Northwest Ecological Services, LLC

M E M O R A DU M

To: Mark Johnson, ESA Adolfson
Dannon C. Traxler, Langabeer & Tull, P.S.

From: Michele Bodtke, Northwest Ecological Services, LLC (NES)

Date: August 17, 2009

Re: Fairhaven Highlands, Addendum to Delineation Report

The following is an addendum to the Wetland Delineation Report written by NES for the Fairhaven Highlands project: *Wetland Delineation for the Fairhaven Highlands, Bellingham WA*. Based on additional site assessments the addendum revisions include:

Wetland CC

On August 5, 2009, further on-site investigation took place in Wetland CC to collect data and to define whether or not the northern upper "arm" of Wetland CC was indeed a contiguous feature of the main "body" of the wetland located in the lower basin. In other words, is Wetland CC one wetland or is it two separate features. During this site investigation it was determined that the soil between the two areas is not hydric; thus we concluded there are two wetlands, with a seasonal surface water connection that occurs during storm events or extended periods of precipitation that overcharge the hydrology in the upper basin. Wetland CC2 (arm) is a combination slope/depressional forested wetland. Wetland CC1 (lower basin) is a forested depressional wetland with a stream-like outlet (Figure 1 attached hereto).

Soils were sampled in the southern portion of Wetland CC2 and in the area between the two wetlands. The soils in Wetland CC2 (Sample Plot 20) were damp and sticky even though measurable rain had not occurred since July 13th. The soil was a silt loam with a dark brown surface layer (10YR3/2) with a reduced gray colored (10YR5/2) silt loam below that had redox concentrations (10YR4/4). The soil column became increasingly more gravelly, with cobbles, with depth. The soils at this sampling point meet the NRCS criteria of a hydric soil (Indicator A11). Data sheets are attached.

The soil between the wetlands was very dense, gravelly, and compact making sampling very difficult (Sample Plot 21). In addition, the soil was extremely dry and friable while soils in the Sample Plot 20 were damp (sample plots were approximately 50 feet apart). The soil was a very gravelly loam with cobbles. Soil color appeared fairly uniform; 10YR3/2 in the upper part

becoming 7.5YR3/2 in the lower part, with no visible redox features. The sample plot was dug to approximately 18 inches. The soil in this sampling area did not meet NRCS hydric soils indicators.
Wetland CC2 is a combination depressional/slope wetland and is located in the Padden Creek Watershed. The majority of the wetland is depressional, with areas that are seasonally ponded (on average less than six inches). Other areas of the wetland are only saturated. Wetland hydrology sources in Wetland CC2 are ground water, precipitation and overland flow from Wetland HH. During the winter and early spring seasons, Wetlands HH and CC2 are occasionally over charged with water. When this condition happens, water flows out of Wetland HH, at one point source, and into Wetland CC2. This same overland water flow also occurs between Wetlands CC2 and CC1; evidence of two outlet points was observed at the southern end of Wetland CC2 (low areas along the trail that appear to have been washed, exposing gravel and cobble at the surface). These conditions are temporary in nature and are dependent upon storm events or extended periods of precipitation, and are not sustained long enough to create wetland conditions and hydric soils between the wetlands.

Wetland CC2 is forested with a moderate to sparse understory. The wetland has many hummocks and large downed woody debris, both of which are heavily vegetated with trees and ferns. Dominant canopy species is western red cedar (*Thuja plicata*). Other tree species observed were paper birch (*Betula papyrifera)* and red alder (*Alnus rubra*). The understory included pockets of slough sedge (*Carex obnupta)*, sapling western red cedars, salmonberry (*Rubus spectabilis*), Indian plum (*Oemleria cerasiformis)*, skunk cabbage (*Lysichiton americanum*), sword fern (*Polystichum munitum)* and trailing blackberry (*Rubus ursinus)*. Areas of bare ground cover approximately one-quarter of the wetland.

Although Wetland CC2 is under one acre in size (12,791 sg.ft. or 0.3 acres), tree sizes in the wetland were measured in order to determine the average DBH (Diameter at Breast Height). Thirty trees were measured; the eight largest trees and average DBH are summarized in Table 1.

Table 1. Summary of Tree sizes and species

Wetland	Tree ID	Size (DBH in cm)	Species
CC2	6	50.7	grand fir
	10	45.2	western red cedar
	14	52.5	western red cedar
	19	44	western red cedar
	25	86.3	western red cedar
	28	99	western red cedar
	29	57	red alder
	30	100	western red cedar
Average DBH		**66.8**	

An upland forest with a mix of hydrophytic and non-hydrophytic vegetation was observed between the two wetlands, including, western red cedar, salmonberry, ocean spray (*Holodiscus discolor)*, sword fern, lady fern (*Athyrium filix-femina)* and trailing blackberry. Observed soil between was not hydric and no indicators of wetland hydrology were observed. There is also a trail between the wetlands that averages five feet wide. The trail is a mix of silt loam and gravel. The distance between Wetlands CC1 and CC2, at the closest point, is approximately 46 feet.

Wetland CC2 was categorized using the revised Washington State Department of Ecology (DOE) Wetland Rating System for Western Washington. The wetland contains both depressional and slope components, but is primarily a depressional wetland and was rated as such. Based on the DOE rating, Wetland CC2 appears to be a Category III wetland. In general, Wetland CC2 provides high wildlife opportunity, moderate water quality improvement and hydrologic functions, and moderate wildlife potential. Wetland CC2 rating form is attached.

Wetland CC2 appears to be a City of Bellingham Category II wetland (1991 CAO) due to retention/detention of water in the system, potential sensitive habitat, and overall size greater than 10,000 square feet. The wetland also has a temporary surface water connection to Wetland CC1, which is connected to a tributary of Padden Creek.

Wetland MM

During further site investigation an additional wetland was observed near the northwest property corner (Figure 1). This wetland was delineated in the field and flagged as Wetland MM. Data sheet for the delineation are attached.

