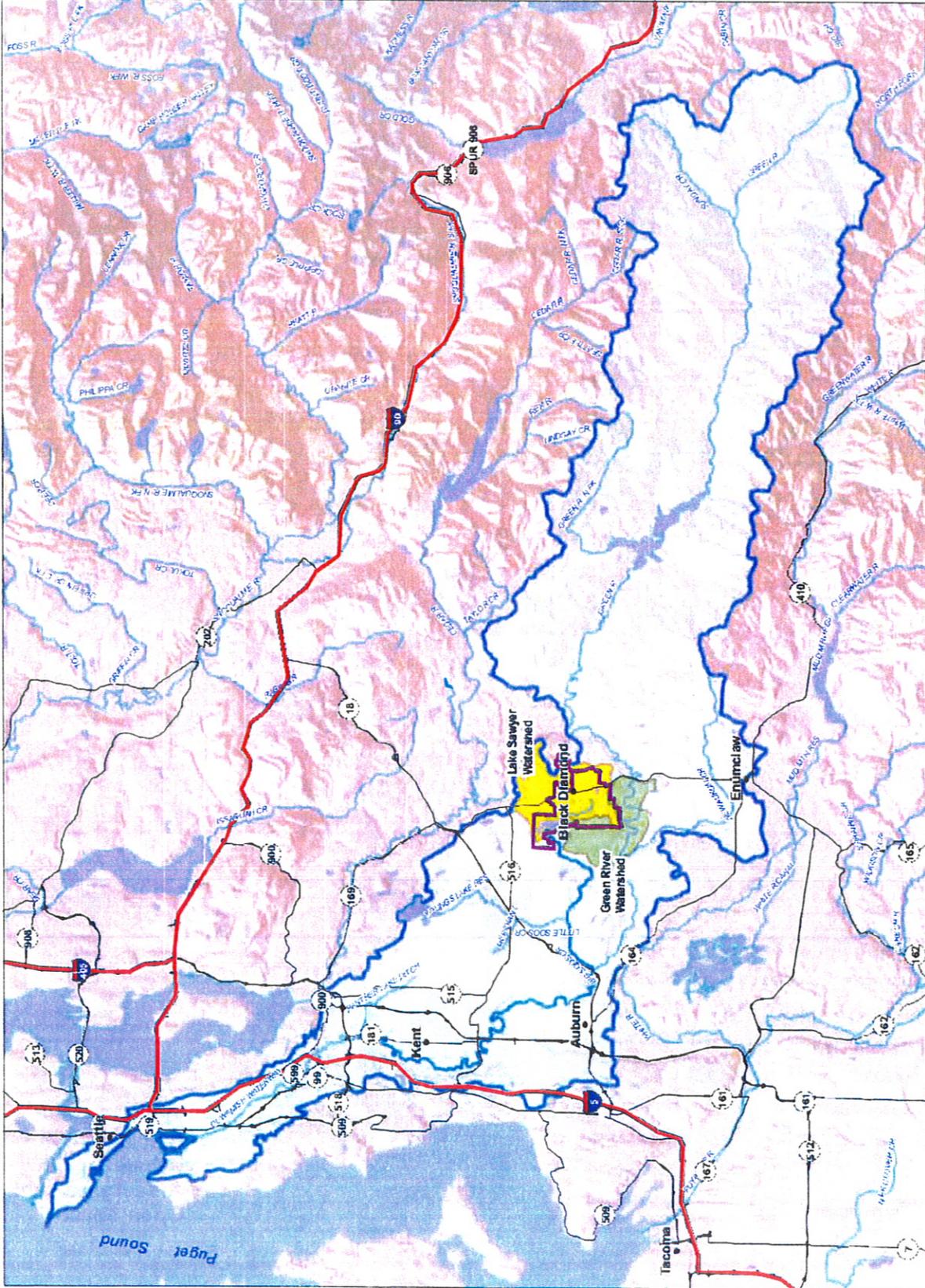
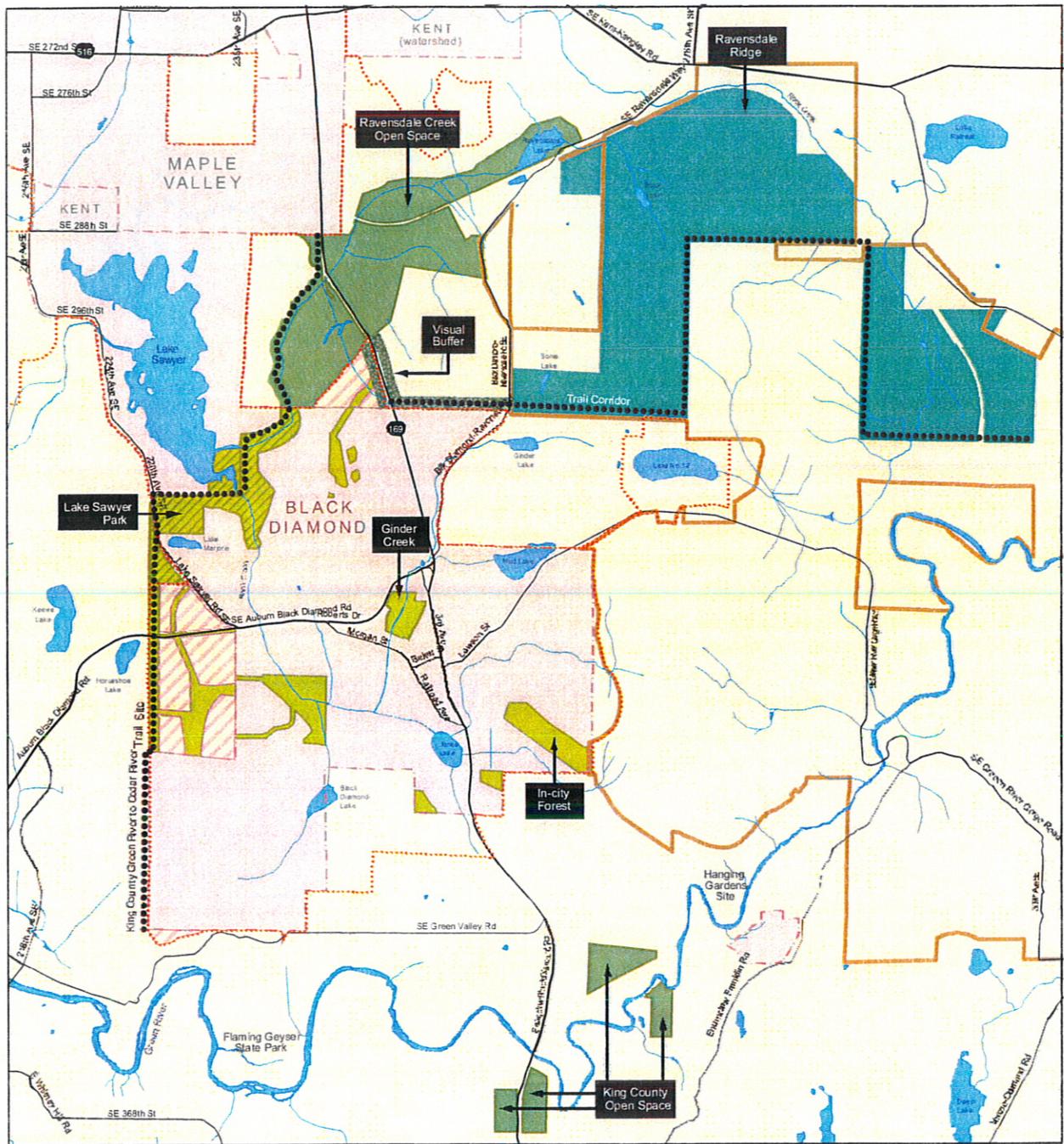


Figure 3-2
Vicinity Watersheds

Sensitive Area Ordinance Update
City of Black Diamond, WA



Parametrix 217-3043-004.01(01) 8/08 (B)



