

**SR 9: 176<sup>th</sup> Street SE to (Marsh Road) Mitigation Site**  
**WIN: A00900V**

**USACE IP NWS-2007-471-SOD**

**Northwest Region**

**2015 MONITORING REPORT**

**Wetlands Program**

*Issued March 2016*



**Washington State  
Department of Transportation**

**Environmental Services Office**

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# SR 9: 176<sup>th</sup> Street SE to (Marsh Road) Mitigation Site

## USACE IP NWS-2007-471-SOD



General Site Information			
<b>USACE IP Number</b>	NWS-2007-471-SOD		
<b>Mitigation Location</b>	NE of intersection of SR 9 and SR 96		
<b>LLID Number</b>	1221093478809		
<b>Construction Date</b>	2008-2010		
<b>Monitoring Period</b>	2011-2015		
<b>Year of Monitoring</b>	5 of 5		
<b>Type of Project Impact</b>	Wetland	Stand-alone Buffer	Stream and Stream Buffer
<b>Area of Project Impact<sup>1,2</sup></b>	6.36 acres	0.31 acres	0.44 acres
<b>Type of Mitigation</b>	Wetland Credits	Buffer Credits	Stream Establishment
<b>Area of Mitigation (or credits debited)<sup>1,2</sup></b>	6.79 credits	0.31 credits	0.43 acres
<b>Type of Mitigation</b>	Wetland Enhancement		Riparian Buffer Enhancement
<b>Area of Mitigation<sup>2</sup></b>	0.02 acres		1.82 acres

<sup>1</sup> Mitigation credits from the Snohomish Basin Mitigation Bank are being used to mitigate for 6.35 acres of the wetland impacts (along with their related wetland buffer impacts) and all 0.31 acre of stand-alone buffer impacts associated with this project. The remaining 0.01 acre of wetland impact is being mitigated for with 0.02 acre of wetland enhancement in the project area.

<sup>2</sup> Wetland impact acreage, wetland enhancement acreage, and wetland and buffer credits debited were referenced from USACE permit NWS-2007-471-SOD (USACE 2008) and an approved modification to that permit dated April 21, 2009 (USACE 2009). The remaining impact and mitigation acreages were referenced from the *SR 9: 176th Street SE to Marsh Road Project Final Wetland and Stream Mitigation Memorandum* (Miller 2007).

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## Summary of Monitoring Results and Management Activities (2015)

Performance Standards	2015 Results <sup>3</sup>	Management Activities
At year 5, the percent cover for species in the mix “A”, “F”, and “G” will be 50 percent cover. The percent cover for species in mix “S” will be 35 percent.	93% (CI <sub>80%</sub> = 86-100%)	
The mitigation site will not exceed more than 30 percent by non-native species listed on table 11 in the mitigation memorandum. Japanese knotweed shall not be present at the mitigation site.	5% overall cover, no knotweed present	Weed control occurred on March 13, 2014, March 25, 2014, October 1, 2014 and August 11, 2015.
Wetland enhancement area: The native woody species will achieve a minimum of 30 percent cover.	98% cover	