Wetland MM is a small slope wetland (2,402 sq.ft. or 0.06 acres). The wetland is classified as a palustrine forested wetland, dominated by evergreen trees, few shrubs, and a dense herbaceous understory. Species observed in the wetland included western red cedar, red alder, black twinberry, snowberry (*Symphoricarpos albus*), skunk cabbage, horsetail (*Equisetum arvense*), and lady fern.

Soils observed in Wetland MM (Sample Plot 22) had a black (10YR 2/1) silt loam top-soil, and a greenish black (Gley1 10Y 2.5/1) clayey silt loam sub-soil. Soils observed at this location did not meet NRCS hydric soil indicators. However, soils were determined to be hydric based on best professional judgment due to an observed dark surface layer over top of a gleyed sub-soil, and the presence of saturated soil conditions in August (after one month of no significant precipitation events).

Wetland MM is in the Padden Creek Watershed. Hydrology appears to be provided primarily by groundwater seeps. At the time of the site visit in August 2009 soils were saturated to the surface and a few small localized areas of standing water (zero to 0.5 inches) were observed. Water flows west towards the property line where it appears to infiltrate near the wetland edge.

A berm is located along the property line at the wetland edge. A small channel is located through the berm where water may occasionally flow west and into a ditch on the adjacent property at the base of the berm.

Wetland MM was categorized using the DOE's Wetland Rating System for Western Washington and appears to be a DOE Category III wetland. In general the wetland provides high wildlife opportunity, moderate water quality improvement, and low hydrologic and wildlife potential functions. Wetland MM rating form is attached.

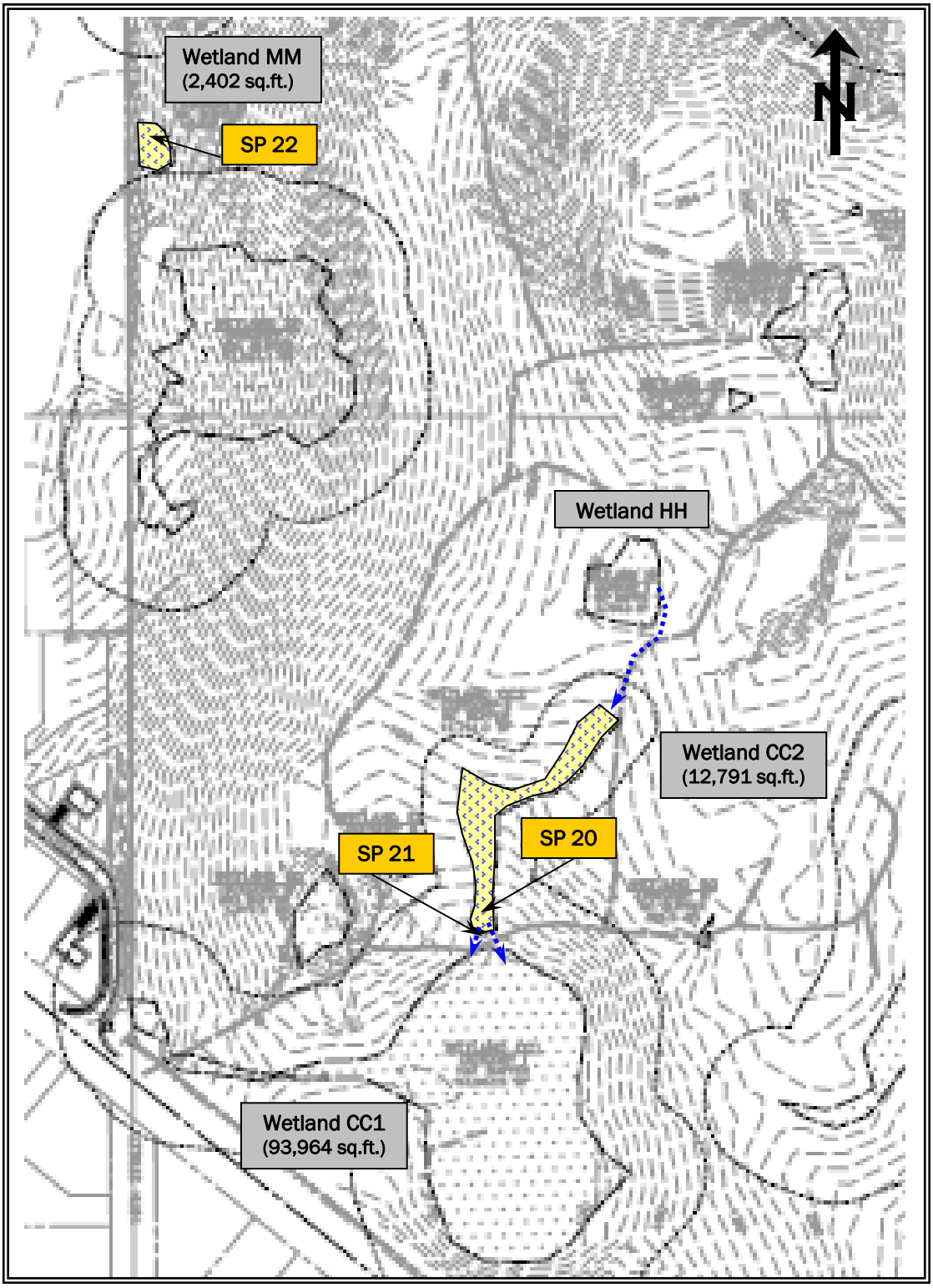
Wetland MM appears to be a City of Bellingham Category III wetland (1991 CAO). However, the wetland size is less than 10,000 square feet and therefore would not be regulated.

Jurisdiction and Regulations

Below is a summary of agencies that appear to have jurisdiction over Wetlands CC1, CC2, and MM. However, only those agencies have the authority to make jurisdictional determinations.