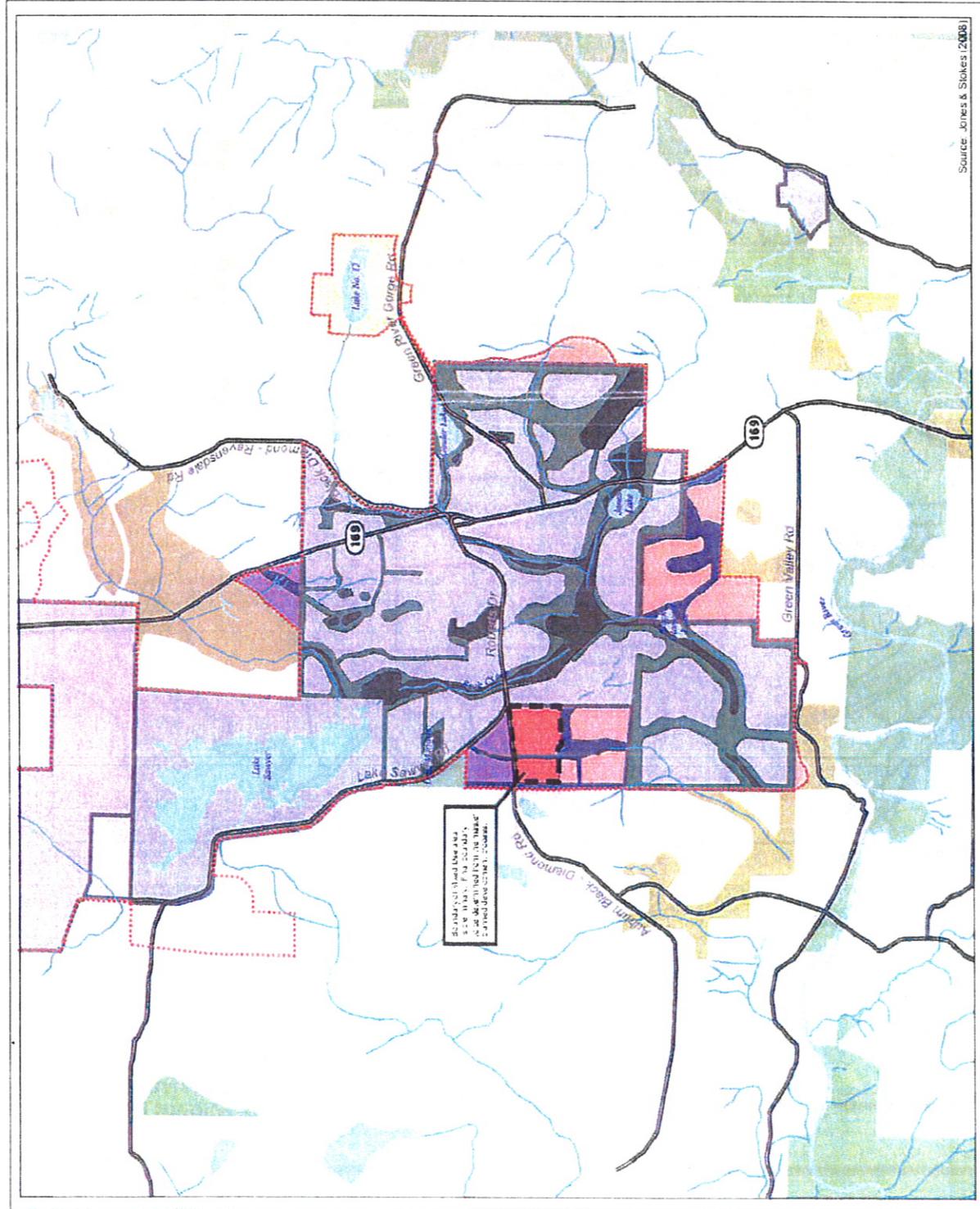
Data Sources:
 Standard King County GIS datasets: in-city forest, annexation areas, King County open space, trails, SSMC mapping Engineers, LLC (2005) In-City Open Space, Sparty Forest, Ginder Cr. Open Space, Section 2 Visual Buffer

Note:
 The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. King County shall not be liable for any general, special, indirect, incidental, or consequential damages, including, but not limited to, lost revenues or lost profits, resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited, except by written permission of King County.

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 Map File: WLRN77 Carl Finished - ORRP 0506_BDCSAmAPLANDS at LPRE
 GIS Data Files: WLRD GIS Archives
 DNRP1 Projects\WLRD\0505



**Figure 3-3
 Black Diamond
 Urban Growth
 Area Agreement,
 Open Space**



25,000 sq ft Wood Use Area
 2,000 sq ft Wood Use Area
 2,000 sq ft Wood Use Area
 2,000 sq ft Wood Use Area

- Legend**
- UGA Land Use**
- UGA Open Space
 - Low Density Residential
 - Medium Density Residential
 - Mixed Use
 - Business Park & Light Industrial
- In City Open Space**
- Primary
 - Secondary
- King County Open Space**
- UGA County Open Space
- City**
- Black Diamond
 - Kent
 - Maple Valley
 - Water Holly
 - UGA Boundary
 - Stream
 - Arterial

Note: UGA Land Use approved by Black Diamond Ordinance No. 723 on 12/6/2001.

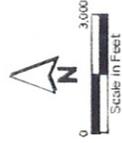
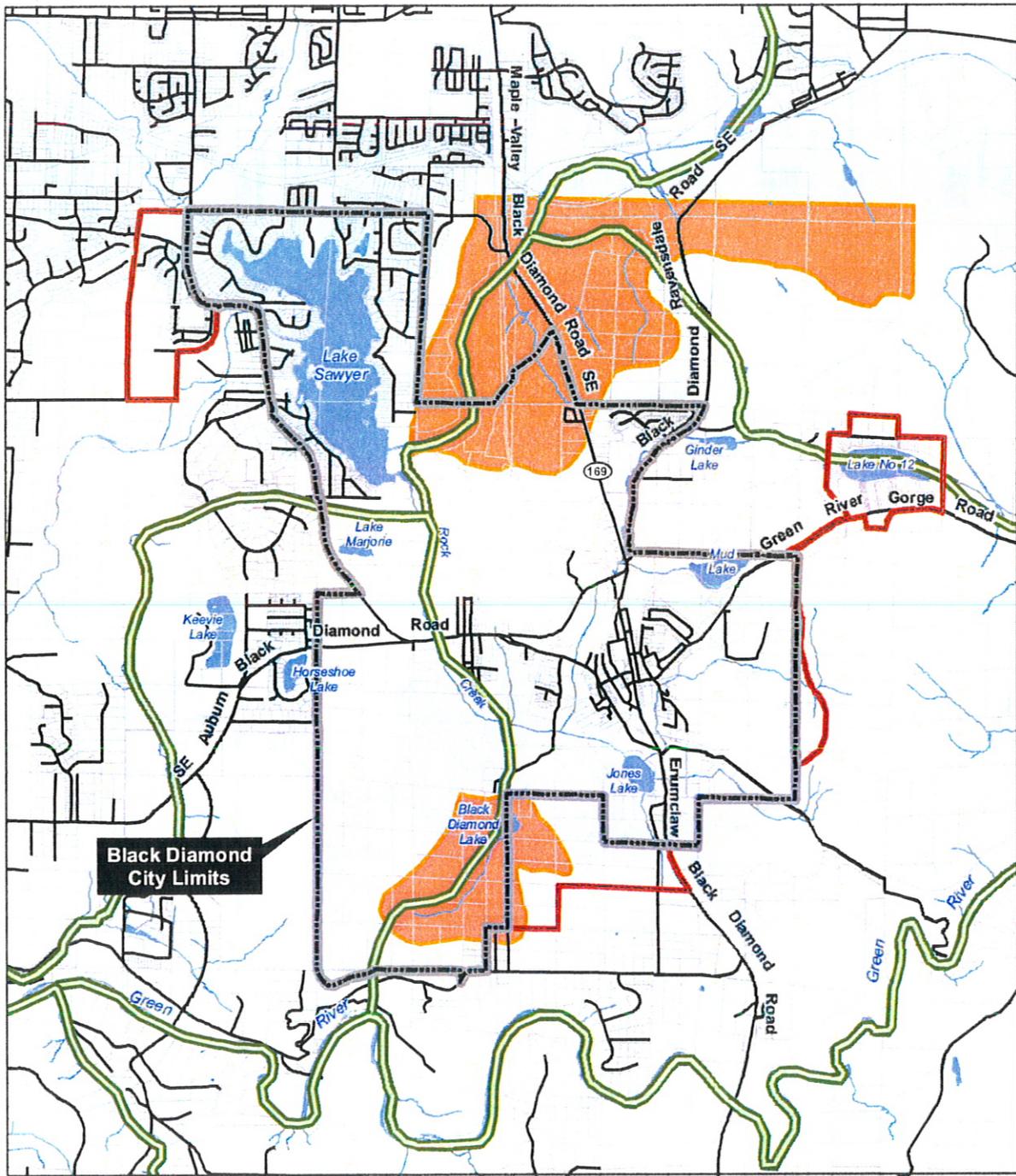
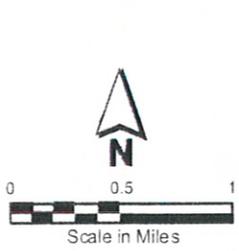


