



Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

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CRITICAL AREA STUDY

FOR

Back Forty – 13813 Chain Lake Road Plat

Wetland Resources, Inc. Project #17124

Prepared By
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Prepared For
Back Forty Construction, LLC
Attn: Shanna Clothier
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Monroe, WA 98272

September 28, 2017

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Executive Summary

Project Name: Back Forty – 13813 Chain Lake Road Plat

Location: Located at 13813 Chain Lake Road (tax parcel ID number 28073100201700), in the City of Monroe, Washington.

Client:

Back Forty Construction, LLC
Attn: Shanna Clothier
27419 118th St SE
Monroe, WA 98272

Wetland Resources Staff: Niels Pedersen (Senior Ecologist), Tess Amen (Associate Ecologist)

Critical Areas Determination: One wetland (Wetland A) was observed within the proposed project site. Wetland A is classified as a Category II wetland, and requires a 100-foot protective buffer in the City of Monroe. No other critical areas were observed on or near the subject property.

Proposed Project: The applicant proposes to create seven tax parcels from one existing parcel. All work will occur outside of the 100-foot buffer associated with Wetland A, and all structures will be placed outside of the 10-foot critical area building setback line. This project complies with chapter 20.05 of the Monroe Municipal Code (MMC). No critical area impacts are proposed, and no mitigation is required.

1.0 INTRODUCTION

1.1 PROJECT LOCATION

The proposed project site is comprised of one tax parcel (28073100201700) located at 13813 Chain Lake Road in the City of Monroe, Washington. The parcel is bound by Chain Lake Road to the north and west, and by Country Crescent Blvd and Rustic View Rd SE to the south. Surrounding land use is primarily low-density residential. The Public Land Survey System locator for the subject property is a portion of Section 31, Township 28N, Range 07E, W.M.

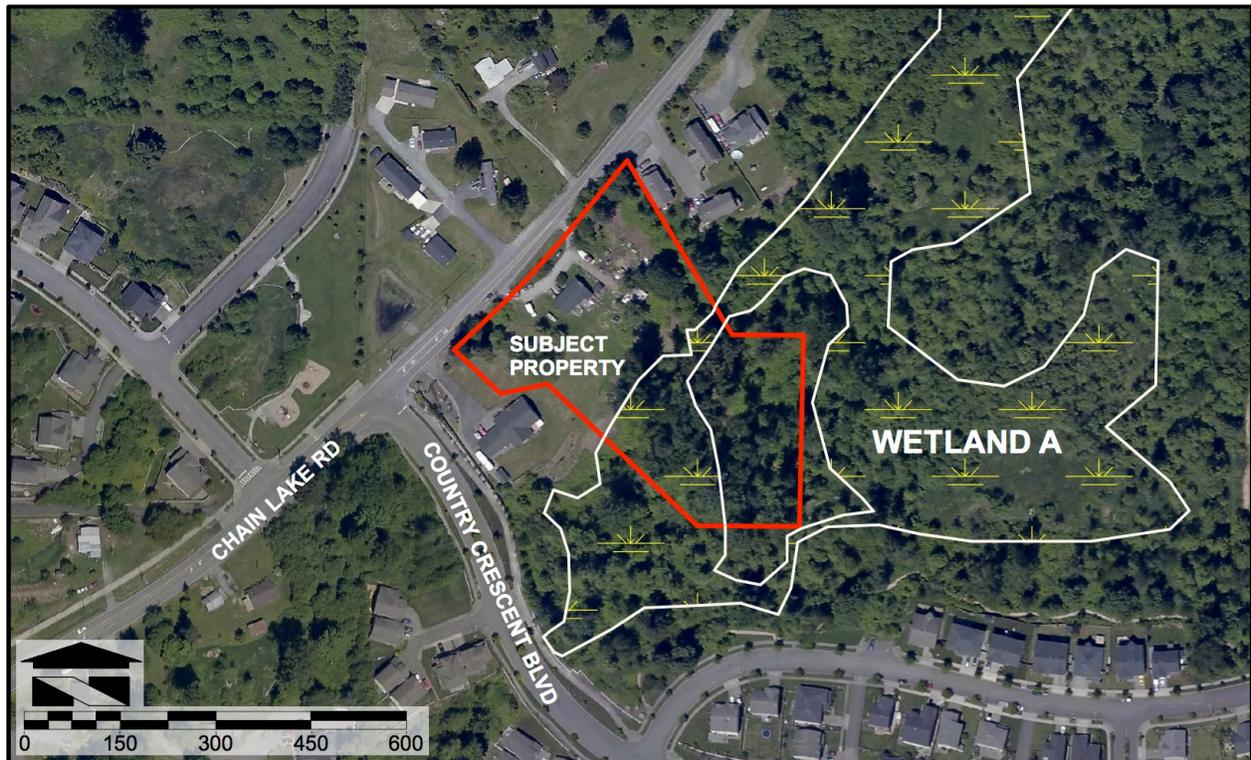


Figure 1: Aerial Overview

1.2 LANDSCAPE SETTING

Basin: Puget Sound

Sub-Basin: Water Resource Inventory Area (WRIA) 7 – Snohomish

Watershed: Skykomish River

Sub-Watershed: Woods Creek

The subject property is located north and just outside of downtown Monroe, and is approximately 1.3 miles north of the Skykomish River. Low-density residential uses, undeveloped forest, and fallow agricultural fields are present within the contributing basin of the site. A nearby tributary to Woods Creek drains the large wetland complex adjacent to the subject property to the south. Woods Creek drains directly to the Skykomish River, approximately two miles upstream from the confluence with the Snoqualmie River that forms the Snohomish River.

1.3 SITE DESCRIPTION

The study area is located at 13813 Chain Lake Road. The site slopes with a gentle east aspect down to a wetland located in the eastern portion of the subject property. On-site vegetation is mixed; the areas surrounding the existing SFR generally consist of gravel areas and lawn/pasture. Himalayan blackberry is the dominant shrub within this portion of the subject property. Reed canarygrass, creeping buttercup, Canada thistle, bull thistle, bentgrass, and common dandelion dominate the herbaceous layer in the vicinity of the existing residence. The eastern portion of the site is forested with black cottonwood and red alder dominating the partially-closed canopy. The understory is dominated by sapling black cottonwood, Himalayan blackberry and salmonberry with minor amounts of cut-leaf blackberry. The herbaceous layer in this area is comprised of creeping buttercup, bentgrass, fescue, reed canarygrass, rush, bulrush, lady fern, and skunk cabbage.