Table 2. City of Bellingham Regulated Buffer Widths for Wetlands CC2 and MM

Wetland	DOE Wetland Category	DOE Habitat Score	Size (sq.ft.)	COB Wetland Category (1991 CAO)	COB Regulated Buffer (feet)
CC2	III	24	12,791	II	50
MM	III	18	2,402	III	n/a



ECOLOGICAL NORTHWEST	**Wetland Map** **(surveyed by Jepsen & Assoc.)** **Fairhaven Highlands** **Wetland Delineation Report Addendum**	**Figure 1.** **8/12/09**

WETLAND DETERMINATION DATA FORM – Western Mountain, Valley Coast Region

Project Site: Chuckanut Ridge/ Greenbriar	City/County: Bellingham	Sample Date: 08/05/09
Applicant/Owner: Greenbriar	State: WA	Sample Point: 20
Investigator: Bodtke, Porter	Section/Township/Range: 12/37N/02E	
Landform (hillslope, terrace, etc):	Local Relief (concave, convex, none) :	Subregion: LRR A
Soil Map Unit Name: Everett- Urban Land Complex (52)		NWI Classification:
Are climatic/hydrologic conditions on the site typical of 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 ☐ No ☒ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** **Yes ☒ No ☐**
Remarks: WETLAND CC2. Positive indicators for all three parameters were observed at this location.	

VEGETATION

Tree Stratum (Plot size: 9 meters)	Absolute % Cover	Indicator Status	Dominant Species?
Thuja plicata	100	FAC	☒
		-	☐
		-	☐
		-	☐
Total Cover:	100		
Sapling/Shrub Stratum (Plot size: 3 meters)			
Thuja plicata	15	FAC	☒
		-	☐
		-	☐
		-	☐
		-	☐
Total Cover:	15		
Herb Stratum (Plot size: 1 meter)			
Polystichum munitum	5	FACU	☒
Lysichiton americanum	trace	OBL	☐
		-	☐
		-	☐
		-	☐
		-	☐
Total Cover:	5		
Woody Vine Stratum (Plot size:)			
n/a		-	☐
		-	☐
		-	☐
Total Cover:			
% Bare Ground in Herb Stratum: 80			

Dominance Test worksheet Number of Dominant Species that are OBL, FACW, or FAC:	2 (A)
Total number of dominant species across all strata:	3 (AB)
Percent of dominant species that or OBL, FACW, FAC:	66.6 (A/AB)

Prevalence Index worksheet	
OBL species:	x 1=
FACW species:	x 2=
FAC species:	x 3=
FACU species:	x 4=
UPL species:	x 5=
Total: (A)	(B)
Prevalence Index = B/A =	

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is > 50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Remarks: The majority of dominant species observed at this location were hydrophytic.

Hydrophytic Vegetation Present?

Yes ☒ No ☐

SOIL

Sample Point: 20

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

Depth	Soil Color		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2 & 3/2	100			-	-	SL	
6-10	10YR 3/2	100			-	-	SL	
10-20	10YR 5/2	70	10YR 4/4	30	C	M	SL	gravelly
					-	-		
					-	-		
					-	-		
					-	-		
					-	-		

[1]Type: C=concentration D=depletion RM=reduced matrix [2]Location: PL=pore lining RC=root channel M=matrix

Hydric Soil Indicators: (applicable to all LRRs unless otherwise noted)

- ☐ Histosol (A1)
- ☐ Histic Epidedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red parent material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ☒ No ☐

Remarks: Soil observed at this location met NRCS hydric soil indicators.

HYDROLOGY

Wetland hydrology Indicators:
Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-stained Leaves (B9) (**except NW coast)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along living roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☒ Water-stained (B9) (**NW coast)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Front-heave Hummocks (D4)
- ☐ FAC-neutral (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

Saturation Present? Yes ☐ No ☒ Depth (inches): (include capillary fringe)

Wetland Hydrology Present?

Yes ☒ No ☐

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

Remarks: Positive indicators of wetland hydrology were observed at this location. Soils were moist but not damp. No significant rainfall in the past month.

WETLAND DETERMINATION DATA FORM – Western Mountain, Valley Coast Region

Project Site: Chuckanut Ridge/ Greenbriar	City/County: Bellingham	Sample Date: 08/05/09
Applicant/Owner: Greenbriar	State: WA	Sample Point: 21
Investigator: Bodtke, Porter	Section/Township/Range: 12/37N/02E	
Landform (hillslope, terrace, etc):	Local Relief (concave, convex, none) :	Subregion: LRR A
Soil Map Unit Name: Everett- Urban Land Complex (52)		NWI Classification:
Are climatic/hydrologic conditions on the site typical of 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 ☒ No ☐ Hydric Soil Present? Yes ☐ No ☒ Wetland Hydrology Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** **Yes ☐ No ☒**
Remarks: Positive indicators for all three parameters were not observed at this location.	

VEGETATION

Tree Stratum (Plot size: 9 meters)	Absolute % Cover	Indicator Status	Dominant Species?
Thuja plicata	95	FAC	☒
Betula papyrifera	10	FAC	☐
Pseudotsuga menziesii	5	FACU	☐
		-	☐
Total Cover:	110		
Sapling/Shrub Stratum (Plot size: 3 meters)			
Thuja plicata	20	FAC	☒
Rubus spectabilis	10	FAC	☒
Rubus parviflorus	5	FAC	☐
Holodiscus discolor	5	UPL	☐
		-	☐
Total Cover:	40		
Herb Stratum (Plot size: 1 meter)			
Polystichum munitum	15	FACU	☒
Athyrium filix-femina	5	FAC	☐
Ranunculus acris	5	FACW	☐
Rubus ursinus	5	FACU	☐
		-	☐
		-	☐
Total Cover:	30		
Woody Vine Stratum (Plot size:)			
n/a		-	☐
		-	☐
		-	☐
Total Cover:			
% Bare Ground in Herb Stratum:			

