



WETLAND DELINEATION FOR THE WOODSTOCK FARM – NORTH CHUCKANUT TRAIL BELLINGHAM, WA



AUGUST 2006



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PARKS/DESIGN DEVELOPMENT
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1.0 BACKGROUND

1.1 Background

Northwest Ecological Services, LLC (NES) was retained to prepare a wetland delineation for a portion of property owned by the City of Bellingham (COB), as part of a trail alignment between the North Chuckanut trailhead and Woodstock Farm. Contracted work is intended to be included with permit application submissions to the U.S. Army Corps of Engineers, the Washington Department of Ecology, and the City of Bellingham.

1.2 Scope of Work

The scope of work included performing a wetland delineation in a portion of the property owned by the City of Bellingham, associated with Woodstock Farm, in Bellingham, Washington (Section 13, Township 37N, Range 02E, W.M.) (Figure 1). The review area for this study is bound by Chuckanut Drive to the east, the Woodstock farm complex to the south, and property lines on remaining sides. An overview of the project area and review area are shown in Figure 2. This report describes existing conditions, identifies critical areas, wildlife presence, and assesses existing wetland and buffer functions for City of Bellingham critical areas and other agencies with authority over wetlands.

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2.0 METHODS

Vikki Jackson and Pete Kairis of Northwest Ecological Services, LLC visited the site on June 30th of 2006. The site visit took place during the dry season, after a period of approximately four weeks of no significant precipitation. Wetland identification and delineation followed the "Routine Determination" (On-site Methodology) described in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987). This methodology requires evidence that at least one positive wetland indicator must be found for each of three parameters (vegetation, soils, and hydrology) to make a positive wetland determination. An area is not considered a regulatory wetland if indicators for any one of these three parameters are not observed under normal environmental conditions. Methods for each of these parameters are as follows:

- **Vegetation:** The plant community at each sample site is considered to be hydrophytic (wetland) vegetation if more than 50 percent of the dominant species from all strata have obligate wetland, facultative wetland, and/or facultative indicator status. Indicator status is taken from U.S. Fish and Wildlife Service (Reed, 1988 and 1993). Dominant species are

considered to be the three most abundant species in each vegetation layer. When only one or two vegetation layers are present, then up to five dominant species from each vegetation layer are recorded and considered in the determination of hydrophytic vegetation. The wetland indicator status for each dominant species is then used to determine whether the plant community is dominated by hydrophytic vegetation.

- **Soils:** Soil test pits are hand dug to approximately 16 inches and soils are examined for hydric soil indicators. These formal soil test pits are labeled with a data point number and located on site delineation map. Colors of the soil matrix, and mottling or gleying, if present, are measured immediately below the upper dark horizon using a Munsell color chart (Kollmorgen 1975).
- **Hydrology:** Site specific hydrology is assessed by an inspection of each site. Depth to shallow groundwater and/or saturation in each test pit is recorded, as are observations of other indicators of hydrology including water marks, drift lines, sediment deposits, and drainage patterns. These data provided information on timing and duration of ponding and/or saturation in the study area. Upland/wetland boundaries are delineated by locating the transition where soils, vegetation, or hydrology no longer indicate that wetland parameters are met.

Data sheets for the delineation are located in Appendix C of this report. Wetlands identified were flagged in the field with pink survey flags. A professional survey of the field delineation was preformed by Larry Steele and Associates, and is included as Figure 3 of this report.

3.0 ECOLOGICAL ASSESSMENT

3.1 Existing Conditions

The review area for this study is located in a portion of property owned by the City of Bellingham, associated with Woodstock Farm. The parcels are zoned for public use and maintained by the COB Parks Department as a public park. The review area is bound by Chuckanut Drive to the east, the Woodstock Farm complex to the south, and property lines on remaining sides. The Farm complex consists of a single family residence, which is utilized primarily as an interpretative center, a garage, barn, and one additional out building. The majority of the review area is currently undeveloped and primarily forested, with exception of a few areas covered with grasses or bare ground, and the area surrounding the farm complex which is dominated by grass and maintained as a mowed lawn. Overall, the property slopes moderately to steeply west towards the Chuckanut Bay estuary. Figure 4 is a 2002 aerial photograph that depicts near current conditions.

3.1.1 Vegetation

The majority of the review area is forested, with exception of a few areas covered with grasses or bare ground, and the area surrounding the farm complex which is dominated by grass and maintained as a mowed lawn. Two primary plant communities were identified within the review area: Upland forest and palustrine forested/ palustrine scrub-shrub wetland.

- **Upland Forest (UF).** This plant community was located throughout the review area and was the dominant community on-site. The community has a mixed evergreen/deciduous canopy with approximately 95% canopy closure, and on average trees were 80 to 100 feet tall. Species observed included western red cedar (*Thuja plicata*), Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), big leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), vine maple (*Acer circinatum*), Indian plum (*Oemleria cerasiformis*), snowberry (*Symporicarpos albus*), red elderberry (*Sambucus racemosa*), devils club (*Oplopanax horridus*), red huckleberry (*Vaccinium parvifolium*), low Oregon grape (*Mahonia nervosa*), sword fern (*Polystichum munitum*), trailing blackberry (*Rubus ursinus*), creeping buttercup (*Ranunculus repens*), pacific water leaf (*Hydrophyllum tenuipes*), common horsetail (*Equisetum arvense*), lady fern (*Athyrium filix-femina*), spreading wood fern (*Dryopteris expansa*), and bleeding heart (*Dicentra formosa*). Traces of Himalayan blackberry (*Rubus discolor*) and herb-Robert (*Geranium robertianum*) non-native, invasive species were also observed within this community.
- **Palustrine Forested/ Palustrine Scrub-Shrub Wetland (PFO/PSS).** This plant community was located in Wetland A. Species observed included red alder, salmonberry (*Rubus spectabilis*), devils club, common horsetail, skunk cabbage (*Lysichiton americanum*), lady fern, creeping buttercup, and piggy back plant (*Tolmiea menziesii*).

3.1.2 Soils

The SCS *Soil Survey* map indicates the presence of Nati Loam (#110) on 30 to 60% slopes and Squalicum gravelly loam (#156) on five to 15% slopes in the vicinity of the review area (Figure 5). Nati loam is a moderately deep, well drained soil located on foothill back slopes and ridges, which formed in colluvium and slope alluvium with an admixture of volcanic ash and glacial till. Nati soils have a water table at a depth of greater than six feet from the surface year round (NRCS 1991). Also included in this soil series are areas of Squalicum, Sehome, Chuckanut, Comar, Bellingham, and Shalcar soils and rock outcrops. Squalicum gravelly loam is a deep, moderately well drained soil located in foothills and in valleys, which formed in a mixture of volcanic ash, loess, and slope alluvium over glacial till. Squalicum soils have a seasonally high, perched water table at a depth of 3.5 to 5.0 feet from December to April. Also included in this soils series are areas of Nati, Chuckanut, Squires, Blethen, Everett, Whatcom, Bellingham, and Labounty soils. Nati loam and Squalicum gravelly loam are both listed as non-hydric on the *Whatcom County Area Hydric List* (Whatcom County 1991). Field observations appear to confirm this mapping, with wetland soils being an inclusion.

Observed wetland soils typically had a clay or silt loam top-soil, which displayed a matrix color of 10YR 2/1, and a sub-soil that was either bedrock or dense gravelly clay loam with a matrix color of 10YR 5/2 and mottles (10YR 4/6). Observed upland soils were typically loams or rocky silt loams. Areas where loam soils were located typically had a duff layer on-top and 10YR 3/3 loam soil throughout the profile and no redoximorphic features. Soils near an old road, near the farm, were a dense gravelly silt loam soil with a matrix color of 10YR 5/2 and no redoximorphic within the upper sixteen inches. Soils in the northern portion of the review area were a loam top-soil with a matrix color of 10YR 3/2-3 and a gravelly loam sub-soil with a matrix color of

7.5YR 4/4-6, and no redoximorphic features. A soil profile at one upland sample plot, east of Wetland A, was not obtainable because this area was dominated by talus on steep slopes.

3.1.3 Hydrology

The site is located in the Chuckanut Bay Watershed. The site visit took place in the “dry season” after approximately four to six weeks of no significant precipitation. At the time of the site visit, soils in Wetland A, within the review area, were moist to heavily wet but not saturated; and soils located further to the west were saturated to the surface. Secondary hydrology indicators included drainage patterns. Hydrology supporting Wetland A appears to be provided by on-site surface runoff and/or groundwater seeps at the toe of the slope. The wetland appears to collect surface run-off from the surrounding foothills. Water from the wetland appears to flow down slope, and into an un-named creek, and then into the Chuckanut Bay estuary. An ephemeral channel was observed in the wetland, which did not contain surface water at the time of the site visit. No hydrologic indicators were observed elsewhere within the review area.

An un-named creek is located within the vicinity of the review area (Figure 3). The creek flows from east to west and into Chuckanut Creek, north of the review area. The creek is located in a moderately incised channel, which was approximately one foot wide. At the time of the site visit, the creek channel was flowing.