Figure 3-4
Black Diamond Comprehensive Plan,
Land Use and Open Space



Parametrix 217-3043-004.01(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

Land Use

UGA Objective LU 1: Accommodate projected growth, protect the critical drainage areas from inappropriate development, protect and retain the community character, and efficiently provide urban services within UGA lands.

UGA Objective LU 2: Ensure that the site development process for the UGA provides flexibility in locating uses, a unified development plan for each site, and adequate opportunities for public involvement.

UGA Objective LU 3: Phase development of the UGA to minimize impacts on environmental quality and disruption of the social and business climate in the existing city.

Open Space

UGA Policy LU 5: Establish a Transfer of Development Credits (TDC) Program prior to annexing any portion of the UGA.

UGA Policy LU 6: The TDC Program should transfer development credits from the priority open space areas identified in the City Open Space Program for use in the UGA.

UGA Policy LU 7: Prior to annexation of any portion of the Pits landowners will Confirm to the City that the PAA and County open space areas have been permanently protected under the City and County open space programs, as appropriate.

UGA Policy LU 8: Approval of the annexation of the Lake 12 Annexation Area should include permanent public access to the lake. (Note: The Washington Department of Fish and Wildlife maintains a public boat launch on the south side of the lake, However, parking, is limited there and the site does not have restroom picnic facilities)

UGA Policy LU 9: Approval of the annexation of the East Annexation Area should include provision of permanent public access to the In-City Forest.

Habitat areas are indicated in Figure 3-4.

3.5 BALANCING WITH OTHER GMA GOALS

Protection of Critical areas is mandated in the Growth Management Act (GMA) as one of many goals and directives in that statute. Critical areas protection however must be balanced with other competing goals.

The importance of balancing the range of GMA goals and polices is reflected in a Court of Appeals case *HEAL v. Hearings Board*, 96 Wn.App 522 (1999) in which the court made several important points in relation to critical areas:

“The GMA requires balancing of more than a dozen goals and several specific directives in implementing those goals. The Legislature passed RCW 36.70A.172(1) five years after the GMA was adopted. It knew of the other factor, but neither made best available science the sole factor, the factor above all other factors nor made it purely procedural. Instead, the Legislature left the cities and counties with the authority and obligation to take scientific evidence and to balance that evidence among the many goals and factors to fashion locally appropriate regulations based on the evidence not on speculation and surmise.”

“While the balancing of the many factors and goals could mean the scientific evidence does not play a major role in the final policy in some GMA contexts, it is hard to imagine in the context of critical areas. The policies at issue here deal with critical areas, which are deemed "critical" because they may be more susceptible to damage from development. The nature and extent of this susceptibility is a uniquely scientific inquiry.

- The Crisp Creek sub-basin flows into the Green River within the Middle Green River sub-basin. It drains an area of roughly 3,200 acres.

The Green/Duwamish River watershed is the largest freshwater component of Water Resources Inventory Area (WRIA) 9. Historically the White, Green and Cedar (via the Black) Rivers flowed into the Duwamish River and the system drained an area of over 1,600 miles. Because of the diversion in the White River in 1911 and the Cedar River in 1916, the Green/Duwamish drainage area has been reduced to 556 square miles (KC DNR 2000).

The Green/Duwamish River is the most hydrologically and habitat altered large river system in the Puget Sound area. Bank hardening and levee projects began in the mid to late 1800's. The river system has been impacted by water diversions, alterations to the channel and estuary (such as filling and deepening), and development has disconnected its floodplains.

The middle portion of the Green River is primarily composed of residential development (50 percent), commercial forestry (27 percent), and agriculture (12 percent). Most of the upper basin is composed of rural residential, commercial forestry, and agriculture while cities and unincorporated urban areas dominate the lower portion of the basin. (King County 2000)

Riparian conditions in the Middle Green River subwatershed vary widely based on channel type and surrounding land use. According to NMFS criteria for riparian function, most riparian zones in the middle portion of the Green River (with the exception of the undeveloped Green River gorge) currently are not functioning properly because either they are too narrow and/or support non-native vegetation (King County 2000).

4.1.2 Soos Creek/Covington Creek

Covington Creek originates in the northwest portion of the City of Black Diamond at the outfall of Lake Sawyer. It is part of the Soos Creek subbasin, which drains an area of approximately 70 square miles and contains approximately 25 identified tributary streams totaling over 60 linear miles. Covington Creek is one of three major tributaries in the Soos Creek subbasin. It flows 6.33 miles generally southwest before entering Big Soos Creek near Wynaco. (King Co DNR 2000).

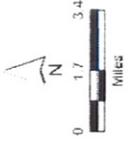
4.1.3 Lake Sawyer

The Lake Sawyer sub-basin is 13 square miles, of which 6.59 miles is located in the UGA (Figure 3-1). Its primary tributaries are Rock Creek and Ravensdale Creek. Rock Creek is located largely within the city limits and UGA. The majority of Ravensdale Creek is outside the UGA in an area zoned for resource forestry use.

