

SR 539 Potter Road Mitigation Site

SR 542: CED East Church Mountain Road Roadway Realignment and Culvert Replacement
(MP 38.67 to MP 39.04)

USACE (14) NWS-2009-786, WIN# A54230G

SR 539: Ten Mile Road to Badger Road (SR 546) Widening (MP 5.90 to MP 12.62)

USACE NWS-2007-470, WIN #A53910D

SR 539 Widening Project: Horton to Ten Mile Road (MP 1.64 to MP 6.26)

USACE 200500927, WIN #A53902D

SR 542/Everson Goshen Road Vic to SR 9 Vic

USACE (23) NWS-2010-938, WIN #A54205G

SR 546/Depot Rd and Bender Rd-Intersection Improvements

USACE (18) NWS-2012-575, WIN #A54600F

Northwest Region

2014 MONITORING REPORT

Wetlands Program

Issued March 2015



**Washington State
Department of Transportation**

Environmental Services Office

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General Site Information			
USACE Number	(14) NWS-2009-786, NWS-2007-470, 200500927, (23) NWS-2010-938, (18) NWS-2012-575		
Mitigation Location	West of Van Zandt, off of Potter Road, Whatcom County		
LLID Number	1222054487876		
Construction Date	2008-2009		
Monitoring Period	2010-2019		
Year of Monitoring	5 of 10		
Area of Project Impact¹	Wetland	Buffer	
	8.15 acres	6.8 acres	
Type of Mitigation	Wetland Establishment	Wetland Enhancement	Buffer Enhancement
Planned Area of Mitigation	10.4 acres	6.53 acres	9.24 acres

¹Additional mitigation provided at SR 539 Larson Road, SR 539 Strand Road, and SR 539 Wisner Lake Mitigation Sites. See Appendix 3, Table 1 for a breakdown of projects, mitigation sites, and mitigation acreage.

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Summary of Monitoring Results and Management Activities (2014)

Performance Standards	2014 Results ²	Management Activities
Wetland hydrology present	Present (see Appendix 3, Table 2)	
Wetland delineated	17.17 acres (see Appendix 5)	
At least 35% cover native facultative or wetter woody species (including native colonizing vegetation) in the forested and scrub-shrub wetland	63% cover (CI _{80%} = 56-71%)	
No more than 20% cover by non-native invasive species (listed in WSDOT 2009) across the entire mitigation site. Japanese knotweed (<i>Reynoutria japonica</i>), and purple loosestrife (<i>Lythrum salicaria</i>) shall not be tolerated on the mitigation site. The presence of Japanese knotweed, English Ivy (<i>Hedera helix</i>), purple loosestrife, and Eurasian water milfoil (<i>Myriophyllum spicatum</i>) will initiate the invasive species contingency measures.	5% cover (CI _{80%} = 1-9%); reed canarygrass present	Weed control was performed on 10 days (February through November) in 2014.
At least 30% cover native woody species (including native colonizing vegetation) in the buffer	65% cover (CI _{80%} = 58-73%)	
No more than 20% cover by non-native invasive species (listed in WSDOT 2009) in the buffer communities across the entire mitigation site. Japanese knotweed and purple loosestrife shall not be tolerated on the mitigation site. The presence of Japanese knotweed or purple loosestrife will initiate the invasive species contingency measures.	1% cover; reed canarygrass and Japanese knotweed present	Weed control was performed on 10 days (February through November) in 2014.

² Estimated values are presented with their corresponding statistical confidence interval. For example, 63% cover (CI_{80%} = 56-71%) means we are 80% confident that the true cover value is between 56 and 71 percent.

Report Introduction

This report summarizes fifth-year (Year-5) monitoring activities at the State Route (SR) 539 Potter Road Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site development. Monitoring activities included vegetation surveys, photo-documentation, and assessments of wetland hydrology. Hydrology was monitored March 4, 17, and April 7, 2014 and vegetation was monitored July 14 and 15, 2014.

What is the SR 539 Potter Road Mitigation Site?

This 26.17-acre mitigation site (Figure 1) is located west of SR 9, and the town of Van Zandt. The Potter Road Mitigation site consists of 10.4 acres of wetland establishment, 6.53 acres of wetland enhancement, and 9.24 acres of buffer enhancement. The site was established to partially compensate for the loss of wetlands due to several road improvements and widening projects within the Nooksack watershed (WRIA 01). This site will increase wetland area, allowing for enhanced flood flow alteration, sediment removal, nutrient and toxicant removal, organic matter production and transport, erosion control and shoreline stabilization, general wildlife habitat, and native plant richness.

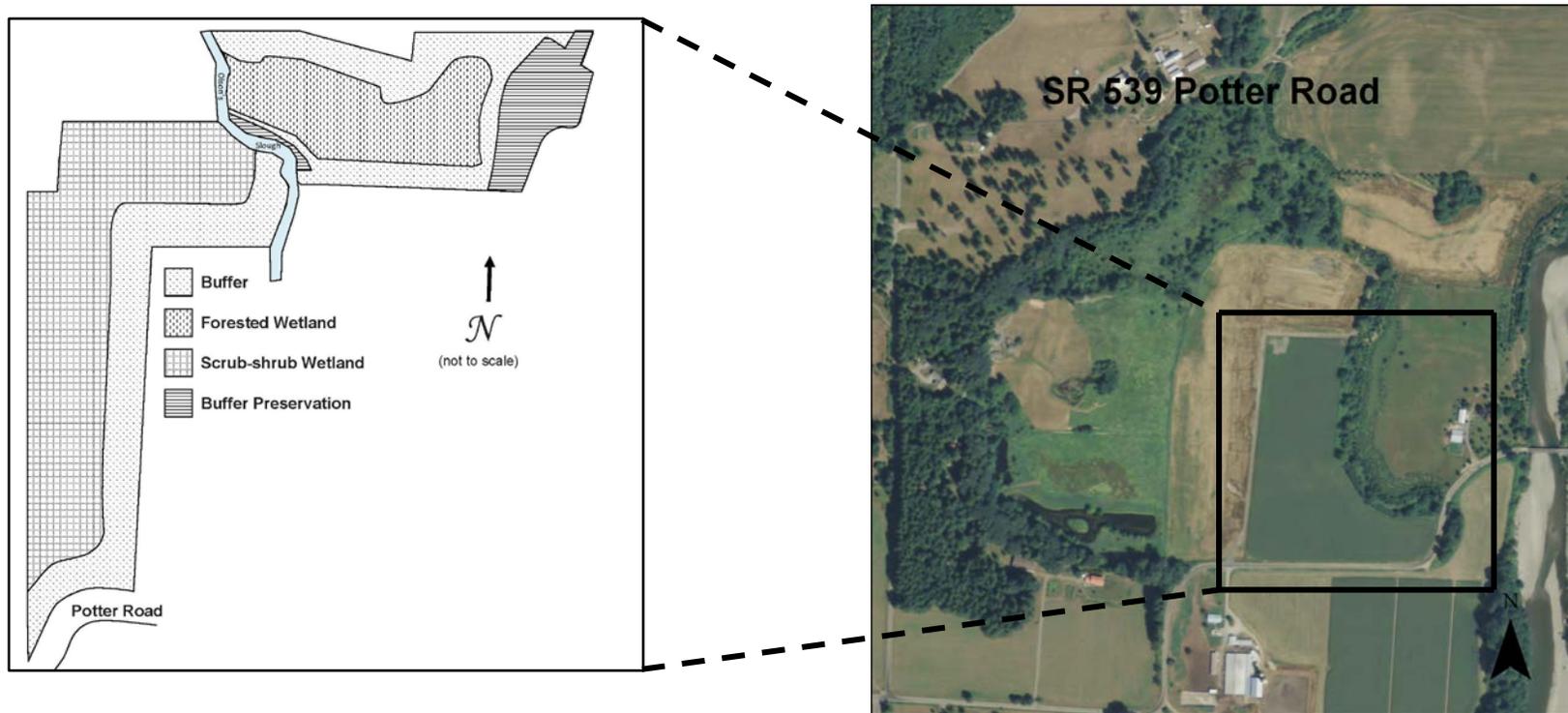


Figure 1 Site Sketch

The SR 539 Potter Road Mitigation Site consists of a scrub-shrub and forested wetland and upland buffer. The site is bisected by Olson's Slough, which drains into the South Fork of the Nooksack River. Appendix 2 includes site directions.

What are the performance standards for this site? (Standards apply to all permits unless otherwise noted.)

Year 5

Performance Standard 1

The soils will be saturated to the surface, or standing water will be present in a monitoring well at 12 inches below the surface or less, for a consecutive number of days greater than or equal to 10 percent of the growing season when rainfall meets or exceeds the 30-year average.

Performance Standard 2 – (applies to permits: NWS-2007-470-SOD, 200500927, (23) NWS-2010-938, (18) NWS-2012-575)

The wetland areas will be delineated using current methods. The Potter Road Site will contain a total of 13.0 acres of created wetland (1.74 acres for permit NWS-2007-470-SOD, 10.40 acres for permit 200500927, 0.85 acre for permit (23) NWS-2010-938, and 0.01 acre for permit (18) NWS-2012-575).