1.4 PROJECT DESCRIPTION

The applicant proposes to create seven tax parcels from one existing tax parcel. The existing single-family residence (SFR) will remain within proposed Lot 4. A non-conforming shed will be removed from within the 100-foot buffer associated with Wetland A.

No critical area impacts are proposed, and therefore no mitigation is required. This study is intended to document existing site conditions, and to demonstrate compliance with the MMC related to critical areas.

2.0 REGULATORY SETTING

2.1 CRITICAL AREAS CLASSIFICATION

This report accurately describes wetlands, streams, Fish and Wildlife Habitat Conservation Areas (FWHCAs), state shorelines, and Special Flood Hazard Areas (SFHAs). All other critical areas are outside the scope of this report.

Wetlands were classified in accordance with Monroe Municipal Code (MMC) section 20.05.030, which requires use of the Washington Department of Ecology Wetland Rating System for Western Washington “as revised.” Therefore the Washington Department of Ecology Wetland Rating System for Western Washington 2014 Update (Ecology Publication 14-06-029) was employed to classify the one wetland observed within the subject property.

Streams were classified in accordance with Washington Administrative Code section 222-016-030, as required by MMC 20.05.030. No streams were observed within the subject property.

FWHCAs were classified in accordance with the definition presented in MMC 20.05.030. No FWHCAs were observed within the subject property.

All streams that exceed twenty cubic feet per second average flow, lakes greater than 20 acres in total area, and marine waters are classified as shorelines of the state. No shorelines of the state are present in the vicinity of the subject property.

SFHAs were classified in accordance with the Flood Insurance Rate Maps (FIRMs) produced by the Federal Emergency Management Agency (FEMA), as required by MMC 20.05.030. No SFHAs are mapped in the vicinity of the subject property.

3.0 CRITICAL AREAS DETERMINATION METHODOLOGY

3.1 LIMIT OF STUDY

The proposed project occurs within one tax parcel. Lack of legal access prevents Wetland Resources, Inc. (WRI) staff from performing routine wetland determinations in surrounding areas. Wetland boundaries depicted outside of the subject property are estimated using best professional judgment based on visual observation (from the edge of legal access), comparison with topographic maps, and using publicly available resources (including the Stream & Wetlands Map, specifically Figure 9.09 of the 12.8.15 City of Monroe Comprehensive Plan).

3.2 WETLAND DETERMINATION AND DELINEATION

Wetlands were identified in accordance with MMC 20.05.030, which requires use of the currently approved federal manual and supplements. Wetlands boundaries were determined using the routine determination approach described in the currently approved manual and supplement, titled Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (U.S. Army Corps of Engineers 2010), respectively. Under the routine methodology, the process for making a wetland determination is based on three steps:

- 1.) Examination of the site for hydrophytic vegetation (species present and percent cover);
- 2.) Examination of the site for hydric soils;
- 3.) Determining the presence of wetland hydrology

The following criteria must be met in order to make a positive wetland determination.

3.2.1 Vegetation Criteria

The Corps Manual and 2010 Regional Supplement define hydrophytic vegetation as “*the assemblage of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence.*” Field indicators are used to determine whether the hydrophytic vegetation criteria have been met. Examples of these indicators include, but are not limited to, the rapid test for hydrophytic vegetation, a dominance test result of greater than 50%, and/or a prevalence index score less than or equal to 3.0.

3.2.2 Soils Criteria

The 2010 Regional Supplement (per the National Technical Committee for Hydric Soils) defines hydric soils as soils “*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 are used to determine whether a given soil meets the definition for hydric soils. Indicators are numerous and include, but are not limited to, presence of a histosol or histic epipedon, a sandy gleyed matrix, depleted matrix, and redoximorphic depressions.

3.2.3 Hydrology Criteria

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. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on the characteristics of vegetation and soils due to anaerobic and chemically reducing conditions, respectively. The strongest indicators include the presence of surface water, a high water table, and/or soil saturation within at least 12 inches of the soil surface.

3.3 STREAM DETERMINATION

Ordinary high water marks (OHWM) are delineated using the methodology described in the Washington State Department of Ecology document Determining the Ordinary High Water Mark on Streams in Washington State (Second Review Draft) (Olson and Stockdale 2010).

4.0 WETLAND AND STREAM DELINEATION REPORT

WRI was contracted by the applicant to delineate and catalogue wetlands and watercourses in the vicinity of the project area. Field delineation occurred on May 5, 2017. One wetland (Wetland A) was observed within the subject property. This feature extends off-site to the north, east, and south. Wetland A is a Category II wetland, and requires a 100-foot protective buffer in the City of Monroe. The Dept. of Ecology Wetland Rating Form for Wetland A is provided as Appendix A of this report.

Wetland Name	Ecology Score (Total, Habitat)	Wetland Category	Standard Buffer (feet)
A	22, 7	II	100

Table 1: Wetlands Located in the Project Area

4.1 REVIEW OF EXISTING INFORMATION

Prior to conducting the on-site investigations, public resources information was reviewed to gather background information on the project study area and surrounding areas in regards to wetlands, streams, and other critical areas.

USFWS National Wetlands Inventory

USFWS National Wetlands Inventory displays a Palustrine Forested/Emergent wetland located off-site, immediately east of the subject site. This wetland is described in this report as Wetland A. NWI also shows a riverine wetland further east (approximately 1,000 feet) of the subject site, associated with a separate Palustrine Forested/Emergent wetland.

Snohomish County Soils

The Natural Resources Conservation Service (NRCS) web soil survey was used to coarsely identify soil types in the project area. The subject property consists of Tokul gravelly medial loam, 0-8 percent slopes. This is not mapped as a hydric soil. The southern (forested) portion of the property is underlain by Terric Medisaprists, nearly level. Terric Medisaprists is considered a hydric soil.

Fish Presence

The Washington Department of Fish and Wildlife (WDFW), Pacific States Marine Fisheries Commission (PSMFC), and the Washington Dept. of Natural Resources (WADNR) are the primary agencies that provide publicly available information used for making fish presence determinations consistent with the water typing rules set forth in WAC 222-16-030. The following information represents the findings from each source.

WDFW SalmonScape Map Tool

SalmonScape is an online GIS database that contains publicly available resource information for fish population studies and general species distribution (both documented and modeled presence).

Fish use is depicted in a Type F stream off-site to the east of the subject site (Cutthroat Creek), which flows to Woods Creek, a tributary of the Skykomish River.

PSMFC StreamNet Map Tool

StreamNet is a fish distribution database maintained by the PSMFC as a regional clearinghouse for fish data.