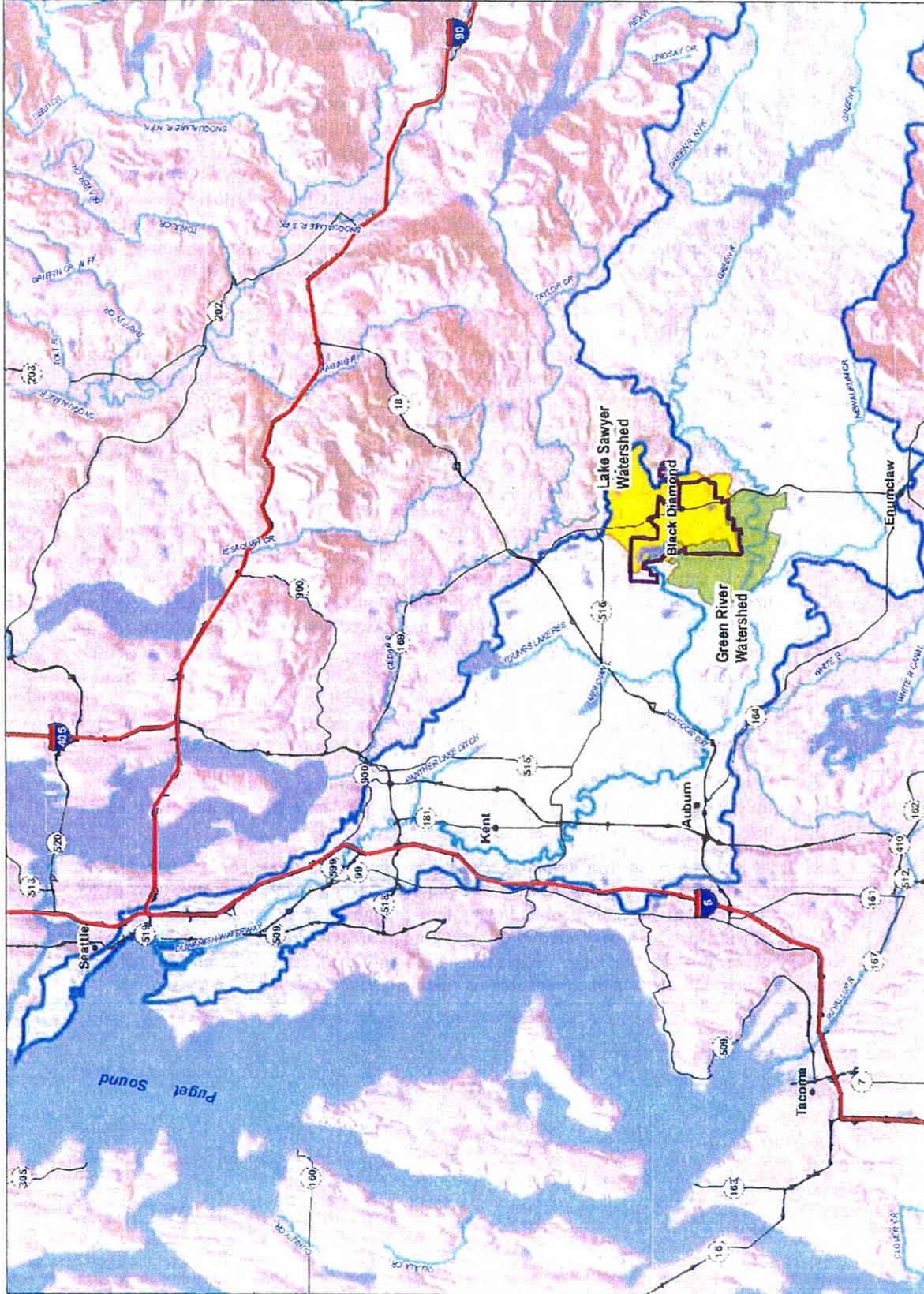
Lake Sawyer is the fourth largest lake in King County with a surface area of 286.1 acres. The lakeshore is primarily developed as single family lots which accounts for about 85 percent of the shoreline. The lake is used extensively for boating, water skiing, swimming and fishing. Public access is provided at county parks on the northwest side and southern parts of the lake. The City of Black Diamond annexed the lake and surrounding homes in 1998.

Lake Sawyer has had historical water quality problems related to the discharge of wastewater from a failed wetland treatment system. The wastewater was diverted to the sanitary sewer in 1992. A draft lake management plan was developed in 1996 by King County to address the long-term water quality protection of the lake and watershed. The management approach for Lake Sawyer and its watershed as stated in the Draft Management Plan is to address the nutrient loading from the watershed to maintain its existing conditions.

Parametrix



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



Data Source: King County GIS, WA DNR

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.

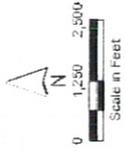
Wetlands, floodplains and hyporheic zones affect nutrient cycling (nitrogen and phosphorous), oxygen, pH, temperature and turbidity as well as pathogens and toxins (metals, hydrocarbons, pesticides). Wetlands store surface water, which traps sediment and facilitates phosphorus removal and contaminant 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.

Parametrix

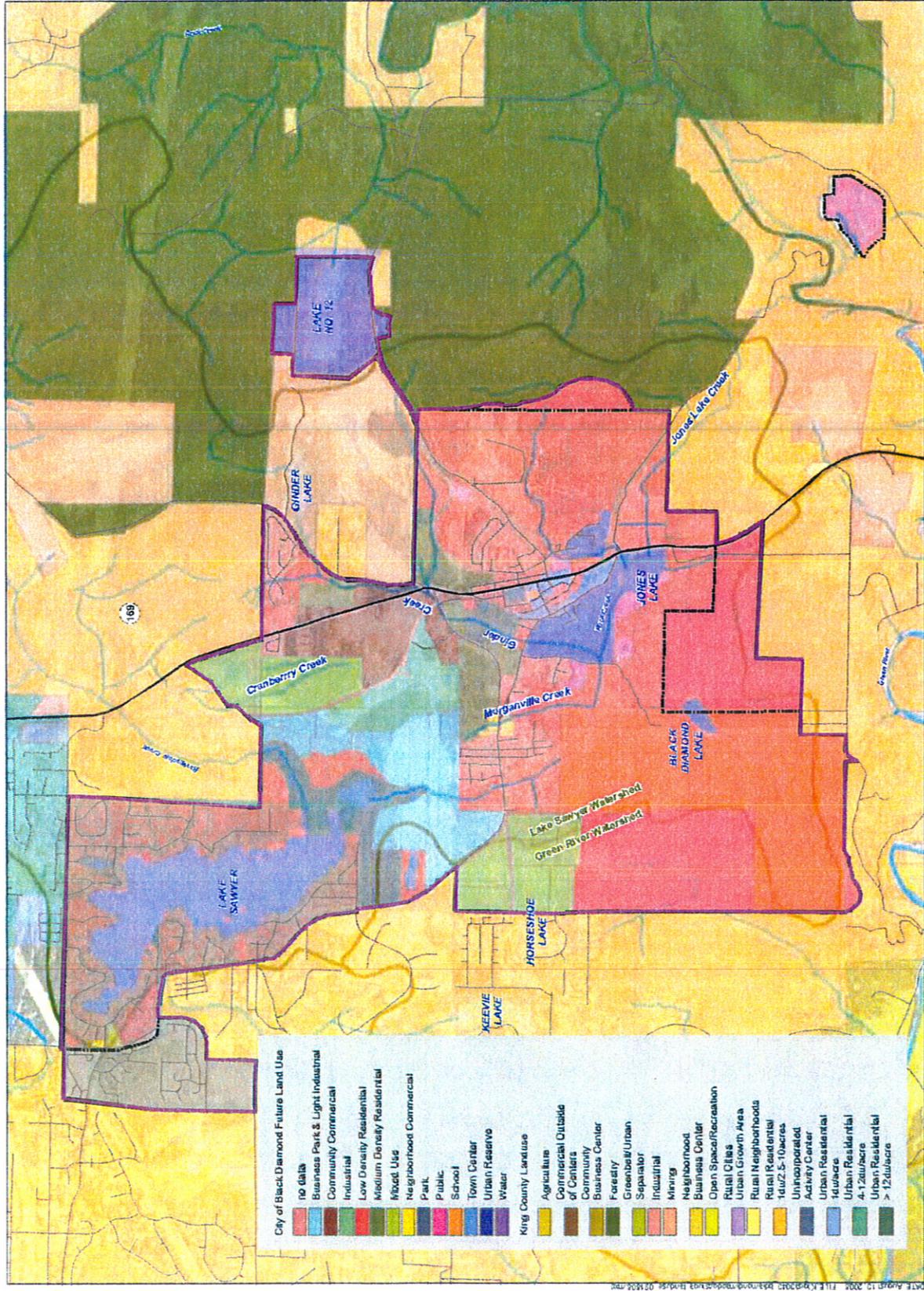


- Legend
- Black Diamond
 - UGA Boundary
 - Green River/Crisp Creek Watershed
 - Lake Sawyer Watershed
 - State Highway
 - Road
 - Water Body
 - Stream

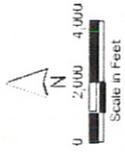
DBS Sawyer King County GIS, WA DNR, 11-10