3.1.4 Wildlife

No State or Federal Threatened, Sensitive, or Endangered plant or animal species were observed on the subject property. The property does provide some suitable habitat for small mammals; and suitable habitat for nesting/breeding sites for a variety of bird and amphibian species. Mapping by Whatcom County indicates the presence of a dabbling duck and soft sediment shorebird concentration area in the Chuckanut Bay estuary; and a rocky substrate shorebird concentration area and a diving bird concentration area within one mile of the review area (*Whatcom County Fish and Wildlife Folio*, 1994).

Additional Habitat and Species maps by Washington Department of Fish and Wildlife (WDFW) indicates the presence of peregrine falcon (*Falco peregrinus*) and multiple bald eagle (*Haliaeetus leucocephalus*) nesting sites within one mile of the subject property, and a 800 foot shoreline nest buffer management zone on the subject parcel. Peregrine falcons are listed federally as a species of concern, and are listed by Washington State as a state sensitive species. Bald eagles are federally listed as a threatened species, and are listed as a threatened species by Washington State. Mapping by WDFW also indicates hardshell intertidal clam, eelgrass beds, and turf algae in the Chuckanut Bay estuary; and presence of harbor seals (*Phoca vitulina richardsi*), a sea bird colony for black oystercatcher (*Haematopus bachmani*), glaucous winged gulls (*Larus glaucescens*), and pigeon guillemots (*Cephus columba*), estuaries, wetlands, and urban natural open space within one mile of the project site. No fish presence is documented in the un-named creek (WDFW and Whatcom County), and no fish were observed in the creek at the time of the site visit. Additional aforementioned species are not federally or state listed as a species of concern,

in this location. Mapping does not indicate the area is utilized by any additional priority, sensitive, threatened or endangered species.

3.2 Existing Wetland and Buffer Functions and Wetland Categorization

The site wetland was rated using the Washington State Department of Ecology's (DOE) Wetland Rating System for Western Washington revised in 2004. Wetland functions were also evaluated using the DOE rating system. This methodology identifies and quantifies the potential of various functions operating within a wetland. The determination is based on the physical characteristics of water quality, hydrologic, and habitat functions in the wetland and buffers. Using this system, wetlands are given a score based on the functions provided by the wetland, and are placed in Category I through Category IV. Wetland A is considered a DOE category III wetland with a score of 46 points. Wetlands that score between 30 and 50 points are considered DOE Category III wetlands. Based on the points available in each functional category, Wetland A scored moderate for water quality and habitat function, and low for hydrologic function. Table 1 shows a summary of the wetland and buffers functions for the wetlands assessed in this project.

Table 1. Wetland Buffers and Functions

Functions	Wetland A
Total DOE Score	46
Water Quality Improvement Function	moderate
Hydrologic Function	low
Overall habitat function	moderate
Total Habitat Function Score	22
Specific habitat functions	
Vegetation structure	moderate
Habitat features	moderate
Buffer quality	moderate
Priority habitats	moderate
Habitat connectivity	moderate

Wetland A is a shallow, depressional PFO/PSS wetland at the toe of a slope below Chuckanut Drive. The wetland provides moderate water quality function primarily due to persistent vegetation cover, area which is seasonally ponded, and because the wetland appears to have the opportunity to provide this function as it receives potentially polluted run-off from Chuckanut Drive. The wetland serves hydrologic flood/storm water and base flow functions at low level due to hydrogeomorphic characteristics and location in the water shed, but it does contain persistent vegetation that is able to slow water velocity and the ability to retain surface flow in a developing area.

Wetland A provides moderate overall and specific biological support functions due to presence of moderate structure and species diversity, presence of habitat features, and connectivity to

quality upland habitat, and additional priority habitats (riparian areas, estuary, and other wetlands) within the vicinity of the wetland.

4.0 DETERMINATION AND REGULATIONS

One wetland was identified within the review area. A summary for the characteristics of Wetland A is shown below in Table 2. Wetland A is not contained within the review area, and appears to extend off-site to the northwest. An un-named creek is also located within the vicinity of the project site; and Chuckanut Creek is within 200 feet of the review area. Figure 3 depicts the locations and sizes of wetlands and streams within the review area.

Table 2. Summary of wetland classifications.

Wetland	Cowardin Classification	HGM Classification	DOE Category
A	PFO/PSS	Depressional	III

The City of Bellingham Critical Areas Ordinance (CAO) states that no activity may be conducted within a regulated wetland or buffer with out a wetland disturbance permit, and mitigation sufficient to maintain or enhance the wetland functions. In addition, the COB requires a buffer around regulated wetlands to protect functions, and the buffer is to remain naturally vegetated except where it can be enhanced to improve the functions. Table 3 details COB regulated buffer widths around wetlands which serve wildlife functions at a moderate level, and have a wildlife habitat function score of 20 to 28 points on the DOE wetland rating form, the buffers shall be as follows:

Table 3. Buffer Width for Wetlands with Moderate Level Wildlife Habitat Function

Wetland Category	High Intensity	Moderate Intensity	Low Intensity
	Buffer Width (feet)		
Category I	150	110	75
Category II	150	110	75
Category III	150	100	60
Category IV	50	40	25
			COB CAO 16.55.340

The applicant has proposed to install a gravel trail on-site. The gravel trail will be functionally impervious (or paved); and therefore the proposed land use appears to be considered a “moderate intensity use” under the new COB CAO. The COB Critical Areas Ordinance (COB CAO 16.55.510) defines “moderate intensity use” as land use that includes the following uses or activities: residential (1 unit/acre or less), moderate- intensity open space (parks), moderate- intensity new agriculture (orchards and hayfields), paved trails, and building of logging roads.

In addition, the COB requires a regulated buffer around the un-named creek which is located within the review area (Figure 3). The on-site creek appears to be Type 4 water, and the COB

regulated stream buffer ranges from 50 to 150 feet. The COB regulated stream buffer around Chuckanut Creek, from the mouth to Chuckanut Drive, ranges from 100 to 250 feet. A summary of COB regulated buffers around the wetland and creeks are shown in Table 4 below.

Table 4. Summary of City of Bellingham Regulated Wetland Buffers

	DOE Category	DOE Habitat Score	Buffer Width (feet)
Wetland A	III	22	100
Un-named Creek	n/a	n/a	50- 150
Chuckanut Creek	n/a	n/a	100- 250

The US Army Corps of Engineers (Corps) requires notification for all disturbances to wetlands. It is incumbent upon the landowner to disclose all such disturbances. Isolated wetlands, however, are not under the authorization of the Corps. Only the Corps has the authority to make an "isolated" determination. A disturbance under one-half acre of non-isolated wetland requires an application for a Nationwide Permit from the Corps. Fills exceeding one-half acre require an Individual Permit from the Corps. Mitigation is required for all wetland fill. In all cases the Corps requires concurrence with Section 7 of the Endangered Species Act.

The Corps also has discretion to disallow disturbance to high quality wetlands. The Washington Department of Ecology and Corps require certification that no listed or known endangered or threatened animal species or National Historic Places are present on the parcel.

The Washington State Department of Ecology reviews all permits received by the Corps for Water Quality Certification. DOE requires an individual review of all wetland disturbances greater than one-half acre. Water Quality Certification is required for all Individual Permit applications. DOE has authority over discharge into all wetlands and streams and can impose buffers and compensatory mitigation for impacts.

The Washington Department of Fish and Wildlife (WDFW) requires notification for any proposed construction activities which will use, divert, obstruct, or change the bed or flow of state waters (RCW Chapter 77.55). If any construction within a stream channel is proposed on-site, the landowner shall apply for a Hydraulic Project Approval (HPA) permit from the WDFW.

5.0 DISCLAIMER

Wetland delineations and determination are based upon protocols defined in manuals and publications produced by Federal, State and Local agencies. The methodology used in this report is consistent with the routine on-site determination method described in the 1987 Corps of Engineers Wetland Delineation Manual. No guarantees are given that delineations or functional determinations will concur with those performed by regulatory agencies or other

qualified professionals. This report is provided for the use of the named recipient only and is not intended for use by others parties for any other purpose.

APPENDIX A: LITERATURE REVIEWED

Literature Reviewed

Brinson, M. 1993. A Hydrogeomorphic Classification for Wetlands. U.S. Army Corps of Engineers, Washington D.C. Tech. Report WRP-DE-4.

City of Bellingham. 2005. City of Bellingham Critical Areas Ordnance, Bellingham Municipal Code Chapter 16.55. Bellingham, WA.

Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1. Army Waterways Experiment Station, Vicksburg, Miss.

Goldin, A. 1992. Soil Survey of Whatcom County Area, Washington. United States Department of Agriculture, Soil Conservation Service.

Hitchcock, C.L. and A Cronquist. 1973 Flora of the Pacific Northwest. University of Washington Press. Seattle, WA.

Kollmorgen Corporation. 1975. Munsell soil color charts. Baltimore, MD.

Reed, R.B. Jr. 1988. National List of Plant Species that Occur in Wetlands: 1988 Northwest. Biological Report 88 (26.9), U.S. Fish and Wildlife Service, St. Petersburg, Florida.

Washington Department of Fish and Wildlife. September 30, 2004. Habitat and Species Maps.

Washington Department of Fish and Wildlife. 2004. SalmonScape. Website: <http://wdfw.wa.gov/mapping/salmonscape/>

Washington State Department of Ecology. March 1997. Washington State Wetlands Identification and Delineation Manual. Washington Department of Ecology, Olympia WA. Publ. #96-94.