Streamnet depicts a stream (Cutthroat Creek) in the same location as SalmonScape, indicating that the stream flows into Woods Creek, a tributary to the Skykomish River.

WDNR Forest Practices Activity Mapping Tool (FPAMT)

FPAMT is an online GIS database that aids the process of submitting a Forest Practices permit application. The tool is useful for the purposes of this study because WADNR models fish presence.

Fish use is depicted for the Cutthroat Creek, a stream that feeds Woods Creek (as displayed on SalmonScape and Streamnet).

WDFW Priority Habitat and Species (PHS) Maps

WDFW Priority Habitat and Species (PHS) Maps displays the NWI-mapped Palustrine Forested/Emergent wetland off-site to the east.

4.2 WETLAND DETERMINATION FINDINGS

Wetland A

Jurisdiction: City of Monroe

HGM Class: Depressional

Cowardin Classification: Palustrine, Forested

Ecology Score for Functions: 22/7 (total score/habitat score)

Ecology Rating: Category II

Monroe Buffer Requirement: 100 feet

Wetland A is an estimated eleven acres in total area. A small portion of the feature is located in the eastern portion of the subject property, and the majority extends off-site to the north, east, and south. The boundary was delineated on May 5, 2017 by Wetland Resources, Inc. staff and mapped using a high-accuracy Trimble GPS unit.

Observed vegetation within Wetland A is dominated by black cottonwood (*Populus balsamifera*; FAC), red alder (*Alnus rubra*; FAC), creeping buttercup (*Ranunculus repens*; FAC), and reed

canarygrass (*Phalaris arundinacea*; FACW). Soils within this wetland are generally very dark brown (10YR 2/2) sandy loam, with dark yellowish brown (10YR 3/6) redoximorphic features in the upper 0 to 9 inches. The sublayer, 9 to 16 inches, is generally dark grayish brown (2.5Y 4/2) sandy loam with dark yellowish brown (10YR 3/6) redoximorphic features. Wetland soils regularly met hydric soil indicator F3 Depleted Matrix. Wetland hydrology was observed as a high water table at 5 inches depth, and saturation was observed from the surface to the water table during the May 5, 2017 field investigation. The field investigation occurred during an abnormally wet period.

5.0 USE OF THIS REPORT

This Critical Area Study is supplied to Back Forty Construction, LLC as a means of determining critical area conditions, as required by the City of Monroe during the permitting process. 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.



Niels Pedersen
Senior Ecologist

Wetland Resources, Inc.



Tess Amen
Associate Ecologist

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APPENDIX A

ECOLOGY WETLAND RATING FORM FOR WESTERN WASHINGTON
(WETLAND A)

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Wetland name or number Wetland A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): 13813 Chain Lake Road - Wetland A Date of site visit: 5/5/2017

Rated by Niels Pedersen Trained by Ecology? Yes No Date of training 6/11/14

HGM Class used for rating DEPRESSIONAL Wetland has multiple HGM classes? Y N

NOTE: Form is not complete without the figures requested (figures can be combined).

Source of base aerial photo/map ESRI/Digital Globe

OVERALL WETLAND CATEGORY II (based on functions or special characteristics)

1. Category of wetland based on FUNCTIONS

 Category I – Total score = 23 - 27

Category II – Total score = 20 - 22

 Category III – Total score = 16 - 19

 Category IV – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>Circle the appropriate ratings</i>				
Site Potential	<input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L	H <input type="checkbox"/> M <input type="checkbox"/> L	H <input type="checkbox"/> M <input type="checkbox"/> L	
Landscape Potential	<input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L	H <input type="checkbox"/> M <input type="checkbox"/> L	H <input type="checkbox"/> M <input type="checkbox"/> L	
Value	<input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L	H <input type="checkbox"/> M <input type="checkbox"/> L	<input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L	TOTAL
Score Based on Ratings	9	6	7	22

Score for each function based on three ratings (order of ratings is not important)

9 = H,H,H

8 = H,H,M

7 = H,H,L

7 = H,M,M

6 = H,M,L

6 = M,M,M

5 = H,L,L

5 = M,M,L

4 = M,L,L

3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	<input checked="" type="checkbox"/>

Wetland name or number Wetland A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	A1
Hydroperiods	D 1.4, H 1.2	A1
Location of outlet (<i>can be added to map of hydroperiods</i>)	D 1.1, D 4.1	A1
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	D 2.2, D 5.2	A1
Map of the contributing basin	D 4.3, D 5.3	A2
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	A2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	A3
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	A4

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (<i>can be added to another figure</i>)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (<i>can be added to another figure</i>)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of dense trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of dense, rigid trees, shrubs, and herbaceous plants (<i>can be added to figure above</i>)	S 4.1	
Boundary of 150 ft buffer (<i>can be added to another figure</i>)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

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 except during floods?

NO – go to 2

YES – the wetland class is **Tidal Fringe** – go to 1.1

- 1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO – **Saltwater Tidal Fringe (Estuarine)**

YES – **Freshwater Tidal Fringe**

*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 an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

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 all** of the following criteria?

_ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (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**.

NO – go to 5

YES – The wetland class is **Slope**

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 <3 ft diameter and less than 1 ft deep).

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 2 years.

Wetland name or number Wetland A

NO – go to 6

YES – The wetland class is **Riverine**

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

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 the wetland unit being scored.

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 HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated		HGM class to use in rating
Slope + Riverine	<input type="checkbox"/>	Riverine
Slope + Depressional	<input checked="" type="checkbox"/>	Depressional
Slope + Lake Fringe	<input type="checkbox"/>	Lake Fringe
Depressional + Riverine along stream within boundary of depression	<input type="checkbox"/>	Depressional
Depressional + Lake Fringe	<input type="checkbox"/>	Depressional
Riverine + Lake Fringe	<input type="checkbox"/>	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	<input type="checkbox"/>	Treat as ESTUARINE

*If you are still unable 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 Wetland A

DEPRESSIONAL AND FLATS WETLANDS		
Water Quality Functions - Indicators that the site functions to improve water quality		
D 1.0. Does the site have the potential to improve water quality?		
D 1.1. Characteristics of surface water outflows from the wetland: <input type="checkbox"/> Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 <input checked="" type="checkbox"/> Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 <input type="checkbox"/> Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 <input type="checkbox"/> Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1		2
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions) Yes = 4 No = 0		4
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): <input type="checkbox"/> Wetland has persistent, ungrazed, plants > 95% of area points = 5 <input checked="" type="checkbox"/> Wetland has persistent, ungrazed, plants > ½ of area points = 3 <input type="checkbox"/> Wetland has persistent, ungrazed plants > 1/10 of area points = 1 <input type="checkbox"/> Wetland has persistent, ungrazed plants < 1/10 of area points = 0		3
D 1.4. Characteristics of seasonal ponding or inundation: <i>This is the area that is ponded for at least 2 months. See description in manual.</i> <input checked="" type="checkbox"/> Area seasonally ponded is > ½ total area of wetland points = 4 <input type="checkbox"/> Area seasonally ponded is > ¼ total area of wetland points = 2 <input type="checkbox"/> Area seasonally ponded is < ¼ total area of wetland points = 0		4
Total for D 1		13