Figure 4-4
Land Use
Black Diamond UGA

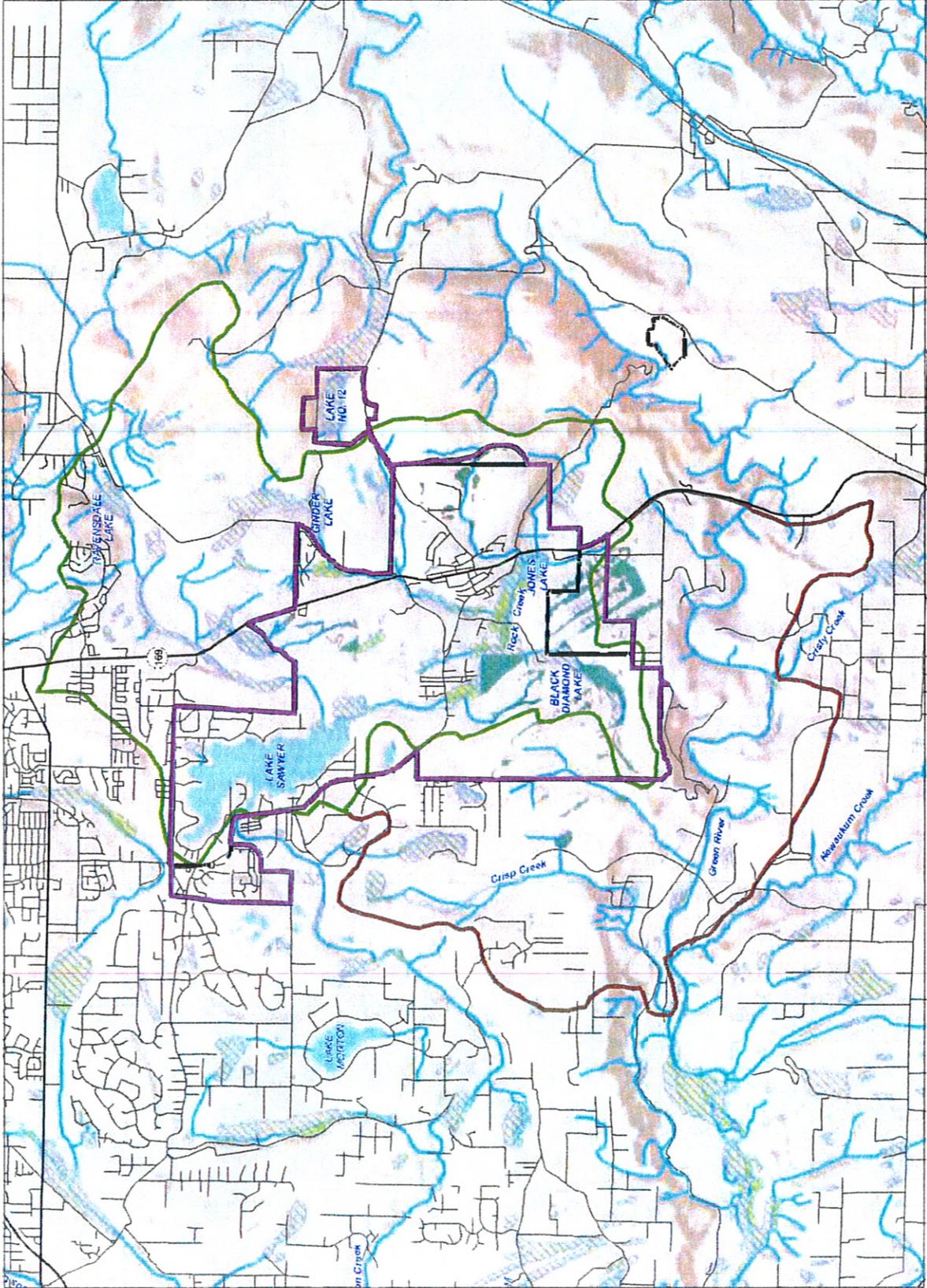
Sensitive Area Ordinance Update
 City of Black Diamond, WA



Parametrix



- Legend**
- Black Diamond
 - UGA Boundary
 - Lake Sawyer Watershed
 - Green River/Crisp Creek Watershed
 - State Highway
 - Road
 - Water Body
 - Stream
 - King County CAO Wetland
 - NWI Freshwater Emergent Wetland
 - NWI Freshwater Forested/Shrub Wetland
 - Triad Surveyed Wetlands

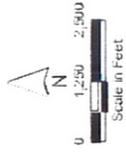


Data Source: King County GIS, WADNR, TAD

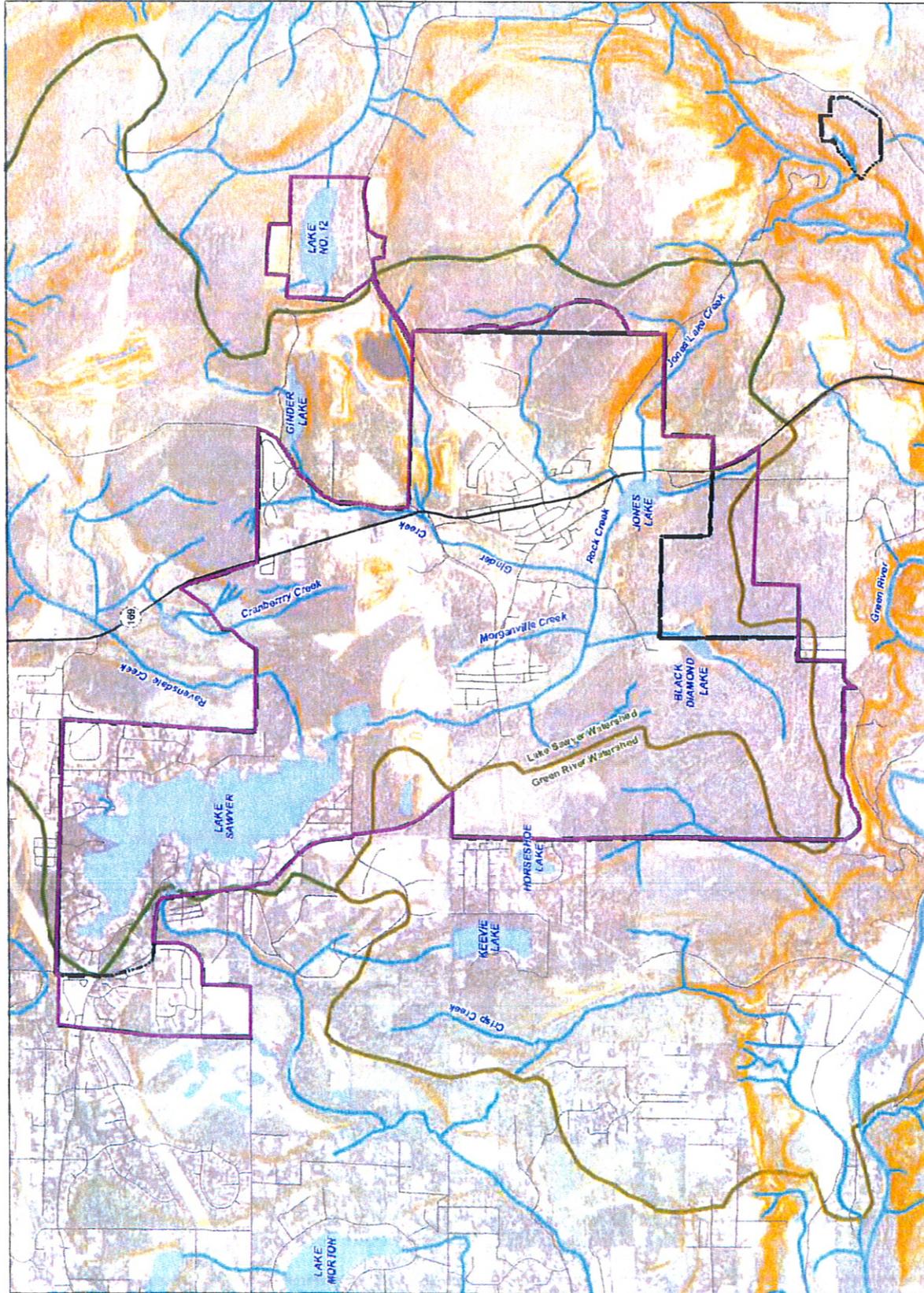
**Figure 4-6
Wetlands**

Sensitive Area Ordinance Update
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Parametrix