Performance Standard 3

Native facultative or wetter woody species will achieve a minimum of 35 percent coverage in the forested and scrub-shrub wetland communities. Native colonizing vegetation will be included in these coverage calculations.

Performance Standard 4

No more than 20 percent cover by non-native invasive species (listed in WSDOT 2009) across the entire mitigation site. Japanese knotweed and purple loosestrife shall not be tolerated on the mitigation site. The presence of Japanese knotweed, English Ivy, purple loosestrife, and Eurasian water milfoil will initiate the invasive species contingency measures.

Performance Standard 5

Native woody species will achieve a minimum of 30 percent coverage in the buffer community. Native colonizing vegetation will be included in these coverage calculations.

Performance Standard 6

No more than 20 percent cover by non-native invasive species (listed in WSDOT 2009) in the buffer communities across the mitigation sites. Japanese knotweed and purple loosestrife shall not be tolerated on the mitigation site. The presence of Japanese knotweed or purple loosestrife will initiate the invasive species contingency measures.

Year 10

Performance Standard 1

The wetland areas will be delineated using current methods. The Potter Road Site will contain 13.13 acres of created wetland (0.13 acres for permit NWS-2009-786, 1.74 acres for permit NWS-2007-470-SOD, 10.40 acres for permit number 200500927, 0.85 acre for permit (23) NWS-2010-938, and 0.01 acre for permit (18) NWS-2012-575).

Performance Standard 2

Native facultative or wetter woody species will achieve a minimum of 60 percent coverage in the forested and scrub-shrub wetland communities. Native colonizing vegetation will be included in these coverage calculations.

Performance Standard 3

No more than 20 percent cover by non-native invasive species (listed in WSDOT 2009) across the entire mitigation sites. Japanese knotweed and purple loosestrife shall not be tolerated on the mitigation site. The presence of Japanese knotweed, English Ivy, purple loosestrife, and Eurasian water milfoil will initiate the invasive species contingency measures.

Performance Standard 4

Native woody species will achieve a minimum of 50 percent coverage in the buffer communities. Native colonizing vegetation will be included in this coverage calculation.

Performance Standard 5

No more than 20 percent cover by non-native invasive species (listed in WSDOT 2009) in the buffer communities across the mitigation sites.

Appendix 1 shows the as-built planting plan (WSDOT 2007).

How were the performance standards evaluated?

WSDOT staff collected hydrology data and performed a wetland delineation using methods described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), *the Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE 2010) and a Global Positioning System (Trimble Mapping Grade) (Performance Standards 1 and 2). Four permanent hydrology monitoring wells were sampled (wells number 1 and 3-5) (Appendix 1). No readings were taken for well 2 as it could not be found. During each monitoring visit, visual observations were made to determine the extent of inundation and surface saturation. Depth and location of standing water was recorded. At each well location, in the absence of inundation or surface saturation, subsurface observations were made.

To evaluate standards for woody and invasive cover, a segmented 802-meter baseline was established north to south in the southern section of the site and west to east in the northern two sections of the site (Figure 2). Twenty-five sampling transects were systematically placed 32-meters apart, perpendicular to the baseline. The line-intercept method was used to determine woody cover, with twenty-four 20-meter long sample units placed randomly along the transects in the wetland (Performance Standards 3) and twenty-eight 10-meter long sample units placed randomly along the transects in the buffer (Performance Standard 5). The point-intercept method was used to determine invasive cover, with twenty-five 20-meter long sample units placed randomly along the transects in both the wetland and buffer (Performance Standards 4). Each

sample unit had 40 points spaced 0.5 meters apart. Invasive cover in the buffer was visually estimated (Performance Standard 6).

For additional details on the methods, see the [WSDOT Wetland Mitigation Site Monitoring Methods Paper](#) (WSDOT 2008).

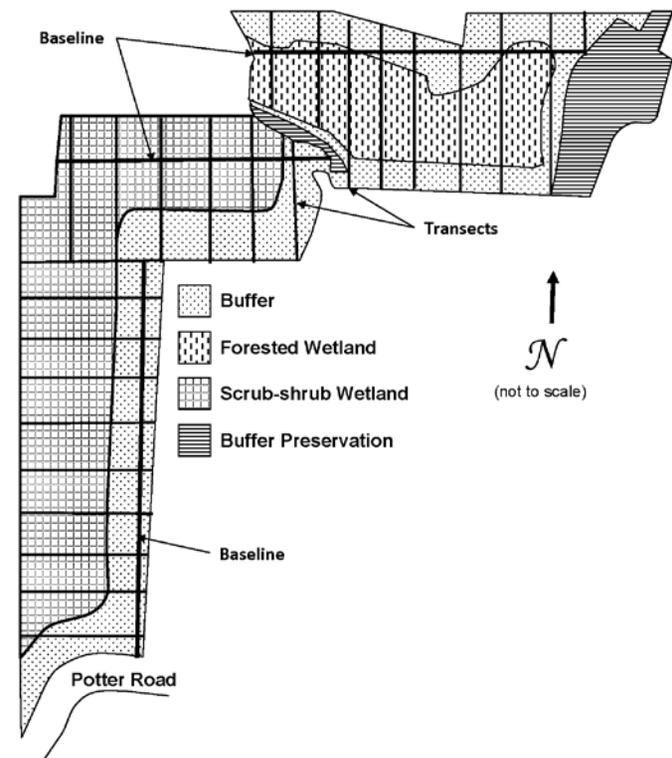


Figure 2 Site Sampling Design (2014)

How is the site developing?

This site is meeting all final Year-10 standards in Year-5 (Appendix 3, Table 3). Vegetation structure is diverse across the site and intermixed with a varied hydrologic regime. Beaver are active on the site and a substantial portion of the central wetland areas is permanently inundated to around three feet deep near the dam. The site is providing high quality wetland functions.

Woody vegetation in permanently flooded areas remains present and provides cover; though less cover than other seasonally inundated areas of the wetland. Reed canarygrass is invading along the southwestern fence line. Continued weed control is recommended.

Coyote, deer, rodents, rabbits, tree frogs, fish, and birds have been documented on site.

Results for Performance Standard 1
(Wetland hydrology):

Based on three hydrology visits in the months of March and April 2014, the hydrology standard has been achieved (Photo 1). Water was present within 12 inches of the soil surface or above for all four wells at all readings (Appendix 3, Table 2).

Results for Performance Standard 2
(13.0 acres of created wetland):

A delineation conducted in May and October 2014 indicates total wetland acreage is 17.17 acres. Appendix 4 contains the 2014 Wetland Delineation report.

Results for Performance Standard 3
(At least 35% cover native woody species in the scrub-shrub and forested wetland):

Native cover of facultative and wetter woody species in the wetland is 63 percent ($CI_{80\%} = 56-71\%$) (Photo 2). This exceeds the performance standard target. Dominate species in the wetland include: black cottonwood (*Populus balsamifera*), Sitka willow (*Salix sitchensis*), Pacific willow (*Salix lasiandra*), twinberry honeysuckle (*Lonicera involucrata*), and black hawthorn (*Crataegus douglasii*). Redosier dogwood (*Cornus alba*) were also observed during monitoring activities.



Photo 1
Wetland hydrology (March 2014)



Photo 2
Cover in the wetland (July 2014)

Results for Performance Standard 4

(Less than 20% cover non-native invasive species across the entire mitigation site):

Invasive species cover in the wetland is 5% ($CI_{80\%}=1-9\%$) and is comprised of reed canarygrass along the southwest site boundary. This value is below the performance standard threshold. Reed canarygrass is invading from the property to the west. Woody plantings are well established in this area and provide shade.

Results for Performance Standard 5

(At least 30% cover native woody species in the buffer):

Native cover of woody species in the buffer is 65% ($CI_{80\%}= 58-73\%$). This value exceeds the performance standard target. Dominate species in the buffer include: thimbleberry (*Rubus parviflorus*), snowberry (*Symphoricarpos albus*), Nootka rose (*Rosa nutkana*), twinberry honeysuckle, and Sitka willow. Vine maple (*Acer circinatum*), Douglas-fir (*Pseudotsuga menziesii*), redosier dogwood, black hawthorn, and salmonberry (*Rubus spectabilis*) were also observed during monitoring activities.

Results for Performance Standard 6

(Less than 20% cover non-native invasive species in the buffer communities):

Invasive cover in the upland buffer is visually estimated at one percent and includes scattered individuals of bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*), and oxeye daisy (*Leucanthemum vulgare*). This value is below the performance standard threshold. The buffer preservation area directly adjacent to the Nooksack River has had established Himalayan blackberry (*Rubus armeniacus*), reed canarygrass, and Japanese knotweed. The restoration crew has spent time in this area targeting these populations with special focus on eliminating Japanese knotweed. This effort is effective. Only a small patch of Japanese knotweed was observed during monitoring activities.

What is planned for this site?

Discussion regarding early closeout may be appropriate for this site. Continue weed control.