Rating of Site Potential If score is: 12-16 = H ___ 6-11 = M ___ 0-5 = L Record the rating on the first page

D 2.0. Does the landscape have the potential to support the water quality function of the site?		
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0		0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0		1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0		1
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source _____ Yes = 1 No = 0		1
Total for D 2		3

Rating of Landscape Potential If score is: 3 or 4 = H ___ 1 or 2 = M ___ 0 = L Record the rating on the first page

D 3.0. Is the water quality improvement provided by the site valuable to society?		
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0		0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0		1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the basin in which the unit is found)? Yes = 2 No = 0		2
Total for D 3		3

Rating of Value If score is: 2-4 = H ___ 1 = M ___ 0 = L Record the rating on the first page

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Wetland name or number Wetland A

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?		
D 4.1. Characteristics of surface water outflows from the wetland:		
<input type="checkbox"/> Wetland is a depression or flat depression with no surface water leaving it (no outlet)	points = 4	2
<input checked="" type="checkbox"/> Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet	points = 2	
<input type="checkbox"/> Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch	points = 1	
<input type="checkbox"/> Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing	points = 0	
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.		
<input type="checkbox"/> Marks of ponding are 3 ft or more above the surface or bottom of outlet	points = 7	3
<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"/> The wetland is a "headwater" wetland	points = 3	
<input type="checkbox"/> Wetland is flat but has small depressions on the surface that trap water	points = 1	
<input type="checkbox"/> Marks of ponding less than 0.5 ft (6 in)	points = 0	
D 4.3. Contribution of the wetland 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.		
<input type="checkbox"/> The area of the basin is less than 10 times the area of the unit	points = 5	3
<input checked="" type="checkbox"/> The area of the basin is 10 to 100 times the area of the unit	points = 3	
<input type="checkbox"/> The area of the basin is more than 100 times the area of the unit	points = 0	
<input type="checkbox"/> Entire wetland is in the Flats class	points = 5	
Total for D 4	Add the points in the boxes above	8

Rating of Site Potential If score is: 12-16 = H 6-11 = M 0-5 = L Record the rating on the first page

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?		
D 5.1. Does the wetland receive stormwater discharges?	Yes = 1 <input type="checkbox"/> No = <input type="checkbox"/>	0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff?	<input type="checkbox"/> Yes = 1 <input type="checkbox"/> No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)?	Yes = 1 <input type="checkbox"/> No = <input type="checkbox"/>	0
Total for D 5	Add the points in the boxes above	1

Rating of Landscape Potential If score is: 3 = H 1 or 2 = M 0 = L Record the rating on the first page

D 6.0. Are the hydrologic functions provided by the site valuable to society?		
D 6.1. The unit is in a landscape that has flooding problems. Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.		
The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds):		
<input type="checkbox"/> • Flooding occurs in a sub-basin that is immediately down-gradient of unit.	points = 2	1
<input checked="" type="checkbox"/> • Surface flooding problems are in a sub-basin farther down-gradient.	points = 1	
<input type="checkbox"/> Flooding from groundwater is an issue in the sub-basin.	points = 1	
<input type="checkbox"/> The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. Explain why _____	points = 0	
<input type="checkbox"/> There are no problems with flooding downstream of the wetland.	points = 0	
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?		
	Yes = 2 <input type="checkbox"/> No = <input type="checkbox"/>	0
Total for D 6	Add the points in the boxes above	1

Rating of Value If score is: 2-4 = H 1 = M 0 = L Record the rating on the first page

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

- Aquatic bed 4 structures or more: points = 4
 - Emergent **3 structures: points = 2**
 - Scrub-shrub (areas where shrubs have > 30% cover) 2 structures: points = 1
 - Forested (areas where trees have > 30% cover) 1 structure: points = 0
- If the unit has a Forested class, check if:*
- The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

2

H 1.2. 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 ac to count (*see text for descriptions of hydroperiods*).

- Permanently flooded or inundated 4 or more types present: points = 3
- Seasonally flooded or inundated **3 types present: points = 2**
- Occasionally flooded or inundated 2 types present: points = 1
- Saturated only 1 type present: points = 0
- Permanently flowing stream or river in, or adjacent to, the wetland
- Seasonally flowing stream in, or adjacent to, the wetland
- Lake Fringe wetland** **2 points**
- Freshwater tidal wetland** **2 points**

2

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft².

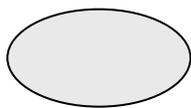
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle

- If you counted: **> 19 species** **points = 2**
- 5 - 19 species points = 1
 - < 5 species points = 0

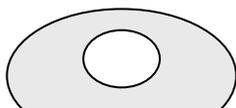
2

H 1.4. Interspersion of habitats

Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



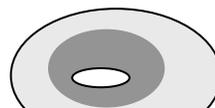
None = 0 points



Low = 1 point

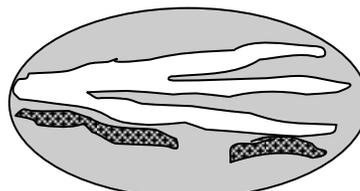
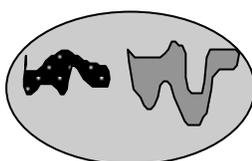


Moderate = 2 points



0

All three diagrams in this row are **HIGH** = 3points



Wetland name or number Wetland A

<p>H 1.5. Special habitat features: Check the habitat features that are present in the wetland. <i>The number of checks is the number of points.</i></p> <p><input checked="" type="checkbox"/> Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long).</p> <p><input checked="" type="checkbox"/> Standing snags (dbh > 4 in) within the wetland</p> <p><input type="checkbox"/> Undercut banks are present for at least 6.6 ft (2 m) and/or overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m)</p> <p><input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (<i>cut shrubs or trees that have not yet weathered where wood is exposed</i>)</p> <p><input checked="" type="checkbox"/> At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (<i>structures for egg-laying by amphibians</i>)</p> <p><input type="checkbox"/> Invasive plants cover less than 25% of the wetland area in every stratum of plants (<i>see H 1.1 for list of strata</i>)</p>		3
Total for H 1	Add the points in the boxes above	9

