

**SR 539 Widening Project: Horton Road to Ten Mile Road  
(MP 1.64 to MP 6.26) (Strand) Mitigation Site  
WIN #A53902D**

**USACE 200500927**

**Northwest Region**

**2014 MONITORING REPORT**

**Wetlands Program**

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# SR 539 Widening Project: Horton Road to Ten Mile Road (MP 1.64 to MP 6.26) (Strand) Mitigation Site

**USACE 200500927**



General Site Information		
<b>USACE Permit Number</b>	200500927	
<b>Mitigation Location</b>	East of Bellingham on SR 9 in Whatcom Co.	
<b>LLID Number</b>	1222015487586	
<b>Construction Date</b>	2008	
<b>Monitoring Period</b>	2010-2019	
<b>Year of Monitoring</b>	5 of 10	
<b>Type of Project Impact</b>	Wetland	Buffer
<b>Area of Project Impact</b>	5.97 acres	5.97 acres
<b>Type of Mitigation</b>	Wetland Enhancement	Wetland Buffer Enhancement
<b>Area of Mitigation<sup>1</sup></b>	6.26 acres	4.37 acres

<sup>1</sup>Additional mitigation for this project is provided at the Larson Road and Potter Road mitigation sites. See Appendix 3, Table 1 for more information. Project impacts from (WSDOT 2007) Table 5 and p 33. Project mitigation from (WSDOT 2007) Table 16.

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## Summary of Monitoring Results and Management Activities (2014)

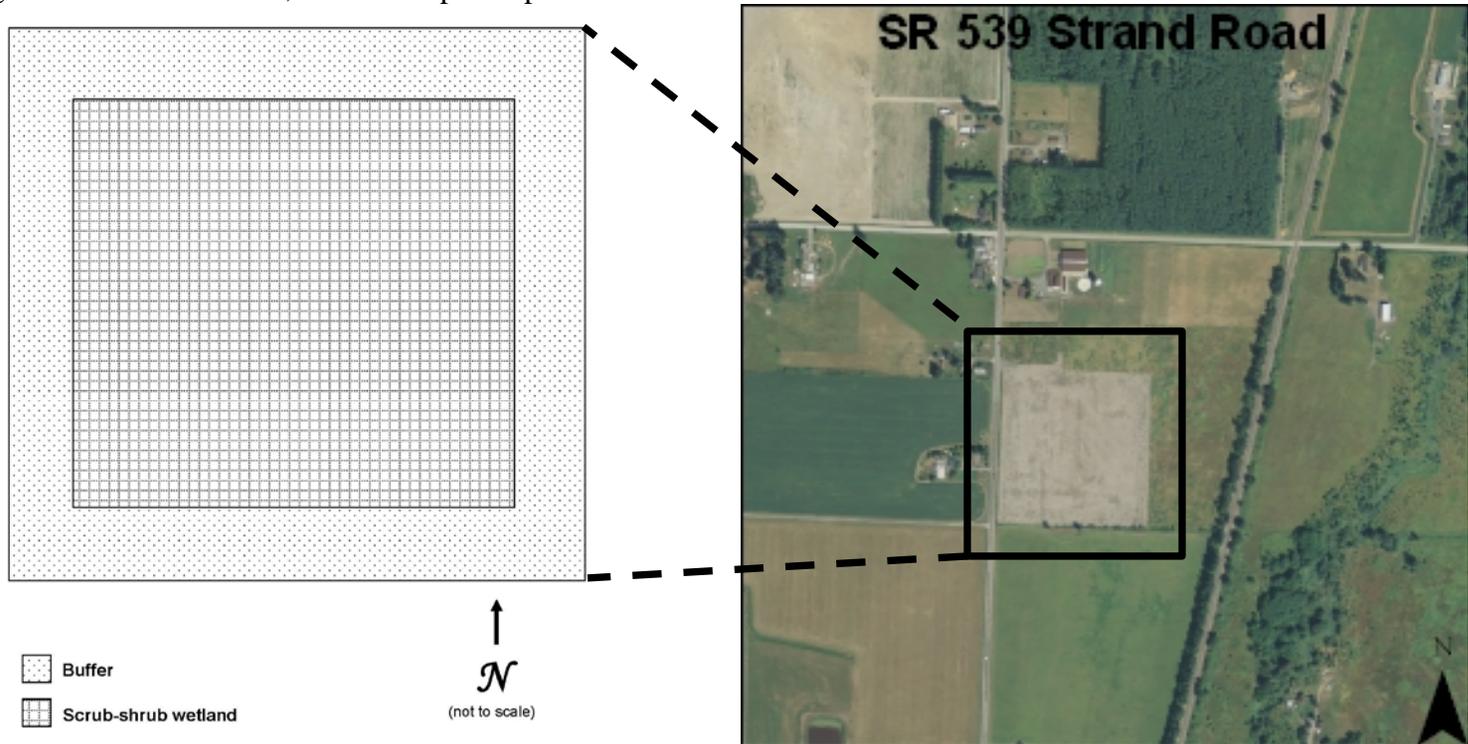
Performance Standards (Year-10)	2014 Results	Management Activities
Wetland hydrology present in intended wetland areas	Present	
Native facultative or wetter woody species will achieve a minimum of 60 percent coverage in the forest and scrub-shrub wetland communities.	90% cover	
No more than 30% cover by non-native invasive species as listed in the mitigation plan across the entire mitigation site. The presence of Japanese knotweed ( <i>Reynoutria japonica</i> ), or purple loosestrife ( <i>Lythrum salicaria</i> ), will initiate the invasive species contingency measures.	<1% cover	2 visits for weed control occurred in 2014(March and June )
Native woody species will achieve a minimum of 50% coverage in the buffer community.	90% cover	
No more than 20% cover by non-native invasive species as listed in the mitigation plan in the buffer communities across the entire mitigation site. The presence of Japanese knotweed or purple loosestrife will initiate the invasive species contingency measures.	<1% cover	2 visits for weed control occurred in 2014( March and June)