Dominance Test worksheet Number of Dominant Species that are OBL, FACW, or FAC:	3 (A)	
Total number of dominant species across all strata:	4 (AB)	
Percent of dominant species that or OBL, FACW, FAC:	75 (A/AB)	
Prevalence Index worksheet		
OBL species: 0	x 1= 0	
FACW species: 5	x 2= 10	
FAC species: 145	x 3= 435	
FACU species: 25	x 4= 100	
UPL species: 5	x 5= 25	
Total: 180 (A)	570 (B)	
Prevalence Index = B/A = 3.16		

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is > 50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Remarks: The majority of dominant species observed at this location were hydrophytic. However, using the prevalence test the vegetation is not hydrophytic. Do to the location of this sample plot, closely situated between two wetlands, vegetation is mixed.	**Hydrophytic Vegetation Present?** **Yes ☒ No ☐**

SOIL

Sample Point: 21

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

Depth	Soil Color		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/2	100			-	-	L	very gravelly with cobbles
16-20	7.5YR 3/2	100			-	-	L	very gravelly with cobbles
					-	-		
					-	-		
					-	-		
					-	-		
					-	-		
					-	-		

[1]Type: C=concentration D=depletion RM=reduced matrix [2]Location: PL=pore lining RC=root channel M=matrix

Hydric Soil Indicators: (applicable to all LRRs unless otherwise noted)

- ☐ Histosol (A1)
- ☐ Histic Epidedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red parent material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ☐ No ☒

Remarks: The soil column was very dense, compact and extremely dry and friable. Soil observed at this location did not met NRCS hydric soil indicators.

HYDROLOGY

Wetland hydrology Indicators:
Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-stained Leaves (B9) (**except NW coast)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along living roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-stained (B9) (**NW coast)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Front-heave Hummocks (D4)
- ☐ FAC-neutral (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

Saturation Present? Yes ☐ No ☒ Depth (inches): (include capillary fringe)

Wetland Hydrology Present?

Yes ☐ No ☒

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

Remarks: Sufficient positive indicators of wetland hydrology were not observed at this location. This sample plot is located in a small draw that is not very defined, but where water occasionally appears to flow from Wetland CC2 to Wetland CC1. At the time of the site visit, soils were very dry.

WETLAND DETERMINATION DATA FORM – Western Mountain, Valley Coast Region

Project Site: Chuckanut Ridge/ Greenbriar	City/County: Bellingham	Sample Date: 08/05/09
Applicant/Owner: Greenbriar	State: WA	Sample Point: 22
Investigator: Bodtke, Porter	Section/Township/Range: 12/37N/02E	
Landform (hillslope, terrace, etc):	Local Relief (concave, convex, none) :	Subregion: LRR A
Soil Map Unit Name: Squalicum- Urban Land Complex (159)		NWI Classification:

Are climatic/hydrologic conditions on the site typical of 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 ☒ No ☐ Hydric Soil Present? Yes ☒ No ☐ Wetland Hydrology Present? Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** **Yes ☒ No ☐**
Remarks: WETLAND MM. Positive indicators for all three parameters were observed at this location.	

VEGETATION

Tree Stratum (Plot size: 9 meters)	Absolute % Cover	Indicator Status	Dominant Species?
Thuja plicata	95	FAC	☒
Alnus rubra	10	FAC	☐
		-	☐
		-	☐
Total Cover:	105		
Sapling/Shrub Stratum (Plot size: 3 meters)			
Thuja plicata	10	FAC	☒
Symphoricarpos albus	Trace	FACU	☐
		-	☐
		-	☐
		-	☐
Total Cover:	10		
Herb Stratum (Plot size: 1 meter)			
Lysichiton americanum	80	OBL	☒
Equisetum arvense	20	FAC	☐
Athyrium filix-femina	20	FAC	☐
		-	☐
		-	☐
		-	☐
Total Cover:	120		
Woody Vine Stratum (Plot size:)			
n/a		-	☐
		-	☐
		-	☐
Total Cover: % Bare Ground in Herb Stratum:			

Dominance Test worksheet Number of Dominant Species that are OBL, FACW, or FAC:	3 (A)
Total number of dominant species across all strata:	3 (AB)
Percent of dominant species that or OBL, FACW, FAC:	100 (A/AB)

Prevalence Index worksheet

OBL species:	x 1=
FACW species:	x 2=
FAC species:	x 3=
FACU species:	x 4=
UPL species:	x 5=
Total: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is > 50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Remarks: The majority of dominant species observed at this location were hydrophytic.

Hydrophytic Vegetation Present?

Yes ☒ No ☐

SOIL

Sample Point: 22

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

Depth	Soil Color		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	100			-	-	SL	slightly mucky, gravelly at 14"
16-20	Gley1 10Y 2.5/1	100			-	-	Clayey SL	with cobbles
					-	-		
					-	-		
					-	-		
					-	-		
					-	-		
					-	-		

[1]Type: C=concentration D=depletion RM=reduced matrix [2]Location: PL=pore lining RC=root channel M=matrix

Hydric Soil Indicators: (applicable to all LRRs unless otherwise noted)

- ☐ Histosol (A1)
- ☐ Histic Epidedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (except MLRA 1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red parent material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ☒ No ☐

Remarks: Soil observed at this location did not met NRCS hydric soil indicators. However, soils were determined to be hydric based on an a very dark thick surface layer, gleyed sub-soil, saturated soils in August, and best professional judgment.

HYDROLOGY

Wetland hydrology Indicators:
Primary Indicators (any one indicator is sufficient)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-stained Leaves (B9) (**except NW coast)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along living roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-stained (B9) (**NW coast)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Front-heave Hummocks (D4)
- ☐ FAC-neutral (D5)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): **0.5**

Water Table Present? Yes ☒ No ☐ Depth (inches): **0**

Saturation Present? Yes ☒ No ☐ Depth (inches): **0** (include capillary fringe)

Wetland Hydrology Present?

Yes ☒ No ☐

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

Remarks: Positive indicators of wetland hydrology were observed at this location. A ground water seep appears to provide hydrology to this wetland.