Rating of Site Potential If score is: 15-18 = H 7-14 = M 0-6 = L *Record the rating on the first page*

<p>H 2.0. Does the landscape have the potential to support the habitat functions of the site?</p>		
<p>H 2.1. Accessible habitat (include <i>only habitat that directly abuts wetland unit</i>). Calculate: % undisturbed habitat <u>62</u> + [(% moderate and low intensity land uses)/2] <u>0</u> = <u>62</u> % If total accessible habitat is:</p> <p><input type="checkbox"/> > 1/3 (33.3%) of 1 km Polygon points = 3</p> <p><input type="checkbox"/> 20-33% of 1 km Polygon points = 2</p> <p><input checked="" type="checkbox"/> 10-19% of 1 km Polygon points = 1</p> <p><input type="checkbox"/> < 10% of 1 km Polygon points = 0</p>		1
<p>H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. Calculate: % undisturbed habitat <u>22</u> + [(% moderate and low intensity land uses)/2] <u>14</u> = <u>36</u> %</p> <p><input type="checkbox"/> Undisturbed habitat > 50% of Polygon points = 3</p> <p><input type="checkbox"/> Undisturbed habitat 10-50% and in 1-3 patches points = 2</p> <p><input checked="" type="checkbox"/> Undisturbed habitat 10-50% and > 3 patches points = 1</p> <p><input type="checkbox"/> Undisturbed habitat < 10% of 1 km Polygon points = 0</p>		1
<p>H 2.3. Land use intensity in 1 km Polygon: If</p> <p><input type="checkbox"/> > 50% of 1 km Polygon is high intensity land use points = (- 2)</p> <p><input checked="" type="checkbox"/> ≤ 50% of 1 km Polygon is high intensity points = 0</p>		0
Total for H 2	Add the points in the boxes above	2

Rating of Landscape Potential If score is: 4-6 = H 1-3 = M < 1 = L *Record the rating on the first page*

<p>H 3.0. Is the habitat provided by the site valuable to society?</p>		
<p>H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? <i>Choose only the highest score that applies to the wetland being rated.</i></p> <p>Site meets ANY of the following criteria: points = 2</p> <p><input checked="" type="checkbox"/> It has 3 or more priority habitats within 100 m (see next page)</p> <p><input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists)</p> <p><input type="checkbox"/> It is mapped as a location for an individual WDFW priority species</p> <p><input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources</p> <p><input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan</p> <p><input type="checkbox"/> Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1</p> <p><input type="checkbox"/> Site does not meet any of the criteria above points = 0</p>		2

Rating of Value If score is: 2 = H 1 = M 0 = L *Record the rating on the first page*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. <http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here: <http://wdfw.wa.gov/conservation/phs/list/>)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE:** This question is independent of the land use between the wetland unit and the priority habitat.

- Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- 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).
- 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 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- Oregon White Oak:** Woodland 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 – see web link above).
- 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 – see web link above).
- 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 – see web link on previous page).
- 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 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), 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 > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

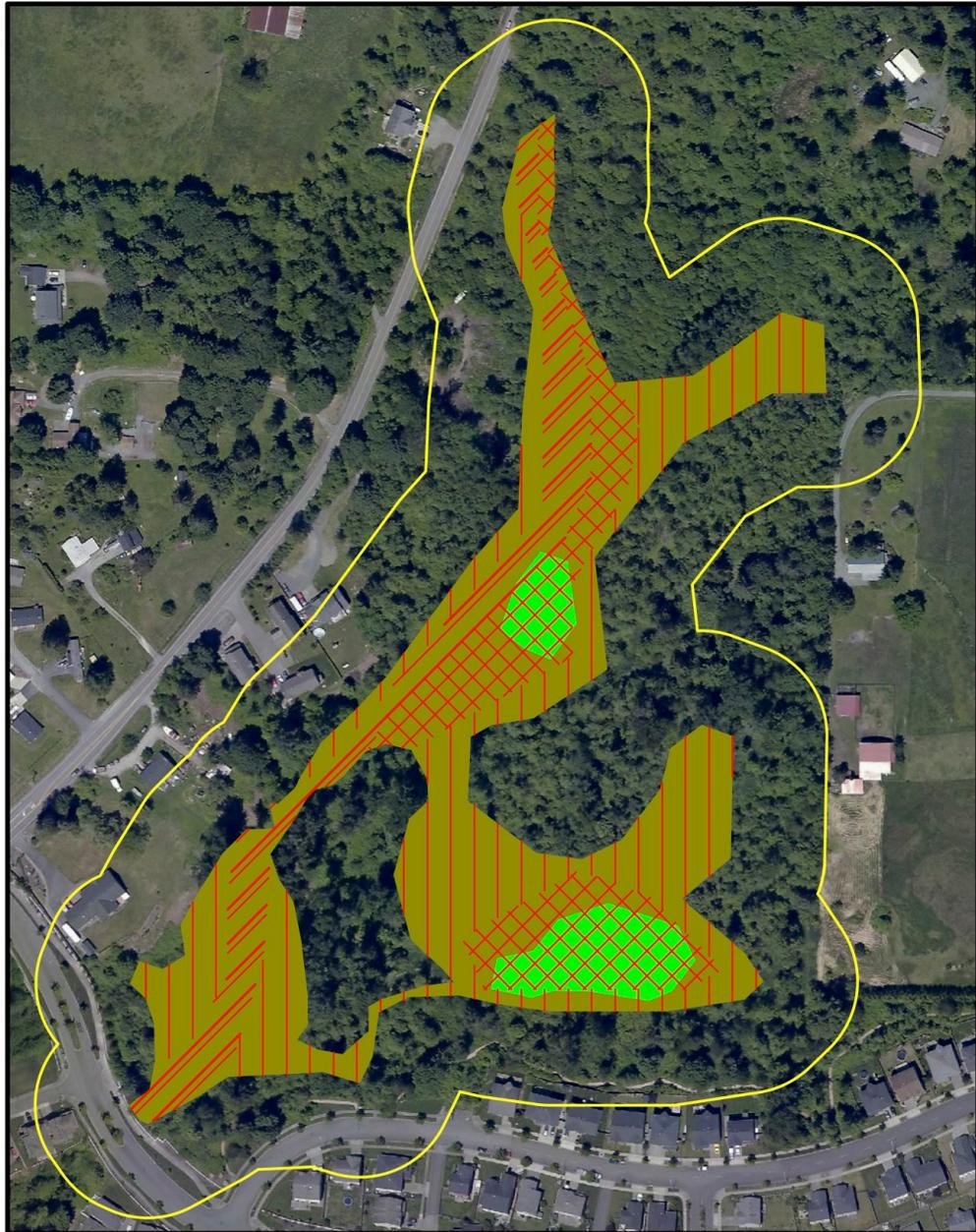
CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type	Category
<p><i>Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.</i></p>	
<p>SC 1.0. Estuarine wetlands Does the wetland 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 Yes –Go to SC 1.1 No= Not an estuarine wetland</p>	
<p>SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = Category I No - Go to SC 1.2</p>	<p>Cat. I</p>
<p>SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? <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 non-native species are <i>Spartina</i>, see page 25) <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 unmowed grassland. <input type="checkbox"/> The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = Category I No = Category II</p>	<p>Cat. I Cat. II</p>
<p>SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes – Go to SC 2.2 No – Go to SC 2.3 SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes = Category I No = Not a WHCV SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes – Contact WNHP/WDNR and go to SC 2.4 No = Not a WHCV SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes = Category I No = Not a WHCV</p>	<p>Cat. I</p>
<p>SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? <i>Use the key below. If you answer YES you will still need to rate the wetland based on its functions.</i> SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to SC 3.3 No – Go to SC 3.2 SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to SC 3.3 No = Is not a bog SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = Is a Category I bog No – Go to SC 3.4 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 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = Is a Category I bog No = Is not a bog</p>	<p>Cat. I</p>