Appendix 1 – As-Built Planting Plan and Photo Point Locations with Hydrology Pit or Well Locations

(from WSDOT 2007)

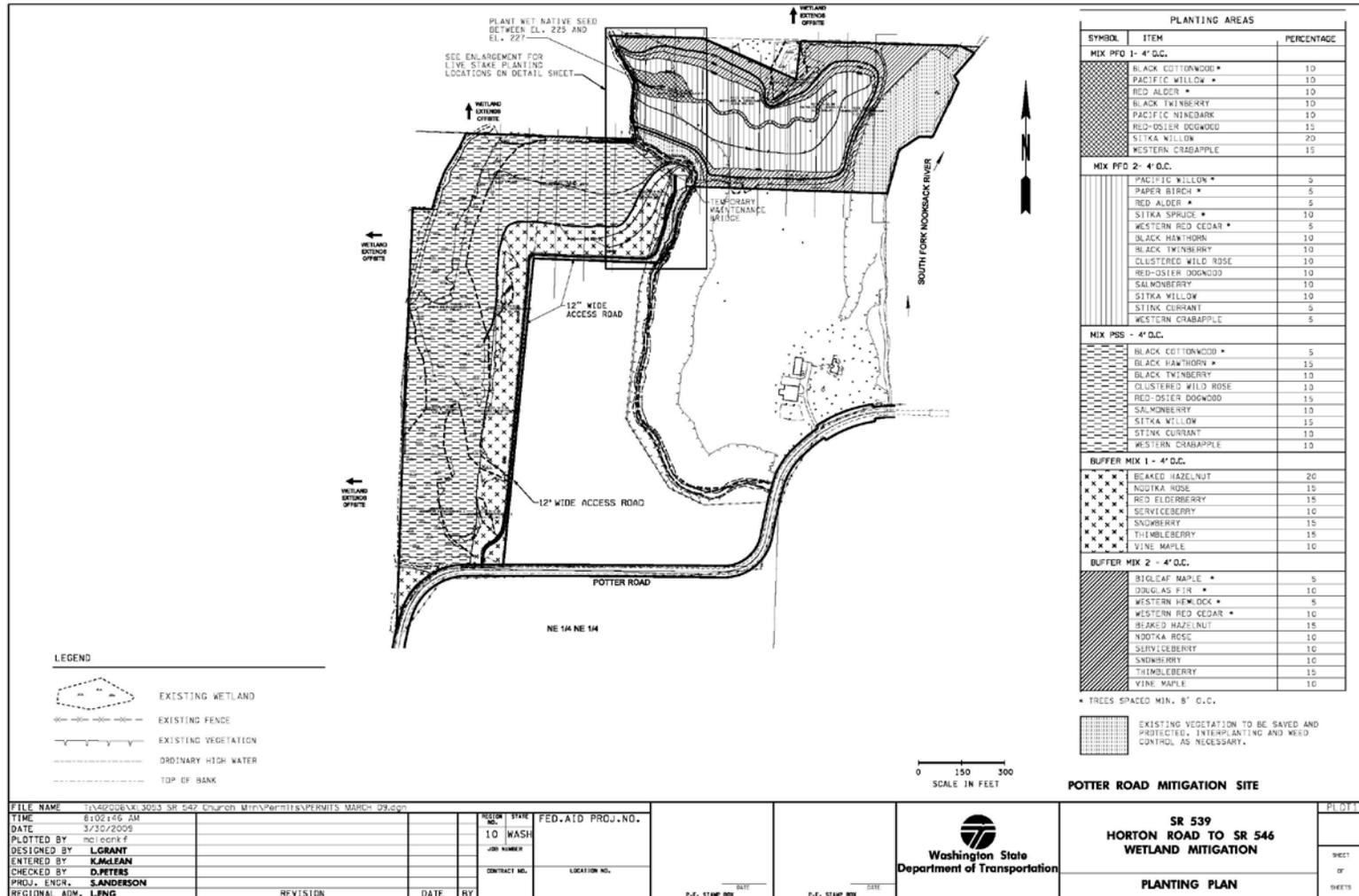
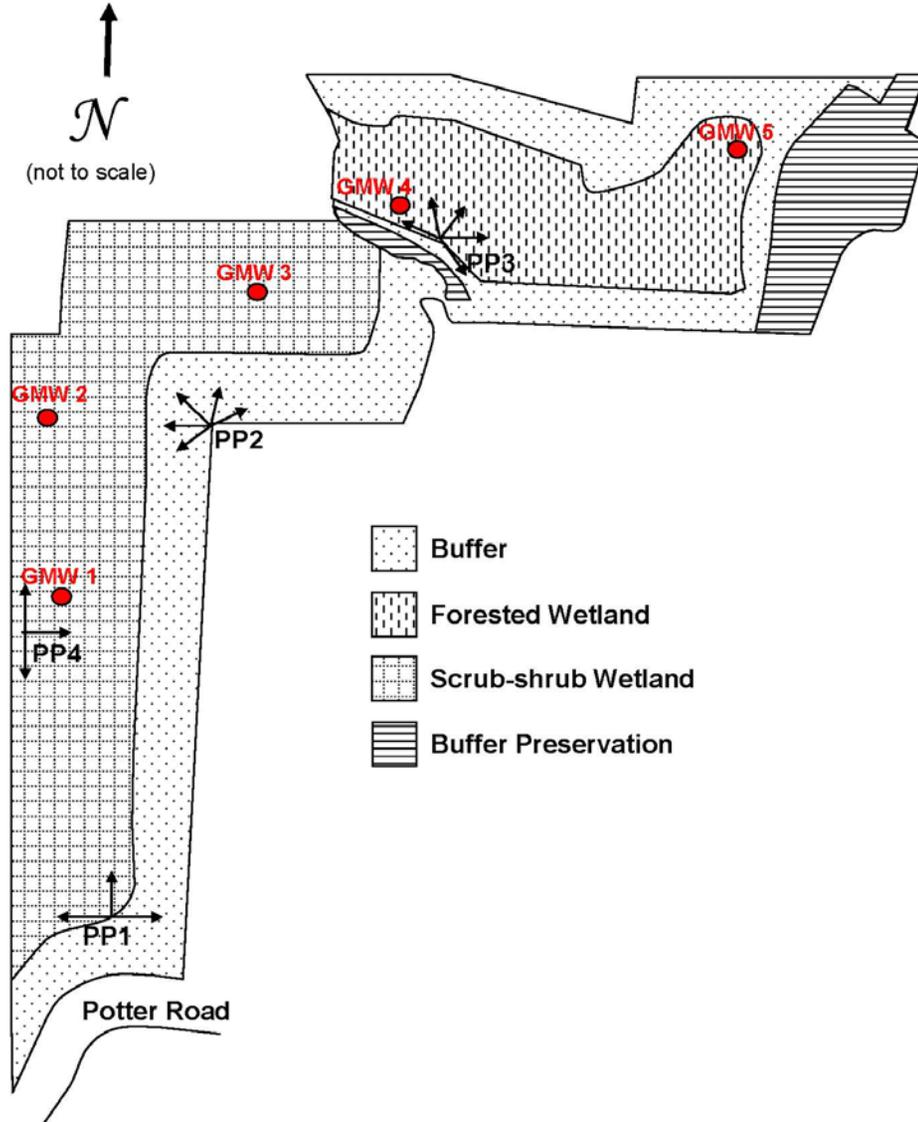


Photo Points and Ground Monitoring Wells



Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on July 14, 2014 and document current site development.



Photo Point 1a



Photo Point 1b



Photo Point 1c



Photo Point 2a



Photo Point 2b



Photo Point 2c



Photo Point 2d



Photo Point 2e



Photo Point 2f



Photo Point 3a



Photo Point 3b



Photo Point 3c



Photo Point 3d & e



Photo Point 4a



Photo Point 4b



Photo Point 4c

Driving Directions:

Take Interstate 5 north. Take exit 230 for SR 20 toward Burlington/Anacortes/Skagit airport. Turn right at Avon Cutoff/SR 20 E. Take first left onto S. Burlington Blvd. Turn right at Avon Cutoff/SR 20 E. Follow SR 20 east for 5.8 miles. Turn left at N Township St/SR 9 N. Follow SR 9 north for 20 miles. Sharp Left on Potter Road at MP 77.37, cross the South fork of the Nooksack River. Site is less than 1 mile west of SR 9 and north of Potter Road.