- Legend
- Black Diamond
 - UGA Boundary
 - Green River/Crisp Creek Watershed
 - Lake Sawyer Watershed
 - State Highway
 - Road
 - Water Body
 - Stream
 - > 40% slope from topography



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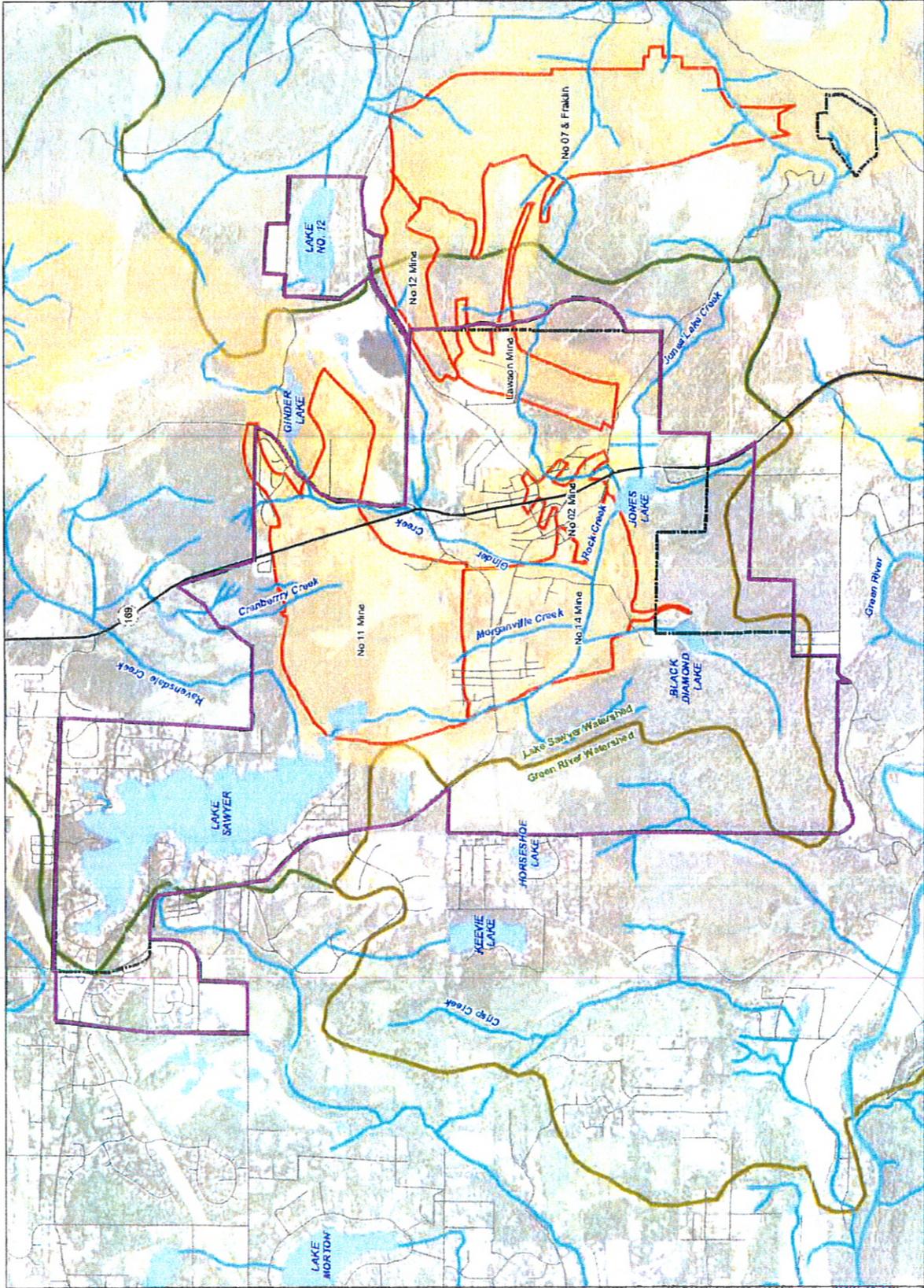
Figure 4-7
Steep Slopes
(from topography)
Black Diamond UGA

Sensitive Area Ordinance Update
 City of Black Diamond, WA

Parametrix



- Legend**
- Black Diamond
 - UGA Boundary
 - Green River/Crisp Creek Watershed
 - Lake Sawyer Watershed
 - State Highway
 - Road
 - Water Body
 - Stream
 - Coal Mine Hazard Area
 - Mapped Mine Hazards
 - Mine Boundary



Data Source: King County GIS, WA State, E.S. 1912, WA State Survey, B. 4.11.3

Figure 4-8
Abandoned Coal Mine
Hazard Areas
Black Diamond UGA

Sensitive Area Ordinance Update
 City of Black Diamond, WA

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 UGA provide fewer process-intensive functions contributing to the overall productivity of that subwatershed, but may be critical to processes that occur in the nearby Horseshoe Lake and possibly Keevie Lake.

The analysis above of the areas associated with the important functions related to hydrology, vegetation, sediment balance, and water quality indicates that:

- The Rock Creek/Jones Lake/Jones Creek corridor has the largest concentration of critical features that affect landscape function, including a large complex of wetlands that provides flood desynchronization, water storage, and a variety of nutrient control functions critical to the health of the watershed. This corridor provides the most important aquatic and terrestrial habitat areas.
- Black Diamond Lake and the associated stream has a large and important concentration of similar features, including a large wetland complex, but is less important currently due to the smaller tributary watershed.
- Large wetland complexes that provide the headwaters of many streams are important for water storage and maintaining year-round stream flows and temperature moderation. Such wetland complexes for the headwaters of Ginder Creek, Lawson Creek, and Jones Creek are present in many smaller tributaries in the area.
- Tributary streams in the area have a variety of gradients and flow conditions, as well as varying degrees of human alteration. Generally, they are less important in providing aquatic and wildlife habitat, but they are critical to providing inputs of high quality low temperature water to the systems with the greater concentrations of landscape functions.

Regulatory implications of these findings lead to a recommendation that the City of Black Diamond can take an approach that provides a high level of protection for the most important areas of the city that contribute the most to current ecological functions. This would be accompanied by a lower level of protection for those specific critical area resources in specific contexts where they contribute less to key functions. By this focused approach, the City is likely to be successful in preserving key ecological functions while accommodating growth goals.

5. SPECIFIC CRITICAL AREAS

5.1 WETLANDS

Wetlands occur throughout the City of Black Diamond and its UGA and are primarily associated with bodies of water (lakes and streams) but also occur separately. Brief summaries of the functions of these wetland complexes are outlined below. It is unknown whether freshwater wetlands were displaced by past residential, commercial, and forestry uses. Any wetlands that may have existed in developed portions of the City have been displaced.

- Rock Creek Wetlands Wetlands associated with Rock Creek are mapped by the NWI as scrub/shrub and forested wetlands. This wetland complex was given a preliminary Category I rating under the Ecology wetland rating system.

5.2 AQUATIC RESOURCES

Aquatic resources within the study area include Green River, Covington Creek, and their tributaries; floodplain, depressional, and slope wetlands; lakes; and groundwater. Historically, these aquatic resources provided important functions such as peak flow storage, groundwater recharge, water quality maintenance, and fish and wildlife habitat.