Wetland Rating Field Data Form- Western Washington

Background Information:

Name of Rater: Bodtke, Porter Affiliation: NW Ecological Date of site visit: 8/5/09

Name of Wetland (if known): Wetland CC2

Government Jurisdiction of Wetland: Whatcom Co., Army Corps of Engineers, Dept. of Ecology

Location (attach map with outline of wetland to rating form):

¼Section: NE Section: 12 Township: 37N Range: 2E

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	9
Score for Hydrologic Functions	14
Score for Habitat Functions	24
TOTAL score for Functions	47

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐ II ☐ III ☐ Does not apply ☒

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

Check the appropriate type and class of wetland being rated.

WETLAND TYPE		WETLAND CLASS	
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	☐		

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

If the answer to any of the questions below is YES than the wetland will need to be protected according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.	☐	☒
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered animal species?* For the purpose of this rating system, "documented" means the wetland is on the appropriate state database.	☐	☒
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?* **See EIS Plant and Animal Tech report**	☒	☐
SP4. *Does the wetland have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance. **COB Wildlife Habitat Analysis**	☒	☐

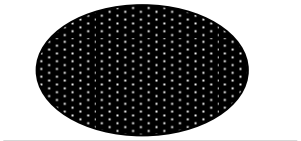
DEPRESSIONAL AND FLATS WETLANDS	Points
Water Quality Functions – Indicators that wetland functions to improve the water quality.	
D1 Does the wetland unit have the potential to improve water quality?	----------
D1.1 Characteristics of surface water which flows out of the wetland: ☐ Unit is a depression with no surface water leaving it (no outlet) 3 pts ☒ Unit has intermittently flowing, or highly constricted permanently flowing outlet 2 pts ☐ Unit has an un-constricted, or slightly constricted, surface outlet (permanently flowing) 1 pt ☐ Unit is a flat depression (Q.7), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch 1 pt *(If ditch is not permanently flowing, treat unit as intermittently flowing)*	2
D1.2 The soil two inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*) ☐ YES 4 pts ☒ NO 0 pts	0
D1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class): ☐ Wetland has persistent, ungrazed, vegetation in >95% of the area 5 pts ☒ Wetland has persistent, ungrazed, vegetation in ≥ ½ of the area 3 pts ☐ Wetland has persistent, ungrazed, vegetation in ≥ 1/10 of the area 1 pt ☐ Wetland has persistent, ungrazed, vegetation in< 1/10 of the area 0 pts	3
D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least two months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition five out of 10 years.* ☒ Area seasonally ponded is > ½ total area of the wetland 4 pts ☐ Area seasonally ponded is > ¼ total area of the wetland 2 pts ☐ Area seasonally ponded is < ¼ total area of the wetland 0 pts	4
Total for D1 *Add the points in the boxes above*	9
D2 Does the wetland unit have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce quality in streams, lakes, or groundwater down gradient from the wetland. *Note which of the following conditions provide the sources of pollutants, A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 feet ☐ Untreated stormwater discharges to the wetland ☐ Tilled fields or orchards within 150 feet of the wetland ☐ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☐ Residential, urban areas, or golf courses are within 150 feet of wetland ☐ Wetland is fed by groundwater high in phosphorus or nitrogen ☐ Other YES = multiplier is 2 NO = multiplier is 1	Multiplier = 1
Total- Water Quality Functions Multiply the score from D1 by D2 *Add the score to the table on page 1*	9

DEPRESSIONAL AND FLATS WETLANDS	Points
Hydrologic Functions Indicators that wetland functions to reduce flooding and stream degradation.	
D3 Does the wetland unit have the <u>potential</u> to reduce flooding and erosion?	----------
D3.1 Characteristics of surface water flows out of the wetland unit: ☐ Unit is a depression with no surface water leaving (no outlet) 4 pts ☒ Unit has an intermittently flowing, OR highly constricted permanently flowing outlet 2 pts ☐ Unit is flat depression (Q.7), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch 1 pt *(If ditch is not permanently flowing, treat unit as intermittently flowing)* ☐ Unit has an un-constricted, or slightly constricted, surface outlet (*permanently flowing*) 0 pts	2
D3.2 Depth of Storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet, measure from the surface of permanent water or deepest part (if dry).* ☐ Marks of ponding are 3 ft or more above the surface or bottom of outlet 7 pts ☐ The wetland is a headwater wetland 5 pts ☐ Marks of ponding between 2 ft to < 3 ft from the surface or bottom of outlet 5 pts ☐ Marks are at least 0.5 ft to < 2 ft from the surface or bottom of outlet 3 pts ☐ Unit is flat (yes to Q.2 or Q.7) but has small depressions on the surface that trap water 1 pt ☒ Marks of ponding less than 0.5 ft 0 pts	0
D3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of: the area of upstream basin contributing surface water to the wetland, to the area of the wetland unit itself.* ☒ The area of the basin is less than 10 times the area of the unit 5 pts ☐ The area of the basin is 10 to 100 times the area of the unit 3 pts ☐ The area of the basin is more than 100 times the area of the unit 0 pt ☐ Entire unit is in the FLATS class 5 pts	5
Total for D3 *Add the points in the boxes above*	7
D4 Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion? Answer YES if the wetland is in a location in the watershed where it provides flood storage, or reduction in water velocity; it 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 floodgate, tide gate, flap valve, reservoir, etc.; OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ☐ Wetland is in a headwater of a river or stream that has flooding problems ☒ Wetland drains to a river or stream that has flooding problems ☐ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ☐ Other YES = multiplier is 2 NO = multiplier is 1	Multiplier = 2
<u>Total- Hydrologic Functions</u> Multiply the score from D3 by D4 *Add score to table on page 1*	14