Appendix 3 – Data Tables

Table 1. Project and mitigation site acreage

Mitigation Type	Potter Road Mitigation Site (ac)	Strand Road Mitigation Site (ac)	Wiser Lake Mitigation Site (ac)	Larson Road Mitigation Site (ac)	Totals (ac)
SR 539 Horton Road to Tenmile Road USACE #200500927					
Establishment	7.66	0.00	0.00	0.37	8.03
Enhancement	3.57	6.26	0.00	1.12	10.95
Buffer Enhancement	4.47	4.37	0.00	0.10	8.94
SR 539 Tenmile Road to Badger Rd (SR 546) USACE #NWS-2007-470-SOD					
Establishment	1.74	0.00	0.00	0.00	1.74
Enhancement	1.49	0.00	2.53	0.00	4.02
Buffer Enhancement	4.77	0.00	2.09	0.00	6.86
SR 542 CED East Church Mountain Rd USACE #NWS-2009-786					
Establishment	0.13	0.00	0.00	0.00	0.13
Enhancement	0.52*	0.00	0.00	0.00	0.52
Buffer Enhancement	0.00	0.00	0.00	0.00	0.00
SR 542/Everson Goshen Road Vic to SR 9 Vic USACE #NWS-2010-938					
Establishment	0.85	0.00	0.00	0.00	0.85
Enhancement	0.00	0.00	0.00	0.00	0.00
Buffer Enhancement	0.00	0.00	0.00	0.00	0.00
SR 546/Depot Rd and Bender Rd Intersection Improvements USACE #NWS-2012-575					
Establishment	0.01	0.00	0.00	0.00	0.01
Buffer	0.00**	0.00	0.00	0.00	
Future Mitigation					
Establishment	0.01	0.00	0.00	0.00	0.02
Enhancement	0.95	0.00	0.00	0.00	0.95

*correct acreage according to SR 539 Horton Road to SR 546 Wetland Mitigation Schematic dated 11/10/2010 as per email dated Sept. 21, 2011 between Kristin Murray and Andrea Hassler.

**This project is mitigating for wetland impacts at the Potter Road site (0.01 acre), the buffer impacts are mitigated for onsite resulting in 0.22 acre of buffer restoration.

Table 2 Hydrology Observations

Date	Surface Observations	Well ID #	Water Level (inches below soil surface unless otherwise noted)
March 4, 2014	About 90 percent of the wetland is inundated northeast of the bridge. Southwest of the bridge, about two-thirds of the wetland area is inundated. New well number four was installed and the reading was taken 20 minutes after installation.	1	3.5
		3	Inundated to 10.5"
		4	7.5
		5	Inundated to 4.5"
March 17, 2014	The site is inundated in low areas and beaver have become more active.	1	2.5
		3	Inundated to 12.5"
		4	7.5
		5	Inundated to 5"
April 7, 2014		1	5
		3	Inundated to 13"
		4	7
		5	Inundated to 7"

Table 3. Year 10 performance standards met in year 5

Performance Standards	2014 Results
<p>The wetland areas will be delineated using current methods. The Potter Road Site will contain 13.13 acres of created wetland (0.13 acres for permit NWS-2009-786, 1.74 acres for permit NWS-2007-470-SOD, 10.40 acres for permit number 200500927, 0.85 acre for permit (23) NWS-2010-938, and 0.01 acre for permit (18) NWS-2012-575).</p>	<p>17.17 acres (See Appendix 5)</p>
<p>At least 60% cover native facultative or wetter woody species in the forested and scrub-shrub wetland communities. Native colonizing vegetation will be included in these coverage calculations.</p>	<p>63% cover (CI_{80%} = 56-71%)</p>
<p>Less than 20% cover by non-native invasive species (listed in WSDOT 2009) across the entire mitigation sites. Japanese knotweed and purple loosestrife shall not be tolerated on the mitigation site. The presence of Japanese knotweed, English Ivy, purple loosestrife, and Eurasian water milfoil will initiate the invasive species contingency measures.</p>	<p>5% cover (CI_{80%} = 1-9%); reed canarygrass present</p>
<p>At least 50% cover native woody species in the buffer communities. Native colonizing vegetation will be included in this coverage calculation.</p>	<p>65% cover (CI_{80%} = 58-73%)</p>
<p>Less than 20% cover by non-native invasive species (listed in WSDOT 2009) in the buffer communities across the mitigation sites.</p>	<p>1% cover; Japanese knotweed present</p>

Appendix 4 – Wetland Delineation Report

WETLAND DELINEATION REPORT

539 Potter Road Mitigation Site

**SR 542 CED East Church Mountain Road Roadway Realignment and
Culvert Replacement (MP 38.67 to MP 39.04)
USACE (NWP 14) NWS-2009-786**

**SR 539 Tenmile Road to Badger Road (SR 546) Widening
(MP 5.90 to MP 12.62)
USACE NWS-2007-470**

**SR 539 Widening Project: Horton to Tenmile Road
(MP 1.64 to MP 6.26)
USACE 2005-00927**

**SR 542 Everson Goshen Road Vic to SR 9 Vic
USACE (NWP 23) NWS-2010-938**

**SR 546 Depot Rd and Bender Rd-Intersection Improvements
USACE (NWP 18) NWS-2012-575**

Whatcom County, Washington

**Prepared by:
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November 2014



**Washington State
Department of Transportation**

Introduction

This report was prepared by the Washington State Department of Transportation (WSDOT) to describe the wetland boundary delineation for the SR 539 Potter Road mitigation site. Field work was conducted by WSDOT wetland biologists Doug Littauer and Sean Patrick, on May 7, 2013 and October 14, 2013. The delineation identifies 17.17 acres of wetland within the mitigation site boundaries.

General Information for the SR 539 Potter Road Mitigation Site		
Location:	S7 & S18, T38N, R5E. Whatcom County. (Vicinity map, Figure 1)	
	USACE NWP 14 Number	NWS-2009-786
	USACE IP Number	NWS-2007-470-SOD
	USACE IP Number	200500927
	USACE NWP 23 Number	NWS-2010-938
	USACE NWP 18 Number	NWS-2012-575
	Long./Lat. ID Number	1222054487876
	Land Resource Region (LRR)	A
	Major Land Resource Area (MLRA)	3
	Construction Date	2008 - 2009
Monitoring Period	2010 - 2019	
Year of Monitoring	4 of 10 (in 2013)	
Area of Project Impact¹	Impacts from multiple projects	
Total Delineated Wetland Area	17.17 acres	

¹ The SR 539 Potter Road mitigation site provides partial mitigation for multiple projects along with three other mitigation sites: SR 539 Larson Road, SR 539 Strand Road, and SR 539 Wisner Lake Mitigation Sites (WSDOT 2013).

Location

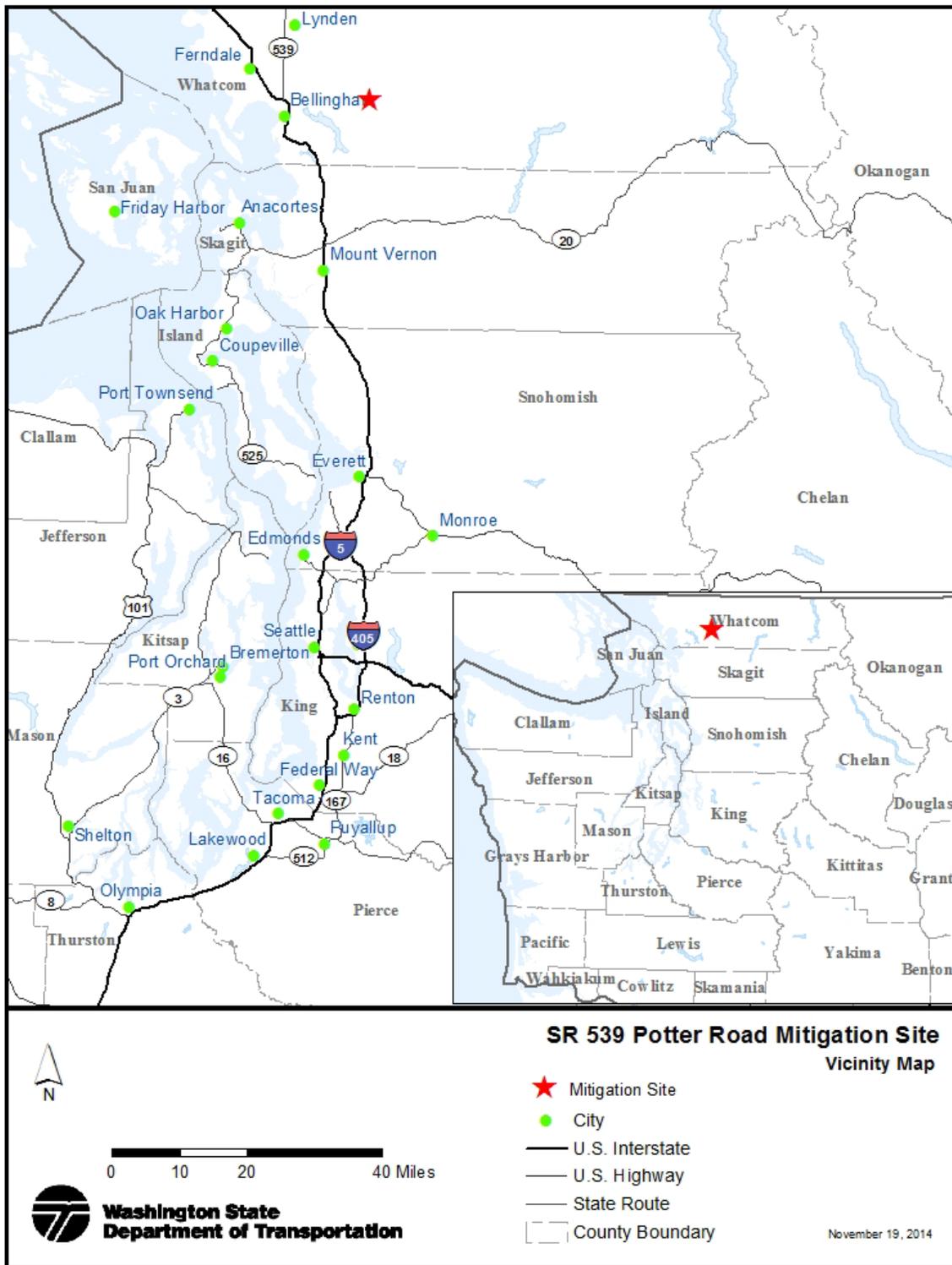


Figure 1. Vicinity Map

Methods

Wetland boundaries within the SR 539 Potter Road mitigation site were delineated using routine methods described in the:

- Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987),
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0) (USACE 2010)

Wetland boundaries were delineated based on on-site observations of hydrology, soils, and plant communities, in conjunction with background information.