Washington State Department of Ecology. 2004. Washington State Wetlands Rating System: Western Washington. Washington Department of Ecology, Olympia WA. Publ. #04-06-025.

Whatcom County Planning and Development. 1994. Whatcom County Fish and Wildlife Habitat: a map folio of fish and wildlife habitat. Whatcom County, WA.

APPENDIX B: FIGURES

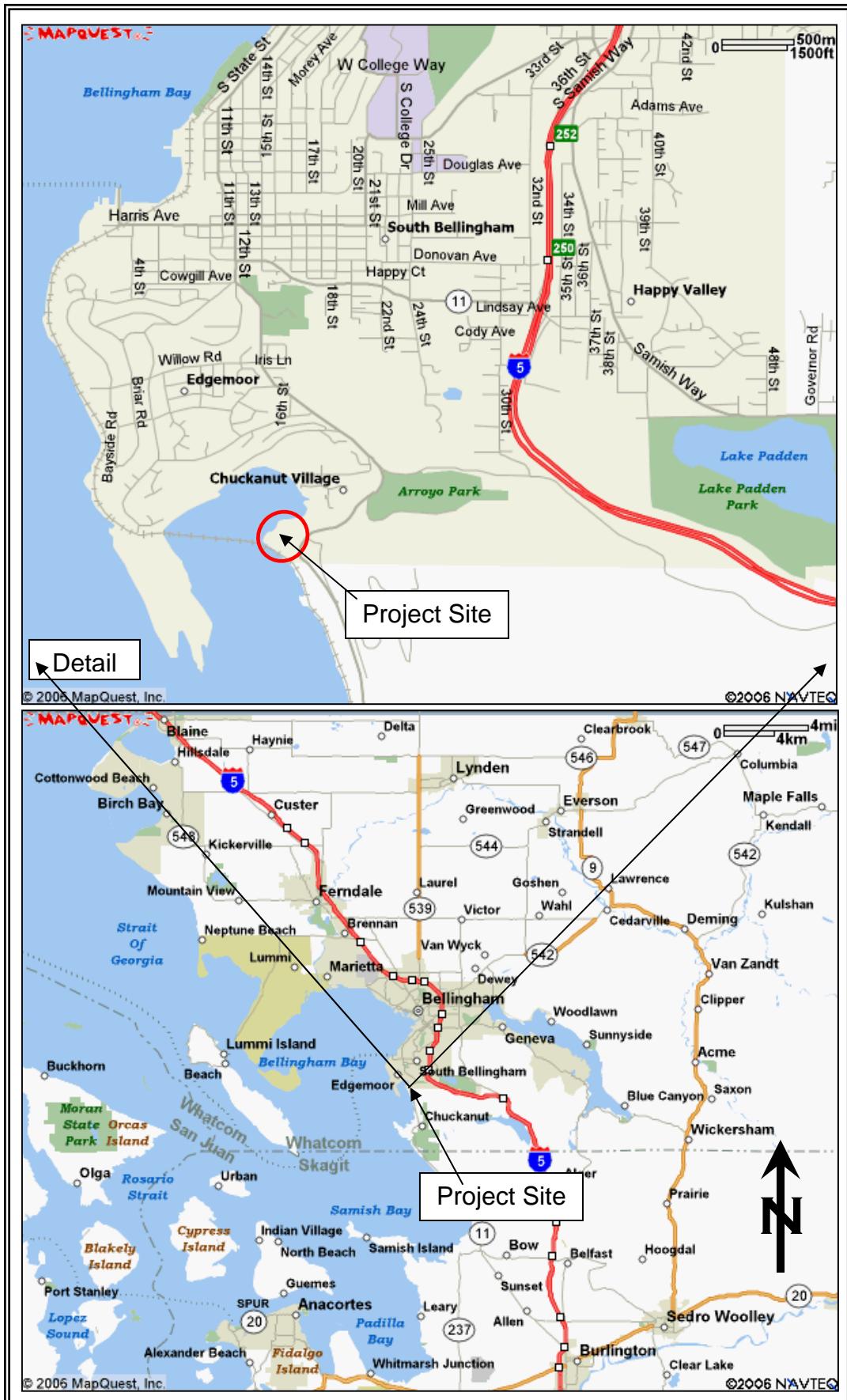


Figure 1. Vicinity Map

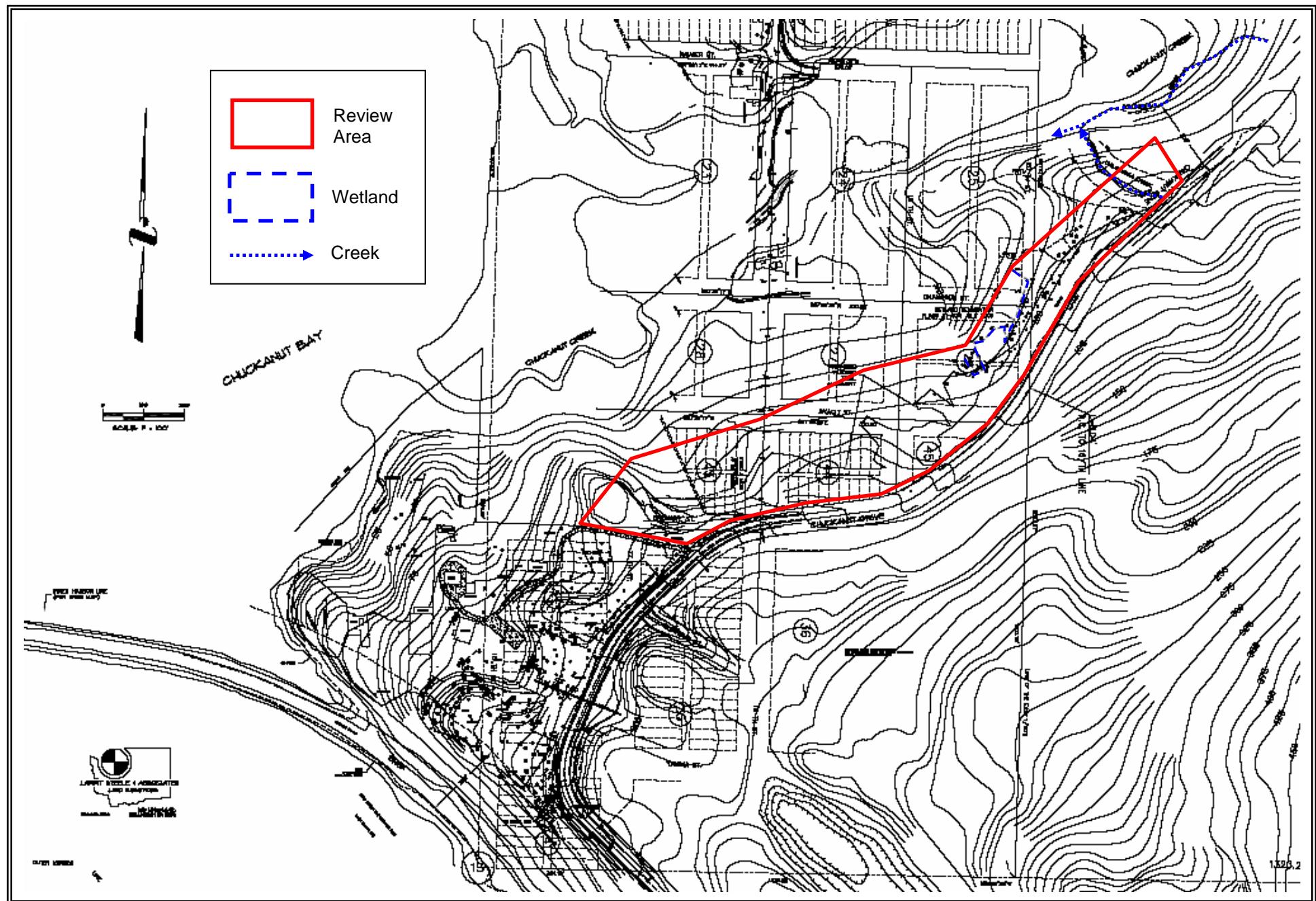


Figure 2. Overview of the Project Area and Review Area

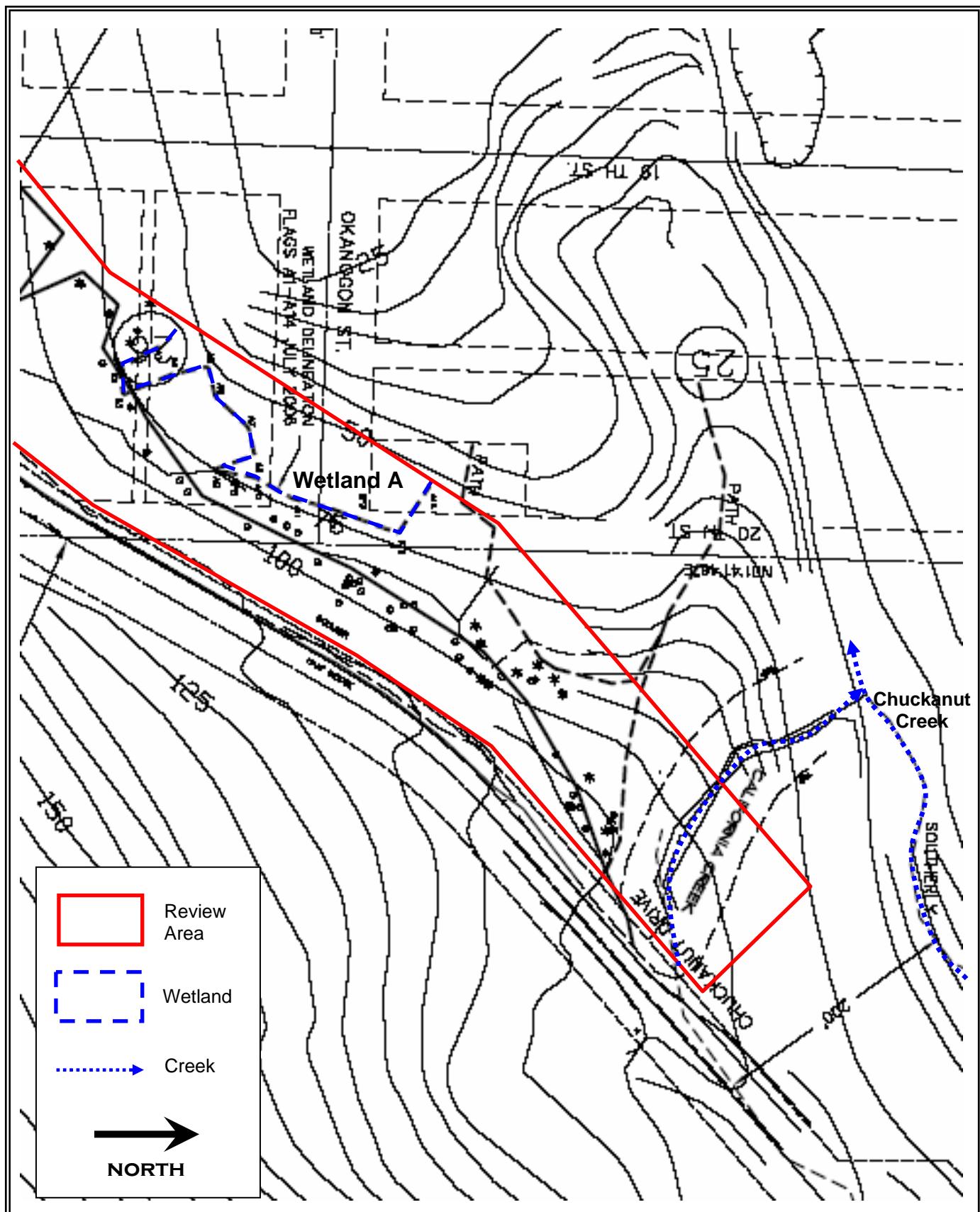


Figure 3. Wetland Map



Figure 4. 2002 Aerial Photograph

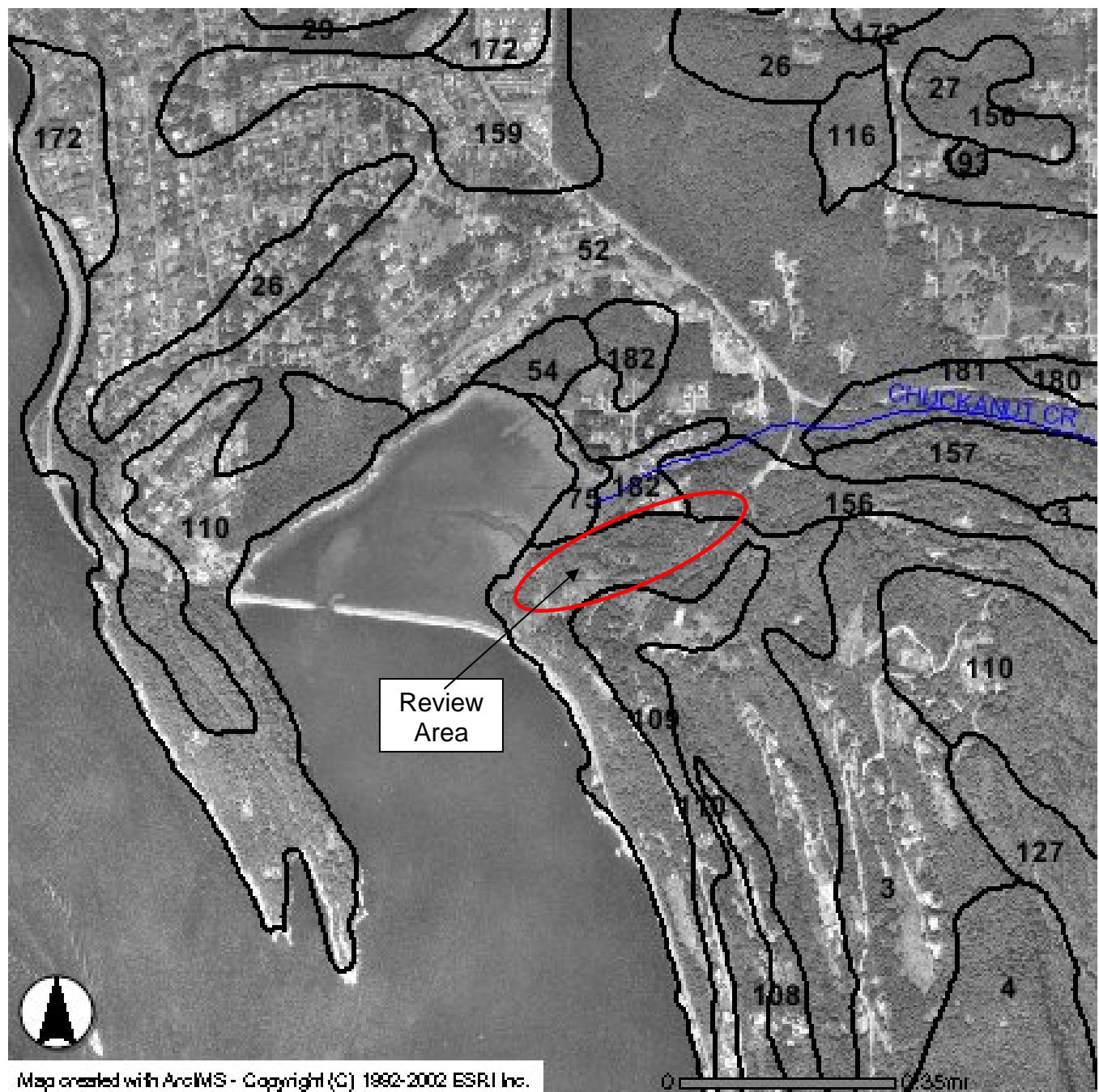


Figure 5. Soils Map
USDA Natural Resources Conservation Service

APPENDIX C: DATA SHEETS

Routine Wetland Determination Data Form
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: City of Bellingham/ Woodstock Farm	Date: 6/30/2006	Community ID: Upland	Do normal circumstances exist on site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Applicant/Owner: City of Bellingham	County: Whatcom	Transect ID: none	Is the site significantly disturbed (atypical)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Investigators: V. Jackson, -, P. Kairis	State: WA	Plot ID: #1	Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	S/T/R: 13/37N/02E		Explanation of atypical or problem area:

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

Dominant Plant Species	*Stratum	% Cover	Indicator	Dominant Plant Species	*Stratum	% Cover	Indicator
<i>Thuja plicata</i>	T	-	FAC	<i>Mahonia nervosa</i>	S	-	UPL
<i>Pseudotsuga menziesii</i>	T	-	FACU		-	-	-
<i>Symporicarpos albus</i>	S	-	FACU		-	-	-
<i>Vaccinium parvifolium</i>	S	-	FACU		-	-	-
<i>Polystichum munitum</i>	H	-	FACU		-	-	-
Hydrophytic vegetation Indicators: dominance				% of dominants OBL, FACW & FAC: 17%			
<input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation <input checked="" type="checkbox"/> Personal knowledge of regional plant communities				<input type="checkbox"/> Morphological adaptations <input type="checkbox"/> Physiological/reproductive adaptations		<input checked="" type="checkbox"/> Technical literature <input checked="" type="checkbox"/> Wetland plant database	