## Report Introduction

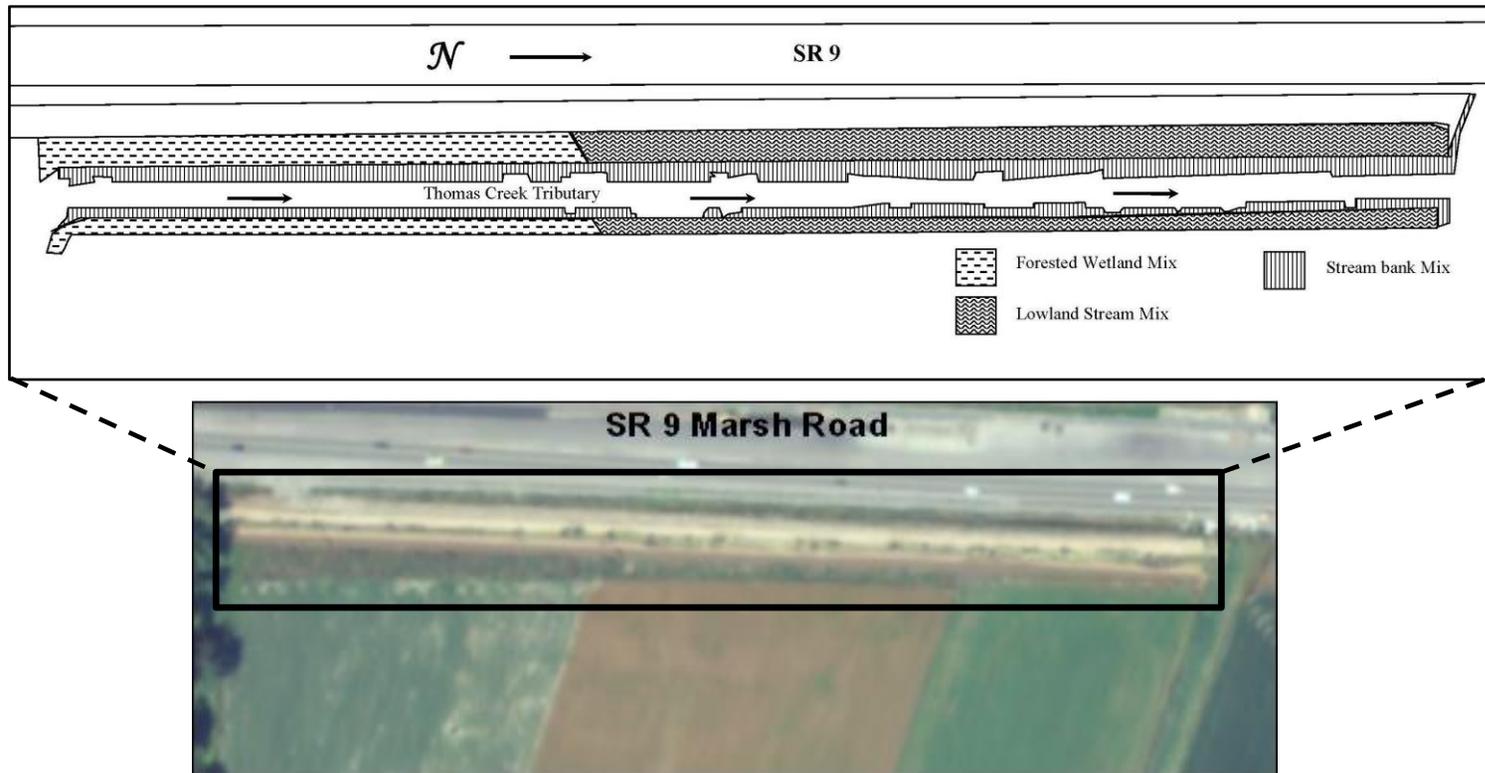
This report summarizes final-year (Year-5) monitoring activities at the State Route (SR) 9 Marsh Road Mitigation Site. Included are a site description, the performance standards, an explanation of monitoring methods, and an evaluation of site success. Monitoring activities included vegetation surveys and photo-documentation on August 24, 2015.

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<sup>3</sup> Estimated values are presented with their corresponding statistical confidence interval. For example, 93% cover (CI<sub>80%</sub> = 86-100%) means we are 80% confident that the true cover value is between 86 and 100%.

## What is the SR 9 Marsh Road Mitigation Site?

This 1.82-acre mitigation site (Figure 1) consists of a relocated stream channel and riparian buffer established east of SR 9. This site was created to compensate for the loss of 0.44 acre of stream and stream buffer due to roadway widening and culvert extensions along SR 9. The new stream channel, wet and upland riparian buffer enhancement is anticipated to provide flood flow alteration, water quality improvements, erosion control and stabilization, production and export of organic matter, and improved fish and wildlife habitat along this section of Thomas Creek Tributary. In addition to the stream mitigation, the site contains 0.02 acre of wetland enhancement (Appendix 1) on the corner of SR 9 and Broadway Avenue.



**Figure 1 Site Sketch**

The SR 9 Marsh Road Stream Mitigation Site contains three vegetative communities along the new stream channel: lowland stream mix, forested wetland stream mix, and stream bank mix. Appendix 2 includes site directions.

## What are the performance standards for this site?

### Year-5

#### Performance Standard 1(from USACE permit modification [2009])

At year 5, the percent cover for species in the mix “A”, “F”, and “G” will be 50 percent cover. The percent cover for species in mix “S” will be 35 percent.

#### Performance Standard 2(from USACE permit modification [2009])

The mitigation site will not exceed more than 30 percent by non-native species listed on table 11 in the mitigation memorandum. Japanese knotweed shall not be present at the mitigation site.