Principal fisheries species present within the study area include (Jeanes 2004):

- **Chinook Salmon (*Oncorhynchus tshawytscha*):** The principal stock of Chinook salmon present in the Green/Duwamish River watershed is summer/fall ocean type Chinook. WRIA data report Chinook salmon occurring in Covington Creek up to the outlet of Lake Sawyer as well as Crisp Creek and the portion of the Green River located in the study area (King County 2000).
- **Coho salmon (*O. kisutch*):** The Green/Duwamish River watershed supports one run of coho salmon, which is a mixed stock with composite production (WDFW 2002). Green/Duwamish River coho salmon are considered part of the Puget Sound Strait of Georgia ESU. Lake Sawyer and Jones Lake as well as Covington, Ravensdale, Ginder, Rock, and Lawson Creeks are reported as providing spawning and/or rearing habitat for coho salmon. These sources also report rearing habitat within and spawning and rearing habitat within Crisp Creek and the portion of the Green River located within the study area.
- **Steelhead (*O. mykiss*):** Winter run steelhead within the Covington Creek basin are in the Puget Sound ESU, which is listed as threatened under the ESA. Covington Creek, Ravensdale Creek, Rock Creek, Lake Sawyer, Crisp Creek, and the portion of the Green River located in the study area are reported as providing spawning and/or rearing habitat for winter steelhead.
- **Cutthroat trout (*O. clarki*):** Cutthroat trout exhibit both resident and anadromous life histories. Cutthroat trout found within the study area are part of the Puget Sound ESU, which does not warrant listing under ESA at this time as populations have been relatively stable over the past 10-15 years. The presence of cutthroat trout is reported in Covington, Ravensdale, Ginder, Rock, Lawson, Crisp, and Black Diamond Lake Creeks as well as Lake Sawyer and the portion of the Green River located in the study area. Most cutthroat trout in the study area likely exhibit resident life histories.
- **Bull trout (*Salvelinus confluentus*):** Puget Sound bull trout exhibit four distinct life histories: resident, adfluvial, fluvial, and anadromous. All bull trout found within the study area are part of the Puget Sound DPS, which is listed as threatened under the ESA.
- **Other Anadromous Species:** The portion of the Green/Duwamish River basin located in the study area does not support pink salmon (*O. gorbuscha*); however, it does provide migration habitat for sockeye salmon (*O. nerka*), as well as spawning and rearing habitat for chum salmon (*O. keta*) (StreamNet 2008).
- **Other Resident Species:** Limited information is available on resident fish in the Lake Sawyer and Middle Green River subwatersheds. Native resident species likely to be present include sculpins (*Cottus spp.*), speckled dace (*Rhinichthys osculus*), and three-spine stickleback (*Gasterosteus aculeatus*). Relatively few non-native fish species are reported in the Green/Duwamish River. Species observed primarily include warm water game fish that are found in several of the basin's lakes. These include black crappie (*Pomoxis nigromaculatus*), brown bullhead (*Ameiurus*

corridor extending to the west to the Crisp Creek watershed along the Black Diamond Lake and stream corridor is the most effective means of providing productive terrestrial habitat in the area as it urbanizes.

5.4 GEOLOGICAL HAZARDS

As indicated in Figures 4-7 and 4-8 steep slopes and mine hazards are the major geologic hazards within the city. Hazards related to slopes include slope stability and landslide hazards. Erosion is an additional concern for all sloped areas, especially those close to water bodies. In most cases, landslide hazards and erosion hazards can be assessed on a site-by-site basis.

Hazards associated with abandoned coal mines are directly related to mine collapse and land subsidence as well as methane gas generation and the risk of fire. The potential for coal mine collapse and land subsidence is influenced primarily by:

- the height of the mine void,
- the depth and the strength of the rock roof, and
- the type and amount of roof support within the mine (Crowell 2001).

There are two types of subsidence:

- sinkhole, also called pit or pothole; and
- sag or trough.

5.5 CRITICAL AQUIFER RECHARGE AREAS

Three factors generally dominate determination of aquifer susceptibility (Cook 2000):

- Overall permeability of the unsaturated zone (soil and underlying geologic strata);
- Thickness of the unsaturated zone (depth to groundwater in unconfined aquifers); and
- Amount of available recharge.

Evaluation of soils in the Black Diamond UGA indicate that most areas have a slight to moderate susceptibility to contamination. There are a number of wells providing public and private water supplies that should be protected as part of the city's regulatory system.

6. OPTIONS FOR PROTECTION OF SENSITIVE AREAS

6.1 CONTROL OF USE AND ALTERATION

The most common approach to protection of sensitive areas in Washington State that has been developed since the adoption of the Growth Management Act (GMA) in 1994 includes the elements of:

- Designation and classification of critical areas
- Restriction on land use and alteration within the resource area and buffers

This approach tends to focus on individual occurrences of features such as streams, wetlands and geologically hazardous areas. The management and protection mechanisms tend to be

- Recreational uses such as fishing, hunting, bird watching and interpretation of natural features.
- Continued use and maintenance of existing features such as dams, water diversions; and existing or ongoing uses such as forestry or agriculture.
- Docks and boat launch ramps on water bodies that provide access for public recreation use;

It also should be recognized that water bodies, especially navigable waters, provide a variety of opportunities for commerce that are integral to our economic system. The state Shoreline Management Act passed in 1971 includes several key goals (RCW 90.58.020 and WAC 173-26-176(3)):

- (a) The utilization of shorelines for economically productive uses that are particularly dependent on shoreline location or use.
- (b) The utilization of shorelines and the waters they encompass for public access and recreation.
- (c) Protection and restoration of the ecological functions of shoreline natural resources.

Generally, critical area codes must allow for use of shorelines of the state for:

- Water dependent uses: Those uses that “cannot exist in any other location and are dependent on the water by intrinsic nature of its operation”.
- Water-related uses: Those uses that are not intrinsically dependent on a waterfront location but whose operation cannot occur economically without a shoreline location.
- Water enjoyment uses provide the opportunity for a significant number of people to enjoy the shoreline.

6.1.2 Buffers

Buffers are often thought of as areas that are outside of sensitive areas such as wetlands and water bodies that separate environmentally sensitive areas for areas of human activity and reduce the adverse impacts of human disturbance. (Norman 1996) This narrow definition however reflects a narrow classification-based view of such features and not an ecosystem perspective. The continued use of the term buffer is somewhat unfortunate, but likely will continue as a familiar concept.

It is important to note that the Growth Management Act requires the protection of “areas *and ecosystems*” (emphasis added) relating to wetlands, fish and wildlife habitat conservation areas and frequently flooded areas. The protection of an ecosystem must go beyond the areas that can be identified by discreet criteria, such as a wetland, or a specific stream reach to include ecosystem processes that occur outside those features.

6.1.3 Buffer Ecological Functions

A variety of functions occur in wetland and aquatic habitats that have essential links with upland areas, including:

- Providing for continued hydrological processes, that provide surface and ground water critical to maintaining wetland aquatic resources;

Table 6-2. Generalization of Various Wetland Buffer Widths on Functions Provided (Continued)

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.
Sensitive	L	L	L	L	L	L
Urban	L/M	L/M	M	M	M/H	H
Birds:						
waterfowl	L	L	M	M/H	M/H	M/H
urban adapted	H	H	M/H	M/L	L	L
edge spp.	M/H	M/H	M/H	M/H	M/H	M
interior ²	L	L	L	L	L	L
Mammals:						
Small	L	L/M	M	M	M/H	M/H
Large	L	L	L	L	L/M	M
Removing Sediment						
Grassy slope less than 5%	M/H	H	H	H	H	H
60-90% removal grassy	L/M	H	H	H	H	H
Steep slope	L	L	L/M	M/H	H	H
Particle Size:						
Sands	H	H	H	H	H	H
Silts	M	M/H	H	H	H	H
Clay	L	L	L	L	L	L
Removing excess nutrients						
60% removal	H	H	H	H	H	H
80% removal	L/M	H	H	H	H	H
Bacterial	L	L/M	H	H	H	H

6.1.4 Buffer from Human Activities

Human activities can produce a variety of changes to ecological processes and proximity impacts can affect wetlands, aquatic and terrestrial wildlife habitat and other ecological processes.