Hydrophytic vegetation present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Rationale for decision/remarks: Majority of species observed at this location were not hydrophytic.				<input checked="" type="checkbox"/> Other: Percent cover was not recorded in this location.			

Hydrology

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Soil temperature: <input type="checkbox"/> Other:	Water marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on: Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Oxidized root (live roots) channels <12 inches: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No FAC Neutral: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sediment deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage patterns: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Local soil survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth of inundation: none inches Depth of free water in pit: >16 inches Depth to saturated soil: >16 inches	Other:		<input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other
Wetland hydrology present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Rational for decision/remarks: Primary indicators of hydrology were not observed in this location.			

Soils

Map Unit Name: Nati loam (110)/Squalicum gravelly loam (156)					Field observations confirm mapped type <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Depth (inches)	Horizon	Matrix Color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance, size & contrast	Texture, concretions, structure, etc.	Hydric soil indicators: <input type="checkbox"/> Histosol <input type="checkbox"/> Histic epipedon <input type="checkbox"/> Sulfidic odor <input type="checkbox"/> Reducing conditions <input type="checkbox"/> High organic content in surface layer (sandy soil) <input type="checkbox"/> Organic streaking in sandy soil <input type="checkbox"/> Listed on national/local hydric soils list <input type="checkbox"/> Other:	
0-3	duff	n/a	n/a	n/a	duff		
3+		10YR 3/3	none	n/a	rocky loam		

Hydric soils present? Yes No Rational for decision/remarks: Hydric soils were not observed in this location.