A Global Positioning System (GPS) Trimble GeoXT mapping grade unit was used to record the wetland boundaries and sampling point locations (Figure 2). Wetland boundary points were recorded at regular intervals and at any change in direction along the boundary.

Wetland Delineation and Study Area

Study Area

Wetlands described in this report were assessed only within the wetland enhancement and establishment areas of the mitigation site (Figure 2). The site also includes a small section of preexisting vegetation between the wetland establishment areas in the northeast corner of the site and the South Fork Nooksack River. This area was not assessed and is not included in the 2013 delineation.

Wetlands

The SR 539 Potter Road mitigation site is a dynamic wetland with riverine, slope, and depressional areas with palustrine emergent (PEM) and palustrine scrub-shrub (PSS) vegetation communities. Varying hydrologic regimes, including sheet flow from a small stream, characterize hydrology on site and contribute to the complexity and habitat provided.

The delineation determined 17.17 acres of wetland were present within the SR 539 Potter Road mitigation site. Field work for Wetland 1 (W1) occurred on May 7, 2013. Wetland 2 (W2) was delineated on October 14, 2013. Delineation data were collected at six sampling points and recorded on wetland determination data forms (Appendix A). Paired wetland and upland sample points were used to define the wetland edge. Data recorded on wetland determination data forms characterize typical wetland and upland conditions observed on site. Vegetation, soils, and hydrology were examined in many additional sampling locations to determine the wetland boundary.

Beaver activity, resulting in permanent, deep inundation was observed in the central portion of the site in July 2014. Because beavers add complexity and dynamic elements to a wetland system that may be ephemeral or longer lasting, site conditions including wetland boundary may change over time.

Precipitation

The Regional Delineation Supplement Version 2.0 (USACE 2010) recommends using methods described in Chapter 19 in *Engineering Field Handbook* (NRCS 1997) to determine if precipitation occurring in the three full months prior to the site visit was normal, drier than normal, or wetter than normal. Actual rainfall is compared to the normal range of the 30-year average. When considering the three prior months as whole, wetter than normal precipitation conditions were present prior to the May 2013 field work and normal conditions were present prior to the October 2013 field work (Appendix B-1).

Trace to light precipitation was recorded in the ten days preceding field work for each of the two site visits (Appendix B-2).

Growing Season

The following evidence of the growing season was observed at the time of the May 2013 delineation:

- New vegetative growth was present on some herbaceous plants.
- The leaves on most woody species were partially or fully emerged.

During the October 2013 delineation vegetative portions of this year's growth were still green and most plants were still identifiable to species.

GPS Data - SR 539 Potter Road, 5/7/2013 & 10/14/2013

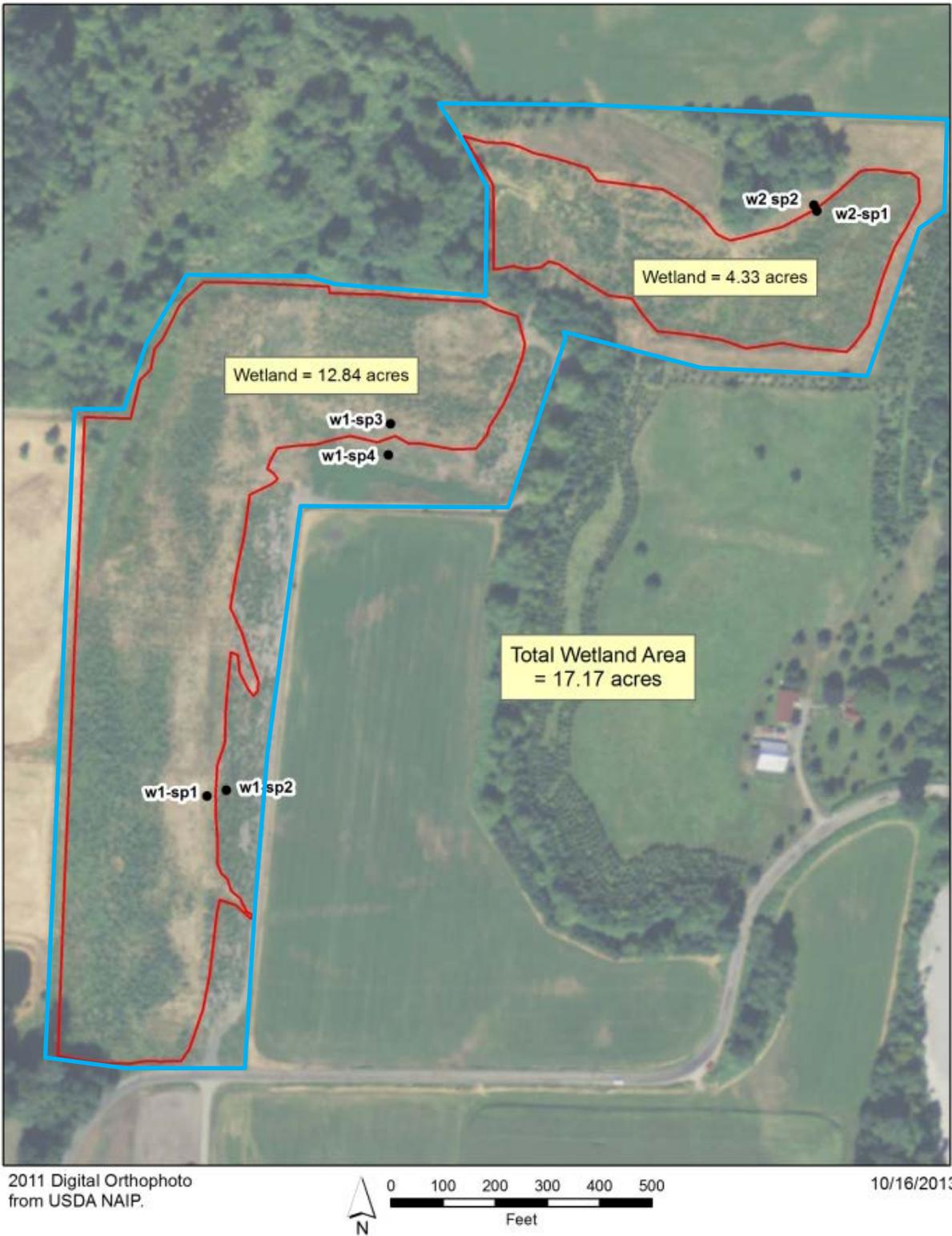


Figure 2. Study area in blue, wetland boundary in red, and sampling point locations in black.

SR 539 Potter Road Mitigation Site – Wetland Delineation Summary

Total Delineated Wetland Area		17.17 acres	
	Wetland Determination Data Form(s)	Appendix A; Sampling Point W1-SP1, W1-SP3, W2-SP1	
	Upland Determination Data Form(s)	Appendix A; Sampling Point W1-SP2, W1-SP4, W2-SP2	
	Delineator(s)	Doug Littauer Sean Patrick	
	Delineation Dates	W1 on May 7, 2013 W2 on October 14, 2013	
Vegetation	<p>Trees – none</p> <p>Shrubs – Sitka willow (<i>Salix sitchensis</i>), Pacific willow (<i>Salix lasiandra</i>), black cottonwood (<i>Populus balsamifera</i>), Pacific crabapple (<i>Malus fusca</i>), Nootka rose (<i>Rosa nutkana</i>), snowberry (<i>Symphoricarpos albus</i>), twinberry honeysuckle (<i>Lonicera involucrata</i>), redosier dogwood (<i>Cornus alba</i>), and black hawthorn (<i>Crataegus douglasii</i>)</p> <p>Herbs – water foxtail (<i>Alopecurus geniculatus</i>), reed canarygrass (<i>Phalaris arundinacea</i>), creeping buttercup (<i>Ranunculus repens</i>), soft rush (<i>Juncus effusus</i>), sawbeak sedge (<i>Carex stipata</i>), American speedwell (<i>Veronica americana</i>), and fringed willowherb (<i>Epilobium ciliatum</i>)</p>		
Soils	Soils examined to a depth of 18 inches exhibited hydric characteristics. Matrix colors of 10YR 2/1, 10YR 3/1, 2.5Y 4/1, 2.5Y 4/2, and 2.5Y 5/1 were observed. Redoximorphic concentrations and depletions were observed throughout the soil profile. Indicator Depleted Matrix (F3) met.		
Hydrology	A high groundwater table associated with the South Fork Nooksack River provides the primary hydrologic inputs on site. Riverine influences come to W1 as sheet flow along the western edge of the site and to W2 through a semi-constricted inlet on the west side of the wetland. Gently sloping topography carries surface and subsurface flows from agricultural fields to the east into W1. W2 had depressional areas. Beaver activity has increased surface water levels and duration in the central and northern portions of the site in W1 following the 2013 delineation. Water in the observation pits ranged 3 to 10 inches below the surface. Shallow inundation was observed in some areas of W1. Surface water to greater than two feet deep was observed in some areas of W2. Oxidized rhizospheres and water-stained leaves were also observed in some locations.		
Rationale for Delineation	Positive indicators of all three wetland criteria are present. Placement of boundary mainly determined by presence/absence of hydrology indicators. Topography also helped in the placement of the W2 boundary.		