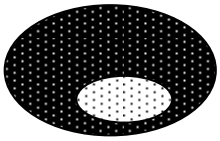
HABITAT FUNCTIONS Indicators that the wetland functions to provide important habitat	Points
H1 Does the wetland unit have the <u>potential</u> to provide habitat for many species?	----------
H1.1 Vegetation structure *Check the types of vegetation classes present (as defined in Cowardin) - Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller that 2.5 acres.* ☐ Aquatic bed ☐ Emergent plants ☐ Scrub/shrub- areas where shrubs have >30% cover ☒ Forested- areas where trees have >30% cover *If the unit has a forested class, check if:* ☐ Forested areas have three out of five strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation types that qualify. If you have:* 4 or more structures 4 pts 3 structures 2 pts 2 structures 1 pt 1 structure 0 pts	0
H1.2 Hydroperiods *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.* ☐ Permanently flooded or inundated — 4 or more present 3 pts ☒ Seasonally flooded or inundated — 3 present 2 pts ☐ Occasionally flooded or inundated — 2 present 1 pt ☒ Saturated only — 1 present 0 pts ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake-fringe wetland** **2 pts** ☐ **Freshwater tidal wetland** **2 pts**	1
H1.3 Richness of Plant Species Count the number of plant species in the wetland that cover at least 10 square feet. *(Different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* Do no include Eurasian Milfoil, reed canary grass, purple loosestrife, or Canadian thistle Number of Species Counted: ☐ >19 species 2 pts ☒ 5-19 species 1 pt ☐ <5 species 0 pts List of species counted (not required):	1

H1.4 Interspersion of Habitats

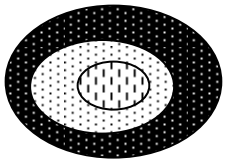
Decide from the diagrams below, whether interspersion between Cowardin vegetation classes (described in H1.1), or the classes and un-vegetated areas (can include open water or mudflats) is high, medium, low, or none.



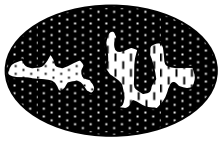
None = 0 points

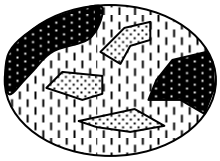


Low = 1 point



Moderate = 2 points





(Riparian braided channels)

High = 3 points

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

0

H1.5 Special Habitat Features

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

- ☒ Large, downed, woody debris within the wetland (>4 inches diameter and 6ft long)
- ☒ Standing snags in the wetland (diameter at bottom >4 inches)
- ☐ Undercut banks are present for at least 6.6ft (2m) and/or overhanging vegetation which extends at least 3.3ft (1m) over a stream for at least 33 ft (10m)
- ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present
- ☒ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in area that are permanently or seasonally inundated (structures for egg-laying by amphibians)
- ☒ Invasive plants cover less than 25% of the wetland area in each stratum of plants

4

H1. Total Score – potential for providing habitat

Add the scores in all H1 columns above

6

Comments:

H2. Does the wetland unit have the <u>opportunity</u> to provide habitat for many species?	Points
H2.1 Buffers *Choose the description that best represents the condition of the buffer of the wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* ☒ 100m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. No structures are within undisturbed part of buffer. (Relatively undisturbed also means no-grazing, no landscaping, no daily human use.) **5 pts** ☐ 100m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >50% circumference. **4 pts** ☐ 50m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **4 pts** ☐ 100m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >25% circumference. **3 pts** ☐ 50m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >50% circumference. **3 pts** **If the buffer does not meet any of the above criteria** ☐ No paved areas (except paved trails) or buildings within 25m (80ft) of wetland >95% circumference. Light to moderate grazing, or lawns are OK. **2 pts** ☐ No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **2 pts** ☐ Heavy grazing in the buffer. **1 pt** ☐ 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). **0 pts** ☐ Buffer does not meet any of the criteria above. **1 pt**	5
H2.2 Corridors and Connections **H2.2.1** Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150ft wide, has at least 30% cover of shrubs, forest, or native undisturbed prairie, that connects to estuaries, other wetlands, or undisturbed uplands that are at least 250 acres in size? Dams in riparian corridors, heavily used gravel roads, and paved roads are considered breaks in the corridor. <u>YES = **4 points** (go to question H 2.3)</u> NO = go to question H2.2.2 **H2.2.2** Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands, or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above. YES = **2 points** (go to question H2.3) NO = go to question H2.2.3. **H2.2.3** Is the wetland: ☐ within five miles (8km) of a brackish or salt water estuary OR ☐ within three miles of a large field or pasture (>40 acres) OR ☐ within one mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	4

H2.3 Near or adjacent to other priority habitats listed by WDFW *(updated Oct 2008)* Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*	Points
☐ **Aspen Stands**: Pure or mixed stands of aspen greater than 0.4ha (1 acre). ☒ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife. (Full description 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) which are >81 cm (32 in) dbh or > 200 yrs of age. Mature Forests- Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100% ; decay, decadence, numbers of snags, and quality of large downed material is generally less than that found in old-growth; 80-200 yr old west of the Cascade crest. ☐ **Oregon White Oak**: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (full description 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 wet prairie (full description 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 description in WDFW PHS report p. 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 (25ft) high and occurring below 5000ft. ☐ **Talus**: Homogeneous areas of rock rubble ranging in average size from 0.15 to 2.0 m (0.5 to 6.5ft), composed as 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 DBH of >51 cm (20 in) in Western Washington and are >2M (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 the wetland has 3 or more priority habitats **4 pts** 2 priority habitats **3 pts** 1 priority habitat **1 pt** no priority habitats **0 pts**	4

H2.4 Wetland Landscape (*see p.85)*	Points
Choose the one description of the landscape around the wetland that best fits. ☒ There are at least three 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, field, or other development). **5 pts** ☐ The wetland is Lake-fringe on a lake with little disturbance and there are three other lake-fringe wetlands within ½ mile. **5 pts** ☐ There are at least three other wetlands with in ½ mile, BUT the connection between them is disturbed. **3 pts** ☐ The wetland is Lake-fringe on a lake WITH disturbance and there are three other lake-fringe wetlands within ½ mile. **3 pts** ☐ There is at least one other wetland within ½ mile. **2 pts** ☐ There are no other wetlands within ½ mile. **0 pts**	5
H2. Total Score - opportunity to provide habitat *Add the scores in all of the H2 columns above*	18
Total for H1	6
Total Score for Habitat Functions- *Add the points from the total H1 and H2 boxes* *Add the score to table on page 1*	24