Wetland determination: **Hydrophytic vegetation?** Yes No **Hydric soils?** Yes No **Wetland hydrology?** Yes No **Is the sampling point in a wetland?** Yes No

Rational/remarks: Positive indicators for all three parameters were not observed in this location.

Notes:

Routine Wetland Determination Data Form
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: City of Bellingham/ Woodstock Farm	Date: 6/30/2006	Community ID: Upland	Do normal circumstances exist on site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Applicant/Owner: City of Bellingham	County: Whatcom	Transect ID: none	Is the site significantly disturbed (atypical)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Investigators: V. Jackson, -, P. Kairis	State: WA	Plot ID: #2	Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	S/T/R: 13/37N/02E		Explanation of atypical or problem area:

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

Dominant Plant Species	*Stratum	% Cover	Indicator	Dominant Plant Species	*Stratum	% Cover	Indicator
<i>Acer macrophyllum</i>	T	40	FACU	<i>Polystichum munitum</i>	H	60	FACU
<i>Pseudotsuga menziesii</i>	T	25	FACU	<i>Dicentra formosa</i>	H	10	FACU
<i>Symporicarpos albus</i>	S	15	FACU		-	-	-
<i>Sambucus racemosa</i>	S	5	FACU		-	-	-
<i>Oplopanax horridum</i>	S	5	FAC+		-	-	-
Hydrophytic vegetation Indicators: dominance				% of dominants OBL, FACW & FAC: 0%			
<input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation				<input type="checkbox"/> Morphological adaptations		<input checked="" type="checkbox"/> Technical literature	
<input checked="" type="checkbox"/> Personal knowledge of regional plant communities				<input type="checkbox"/> Physiological/reproductive adaptations		<input checked="" type="checkbox"/> Wetland plant database	
Hydrophytic vegetation present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Rationale for decision/remarks: Majority of dominant species observed at this location were not hydrophytic.				<input type="checkbox"/> Other:			

Hydrology

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Soil temperature: <input type="checkbox"/> Other:	Water marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on: Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Oxidized root (live roots) channels <12 inches: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No FAC Neutral: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sediment deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage patterns: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Local soil survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth of inundation: none inches Depth of free water in pit: >16 inches Depth to saturated soil: >16 inches	Other: <input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other		
Wetland hydrology present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Rational for decision/remarks: Primary indicators of hydrology were not observed in this location.		

Soils

Map Unit Name: Nati loam (110)/Squalicum gravelly loam (156)					Field observations confirm mapped type <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Depth (inches)	Horizon	Matrix Color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance, size & contrast	Texture, concretions, structure, etc.	Hydric soil indicators:	
0-3		10YR 3/2 - 3/3	none	n/a	loam	<input type="checkbox"/> Histosol	<input type="checkbox"/> Matrix chroma ≤2 with mottles
3+		7.5YR 4/4 - 4/6	none	n/a	rocky loam	<input type="checkbox"/> Histic epipedon	<input type="checkbox"/> Mg or Fe concretions
						<input type="checkbox"/> Sulfidic odor	<input type="checkbox"/> Aquic moisture regime
						<input type="checkbox"/> Reducing conditions	<input type="checkbox"/> Gleyed or low chroma matrix
						<input type="checkbox"/> High organic content in surface layer (sandy soil)	
						<input type="checkbox"/> Organic streaking in sandy soil	
						<input type="checkbox"/> Listed on national/local hydric soils list	
						<input type="checkbox"/> Other:	

Hydric soils present? Yes No Rational for decision/remarks: Hydric soils were not observed in this location.

Wetland determination: *Hydrophytic vegetation?* Yes No *Hydric soils?* Yes No *Wetland hydrology?* Yes No **Is the sampling point in a wetland?** Yes No

Rational/remarks: Positive indicators for all three parameters were not observed in this location.

Notes:

Routine Wetland Determination Data Form
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: City of Bellingham/ Woodstock Farm	Date: 6/30/2006	Community ID: Wetland	Do normal circumstances exist on site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Applicant/Owner: City of Bellingham	County: Whatcom	Transect ID: none	Is the site significantly disturbed (atypical)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Investigators: V. Jackson, -, P. Kairis	State: WA	Plot ID: #3 Wetland A	Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	S/T/R: 13/37N/02E		Explanation of atypical or problem area:

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

Dominant Plant Species	*Stratum	% Cover	Indicator	Dominant Plant Species	*Stratum	% Cover	Indicator
<i>Rubus spectabilis</i>	S	30	FAC+		-	-	-
<i>Oplopanax horridus</i>	S	30	FAC+		-	-	-
<i>Lysichiton americanum</i>	H	25	OBL		-	-	-
<i>Athyrium filix-femina</i>	H	10	FAC		-	-	-
<i>Ranunculus repens</i>	H	10	FACW		-	-	-
Hydrophytic vegetation Indicators: dominance				% of dominants OBL, FACW & FAC: 100%			
<input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation <input checked="" type="checkbox"/> Personal knowledge of regional plant communities Hydrophytic vegetation present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Rationale for decision/remarks: Majority of dominant species observed at this location were hydrophytic.				<input type="checkbox"/> Morphological adaptations <input type="checkbox"/> Physiological/reproductive adaptations <input type="checkbox"/> Other: Observed <i>Alnus rubra</i> and <i>Acer macrophyllum</i> growing on hummocks within the wetland.		<input checked="" type="checkbox"/> Technical literature <input checked="" type="checkbox"/> Wetland plant database	

Hydrology

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Soil temperature: <input type="checkbox"/> Other:	Water marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on: Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Oxidized root (live roots) channels <12 inches: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No FAC Neutral: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sediment deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage patterns: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Local soil survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth of inundation: none inches Depth of free water in pit: >16 inches Depth to saturated soil: >16 inches		Other: Soil heavily wet (but not saturated) in the upper five inches, damp below. Wetland is at toe of slope, appears to collect water from surrounding slopes.	<input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other
Wetland hydrology present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Rationale for decision/remarks: Multiple secondary indicators of hydrology were observed in this location.			

Soils

Map Unit Name: Nati loam (110)/Squalicum gravelly loam (156) - Bellingham inclusions				Field observations confirm mapped type <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Depth (inches)	Horizon	Matrix Color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance, size & contrast	Texture, concretions, structure, etc.	Hydric soil indicators:	
0-5		10YR 2/1	none	n/a	clay loam	<input type="checkbox"/> Histosol	<input checked="" type="checkbox"/> Matrix chroma ≤2 with mottles
5+		10YR 5/2	10YR 4/6	small, infrequent	gravelly clay loam	<input type="checkbox"/> Histic epipedon	<input type="checkbox"/> Mg or Fe concretions
						<input type="checkbox"/> Sulfidic odor	<input type="checkbox"/> Aquic moisture regime
						<input type="checkbox"/> Reducing conditions	<input checked="" type="checkbox"/> Gleyed or low chroma matrix
						<input type="checkbox"/> High organic content in surface layer (sandy soil)	
						<input type="checkbox"/> Organic streaking in sandy soil	
						<input type="checkbox"/> Listed on national/local hydric soils list	
						<input type="checkbox"/> Other:	

Hydric soils present? Yes No Rational for decision/remarks: Hydric soils were observed in this location.

Wetland determination: *Hydrophytic vegetation?* Yes No *Hydric soils?* Yes No *Wetland hydrology?* Yes No **Is the sampling point in a wetland?** Yes No

Rational/remarks: Positive indicators for all three parameters were observed in this location.

Notes:

Routine Wetland Determination Data Form
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: City of Bellingham/ Woodstock Farm	Date: 6/30/2006	Community ID: Upland	Do normal circumstances exist on site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Applicant/Owner: City of Bellingham	County: Whatcom	Transect ID: none	Is the site significantly disturbed (atypical)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Investigators: V. Jackson, -, P. Kairis	State: WA	Plot ID: #4	Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	S/T/R: 13/37N/02E		Explanation of atypical or problem area:

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

Dominant Plant Species	*Stratum	% Cover	Indicator	Dominant Plant Species	*Stratum	% Cover	Indicator
<i>Acer macrophyllum</i>	T	100	FACU		-	-	-
<i>Polystichum munitum</i>	H	95	FACU		-	-	-
<i>Oplopanax horridus</i>	S	Trace	FAC+		-	-	-
<i>Sambucus racemosa</i>	S	Trace	FACU		-	-	-
<i>Oemleria cerasiformis</i>	S	Trace	FACU		-	-	-
Hydrophytic vegetation Indicators: dominance				% of dominants OBL, FACW & FAC: 0%			
<input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation <input checked="" type="checkbox"/> Personal knowledge of regional plant communities				<input type="checkbox"/> Morphological adaptations <input type="checkbox"/> Physiological/reproductive adaptations <input type="checkbox"/> Other:		<input checked="" type="checkbox"/> Technical literature <input checked="" type="checkbox"/> Wetland plant database	
Hydrophytic vegetation present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Rationale for decision/remarks: Dominant species observed at this location were not hydrophytic.							