Wetland name or number _____

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17124 Back Forty - Chain Lake Rd
 WETLAND RATING FIGURE A1 - WETLAND A

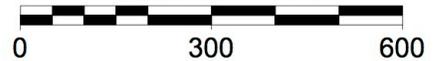


LEGEND

-  SCRUB-SHRUB
-  FORESTED VEGETATION
-  SATURATED ONLY
-  SEASONALLY FLOODED
-  OCCASIONALLY FLOODED
-  150' FROM WL BOUNDARY



Scale 1" = 300'



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 9505 19th Avenue S.E. Suite 106 Everett, Washington 98208
 Phone: (425) 337-3174
 Fax: (425) 337-3045
 Email: mailbox@wetlandresources.com

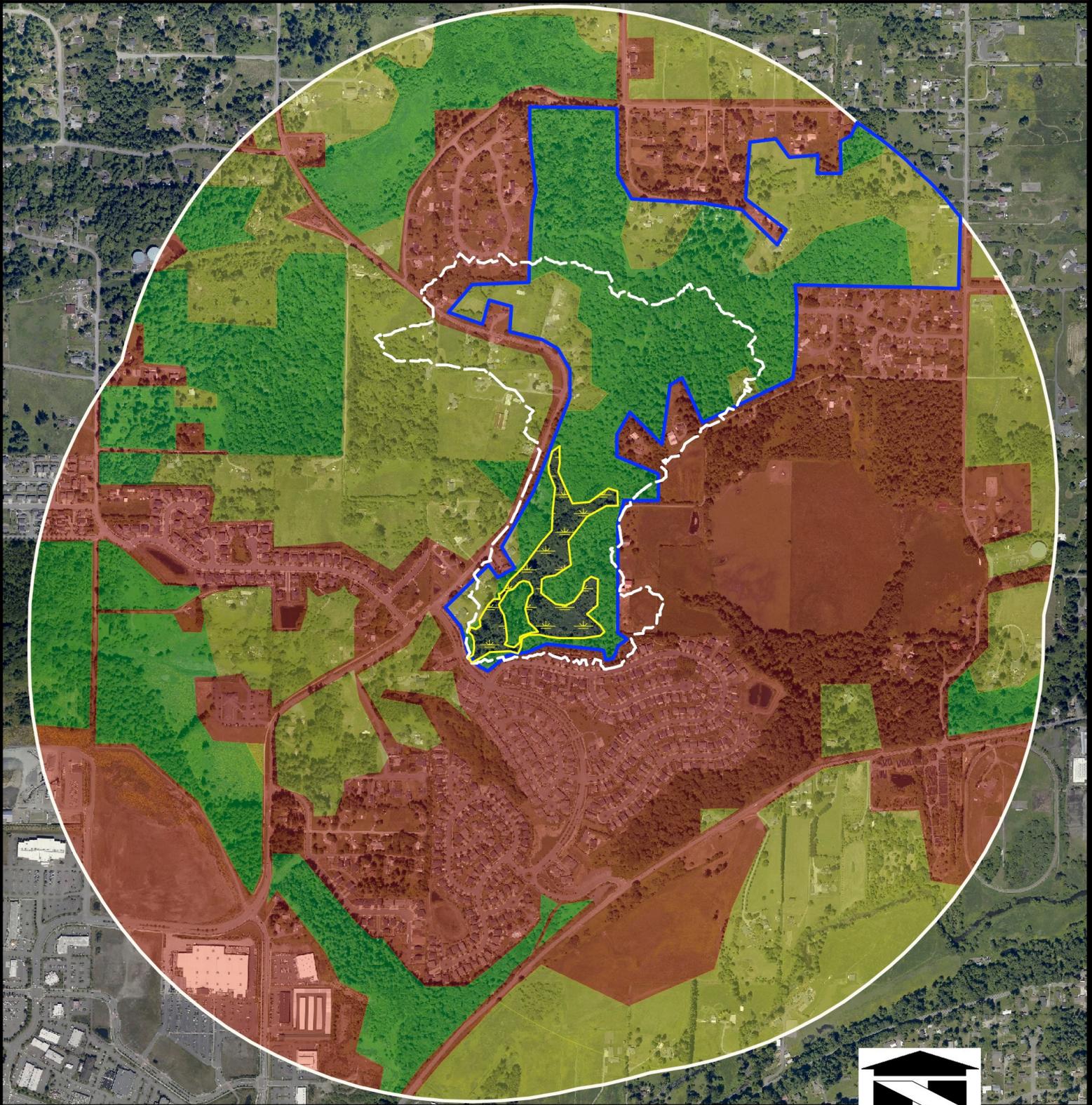
**WETLAND RATING
 Wetland A**

Back Forty Construction, LLC
 Shanna Clothier
 27419 118th St SE
 Monroe, WA 98272

Figure A1
 WRI Job # 17124
 Drawn by: TA

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17124 Back Forty - Chain Lake Rd
 WETLAND RATING FIGURE A2 - WETLAND A