Wetland Rating Field Data Form- Western Washington

Background Information:

Name of Rater: Bodtke, Porter Affiliation: NW Ecological Date of site visit: 8/5/09

Name of Wetland (if known): Wetland MM

Government Jurisdiction of Wetland: COB, USACOE, WDOE

Location (attach map with outline of wetland to rating form):

¼Section: NE Section: 12 Township: 37N Range: 2E

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	6
Score for Habitat Functions	18
TOTAL score for Functions	30

Category based on SPECIAL CHARACTERISTICS of wetland

I ☐ II ☐ III ☐ Does not apply ☒

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

Check the appropriate type and class of wetland being rated.

WETLAND TYPE		WETLAND CLASS	
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	☐		

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

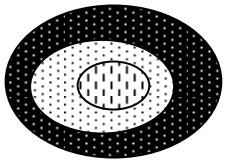
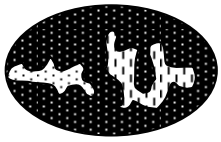
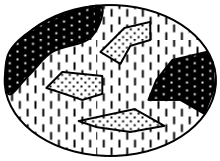
If the answer to any of the questions below is YES than the wetland will need to be protected according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That Need Special Protection, and That Are Not Included in the Rating	YES	NO
SP1. *Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered animal or plant species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.	☐	☒
SP2. *Has the wetland been documented as habitat for any State listed Threatened or Endangered animal species?* For the purpose of this rating system, "documented" means the wetland is on the appropriate state database.	☐	☒
SP3. *Does the wetland contain individuals of Priority species listed by the WDFW for the state?* **See EIS Plant and Animal Tech report**	☒	☐
SP4. *Does the wetland have a local significance in addition to its functions?* For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance. **COB Wildlife Habitat Analysis**	☒	☐

SLOPE WETLANDS	Points
WATER QUALITY FUNCTIONS – Indicators that wetland functions to improve the water quality.	
S1. Does the wetland unit have the potential to improve water quality?	----------
S1.1 Characteristics of the average slope of unit: ☐ Slope is 1% or less (*a 1% slope has a one foot drop in elevation for every 100ft in horizontal distance)* 3 pts ☐ Slope is 1% to 2% 2 pts ☐ Slope is 2% to 5% 1 pt ☒ Slope is greater than 5% 0 pts	0
S1.2 The soil two inches below the surface (or duff layer) is clay or organic (*use NRCS definitions*). ☐ YES 3 pts ☒ NO 0 pts	0
S1.3 Characteristics of vegetation in the wetland that trap sediments and pollutants: *Choose the points appropriate for the description that bests fits the vegetation in the wetland. Dense vegetation means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than six inches. .* ☒ Dense, un-grazed, herbaceous vegetation in >90% of the area 6 pts ☐ Dense, un-grazed, herbaceous > ½ of the area 3 pts ☐ Dense, woody, vegetation in > ½ of the area 2 pts ☐ Dense, un-grazed, herbaceous vegetation in< ¼ of the area 1 pt ☐ Does not meet any of the criteria above for vegetation 0 pts	6
Total for S1 *Add the points in the boxes above*	6
S2. Does the wetland unit have the opportunity to improve water quality? Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes, or groundwater down-gradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 feet ☐ Untreated stormwater discharges to the wetland ☐ Tilled fields or orchards within 150 feet of the wetland ☐ Residential, urban areas, or golf courses are within 150 feet of wetland ☐ Other YES = multiplier is 2 NO = multiplier is 1	Multiplier = 1
Total- Water Quality Functions Multiply the score from S1 by S2 *Add the score to the table on page 1*	6

SLOPE WETLANDS	Points
HYDROLOGIC FUNCTIONS- Indicators that wetland functions to reduce flooding and stream degradation.	
S3. Does the wetland unit have the <u>potential</u> to reduce flooding and stream erosion?	----------
S3.1 Characteristics of vegetation that reduce the velocity of surface flows during storms. *Choose the points appropriate for the description that best fit conditions in the wetland (stems of plants should be thick enough (usually >1/8 inch), or dense enough, to remain erect during surface flows).* ☐ Dense, uncut, **rigid**, vegetation covers >90% of the area of the wetland 6 pts ☒ Dense, uncut, **rigid** vegetation > ½ area 3 pts ☐ Dense, uncut, **rigid** vegetation > ¼ area 1 pt ☐ More than ¼ of the area is grazed, mowed, tilled, or vegetation is not rigid 0 pts	3
S3.2 Characteristic of slope wetlands that hold back small amounts of flood flows: The slope wetland has small surface depressions that can retain water over at least 10% of its area? YES 2 pts NO 0 pts	0
Total for D3 *Add the points in the boxes above*	3
S4. Does the wetland unit have the <u>opportunity</u> to reduce flooding and erosion? Is the wetland in a landscape position where the reduction in water velocity it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows? *Note which of the following indicators of opportunity apply.* ☒ Wetland has surface runoff that drains to a river or stream that has flooding problems ☐ Other: Answer NO if the major source of water is controlled by a reservoir (e.g. the wetland is a seep that is on the downstream side of a dam) YES = multiplier is 2 NO = multiplier is 1	Multiplier = 2
Total- Hydrologic Functions Multiply the score from S3 by S4 *Add score to table on page 1*	6