Hydrology

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Soil temperature: <input type="checkbox"/> Other:	Water marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on: Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Oxidized root (live roots) channels <12 inches: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No FAC Neutral: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sediment deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage patterns: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Other:	Local soil survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other
Depth of inundation: none inches Depth of free water in pit: >16 inches Depth to saturated soil: >16 inches			
Wetland hydrology present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Rational for decision/remarks: Indicators of hydrology were not observed in this location.			

Soils

Map Unit Name: Mapped as Nati loam (110)/Squalicum gravelly loam (156)				Field observations confirm mapped type <input type="checkbox"/> Yes <input type="checkbox"/> No		
Depth (inches)	Horizon	Matrix Color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance, size & contrast	Texture, concretions, structure, etc.	Hydric soil indicators:
		Not able to obtain a soil sample due to rocky unstable slopes			Soil profile not attainable (rocky talus slope).	<input type="checkbox"/> Histosol <input type="checkbox"/> Histic epipedon <input type="checkbox"/> Sulfidic odor <input type="checkbox"/> Reducing conditions <input type="checkbox"/> High organic content in surface layer (sandy soil) <input type="checkbox"/> Organic streaking in sandy soil <input type="checkbox"/> Listed on national/local hydric soils list <input type="checkbox"/> Other:
						<input type="checkbox"/> Matrix chroma ≤2 with mottles <input type="checkbox"/> Mg or Fe concretions <input type="checkbox"/> Aquic moisture regime <input type="checkbox"/> Gleyed or low chroma matrix

Hydric soils present? Yes No Rational for decision/remarks: n/a

Wetland determination: *Hydrophytic vegetation?* Yes No *Hydric soils?* Yes No *Wetland hydrology?* Yes No **Is the sampling point in a wetland?** Yes No

Rational/remarks: Positive indicators for two out of the three (vegetation and hydrology) parameters were not observed in this location.

Notes:

Routine Wetland Determination Data Form
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: City of Bellingham/ Woodstock Farm	Date: 6/30/2006	Community ID: Wetland	Do normal circumstances exist on site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Applicant/Owner: City of Bellingham	County: Whatcom	Transect ID: none	Is the site significantly disturbed (atypical)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Investigators: V. Jackson, -, P. Kairis	State: WA	Plot ID: #5 Wetland A	Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	S/T/R: 13/37N/02E		Explanation of atypical or problem area:

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

Dominant Plant Species	*Stratum	% Cover	Indicator	Dominant Plant Species	*Stratum	% Cover	Indicator
<i>Athyrium filix-femina</i>	H	Trace	FAC		-	-	-
<i>Tolmiea menziesii</i>	H	Trace	FAC		-	-	-
<i>Oplopanax horridus</i>	S	Trace	FAC+		-	-	-
	-	-	-		-	-	-
	-	-	-		-	-	-

Hydrophytic vegetation Indicators: dominance

% of dominants OBL, FACW & FAC: 0%

<input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation	<input type="checkbox"/> Morphological adaptations	<input checked="" type="checkbox"/> Technical literature
<input checked="" type="checkbox"/> Personal knowledge of regional plant communities	<input type="checkbox"/> Physiological/reproductive adaptations	<input checked="" type="checkbox"/> Wetland plant database
Hydrophytic vegetation present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Rationale for decision/remarks: All species observed at this location were hydrophytic.	<input type="checkbox"/> Other: Plot located in ephemeral channel. Little vegetation in the channel itself.	

Hydrology

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Soil temperature: <input type="checkbox"/> Other:	Water marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on: Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Oxidized root (live roots) channels <12 inches: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No FAC Neutral: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sediment deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage patterns: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Local soil survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth of inundation: none inches Depth of free water in pit:>16 inches Depth to saturated soil:>16 inches		Other: Plot located in ephemeral channel. Moist soil, but not saturated (site visit was during the dry season).	<input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other
Wetland hydrology present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Rational for decision/remarks: Secondary indicators of hydrology were observed in this location.		

Soils

Map Unit Name: Nati loam (110)/Squalicum gravelly loam (156) - Bellingham inclusions				Field observations confirm mapped type <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Depth (inches)	Horizon	Matrix Color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance, size & contrast	Texture, concretions, structure, etc.	Hydric soil indicators:
0-6		10 YR 2/1	none	n/a	silt loam, with areas of sandstone	<input type="checkbox"/> Histosol <input type="checkbox"/> Matrix chroma ≤2 with mottles <input type="checkbox"/> Histic epipedon <input type="checkbox"/> Mg or Fe concretions <input type="checkbox"/> Sulfidic odor <input type="checkbox"/> Aquic moisture regime <input type="checkbox"/> Reducing conditions <input checked="" type="checkbox"/> Gleyed or low chroma matrix <input type="checkbox"/> High organic content in surface layer (sandy soil) <input type="checkbox"/> Organic streaking in sandy soil <input type="checkbox"/> Listed on national/local hydric soils list <input type="checkbox"/> Other:
6+		bedrock			bedrock (sandstone)	

Hydric soils present? Yes No Rational for decision/remarks: Hydric soils were observed in this location.

Wetland determination: *Hydrophytic vegetation?* Yes No *Hydric soils?* Yes No *Wetland hydrology?* Yes No **Is the sampling point in a wetland?** Yes No

Rational/remarks: Positive indicators for all three parameters were observed in this location.

Notes:

Routine Wetland Determination Data Form
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: City of Bellingham/ Woodstock Farm	Date: 6/30/2006	Community ID: Upland	Do normal circumstances exist on site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Applicant/Owner: City of Bellingham	County: Whatcom	Transect ID: none	Is the site significantly disturbed (atypical)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Investigators: V. Jackson, -, P. Kairis	State: WA	Plot ID: #6	Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	S/T/R: 13/37N/02E		Explanation of atypical or problem area:

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

Dominant Plant Species	*Stratum	% Cover	Indicator	Dominant Plant Species	*Stratum	% Cover	Indicator
<i>Alnus rubra</i>	T	40	FAC		-	-	-
<i>Thuja plicata</i>	T	30	FAC		-	-	-
<i>Acer circinatum</i>	S	20	FAC-		-	-	-
<i>Polystichum munitum</i>	H	20	FACU		-	-	-
	-	-	-		-	-	-
Hydrophytic vegetation Indicators: dominance				% of dominants OBL, FACW & FAC:50%			
<input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation <input checked="" type="checkbox"/> Personal knowledge of regional plant communities				<input type="checkbox"/> Morphological adaptations <input type="checkbox"/> Physiological/reproductive adaptations <input type="checkbox"/> Other:		<input checked="" type="checkbox"/> Technical literature <input checked="" type="checkbox"/> Wetland plant database	
Hydrophytic vegetation present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Rationale for decision/remarks: Majority of dominant species observed at this location were not hydrophytic.							

Hydrology

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Soil temperature: <input type="checkbox"/> Other:	Water marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on: Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Oxidized root (live roots) channels <12 inches: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No FAC Neutral: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sediment deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage patterns: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Other:	Local soil survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other
Depth of inundation: none inches Depth of free water in pit:>16 inches Depth to saturated soil:>16 inches			
Wetland hydrology present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Rational for decision/remarks: Indicators of hydrology were not observed in this location.			

Soils

Map Unit Name: Nati loam (110)/Squalicum gravelly loam (156)					Field observations confirm mapped type <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Depth (inches)	Horizon	Matrix Color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance, size & contrast	Texture, concretions, structure, etc.	Hydric soil indicators:	
0-1.5	duff	n/a	n/a	n/a	duff	<input type="checkbox"/> Histosol	<input type="checkbox"/> Matrix chroma ≤2 with mottles
1.5-12		10YR3/3	none	n/a	loam	<input type="checkbox"/> Histic epipedon	<input type="checkbox"/> Mg or Fe concretions
						<input type="checkbox"/> Sulfidic odor	<input type="checkbox"/> Aquic moisture regime
						<input type="checkbox"/> Reducing conditions	<input type="checkbox"/> Gleyed or low chroma matrix
						<input type="checkbox"/> High organic content in surface layer (sandy soil)	<input type="checkbox"/> Organic streaking in sandy soil
						<input type="checkbox"/> Listed on national/local hydric soils list	<input type="checkbox"/> Other:

Hydric soils present? Yes No Rational for decision/remarks: Hydric soils were not observed in this location.

Wetland determination: *Hydrophytic vegetation?* Yes No *Hydric soils?* Yes No *Wetland hydrology?* Yes No **Is the sampling point in a wetland?** Yes No

Rational/remarks: Positive indicators for all three parameters were not observed in this location.