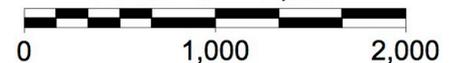


LEGEND

- RELATIVELY UNDISTURBED
- LOW/MOD. INTENSITY
- HIGH INTENSITY
- ACCESSIBLE HABITAT
- WETLAND
- 1 KM FROM WETLAND CONTRIBUTING BASIN

**CONTRIBUTING BASIN
 AREA RELATIVE TO
 WETLAND UNIT IS 16:1**

Scale 1" = 1,000'



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 Email: mailbox@wetlandresources.com

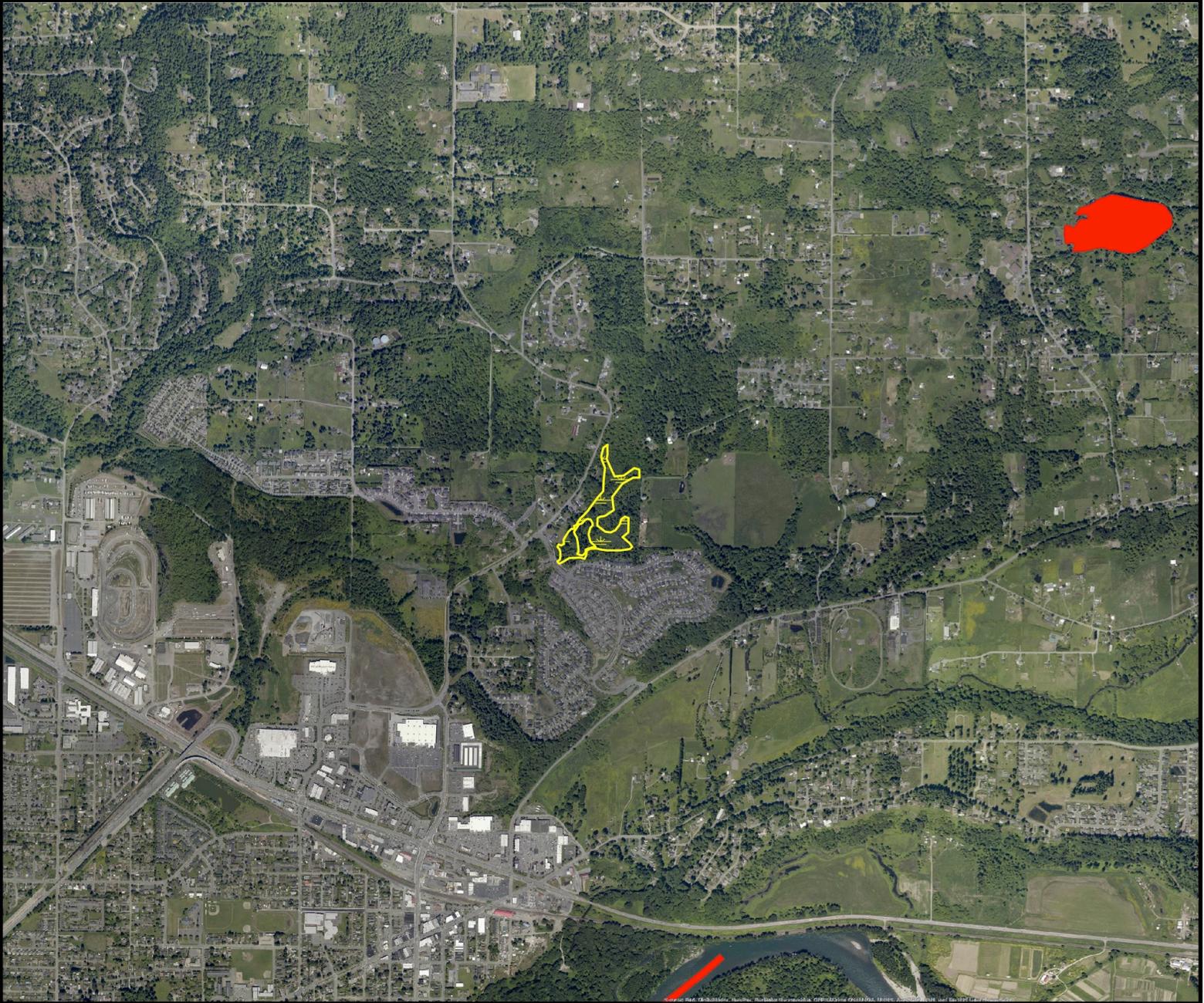
**WETLAND RATING
 Wetland A**

Back Forty Construction, LLC
 Shanna Clothier
 27419 118th St SE
 Monroe, WA 98272

Figure A2
 WRI Job # 17124
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17124 Back Forty - Chain Lake Rd
WETLAND RATING FIGURE A3 - WETLAND A



Scale 1" = 2,000'



LEGEND



WETLAND



AQUATIC RESOURCES
ON THE 303(d) LIST



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

WETLAND RATING
Wetland A
Back Forty Construction, LLC
Shanna Clothier
27419 118th St SE
Monroe, WA 98272
Figure A3
WRI Job # 17124
Drawn by: TA

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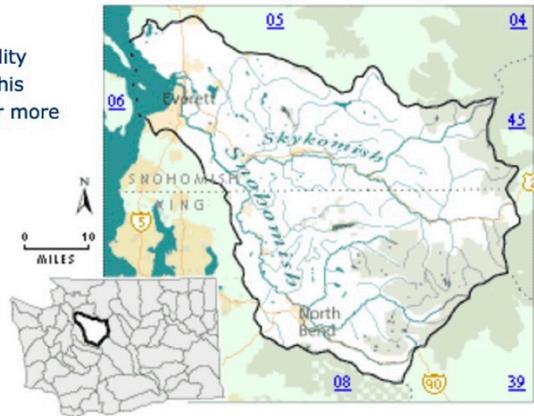
17124 Back Forty - Chain Lake Rd
WETLAND RATING FIGURE A4 - WETLAND A

WRIA 7: Snohomish

The following table lists overview information and links to specific water quality improvement projects (including total maximum daily loads, or TMDLs) for this water resource inventory area (WRIA). Please use links (where available) for more information on a project.