Limitations

This wetland delineation report documents the investigation, best professional judgment and conclusions of WSDOT based on the site conditions encountered at the time of this study. The wetland delineation was performed in compliance with accepted standards for professional wetland biologists and applicable federal, state, and local ordinances. It is correct and complete to the best of our knowledge. It should be considered a preliminary jurisdictional determination of wetlands and other waters until it has been reviewed and approved in writing by the appropriate jurisdictional authorities.

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Appendix A —Wetland Determination Data Forms

Wetland Delineation Data Forms for:

W1-SP1

W1-SP2

W1-SP3

W1-SP4

W2-SP1

W2-SP2

Wetland polygons, sampling point locations, and wetland names shown in Figure 2.

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

Project/Site: SR 539 Potter Road City/County: Whatcom County Sampling Date: 07-May-13
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp1
 Investigator(s): Doug Littauer, Sean Patrick Section, Township, Range: S 18 T 38N R 5E
 Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): concave Slope: 5.0% / 2.9%
 Subregion (LRR): LRR A Lat.: 48.789 Long.: -122.205 Datum: NAD83HARN
 Soil Map Unit Name: Briscot silt loam, drained, 0 to 2 percent slopes NWI classification: PEM

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="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
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Remarks:
 Would be a PSS community except it would need 30% or more cover in the shrub layer. Wetter than normal precipitation conditions were present prior to the May 2013 field work (Appendix B-1).

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: 15 ft dia)					
1. _____	0	<input type="checkbox"/> 0.0%	_____	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>100.0%</u> (A/B)	
2. _____	0	<input type="checkbox"/> 0.0%	_____		
3. _____	0	<input type="checkbox"/> 0.0%	_____		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Sapling/Shrub Stratum (Plot size: 15 ft dia)					
1. Salix sitchensis	15	<input checked="" type="checkbox"/> 75.0%	FACW	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>40</u> x 1 = <u>40</u> FACW species <u>58</u> x 2 = <u>116</u> FAC species <u>22</u> x 3 = <u>66</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>120</u> (A) <u>222</u> (B) Prevalence Index = B/A = <u>1.850</u>	
2. Salix lasiandra	1	<input type="checkbox"/> 5.0%	FACW		
3. Populus balsamifera	1	<input type="checkbox"/> 5.0%	FAC		
4. Malus fusca	2	<input type="checkbox"/> 10.0%	FACW		
5. Lonicera involucrata	1	<input type="checkbox"/> 5.0%	FAC		
= Total Cover					
Herb Stratum (Plot size: 5 ft dia)					
1. Ranunculus repens	20	<input checked="" type="checkbox"/> 20.0%	FAC		
2. Phalaris arundinacea	30	<input checked="" type="checkbox"/> 30.0%	FACW		
3. Juncus effusus	10	<input type="checkbox"/> 10.0%	FACW		
4. Alopecurus geniculatus	40	<input checked="" type="checkbox"/> 40.0%	OBL		
5. _____	0	<input type="checkbox"/> 0.0%	_____		
6. _____	0	<input type="checkbox"/> 0.0%	_____		
7. _____	0	<input type="checkbox"/> 0.0%	_____		
8. _____	0	<input type="checkbox"/> 0.0%	_____		
9. _____	0	<input type="checkbox"/> 0.0%	_____		
10. _____	0	<input type="checkbox"/> 0.0%	_____		
11. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Woody Vine Stratum (Plot size: 5 ft dia)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____		
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
% Bare Ground in Herb Stratum: <u>0</u>					
				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is > 50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - 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.	
				Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: w1-sp1

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

Depth (inches)	Matrix			Redox Features				Texture	Remarks	
	Color (moist)		%	Color (moist)		%	Type ¹			Loc ²
0-3	10YR	2/1	100	10YR	5/6	5%	C	PL	Silt Loam	concentration is prominent
3-18	2.5Y	4/1	80	10YR	5/6	20	C	M	Silt Loam	concentration is prominent

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 Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except in MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox depressions (F8)	

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

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
 Upper layer too thin to meet F6.

Hydrology

Wetland Hydrology Indicators:

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

Field Observations:

Surface Water Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): <input type="text"/>	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Water Table Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): <input type="text"/>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="3"/>	

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

Remarks:

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

Project/Site: SR 539 Potter Road City/County: Whatcom County Sampling Date: 07-May-13
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp2
 Investigator(s): Doug Littauer, Sean Patrick Section, Township, Range: S 18 T 38N R 5E
 Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): concave Slope: 5.0 % / 2.9 °
 Subregion (LRR): LRR A Lat.: 48.789 Long.: -122.206 Datum: NAD83HARN
 Soil Map Unit Name: Briscot silt loam, drained, 0 to 2 percent slopes NWI classification: upland

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="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/>
---	---

Remarks:
 Wetter than normal precipitation conditions were present prior to the May 2013 field work (Appendix B-1).

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: <u>15 ft dia</u>)					
1. _____	0	<input type="checkbox"/> 0.0%	_____	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>100.0%</u> (A/B)	
2. _____	0	<input type="checkbox"/> 0.0%	_____		
3. _____	0	<input type="checkbox"/> 0.0%	_____		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Sapling/Shrub Stratum (Plot size: <u>15 ft dia</u>)					
1. <u>Salix sitchensis</u>	50	<input checked="" type="checkbox"/> 62.5%	FACW	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>125</u> x 2 = <u>250</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>15</u> x 4 = <u>60</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>155</u> (A) <u>355</u> (B) Prevalence Index = B/A = <u>2.290</u>	
2. <u>Rosa nutkana</u>	15	<input type="checkbox"/> 18.8%	FAC		
3. <u>Symphoricarpos albus</u>	15	<input type="checkbox"/> 18.8%	FACU		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
5. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Herb Stratum (Plot size: <u>5 ft dia</u>)					
1. <u>Phalaris arundinacea</u>	75	<input checked="" type="checkbox"/> 100.0%	FACW		
2. _____	0	<input type="checkbox"/> 0.0%	_____		
3. _____	0	<input type="checkbox"/> 0.0%	_____		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
5. _____	0	<input type="checkbox"/> 0.0%	_____		
6. _____	0	<input type="checkbox"/> 0.0%	_____		
7. _____	0	<input type="checkbox"/> 0.0%	_____		
8. _____	0	<input type="checkbox"/> 0.0%	_____		
9. _____	0	<input type="checkbox"/> 0.0%	_____		
10. _____	0	<input type="checkbox"/> 0.0%	_____		
11. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____		
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
% Bare Ground in Herb Stratum: <u>25</u>					

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrologic Vegetation
 2 - Dominance Test is > 50%
 3 - Prevalence Index is ≤ 3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 5 - Wetland Non-Vascular Plants¹
 Problematic Hydrophytic Vegetation¹ (Explain)
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: W1-sp2

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

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-4	10YR	2/1	100						Silt Loam	
4-20	2.5Y	4/1	90	10YR	4/6	10	C	M	Silt Loam	concentration is prominent

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 Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except in MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox depressions (F8)	

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

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

Field Observations:

Surface Water Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): <input type="text"/>	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Water Table Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="16"/>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="14"/>	

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

Remarks:
 Wetter than normal conditions characterize the three months to filed work and helps explain why hydrology is nearly meeting the saturation/high water table indicators.

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

Project/Site: SR 539 Potter Road City/County: Whatcom County Sampling Date: 07-May-13
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp3
 Investigator(s): Doug Littauer, Sean Patrick Section, Township, Range: S 7 T 38N R 5E
 Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): concave Slope: 5.0% / 2.9%
 Subregion (LRR): LRR A Lat.: 48.791 Long.: -122.204 Datum: NAD83HARN
 Soil Map Unit Name: Briscot silt loam, drained, 0 to 2 percent slopes NWI classification: PSS

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="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/>
---	---

Remarks:
 Wetter than normal precipitation conditions were present prior to the May 2013 field work (Appendix B-1).