Notes:

Routine Wetland Determination Data Form
(WA State Wetland Delineation Manual or 1987 Corps Wetland Delineation Manual)

Project/Site: City of Bellingham/ Woodstock Farm	Date: 6/30/2006	Community ID: Upland	Do normal circumstances exist on site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Applicant/Owner: City of Bellingham	County: Whatcom	Transect ID: none	Is the site significantly disturbed (atypical)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Investigators: V. Jackson, -, P. Kairis	State: WA	Plot ID: #7	Is the area a potential problem area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	S/T/R: 13/37N/02E		Explanation of atypical or problem area:

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

Dominant Plant Species	*Stratum	% Cover	Indicator	Dominant Plant Species	*Stratum	% Cover	Indicator
<i>Agrostis</i> sp.	H	70	FAC		-	-	-
<i>Ranunculus repens</i>	H	40	FACW		-	-	-
<i>Equisetum arvense</i>	H	15	FAC		-	-	-
<i>Athyrium filix-femina</i>	H	10	FAC		-	-	-
	-	-	-		-	-	-

Hydrophytic vegetation Indicators: dominance

<input type="checkbox"/> Visual observation of plant species growing in areas of prolonged inundation/saturation	<input type="checkbox"/> Morphological adaptations	<input checked="" type="checkbox"/> Technical literature
<input checked="" type="checkbox"/> Personal knowledge of regional plant communities	<input type="checkbox"/> Physiological/reproductive adaptations	<input checked="" type="checkbox"/> Wetland plant database
Hydrophytic vegetation present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Rationale for decision/remarks: The majority of dominant species observed at this location were not hydrophytic.	<input type="checkbox"/> Other:	

Hydrology

Is it the growing season? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Soil temperature: <input type="checkbox"/> Other:	Water marks: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No on: Drift Lines: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Oxidized root (live roots) channels <12 inches: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No FAC Neutral: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sediment deposits: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Drainage patterns: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Local soil survey: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Water-stained leaves: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Depth of inundation: none inches Depth of free water in pit:>16 inches Depth to saturated soil:>16 inches		Other:	<input type="checkbox"/> Stream, lake or gage data <input type="checkbox"/> Aerial photographs <input type="checkbox"/> Other

Wetland hydrology present? Yes No

Rational for decision/remarks: Sufficient indicators of hydrology were not observed in this location.

Soils

Map Unit Name: Nati loam (110)/Squalicum gravelly loam (156)				Field observations confirm mapped type <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Depth (inches)	Horizon	Matrix Color (Munsell moist)	Mottle colors (Munsell moist)	Mottle abundance, size & contrast	Texture, concretions, structure, etc.	Hydric soil indicators:
0-5		10YR 5/2	none	n/a	rocky silt loam. compact	<input type="checkbox"/> Histosol <input type="checkbox"/> Matrix chroma ≤2 with mottles <input type="checkbox"/> Histic epipedon <input type="checkbox"/> Mg or Fe concretions <input type="checkbox"/> Sulfidic odor <input type="checkbox"/> Aquic moisture regime <input type="checkbox"/> Reducing conditions <input type="checkbox"/> Gleyed or low chroma matrix <input type="checkbox"/> High organic content in surface layer (sandy soil) <input type="checkbox"/> Organic streaking in sandy soil <input type="checkbox"/> Listed on national/local hydric soils list <input type="checkbox"/> Other:
5+		bedrock			bed rock	

Hydric soils present? Yes No Rational for decision/remarks: Hydric soils were observed in this location.

Wetland determination: *Hydrophytic vegetation?* Yes No *Hydric soils?* Yes No *Wetland hydrology?* Yes No **Is the sampling point in a wetland?** Yes No

Rational/remarks: Positive indicators for all three parameters were not observed in this location.

Notes:

Wetland Rating Field Data Form- Western Washington

Background Information:

Name of Rater: M. Porter Affiliation: NW Ecological Date of site visit: 06/30/2006

Name of Wetland (if known): City of Bellingham/ Woodstock Farm/ Wetland A

Government Jurisdiction of Wetland:

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

1/4Section: NW

Section: 13

Township: 37N

Range: 02E

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

20

Score for Hydrologic Functions

4

Score for Habitat Functions

22

TOTAL score for Functions

46

Category based on SPECIAL CHARACTERISTICS of wetland

I II III Does not apply

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

Category III

Check the appropriate type and class of wetland being rated.

WETLAND TYPE		WETLAND CLASS
Estuarine	<input type="checkbox"/>	Depressional <input checked="" type="checkbox"/>
Natural Heritage Wetland	<input type="checkbox"/>	Riverine <input type="checkbox"/>
Bog	<input type="checkbox"/>	Lake-fringe <input type="checkbox"/>
Mature Forest	<input type="checkbox"/>	Slope <input type="checkbox"/>
Old Growth Forest	<input type="checkbox"/>	Flats <input type="checkbox"/>
Coastal Lagoon	<input type="checkbox"/>	Freshwater Tidal <input type="checkbox"/>
Interdunal	<input type="checkbox"/>	
None of the Above	<input type="checkbox"/>	

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. <i>Has the wetland been documented as a habitat for any Federally listed Threatened or Endangered plant or animal species (T/E species)?</i> For the purposes of this rating system, “documented” means the wetland is on the appropriate state or federal database.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SP2. <i>Has the wetland been documented as habitat for any State listed Threatened or Endangered plant or animal species?</i> For the purpose of this rating system, “documented” means the wetland is on the appropriate state database.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SP3. <i>Does the wetland contain individuals of Priority species listed by the WDFW for the state?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SP4. <i>Does the wetland have a local significance in addition to its functions?</i> For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

DEPRESSIONAL AND FLATS WETLANDS		Points
Water Quality Functions – Indicators that wetland functions to improve the water quality.		
D1 Does the wetland have the potential to improve water quality?		-----
D1.1 Characteristics of surface water which flows out of the wetland:		
<input type="checkbox"/> Wetland is depression with no surface water outlet <input type="checkbox"/> Wetland has intermittently flowing, or highly constricted outlet <input checked="" type="checkbox"/> Wetland has an unconstricted surface outlet <input type="checkbox"/> Wetland is flat and has no obvious outlet and/or outlet is a ditch	3 points 2 points 1 point 1 point	1
D1.2 The soil 2 inches below the surface is clay, organic, or smells anoxic (hydrogen sulfide).		4
	<input checked="" type="checkbox"/> YES 4 points <input type="checkbox"/> NO 0 points	
D1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest class):		5
<input checked="" type="checkbox"/> Wetland has persistent, ungrazed, vegetation in >95% of the area <input type="checkbox"/> Wetland has persistent, ungrazed, vegetation in > 1/2 of the area <input type="checkbox"/> Wetland has persistent, ungrazed, vegetation in > 1/10 of the area <input type="checkbox"/> Wetland has persistent, ungrazed, vegetation in < 1/10 of the area	5 points 3 points 1 point 0 points	
D1.4 Characteristics of seasonal ponding or inundation.		0
This is the area of the wetland that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 years.		
<input type="checkbox"/> Area seasonally ponded is > 1/2 total area of the wetland <input type="checkbox"/> Area seasonally ponded is > 1/4 total area of the wetland <input checked="" type="checkbox"/> Area seasonally ponded is < 1/4 total area of the wetland	4 points 2 points 0 points	
Total for D1	<i>Add the points in the boxes above</i>	10
D2 Does the wetland 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?		
Which of the following conditions provide the sources of pollutants?		
<input type="checkbox"/> Grazing in the wetland or within 150 feet <input checked="" type="checkbox"/> Untreated stormwater discharges to the wetland <input type="checkbox"/> Tilled fields or orchards within 150 feet of the wetland <input type="checkbox"/> A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging <input type="checkbox"/> Residential, urban areas, or golf courses are within 150 feet of wetland <input type="checkbox"/> Wetland is fed by groundwater high in phosphorus or nitrogen <input checked="" type="checkbox"/> Other Chuckanut Drive upslope of wetland	Multiplier =2	
YES = multiplier is 2	NO = multiplier is 1	
Total- Water Quality Functions	<i>Multiply the score from D1 by D2</i> <i>Add the score to the table on p.1</i>	20

DEPRESSIONAL AND FLATS WETLANDS		Points
Hydrologic Functions		
Indicators that wetland functions to reduce flooding and stream degradation.		
D3 Does the wetland have the <u>potential</u> to reduce flooding and erosion?		-----
D3.1 Characteristics of surface water which flows out of the wetland:		
<input type="checkbox"/> Wetland has no surface water outlet	4 points	0
<input type="checkbox"/> Wetland has an intermittently flowing, or highly constricted outlet	2 points	
<input type="checkbox"/> Wetland is flat and has no obvious outlet and/or outlet is a small ditch	1 point	
<input checked="" type="checkbox"/> Wetland has an unconstricted surface outlet	0 points	
D3.2 Depth of Storage during wet periods		1
Estimate the height of ponding above the bottom of the outlet		
<input type="checkbox"/> Marks of ponding are 3 ft or more above the surface	7 points	
<input type="checkbox"/> The wetland is a headwater wetland	5 points	
<input type="checkbox"/> Marks of ponding between 2 ft to < 3 ft from the surface	5 points	
<input type="checkbox"/> Marks are at least 0.5 ft to < 2 ft from the surface	3 points	
<input checked="" type="checkbox"/> Wetland is flat but has small depressions on the surface that trap water	1 point	
<input type="checkbox"/> Marks of ponding less than 0.5 ft	0 points	
D3.3 Contribution of wetland to storage in the watershed		3
Estimate the ratio of the area of upstream basin contributing surface water to the area of the wetland itself.		
<input type="checkbox"/> The area of the basin is less than 10 times the area of the wetland	5 points	
<input checked="" type="checkbox"/> The area of the basin is 10 to 100 times the area of the wetland	3 points	
<input type="checkbox"/> The area of the basin is more than 100 times the area of the wetland	0 point	
<input type="checkbox"/> Wetland is in the FLATS class (basin = the wetland by definition)	5 points	
Total for D3	<i>Add the points in the boxes above</i>	4
D4 Does the wetland 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, and/or 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 ect. OR you estimate that more than 90% of the water in the wetland is from groundwater.		
Which of the following indicators of opportunity apply?		<i>Multiplier</i> =1
<input type="checkbox"/> Wetland is in a headwater of a river or stream that has flooding problems		
<input type="checkbox"/> Wetland drains to a river or stream that has flooding problems		
<input type="checkbox"/> Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems		
<input type="checkbox"/> Other		
YES = multiplier is 2 NO = multiplier is 1		
Total- Hydrologic Functions	<i>Multiply the score from D3 by D4</i> <i>Add score to table on p.1</i>	4