## Report Introduction

This report summarizes Year-5 monitoring activities at the State Route (SR) 539 Strand Road Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site success. Monitoring activities included vegetation surveys, photo-documentation, and assessments of wetland hydrology. Vegetation monitoring was conducted on August 11. Hydrology visits occurred on March 4, March 17, and April 7.

## What is the SR 539 Strand Road Mitigation Site?

This 10.54 acre mitigation site (Figure 1) provides 6.26 acres of wetland enhancement and 4.37 acres of wetland buffer enhancement. This site was created to partially compensate for the loss of 5.97 acres of wetlands due to road improvements along SR 539. The enhanced wetland area is anticipated to provide flood flow alteration, sediment removal, nutrient and toxicant removal, general wildlife habitat, and native plant species richness.



**Figure 1 Site Sketch**

The SR 539 Strand Road Mitigation Site consists primarily of dense scrub-shrub with an underlying herbaceous layer of vegetation surrounded by an 80-foot enhanced buffer. Appendix 2 includes site directions.

## **What are the performance standards for this site?**

### **Year 10 (2018)**

#### 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

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

The mitigation site shall not exceed more than 20 percent by non-native invasive species listed on Table 25 in the mitigation plan, with the exception of Japanese Knotweed. Japanese Knotweed shall not be present at the mitigation site. If it is discovered during monitoring, it will be immediately removed and chemically treated for elimination.

#### Performance Standard 4

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

#### Performance Standard 5

The mitigation site shall not exceed more than 20 percent by non-native invasive species listed on Table 25 in the mitigation plan, with the exception of Japanese Knotweed. Japanese Knotweed shall not be present at the mitigation site. If it is discovered during monitoring, it will be immediately removed and chemically treated for elimination.

Appendix 1 shows the as-built planting plan (WSDOT 2009). Table 25 from the mitigation plan is shown as Table 3 in Appendix 3).

## How were the performance standards evaluated?

All vegetative performance standards were assessed qualitatively with visual estimates (Performance Standards 2, 3, 4, and 5).

WSDOT staff collected hydrology using 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) and a Global Positioning System (Trimble Mapping Grade) (Performance Standard 1).

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

## How is the site developing?

The site has developed more rapidly than anticipated and has been meeting the year-10 final year standards for the buffer and wetland woody cover for three years. On April 23, 2014 a request to discontinue quantitative sampling for the buffer and wetland woody cover was sent to USACE and the Department of Ecology this request was accepted on May 27, 2014 and April 28, 2014 respectively. The final year standards are still currently being met.

The woody plantings have produced rapid and robust growth, providing over 90 percent cover across the site with an average canopy height of about four meters. Willows (*Salix spp.*) provide the largest share of the woody cover, particularly in the buffer, but the other woody plantings are also developing well. Sixty-five percent of the woody cover in the scrub-shrub wetland area is provided by non-willow species, with seven species providing at least five percent relative cover each. There has been some die off of twinberry honeysuckle (*Lonicera involucrata*) in the understory, but has little to no effect on the overall woody cover. Much of the site has very little herbaceous cover because the woody growth is so dense. The areas that are a little more open, primarily in the center of the site, have developed an herbaceous understory comprised of a mix of native and introduced species, but there is very little cover of noxious weeds.