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: 15 ft dia)					
1. _____	0	<input type="checkbox"/> 0.0%	_____	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>100.0%</u> (A/B)	
2. _____	0	<input type="checkbox"/> 0.0%	_____		
3. _____	0	<input type="checkbox"/> 0.0%	_____		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Sapling/Shrub Stratum (Plot size: 15 ft dia)					
1. Populus balsamifera	20	<input checked="" type="checkbox"/> 50.0%	FAC	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>78</u> x 1 = <u>78</u> FACW species <u>30</u> x 2 = <u>60</u> FAC species <u>32</u> x 3 = <u>96</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Total s: <u>140</u> (A) <u>234</u> (B) Prevalence Index = B/A = <u>1.671</u>	
2. Lonicera involucrata	10	<input checked="" type="checkbox"/> 25.0%	FAC		
3. Cornus alba	3	<input type="checkbox"/> 7.5%	FACW		
4. Salix sitchensis	5	<input type="checkbox"/> 12.5%	FACW		
5. Rosa pisocarpa	2	<input type="checkbox"/> 5.0%	FAC		
= Total Cover					
Herb Stratum (Plot size: 5 ft dia)					
1. Juncus effusus	20	<input checked="" type="checkbox"/> 20.0%	FACW		
2. Alopecurus geniculatus	65	<input checked="" type="checkbox"/> 65.0%	OBL		
3. Carex stipata	10	<input type="checkbox"/> 10.0%	OBL		
4. Epilobium ciliatum	2	<input type="checkbox"/> 2.0%	FACW		
5. Veronica americana	3	<input type="checkbox"/> 3.0%	OBL		
6. _____	0	<input type="checkbox"/> 0.0%	_____		
7. _____	0	<input type="checkbox"/> 0.0%	_____		
8. _____	0	<input type="checkbox"/> 0.0%	_____		
9. _____	0	<input type="checkbox"/> 0.0%	_____		
10. _____	0	<input type="checkbox"/> 0.0%	_____		
11. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Woody Vine Stratum (Plot size: 5 ft dia)					
1. _____	_____	<input type="checkbox"/> 0.0%	_____		
2. _____	_____	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
% Bare Ground in Herb Stratum: <u>0</u>					

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrologic Vegetation
 2 - Dominance Test is > 50%
 3 - Prevalence Index is ≤ 3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 5 - Wetland Non-Vascular Plants¹
 Problematic Hydrophytic Vegetation¹ (Explain)
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No

Remarks:

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: W1-sp3

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

Depth (inches)	Matrix			Redox Features				Texture	Remarks	
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-9	2.5Y	4/1	90	10YR	5/6	10	C	M	Silt Loam	concentration is prominent
9-20	2.5Y	4/2	95	2.5Y	4/1	5	D	M	Silt Loam	

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

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except in MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox depressions (F8)	

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

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

Field Observations:

Surface Water Present? Yes No Depth (inches):

Water Table Present? Yes No Depth (inches):

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

Wetland Hydrology Present? Yes No

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

Remarks:

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

Project/Site: SR 539 Potter Road City/County: Whatcom County Sampling Date: 07-May-13
 Applicant/Owner: WSDOT State: WA Sampling Point: w1-sp4
 Investigator(s): Doug Littauer, Sean Patrick Section, Township, Range: S 7 T 38N R 5E
 Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): convex Slope: 5.0% / 2.9°
 Subregion (LRR): LRR A Lat.: 48.791 Long.: -122.204 Datum: NAD83HARN
 Soil Map Unit Name: Briscot silt loam, drained, 0 to 2 percent slopes NWI classification: upland

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

Remarks:
 Wetter than normal precipitation conditions were present prior to the May 2013 field work (Appendix B-1).

VEGETATION - Use scientific names of plants.

Stratum	Absolute % Cover	Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: 15 ft dia)				Number of Dominant Species That are OBL, FACW, or FAC: <u>1</u> (A)
1. _____	0	<input type="checkbox"/> 0.0%	_____	Total Number of Dominant Species Across All Strata: <u>5</u> (B)
2. _____	0	<input type="checkbox"/> 0.0%	_____	Percent of dominant Species That Are OBL, FACW, or FAC: <u>20.0%</u> (A/B)
3. _____	0	<input type="checkbox"/> 0.0%	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>1</u> x 2 = <u>2</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>5</u> x 4 = <u>20</u> UPL species <u>0</u> x 5 = <u>0</u> Column Total s: <u>6</u> (A) <u>22</u> (B) Prevalence Index = B/A = <u>3.667</u>
4. _____	0	<input type="checkbox"/> 0.0%	_____	
= Total Cover				
Sapling/Shrub Stratum (Plot size: 15 ft dia)				
1. Pseudotsuga menziesii	2	<input checked="" type="checkbox"/> 33.3%	FACU	
2. Amelanchier alnifolia	1	<input checked="" type="checkbox"/> 16.7%	FACU	
3. Corylus cornuta	1	<input checked="" type="checkbox"/> 16.7%	FACU	
4. Cornus alba	1	<input checked="" type="checkbox"/> 16.7%	FACW	
5. Symphoricarpos albus	1	<input checked="" type="checkbox"/> 16.7%	FACU	
= Total Cover				
Herb Stratum (Plot size: 5 ft dia)				
1. _____	0	<input type="checkbox"/> 0.0%	_____	
2. _____	0	<input type="checkbox"/> 0.0%	_____	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
= Total Cover				
Woody Vine Stratum (Plot size: 5 ft dia)				
1. _____	0	<input type="checkbox"/> 0.0%	_____	
2. _____	0	<input type="checkbox"/> 0.0%	_____	
= Total Cover				
% Bare Ground in Herb Stratum: <u>100</u>				

Remarks:
 Area is mulched. Cover in herb stratum is about one percent with less than one percent each of Festuca arundinacea, Ranunculus repens, and Ranunculus acris (all FAC). If added to the shrub stratum, these species would not be dominant and would not cause the vegetation to meet any indicators.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: W1-SP4

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

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-7	10YR	2/1	100						Silt Loam	
7-20	2.5Y	4/1	98	10YR	4/6	2	C	M	Silt Loam	concentration is prominent

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 Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except in MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox depressions (F8)	

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

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
 The NRCS mapped soils throughout most of the mitigation site, including the location of W1-SP4, are Briscot silt loam which is a hydric soil in Washington State. This helps to explain why hydric soils may be present in this upland location (hydrophytic vegetation and wetland hydrology indicators are lacking in this location).

Hydrology

Wetland Hydrology Indicators:

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

Field Observations:

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

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

Remarks:
 No hydrology

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

Project/Site: SR 539 Potter Road City/County: Whatcom Sampling Date: 14-Oct-13
 Applicant/Owner: WSDOT State: WA Sampling Point: w2-sp1
 Investigator(s): Doug Littauer, Sean Patrick Section, Township, Range: S 7 T 38N R 5E
 Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): concave Slope: 3.0 % / 1.7 °
 Subregion (LRR): LRR A Lat.: 48.792 Long.: -122.201 Datum: NAD83HARN
 Soil Map Unit Name: Briscot silt loam, drained, 0 to 2 percent slopes NWI classification: PSS

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

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Rel.Strat. Cover	Indicator Status		
Tree Stratum (Plot size: <u>15 ft dia</u>)					
1. _____	0	<input type="checkbox"/> 0.0%	_____	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>100.0%</u> (A/B)	
2. _____	0	<input type="checkbox"/> 0.0%	_____		
3. _____	0	<input type="checkbox"/> 0.0%	_____		
4. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Sapling/Shrub Stratum (Plot size: <u>10 ft dia</u>)					
1. <u>Cornus alba</u>	20	<input checked="" type="checkbox"/> 40.8%	FACW	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>46</u> x 2 = <u>92</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>66</u> (A) <u>152</u> (B) Prevalence Index = B/A = <u>2.303</u>	
2. <u>Salix lasiandra</u>	7	<input type="checkbox"/> 14.3%	FACW		
3. <u>Salix sitchensis</u>	10	<input checked="" type="checkbox"/> 20.4%	FACW		
4. <u>Lonicera involucrata</u>	7	<input type="checkbox"/> 14.3%	FAC		
5. <u>Crataegus douglasii</u>	5	<input type="checkbox"/> 10.2%	FAC		
= Total Cover					
Herb Stratum (Plot size: <u>5 ft dia</u>)					
1. <u>Ranunculus repens</u>	5	<input checked="" type="checkbox"/> 29.4%	FAC		
2. <u>Epilobium ciliatum</u>	5	<input checked="" type="checkbox"/> 29.4%	FACW		
3. <u>Juncus effusus</u>	2	<input type="checkbox"/> 11.8%	FACW		
4. <u>Juncus bufonius</u>	2	<input type="checkbox"/> 11.8%	FACW		
5. <u>Equisetum arvense</u>	3	<input type="checkbox"/> 17.6%	FAC		
6. _____	0	<input type="checkbox"/> 0.0%	_____		
7. _____	0	<input type="checkbox"/> 0.0%	_____		
8. _____	0	<input type="checkbox"/> 0.0%	_____		
9. _____	0	<input type="checkbox"/> 0.0%	_____		
10. _____	0	<input type="checkbox"/> 0.0%	_____		
11. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)					
1. _____	0	<input type="checkbox"/> 0.0%	_____		
2. _____	0	<input type="checkbox"/> 0.0%	_____		
= Total Cover					
% Bare Ground in Herb Stratum: <u>83</u>					
Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrologic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is > 50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> 5 - 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.					
Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/>					
Remarks:					