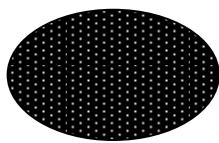
HABITAT FUNCTIONS	Points
Indicators that the wetland functions to provide important habitat	
H1 Does the wetland have the potential to provide habitat for many species?	-----
<p>H1.1 Vegetation structure</p> <p>Check the types of vegetation classes present (as defined in Cowardin) if the class covers more than 10% of the wetlands area or ¼ acre</p> <p><input type="checkbox"/> Aquatic bed <input checked="" type="checkbox"/> Emergent plants <input checked="" type="checkbox"/> Scrub/shrub- areas where shrubs have >30% cover <input checked="" type="checkbox"/> Forested- areas where trees have >30% cover <input type="checkbox"/> Forested areas have 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover)</p> <p>Add the number of vegetation types that qualify. 4 types or more = 4 points 3 types = 2 points 2 types = 1 point 1 type = 0 points</p>	3
<p>H1.2 Hydroperiod</p> <p>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.</p> <p><input type="checkbox"/> Permanently flooded or inundated <input checked="" type="checkbox"/> Seasonally flooded or inundated 4 types or more = 3 points <input checked="" type="checkbox"/> Occasionally flooded or inundated 3 types = 2 points <input checked="" type="checkbox"/> Saturated only 2 types = 1 points <input type="checkbox"/> Permanently flowing stream or river in, or adjacent to, the wetland <input type="checkbox"/> Seasonally flowing stream in, or adjacent to, the wetland <input type="checkbox"/> Lake-fringe wetland = 2 points <input type="checkbox"/> Freshwater tidal wetland = 2 points</p>	2
<p>H1.3 Richness of Plant Species</p> <p>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.</p> <p>Do not include Eurasian Milfoil, reed canary grass, purple loosestrife, or Canadian thistle</p> <p>Number of Species Counted List of species counted (not required):</p> <p><input type="checkbox"/> >19 species = 2 points <input checked="" type="checkbox"/> 5-19 species = 1 points <input type="checkbox"/> <5 species = 0 points</p>	1

H1.4 Interspersion of Habitats

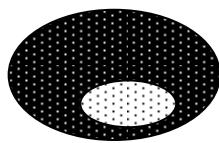
Decide from the diagrams below, whether interspersion between types of vegetation (described in H1.1), or vegetation types and un-vegetated areas (can include open water or mudflats) is high, medium, low, or none.

Points

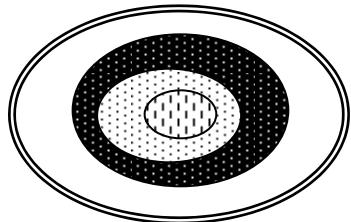
2



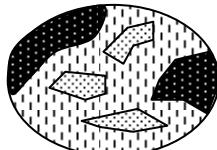
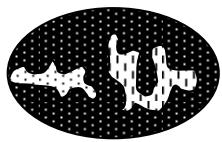
None = 0 points



Low = 1 point



Moderate = 2 points



(Riparian braided channels)

High = 3 points

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

H1.5 Special Habitat Features

Check the habitat features that are present in the wetland.

3

The number of checks is the number of points you put into the points column.

- Large, downed, woody debris within the wetland (>4in diameter and 6ft long)
- Standing snags in the wetland (diameter at bottom >4in)
- 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 1/4 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

H1. Total Score

Add the scores in all H1 columns above

11

Comments:

H2. Does the wetland have the <u>opportunity</u> to provide habitat for many species?	Points
<p>H2.1 Buffers</p> <p>Choose the description that best represents the condition of the buffer of the wetland. The highest scoring criterion that applies to the wetland is to be used in the rating.</p> <p><input type="checkbox"/> 100m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water with >95% circumference. No developed areas within undisturbed part of buffer. Relatively undisturbed also means no-grazing. 5 points</p> <p><input checked="" type="checkbox"/> 100m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water with >50% circumference. 4 points</p> <p><input type="checkbox"/> 50m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water with >95% circumference. 4 points</p> <p><input type="checkbox"/> 100m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water with >25% circumference. 3 points</p> <p><input type="checkbox"/> 50m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water with >50% circumference. 3 points</p> <p>If the buffer does not meet any of the above criteria</p> <p><input type="checkbox"/> No paved areas (except paved trails) or buildings within 25m (80ft) of wetland >95% circumference. Light to moderate grazing, or lawns are OK. 2 points</p> <p><input type="checkbox"/> No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. 2 points</p> <p><input type="checkbox"/> Heavy grazing in the buffer. 1 point</p> <p><input type="checkbox"/> Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland). 0 points</p> <p><input type="checkbox"/> Buffer does not meet any of the criteria above. 1 point</p>	4
<p>H2.2 Corridors and Connections</p> <p>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.</p> <p>YES = 4 points (go to question H2.3) NO = go to question H2.2.2</p> <p>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.</p> <p>YES = 2 points (go to question H2.3) NO = go to question H2.2.3.</p> <p>H2.2.3 Is the wetland:</p> <p><input checked="" type="checkbox"/> within 5 mi (8km) of a brackish or salt water estuary OR</p> <p><input type="checkbox"/> within 3 mi of a large field or pasture (>40 acres) OR</p> <p><input type="checkbox"/> within 1 mi of a lake greater than 20 acres?</p>	1

H2.3 Near or adjacent to other priority habitats listed by WDFW	Points
<p>Which of the following priority habitats are within 330ft (100m) of the wetland?</p> <p><input checked="" type="checkbox"/> Riparian: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.</p> <p><input type="checkbox"/> Aspen Stands: Pure or mixed stands of aspen greater than 0.8ha (2acres).</p> <p><input type="checkbox"/> Cliffs: Greater than 7.6 m (25ft) high and occurring below 5000ft.</p> <p><input type="checkbox"/> Old-growth forests: Old growth west of Cascade crest. Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) which are >81 cm (32 in) dbh or > 200 yrs of age.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Prairies: Relatively undisturbed areas (as indicated by dominance of native plants) where grasses and/or forbs form the natural climax plant community.</p> <p><input type="checkbox"/> 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.</p> <p><input type="checkbox"/> Caves: A naturally occurring cavity, recess, void, or system of interconnected passages.</p> <p><input type="checkbox"/> Oregon White Oak: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component of the stand is 25%.</p> <p><input type="checkbox"/> Urban Natural Open Space: A priority species resides within or is adjacent to the open space and uses it for breeding and/or regular feeding; and /or the open space functions as a corridor connecting other priority habitats, especially those that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4ha (10 acres) and is surrounded by urban development.</p> <p><input checked="" type="checkbox"/> Estuary/Estuary-like: Deepwater tidal habitats and adjacent tidal wetlands, usually semi-enclosed by land but with open, partly obstructed or sporadic access to the open ocean, and which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Estuarine habitat extends upstream and landward to where ocean-derived salts measure less than 0.5% during the period of average annual low flow. Includes both estuaries and lagoons.</p> <p><input type="checkbox"/> Marine/ Estuarine Shorelines: Shorelines include the inter-tidal and sub-tidal zones of beaches, and may also include the backshore and adjacent components of the terrestrial landscape (e.g. cliffs, snags, mature trees, dunes, meadows) that are important to shoreline and associated fish and wildlife, and that contribute to shoreline function (e.g. sand/rock/log recruitment, nutrient contribution, erosion control).</p>	3

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

2 priority habitats = 3 points	
1 priority habitat = 1 point	
no priority habitats = 0 points	

H2.4 Wetland Landscape	Points
Choose the one description of the landscape around the wetland that best fits.	
<input type="checkbox"/> There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, field, or other development). 5 points	3
<input type="checkbox"/> The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile. 5 points	
<input checked="" type="checkbox"/> There are at least 3 other wetlands with in ½ mile, BUT the connection between them is disturbed. 3 points	
<input type="checkbox"/> The wetland is Lake-fringe on a lake WITH disturbance and there are 3 other lake-fringe wetlands within ½ mile. 3 points	
<input type="checkbox"/> There is at least 1 other wetland within ½ mile. 2 points	
<input type="checkbox"/> There are no other wetlands within ½ mile. 0 points	
H2. Total Score <i>Add the scores in all of the H2 columns above</i>	11
Total Score for Habitat Functions- <i>Add the points from the total H1 and H2 boxes Add the score to table on p.1</i>	22