Results for Performance Standard 1  
(Wetland hydrology present):

Water was present within the upper 12 inches of the soil across the site during each of the three site visits (Photo 1). Wetland hydrology was documented in all four ground monitoring wells on each of the three spring hydrology visits. See Appendix 3 Table 3 for complete results.

Results for Performance Standard 2  
(Native facultative or wetter woody species will achieve a minimum of 60% coverage):

Native woody coverage is 90 percent with two layers of well-developed canopy (Photo 2). The overstory provides approximately 90 percent cover by five meter tall willows (*Salix* spp.). An understory of native shrubs provides approximately 30 percent cover. Understory dominant plants include: black hawthorn (*Crataegus douglasii*), twinberry honeysuckle (*Lonicera involucrata*), Nootka rose (*Rosa nutkana*).



**Photo 1**  
**Surface saturation and inundation in the wetland**  
**(March 2014)**

Results for Performance Standard 3

(No more than 30 percent cover by non-native invasive species):

Cover of listed invasive species estimated at less than one percent. Reed canarygrass (*Phalaris arundinacea*) was observed in small isolated patches under the dense canopy. Japanese knotweed and purple loosestrife were not observed on-site during monitoring activities.

Results for Performance Standard 4

(Native woody species will achieve a minimum of 50 percent coverage in the buffer community):

The plant community in the buffer and wetland is virtually undistinguishable. Cover in the buffer is 90 percent and has similar native species and canopy structure developing as the wetland discussed above (Photo 3).

Results for Performance Standard 5

(No more than 20 percent cover by non-native invasive species):

Cover of listed invasive species estimated at less than one percent. Reed canarygrass was observed in small isolated patches under the dense canopy. Japanese knotweed and purple loosestrife were not observed on-site during monitoring activities.



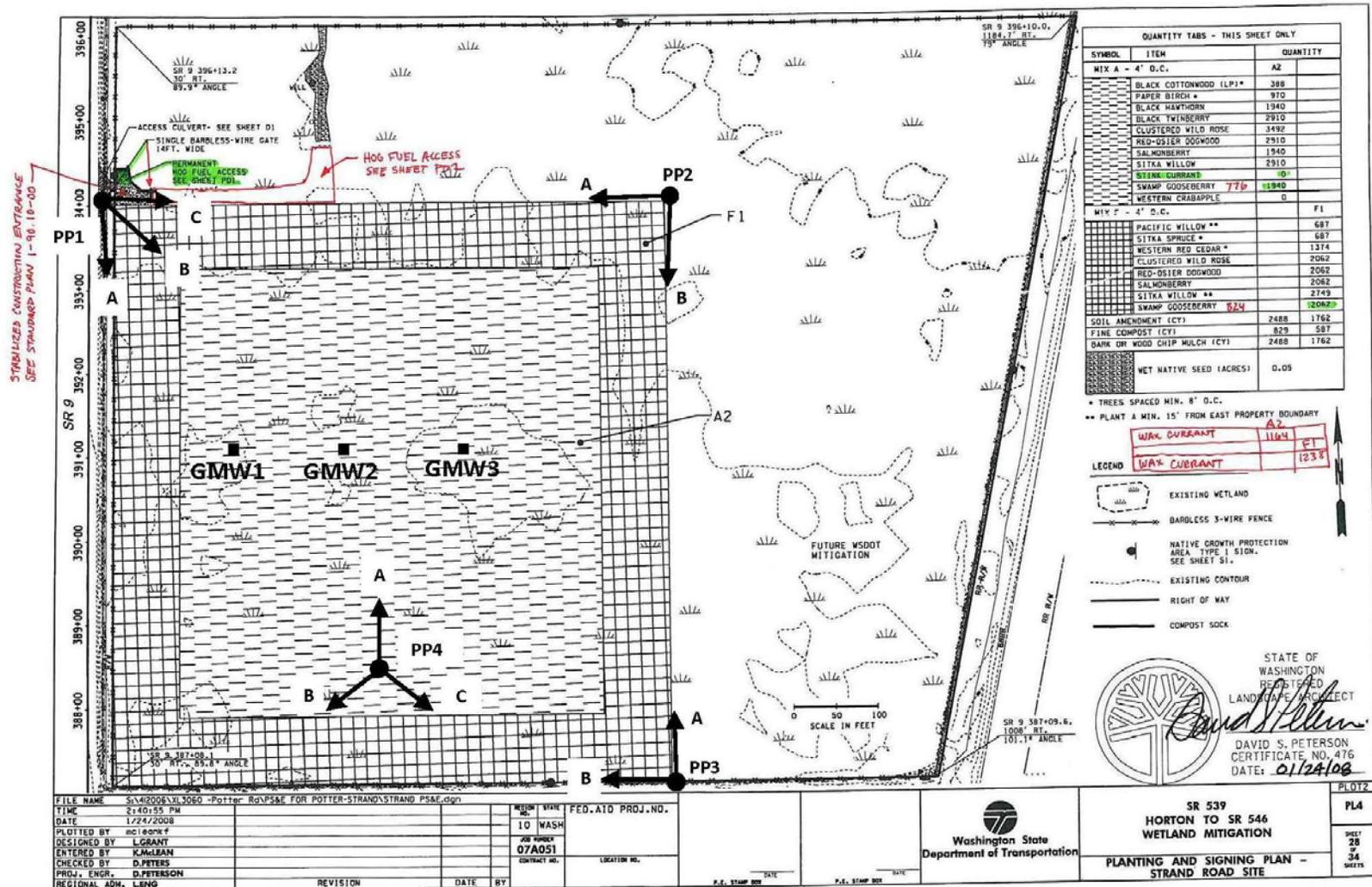
**Photo 2**  
**Woody cover in the wetland (August 2014)**