Counties

- [King](#)
- [Snohomish](#)



Waterbody Name	Pollutant(s)	Status**	TMDL Lead
Lake Loma	Total Phosphorus	Straight to implementation project under development	Tricia Shoblom 425-649-7288
Snohomish River	French Creek / Pilchuck River	Under development	Ralph Svrcek 425-649-7165
	<ul style="list-style-type: none"> • Dissolved Oxygen • Temperature 		
	Dioxin	EPA approved	Ralph Svrcek 425-649-7165
	Estuary	EPA approved	Ralph Svrcek 425-649-7165
	<ul style="list-style-type: none"> • Ammonia • BOD 		
Tributaries	EPA approved	Ralph Svrcek 425-649-7165	
<ul style="list-style-type: none"> • Fecal Coliform Tributaries: <ul style="list-style-type: none"> • Allen Creek • Quilceda Creek • French Creek • Woods Creek • Pilchuck River • Marshlands (Wood Creek) {2} 			
Snoqualmie River	EPA approved	Ralph Svrcek 425-649-7165	
<ul style="list-style-type: none"> • Ammonia-N • BOD (5-day) • Fecal Coliform Temperature	EPA approved Has an implementation plan		

** Status will be listed as one of the following: Approved by EPA, Under Development or Implementation

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

**WETLAND RATING
Wetland A**

Back Forty Construction, LLC
 Shanna Clothier
 27419 118th St SE
 Monroe, WA 98272

Figure A4
 WRI Job # 17124
 Drawn by: TA

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APPENDIX B

US ARMY CORPS WETLAND DETERMINATION
DATA FORMS (S1-S3)

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

Project/Site: Back Forty- 13813 Chain Lake Road Plat City/County: Monroe/Snohomish Sampling Date: 5/5/2017
 Applicant/Owner: Back Forty Construction LLC State: WA Sampling Point: S1
 Investigator(s): NP, TA Section, Township, Range: S31, T28N, R07E, W.M.
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): <2%
 Subregion (LRR): A Lat: 47.871 Long: -121.962 Datum: NAD 83
 Soil Map Unit Name: Terric Medisaprists, nearly level NWI classification: None

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: The period leading up to the May 2017 site investigation (February-April 2017) was wetter than normal, according to WETS table analysis.	

VEGETATION – Use scientific names of plants.

Stratum	Plot size	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: <u>5m²</u>)					Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</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>100%</u> (A/B)
1. <u>Alnus rubra</u>		<u>40</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Populus balsamifera</u>		<u>25</u>	<u>Y</u>	<u>FAC</u>	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
<u>65</u> = 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: <u>3m²</u>)					
1. <u>Rubus armeniacus</u>		<u>15</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Rubus spectabilis</u>		<u>5</u>	<u>Y</u>	<u>FAC</u>	
3. _____		_____	_____	_____	
<u>20</u> = Total Cover					
Herb Stratum (Plot size: <u>1m²</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.
1. <u>Ranunculus repens</u>		<u>100</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Juncus effusus</u>		<u>5</u>	<u>N</u>	<u>FACW</u>	
3. _____		_____	_____	_____	
4. _____		_____	_____	_____	
5. _____		_____	_____	_____	
6. _____		_____	_____	_____	
7. _____		_____	_____	_____	
8. _____		_____	_____	_____	
9. _____		_____	_____	_____	
10. _____		_____	_____	_____	
11. _____		_____	_____	_____	
<u>105</u> = Total Cover					
Woody Vine Stratum (Plot size: <u>3m²</u>)					
1. <u>None</u>		_____	_____	_____	
2. _____		_____	_____	_____	
<u>0</u> = Total Cover					
% Bare Ground in Herb Stratum <u>0</u>					

Remarks:

SOIL

Sampling Point: S1

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			
0-9	10YR 3/2	100					Silt Loam	
9-15	10YR 4/4	100					Sandy 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.)	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) (except MLRA 1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8)

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

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (2 or more required) <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 <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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: Back Forty - 13813 Chain Lake Road Plat City/County: Monroe/Snohomish Sampling Date: 5/5/2017
 Applicant/Owner: Back Forty Construction LLC State: WA Sampling Point: S2
 Investigator(s): NP, TA Section, Township, Range: S31, T28N, R07E, W.M.
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): <2%
 Subregion (LRR): A Lat: 47.871 Long: -121.962 Datum: NAD 83
 Soil Map Unit Name: Terric Medisaprists, nearly level NWI classification: PFOC

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: The period leading up to the May 2017 site investigation (February-April 2017) was wetter than normal, according to WETS table analysis.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status		
Tree Stratum (Plot size: 5m ²)					
1. <u>Populus balsamifera</u>	40	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. <u>Alnus rubra</u>	40	Y	FAC		
3. _____					
4. _____					
	80	= Total Cover			
Sapling/Shrub Stratum (Plot size: 3m ²)					
1. <u>None</u>				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. _____					
3. _____					
4. _____					
5. _____					
	0	= Total Cover			
Herb Stratum (Plot size: 1m ²)					
1. <u>Ranunculus repens</u>	60	Y	FAC		
2. <u>Phalaris arundinacea</u>	30	Y	FACW		
3. <u>Juncus effusus</u>	20	N	FACW		
4. <u>Rumex crispus</u>	Trace	N	FAC		
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
11. _____					
	110	= Total Cover			
Woody Vine Stratum (Plot size: 3m ²)					
1. <u>None</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. _____					
	0	= Total Cover			
% Bare Ground in Herb Stratum <u>0</u>					
Remarks:					

SOIL

Sampling Point: S2

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			
0-9	10YR 2/2	95	10YR 3/6	5	C	M	Sandy Loam	
9-16	2.5Y 4/2	80	10YR 3/6	20	C	M	Sandy Loam	

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

Project/Site: Back Forty - 13813 Chain Lake Road Plat City/County: Monroe/Snohomish Sampling Date: 5/5/2017
 Applicant/Owner: Back Forty Construction LLC State: WA Sampling Point: S3
 Investigator(s): NP, TA Section, Township, Range: S31, T28N, R07E, W.M.
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): <2%
 Subregion (LRR): A Lat: 47.871 Long: -121.962 Datum: NAD 83
 Soil Map Unit Name: Terric Medisaprists, nearly level NWI classification: None

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 checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: The period leading up to the May 2017 site investigation (February-April 2017) was wetter than normal, according to WETS table analysis.	

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: 5m ²)				
1. <u>Populus balsamifera</u>	25	Y	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
25 = Total Cover				
Sapling/Shrub Stratum (Plot size: 3m ²)				
1. <u>None</u>	_____	_____	_____	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. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
0 = Total Cover				
Herb Stratum (Plot size: 1m ²)				
1. <u>Ranunculus repens</u>	100	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) 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. _____	_____	_____	_____	
100 = Total Cover				
Woody Vine Stratum (Plot size: 3m ²)				
1. <u>None</u>	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
0 = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				

Remarks:
 Vegetative species are those that thrive after disturbance.

APPENDIX C

CRITICAL AREA STUDY MAPS
(SHEETS 1/2 -2/2)

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