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

Soil

Sampling Point: w2-sp1

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

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-4	10YR	3/1	100						Silt Loam	
4-18	2.5Y	5/1	80	10YR	5/6	20	C	M	Silt Loam	concentration is prominent

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 Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except in MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox depressions (F8)	

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

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Hydrology

Wetland Hydrology Indicators:

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

Field Observations:

Surface Water Present?	Yes <input type="radio"/> No <input checked="" type="radio"/>	Depth (inches): <input type="text"/>	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Water Table Present?	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="10"/>	
Saturation Present? (includes capillary fringe)	Yes <input checked="" type="radio"/> No <input type="radio"/>	Depth (inches): <input type="text" value="4"/>	

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

Remarks:

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

Project/Site: SR 539 Potter Road City/County: Whatcom Sampling Date: 14-Oct-13
 Applicant/Owner: WSDOT State: WA Sampling Point: w2-sp2
 Investigator(s): Doug Littauer, Sean Patrick Section, Township, Range: S 7 T 38N R 5E
 Landform (hillslope, terrace, etc.): Valley bottom Local relief (concave, convex, none): none Slope: 10.0 % / 5.7 °
 Subregion (LRR): LRR A Lat.: 48.792 Long.: -122.201 Datum: NAD83HARN
 Soil Map Unit Name: Briscot silt loam, drained, 0 to 2 percent slopes NWI classification: upland

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

Summary of Findings - Attach site map showing sampling point locations, transects, important features, etc.

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

VEGETATION - Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status	Dominance Test worksheet:
Tree Stratum (Plot size: <u>15 ft dia</u>)				Number of Dominant Species That are OBL, FACW, or FAC: <u>2</u> (A)
1. _____	_____	<input type="checkbox"/> 0.0%	_____	Total Number of Dominant Species Across All Strata: <u>4</u> (B)
2. _____	_____	<input type="checkbox"/> 0.0%	_____	Percent of dominant Species That Are OBL, FACW, or FAC: <u>50.0%</u> (A/B)
3. _____	_____	<input type="checkbox"/> 0.0%	_____	
4. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>10 ft dia</u>)				Prevalence Index worksheet:
1. <u>Rubus parviflorus</u>	20	<input checked="" type="checkbox"/> 40.0%	FACU	Total % Cover of: _____ Multiply by: _____
2. <u>Symphoricarpos albus</u>	17	<input checked="" type="checkbox"/> 34.0%	FACU	OBL species <u>0</u> x 1 = <u>0</u>
3. <u>Rosa nutkana</u>	5	<input type="checkbox"/> 10.0%	FAC	FACW species <u>4</u> x 2 = <u>8</u>
4. <u>Corylus cornuta</u>	5	<input type="checkbox"/> 10.0%	FACU	FAC species <u>6</u> x 3 = <u>18</u>
5. <u>Acer macrophyllum</u>	3	<input type="checkbox"/> 6.0%	FACU	FACU species <u>45</u> x 4 = <u>180</u>
	50	= Total Cover		UPL species <u>0</u> x 5 = <u>0</u>
Herb Stratum (Plot size: <u>5 ft dia</u>)				Column Totals: <u>55</u> (A) <u>206</u> (B)
1. <u>Epilobium ciliatum</u>	4	<input checked="" type="checkbox"/> 80.0%	FACW	Prevalence Index = B/A = <u>3.745</u>
2. <u>Veronica serpyllifolia</u>	1	<input checked="" type="checkbox"/> 20.0%	FAC	
3. _____	0	<input type="checkbox"/> 0.0%	_____	
4. _____	0	<input type="checkbox"/> 0.0%	_____	
5. _____	0	<input type="checkbox"/> 0.0%	_____	
6. _____	0	<input type="checkbox"/> 0.0%	_____	
7. _____	0	<input type="checkbox"/> 0.0%	_____	
8. _____	0	<input type="checkbox"/> 0.0%	_____	
9. _____	0	<input type="checkbox"/> 0.0%	_____	
10. _____	0	<input type="checkbox"/> 0.0%	_____	
11. _____	0	<input type="checkbox"/> 0.0%	_____	
	5	= Total Cover		
Woody Vine Stratum (Plot size: <u>5 ft dia</u>)				
1. _____	_____	<input type="checkbox"/> 0.0%	_____	
2. _____	_____	<input type="checkbox"/> 0.0%	_____	
	0	= Total Cover		
% Bare Ground in Herb Stratum: <u>95</u>				

Hydrophytic Vegetation Indicators:

1 - Rapid Test for Hydrologic Vegetation

2 - Dominance Test is > 50%

3 - Prevalence Index is ≤ 3.0¹

4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

5 - Wetland Non-Vascular Plants¹

Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes No

Remarks:

Soil

Sampling Point: W2-SP2

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

Depth (inches)	Matrix			Redox Features					Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type ¹	Loc ²			
0-4	10YR	3/1	100						Silt Loam	
4-20	2.5Y	4/1	80	7.5YR	4/6	20	C	M	Silt Loam	concentration is prominent

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 Soils³:
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (except in MLRA 1)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input checked="" type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Sandy Muck Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox depressions (F8)	

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

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:
 The NRCS mapped soils throughout most of the mitigation site, including the location of W2-SP2, are Briscot silt loam which is a hydric soil in Washington State. This helps to explain why hydric soils may be present in this upland location (hydrophytic vegetation and wetland hydrology indicators are lacking in this location).

Hydrology

Wetland Hydrology Indicators:

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

Field Observations:

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

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

Remarks:
 No hydrology present.

Appendix B — Precipitation Data

Appendix B-1. Comparison of Observed and Normal Precipitation (NRCS 1997)

Monthly precipitation data for Clearbrook, Washington for field work occurring on May 7, 2013.

	Long-term rainfall records ^a			Rain fall ^a	Condition dry, wet, normal ^b	Condition Value	Month weight value	Product of previous two columns	
	3 yrs. in 10 less than	Average	3 yrs. in 10 more than						
1 st prior month	Apr	2.85	3.66	4.23	5.93	W	3	3	9
2 nd prior month	Mar	3.09	4.04	4.69	7.09	W	3	2	6
3 rd prior month	Feb	2.62	4.20	5.07	2.96	N	2	1	2
Sum									17

^aNRCS 2014

^bConditions are considered normal if they fall within the low and high range around the average.

Note: If sum is

- 6 - 9 then prior period has been drier than normal
- 10 - 14 then period has been normal
- 15 - 18 then period has been wetter than normal

Condition value:

- Dry (D) =1
- Normal (N) =2
- Wet (W) =3

Conclusions: Wetter than normal precipitation conditions were present prior to the field visit on May 7, 2013.

Monthly precipitation data for Clearbrook, Washington for field work occurring on October 14, 2013.

		Long-term rainfall records ^a							
	Month	3 yrs. in 10 less than	Average	3 yrs. in 10 more than	Rain fall ^a	Condition dry, wet, normal ^b	Condition Value	Month weight value	Product of previous two columns
1 st prior month	Sept	1.21	2.58	3.16	5.70	W	3	3	9
2 nd prior month	Aug	0.62	1.65	2.00	1.44	N	2	2	4
3 rd prior month	July	1.01	1.83	2.23	0.00	D	1	1	1
								Sum	14

^aNRCS 2014

^b Conditions are considered normal if they fall within the low and high range around the average.

Note: If sum is

- 6 - 9 then prior period has been drier than normal
- 10 - 14 then period has been normal
- 15 - 18 then period has been wetter than normal

Condition value:

- Dry (D) =1
- Normal (N) =2
- Wet (W) =3

Conclusions: Normal precipitation conditions were present prior to the field visit occurring on October 14, 2013.

**Appendix B-2.
Daily Precipitation 10 days preceding field work, Clearbrook,
Washington**

For field work occurring May 7, 2013

Date (2013)	Daily Precipitation (inches) ^a
May 6	0.00
May 5	0.00
May 4	0.00
May 3	T ^b
May 2	T
May 1	0.00
Apr 30	T
Apr 29	0.28
Apr 28	T
Apr 27	0.25

^aNOAA 2014

^b“T” indicates trace amounts of precipitation were recorded

For field work occurring October 14, 2013

Date (2013)	Daily Precipitation (inches) ^a
Oct 13	0.00
Oct 12	0.00
Oct 11	0.00
Oct 10	0.00
Oct 9	0.00
Oct 8	T ^b
Oct 7	0.62
Oct 6	0.00
Oct 5	0.00
Oct 4	0.00

^aNOAA 2014

^b“T” indicates trace amounts of precipitation were recorded

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