**Photo 3**  
**Woody cover in the buffer (August 2014)**

# Appendix 1 – As-built Planting Plan with Photo Point and Groundwater Monitoring Well Locations

(from WSDOT 2009)



## Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on August 11, 2014 and document current site development.



**Photo Point 1a**



**Photo Point 1b**



**Photo Point 1c**



**Photo Point 2a**

The photographs below were taken from permanent photo-points on August 11, 2014 and document current site development.



**Photo Point 2b**



**Photo Point 3a**



**Photo Point 3b**



**Photo Point 4a**

The photographs below were taken from permanent photo-points on August 11, 2014 and document current site development.



**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 1st left onto S. Burlington Blvd. Turn right at Avon Cutoff/SR 20 E. Follow SR 20 E for 5.8 miles. Turn left at N Township St/SR 9 N. Follow SR 9 north for 18 miles. Site is located at milepost 75.22, just south of Strand road and on the east side of SR 9.

## Appendix 3 – Data Tables

**Table 1. Project Mitigation Acreages**

Mitigation Type	Potter Road Mitigation Site (ac)	Strand Road Mitigation Site (ac)	Wiser Lake Mitigation Site (ac)	Larson Road Mitigation Site (ac)	Totals (ac)
<b>SR 539 Horton Road to Tenmile Road USACE #200500927</b>					
<b>Creation</b>	<b>7.66</b>	<b>0.00</b>	<b>0.00</b>	<b>0.37</b>	<b>8.03</b>
<b>Enhancement</b>	<b>3.57</b>	<b>6.26</b>	<b>0.00</b>	<b>1.12</b>	<b>10.95</b>
<b>Buffer Enhancement</b>	<b>4.47</b>	<b>4.37</b>	<b>0.00</b>	<b>0.10</b>	<b>8.94</b>

**Table 2. Non-native invasive species. (Table 25 from the mitigation plan)**

Scientific Name	Common Name
<i>Buddleia alternifolia</i>	fountain butterfly bush
<i>Cirsium arvense</i>	Canada thistle
<i>Cytisus scoparius</i>	Scot's broom
<i>Geranium robertianum</i>	herb Robert
<i>Hedera helix</i>	English ivy
<i>Ilex aquifolium</i>	English holly
<i>Iris pseudacorus</i>	yellow flag iris
<i>Lythrum salicaria</i>	purple loosestrife
<i>Phalaris arundinacea</i>	reed canarygrass
<i>Polygonum cuspidatum (and related species and hybrids)</i>	Japanese knotweed
<i>Prunus laurocerasus</i>	English laurel
<i>Rubus laciniatus</i>	evergreen blackberry
<i>Rubus armeniacus (discolor)</i>	Himalaya or Armenian blackberry

**Table 3. Hydrology Observations.**

Date	Surface Observations	Well ID #	Water Level (inches below soil surface unless otherwise noted)
March 4, 2014	Majority of site either saturated to the soil surface or inundated.	1	Saturated to the soil surface
		2	3.5"
		3	Saturated to the soil surface
		4	1"
March 17, 2014	About 1/2 of wetland area inundated or saturated to the surface (scattered across the site).	1	1.5"
		2	3"
		3	4"
		4	2"
April 7, 2014	Approximately 2/3 of the wetland area inundated or saturated to the surface	1	Saturated to the soil surface
		2	Saturated to the soil surface
		3	4.5"
		4	3"

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