There are basically two types of impacts that occur from human activities:

- Changes in inputs to ecological processes that affect the hydrologic cycle or other elements of the ecosystem. Buffers are generally not effective for these impacts, unless large enough to provide sufficient area for the processes to remain. Even in

In an urban setting, the range of activities adjacent to a resource may affect the size or character of a buffer. Higher intensity uses generally have greater impacts, although design can make a substantial difference in impacts. For example, large warehouse or industrial buildings adjacent to buffers with wall density sufficient to be a barrier to noise and no windows or exterior lighting may have less of an impact than residential use. Open space uses can vary greatly in proximity impacts. Active sports fields, for example can introduce high levels of noise and light as well as impacts from chemical fertilizers, herbicides and pesticides. Predation of wildlife by domestic animals is difficult to address by buffer size, no matter how extensive. Buffers also may become habitat for ferial domestic animals. In such a case, controls on domestic animals, such as fencing may be needed in addition to buffers.

The character of buffer vegetation is also a key element of ecological functions and attenuation of proximity impacts of human use. The edge vegetation of native forests at a boundary such as a meadow, or an area cleared by humans typically reaches the full length of trees. This contrasts markedly with the interior of a stand of native evergreens that typically have lost most of their lower branches due to shading. A cleared native forest buffer has very little vegetation near the ground and provides little effect on proximity impacts from adjacent development such as light or the view of adjacent development that may deter use by wildlife. An example of the difference between a natural forest edge and a recently cleared second-growth forest are provided in Figures 6-1 and 6-2.

It is important to acknowledge that buffers cannot mitigate all effects of human land uses, on a landscape level. A range of human uses alter the movement and storage of surface water and groundwater within a wetland's contributing basin. Stormwater management programs are essential to control the amount of surface water runoff as well as to assure high water quality.



Figure 6-1. Natural Forest Edge

provide for enhancement of functions in future redevelopment of existing uses as is provided for in RCW 36.70A.020(10), RCW 36.70A.172 and RCW 36.70A.020(8).

A “no harm” system also is likely to be much more difficult and expensive to implement, especially the monitoring component, and provides little certainty to applicants of the standards likely to be imposed on their development.

6.3 GEOLOGICAL HAZARDS

The options for regulating geological hazards vary primarily in the degree of specificity of regulation. In general, the greater the specificity the more likely risk will be avoided or reduced.

Each option addresses the following criteria:

- Designating and classifying the hazard areas.
- The information needed to assess risk on a specific site.
- The range of options for avoiding risk.
- Allowing individuals to determine the risk they are willing to accept.
- Specifying restrictions on the types of developments; largely aimed at reducing exposure to uses involving risk to human life, especially large groups in uses such as schools or assembly facilities. The most successful and ultimately least costly protection from geologic hazards is often avoidance of known hazardous areas. This includes activities on adjacent areas that may result in an increased failure hazard that moves off site, down slope, or downstream.
- Reducing the exposure of occupied buildings through requirements for building setbacks, buffers, and vegetation management, as well as adherence to building codes; and development of monitoring and warning systems, evacuation plans, and recovery plans.
- Reducing secondary effects to other resources, such as fish, through limiting activities that result in discharge of materials into water bodies or other effects that may damage habitat.

6.4 FREQUENTLY FLOODED AREAS

Only Rock Creek upstream of Roberts Road (Auburn Black Diamond Road) has been designated a floodplain in studies prepared by the Federal Emergency Management Agency (FEMA). Flooding of this area is affected to some extent by the capacity of the existing Roberts Road Bridge. The floodplain area is largely contained within the wetland and proposed buffer area associated with Rock Creek and does not warrant separate protection.

6.5 CRITICAL AQUIFER RECHARGE AREAS

Three factors generally dominate determination of aquifer susceptibility (Cook 2000):

- Overall permeability of the unsaturated zone (soil and underlying geologic strata);
- Thickness of the unsaturated zone (depth to groundwater in unconfined aquifers); and
- Amount of available recharge.

beneficial effects on Lake Sawyer water quality, in addition to control of nutrients at the source.

7. Black Diamond Lake and the associated stream has a large and important concentration of similar features, including a large wetland complex, but is currently somewhat less important currently due to the smaller tributary watershed. As the area urbanizes, it will be increasingly important in providing water storage, and a variety of nutrient control functions essential to the health of the Lake Sawyer watershed.
8. Large wetland complexes that provide the headwaters of many streams are important in water storage and maintaining year round stream flows and temperature moderation. Such wetland complexes are present in the headwaters of Ginder Creek, Lawson Creek, Jones Creek, and Mud Creekn as well as the Rock Creek tributary to the Cedar River.
9. Tributary streams in the area have a variety of gradients and flow conditions as well as varying degrees of human alteration. Generally they are less important in providing aquatic and wildlife habitat, but they are important in providing inputs of high quality low temperature water to the systems with the greater concentrations of landscape functions.
10. Terrestrial habitat in the Black Diamond UGA is extensive due to the largely undeveloped character of the area. Preservation of wildlife habitat and corridors can be accomplished in concert with preservation of the Rock Creek/Jones Lake/Jones Creek and Black Diamond Lake/Stream areas with extension of the corridors to the north to Ravensdale Creek and to the east and west UGA boundaries. Wildlife corridors will be enhanced by providing passage under major roads by enhancing crossings of water bodies to provide bridges with additional height and width for animal movement.
11. Frequently flooded areas in the Black Diamond UGA are contained within the recommended stream and wetland buffer areas of the core Rock Creek/Jones Lake/Jones Creek corridor and do not warrant separate regulation.
12. Geologic hazards of landslides, erosion hazards and seismic hazards are relatively limited in scope and can be addressed on a case-by-case basis.
13. Geologic hazards related to abandoned coal mines are of concern in Black Diamond due to its history of coal mining. Coal mine hazards relate primarily to depth of workings and the presence of openings. Generally deeper workings have the least hazard with shallow workings posing the greatest risk. Coal mine hazards can generally be addressed by site specific studies and mitigating measures.
14. Critical aquifer recharge areas are generally in the moderate risk range based on analysis of soil and geologic conditions and can be addressed by regulation of activities most likely to discharge hazardous materials and through protection of wellhead areas.

7.2 RECOMMENDATIONS

Regulatory implications of these findings leads to a recommendation that the City of Black Diamond take an approach that provides the highest level of protection for the most important areas of the city that contribute the most to current ecological functions. This would be accompanied by a lower level of protection for those specific sensitive area resources in specific contexts where they contribute less to key functions. By this focused approach, the city is likely to be successful in preserving key ecological functions while accommodating growth goals.

Key elements of this approach include:

and other chemicals and also bring large groups of people into close proximity to the resource.

- (c) Adjacent development should control impacts on the resource that will not be addressed by buffer width, including:
- Runoff control generally should not include discharge to or across the buffer. Infiltration or other low impact development mechanisms should be employed.
 - Setbacks of buildings, parking areas, road and driveways from the buffer should be employed to provide additional areas for distance attenuation of proximity impacts that may be devoted to low intensity uses such as yards.
 - Noise and light and glare should be limited by building placement and design, including avoidance of windows facing the buffer, avoidance of outdoor and security lighting, placement of mechanical and ventilating equipment away from the buffer and planting a dense vegetative screen at the margins of the buffer.
 - The buffer should be fenced to limit intrusion of domestic animals and disturbance from informal human use and to also to attenuate noise and light and glare intrusion.
4. Small isolated wetlands often provide few functions when surrounded by urban development. Such wetland should be considered for displacement, if mitigation includes improving functions of wetlands and buffers in the core wetland/stream corridor.
5. Streams outside the core complex should be protected to continue to provide high quality water and fish habitat, where available.

Recommended buffers for streams and lakes outside the core complex are shown in Table 7-2:

Table 7-2. Recommended Stream and Lake Buffers

Type	Standard Buffer	Minimum Buffer with Transfer to Core Wetland Complex
Type S- all waters, as inventoried as "shorelines of the state" under the jurisdiction of the Shoreline Management Act, except associated wetlands,	200 feet	150 feet
Type F - segments of natural waters other than Type S Waters, which are greater than 10 feet in width	150 feet	100 feet
Type Np - segments of natural waters that are perennial non-fish habitat streams. - 75 feet	100 feet	50 feet
Type Ns - segments of natural waters within defined channels that are seasonal, non-fish habitat streams	50 feet	30 feet