HABITAT FUNCTIONS Indicators that the wetland functions to provide important habitat			Points
H1 Does the wetland unit have the <u>potential</u> to provide habitat for many species?			----------
H1.1 Vegetation structure *Check the types of vegetation classes present (as defined in Cowardin) - Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller that 2.5 acres.* ☐ Aquatic bed ☐ Emergent plants ☐ Scrub/shrub- areas where shrubs have >30% cover ☒ Forested- areas where trees have >30% cover *If the unit has a forested class, check if:* ☐ Forested areas have three out of five strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation types that qualify. If you have:*	4 or more structures 3 structures 2 structures 1 structure	4 pts 2 pts 1 pt 0 pts	0
H1.2 Hydroperiods *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.* ☐ Permanently flooded or inundated ☐ Seasonally flooded or inundated ☐ Occasionally flooded or inundated ☒ Saturated only ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake-fringe wetland** ☐ **Freshwater tidal wetland**	4 or more present 3 present 2 present 1 present	3 pts 2 pts 1 pt 0 pts **2 pts** **2 pts**	0
H1.3 Richness of Plant Species Count the number of plant species in the wetland that cover at least 10 square feet. *(Different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* Do no include Eurasian Milfoil, reed canary grass, purple loosestrife, or Canadian thistle Number of Species Counted: ☐ >19 species ☒ 5-19 species ☐ <5 species List of species counted (not required):		2 pts 1 pt 0 pts	1

	Points
H1.4 Interspersion of Habitats Decide from the diagrams below, whether interspersion between types of vegetation (described in H1.1), or vegetation types and un-vegetated areas (can include open water or mudflats) is high, medium, low, or none.  None = 0 points Low = 1 point   Moderate = 2 points    (Riparian braided channels) High = 3 points NOTE: If you have four or more classes or three vegetation classes and open water, the rating is always "high".	0
H1.5 Special Habitat Features *Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the points column.* ☐ Large, downed, woody debris within the wetland (>4 inches diameter and 6ft long) ☐ Standing snags in the wetland (diameter at bottom >4 inches) ☐ Undercut banks are present for at least 6.6ft (2m) and/or overhanging vegetation which extends at least 3.3ft (1m) over a stream for at least 33 ft (10m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present ☐ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in area that are permanently or seasonally inundated (structures for egg-laying by amphibians) ☒ Invasive plants cover less than 25% of the wetland area in each stratum of plants	1
H1. Total Score – potential for providing habitat *Add the scores in all H1 columns above*	2

Comments:

H2. Does the wetland unit have the <u>opportunity</u> to provide habitat for many species?	Points
H2.1 Buffers *Choose the description that best represents the condition of the buffer of the wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating.* ☐ 100m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. No structures are within undisturbed part of buffer. (Relatively undisturbed also means no-grazing, no landscaping, no daily human use.) **5 pts** ☒ 100m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >50% circumference. **4 pts** ☐ 50m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **4 pts** ☐ 100m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >25% circumference. **3 pts** ☐ 50m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >50% circumference. **3 pts** **If the buffer does not meet any of the above criteria** ☐ No paved areas (except paved trails) or buildings within 25m (80ft) of wetland >95% circumference. Light to moderate grazing, or lawns are OK. **2 pts** ☐ No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **2 pts** ☐ Heavy grazing in the buffer. **1 pt** ☐ 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). **0 pts** ☐ Buffer does not meet any of the criteria above. **1 pt**	4
H2.2 Corridors and Connections **H2.2.1** Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150ft wide, has at least 30% cover of shrubs, forest, or native undisturbed prairie, that connects to estuaries, other wetlands, or undisturbed uplands that are at least 250 acres in size? Dams in riparian corridors, heavily used gravel roads, and paved roads are considered breaks in the corridor. <u>YES = **4 points** (go to question H 2.3)</u> NO = go to question H2.2.2 **H2.2.2** Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands, or undisturbed uplands that are at least 25 acres in size? OR a Lake-fringe wetland, if it does not have an undisturbed corridor as in the question above. YES = **2 points** (go to question H2.3) NO = go to question H2.2.3. **H2.2.3** Is the wetland: ☐ within five miles (8km) of a brackish or salt water estuary OR ☐ within three miles of a large field or pasture (>40 acres) OR ☐ within one mile of a lake greater than 20 acres? YES = **1 point** NO = **0 points**	4

	Points
H2.3 Near or adjacent to other priority habitats listed by WDFW *(updated Oct 2008)* 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 0.4ha (1 acre). ☒ **Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife. (Full description 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) which are >81 cm (32 in) dbh or > 200 yrs of age. Mature Forests- Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100% ; decay, decadence, numbers of snags, and quality of large downed material is generally less than that found in old-growth; 80-200 yr old west of the Cascade crest. ☐ **Oregon White Oak**: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (full description 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 wet prairie (full description 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 description in WDFW PHS report p. 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 (25ft) high and occurring below 5000ft. ☐ **Talus**: Homogeneous areas of rock rubble ranging in average size from 0.15 to 2.0 m (0.5 to 6.5ft), composed as 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 DBH of >51 cm (20 in) in Western Washington and are >2M (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 the wetland has 3 or more priority habitats **4 pts** 2 priority habitats **3 pts** 1 priority habitat **1 pt** no priority habitats **0 pts**	3

H2.4 Wetland Landscape Choose the one description of the landscape around the wetland that best fits.	Points
☒ There are at least three 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, field, or other development). **5 pts** ☐ The wetland is Lake-fringe on a lake with little disturbance and there are three other lake-fringe wetlands within ½ mile. **5 pts** ☐ There are at least three other wetlands with in ½ mile, BUT the connection between them is disturbed. **3 pts** ☐ The wetland is Lake-fringe on a lake WITH disturbance and there are three other lake-fringe wetlands within ½ mile. **3 pts** ☐ There is at least one other wetland within ½ mile. **2 pts** ☐ There are no other wetlands within ½ mile. **0 pts**	5
H2. Total Score - opportunity to provide habitat *Add the scores in all of the H2 columns above*	16
Total for H1	2
Total Score for Habitat Functions- *Add the points from the total H1 and H2 boxes* *Add the score to table on page 1*	18