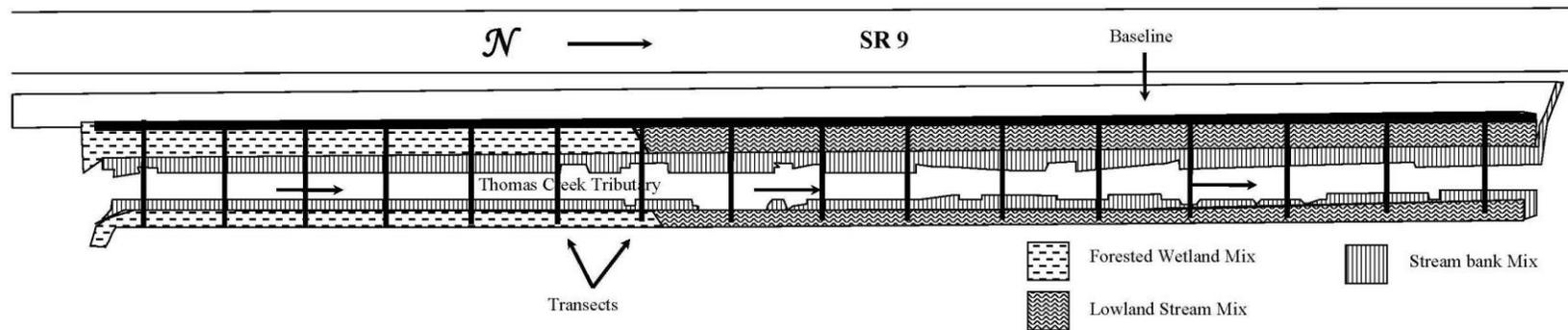
#### Performance Standard 3(from USACE permit modification [2009])

Wetland enhancement area: The native woody species will achieve a minimum of 30 percent cover.

Appendix 1 shows the planting plan (WSDOT 2009)

## How were the performance standards evaluated?

The table below documents the sampling method used for all of the performance standards (PS) as required by the USACE permit. For additional details on the methods see the [WSDOT Wetland Mitigation Site Monitoring Methods Paper](#) (WSDOT 2008).



**Figure 2 Site Sampling Design (2015)**

**Placement of Baseline:** The 354 meter baseline was placed south to north along the west side of the creek, parallel to State Route 9.

	PS 1	PS 2	PS 3
<b>Attribute</b>	Cover	Cover	Cover
<b>Target pop.</b>	Native Woody	Noxious Weeds/ Invasive sp.	Native Woody
<b>Zone</b>	Riparian	Entire site	Wetland
<b>Sample method</b>	Line Intercept	Qualitative	Qualitative
<b>SU length</b>	10 meters	N/A	N/A
<b>SU width</b>	N/A	N/A	N/A
<b>Points per SU</b>	N/A	N/A	N/A
<b>Total # of SU</b>	8	N/A	N/A

## **Is this site a success?**

The functions intended for this riparian area include wildlife habitat, food web support, flood flow alteration, and water quality. The site is dominated by native trees and shrubs and has developed into a dense community of diverse riparian vegetation. The vegetation community consists of two different strata and it spans the creek channel providing shade, allochthonous inputs, and bank stabilization. The large woody debris present in the stream bank contributes to the stream complexity and fish habitat. The stream channel has the capacity to store flood waters and the riparian buffer vegetation present can slow and filter water before it enters the stream channel.

Beaver are active on this site. There was a beaver dam present on the south edge of the restored creek channel at the time of monitoring. There were raccoon prints in the stream channel and several species of birds present.

Results for Performance Standard 1

(Cover for species in the mix “A”, “F”, and “G” will be 50%. Cover for species in mix “S” will be 35%):

Overall cover of woody species in the riparian buffer is 93% (CI<sub>80%</sub> = 86-100%). The area was not divided into the zones called out in the performance standard; it was sampled as one due the homogeneity of the community. Dominant species include Pacific willow (*Salix lasiandra*), Pacific ninebark (*Physocarpus capitatus*), and twinberry honeysuckle (*Lonicera involucrata*) (Photo 1).

Results for Performance Standard 2

(No more than 30% cover of species on Table 11 and no knotweed shall be present):

The cover of invasive species was estimated at 5 percent. Reed canarygrass (*Phalaris arundinacea*) and Himalayan blackberry (*Rubus armeniacus*) are present on site.

Results for Performance Standard 3

(Cover of woody species in the wetland enhancement area will be 30%):

Cover of native woody species is estimated at 98% in the enhanced wetland planting area. The wetland area looks great. The area is so small and has such high cover that it was monitored qualitatively (Photo 2). Dominant species in this area include Pacific willow (*Salix lasiandra*), twinberry honeysuckle (*Lonicera involucrata*), and redosier dogwood (*Cornus alba*).



**Photo 1**  
**Woody cover in the riparian corridor (Aug 2015)**



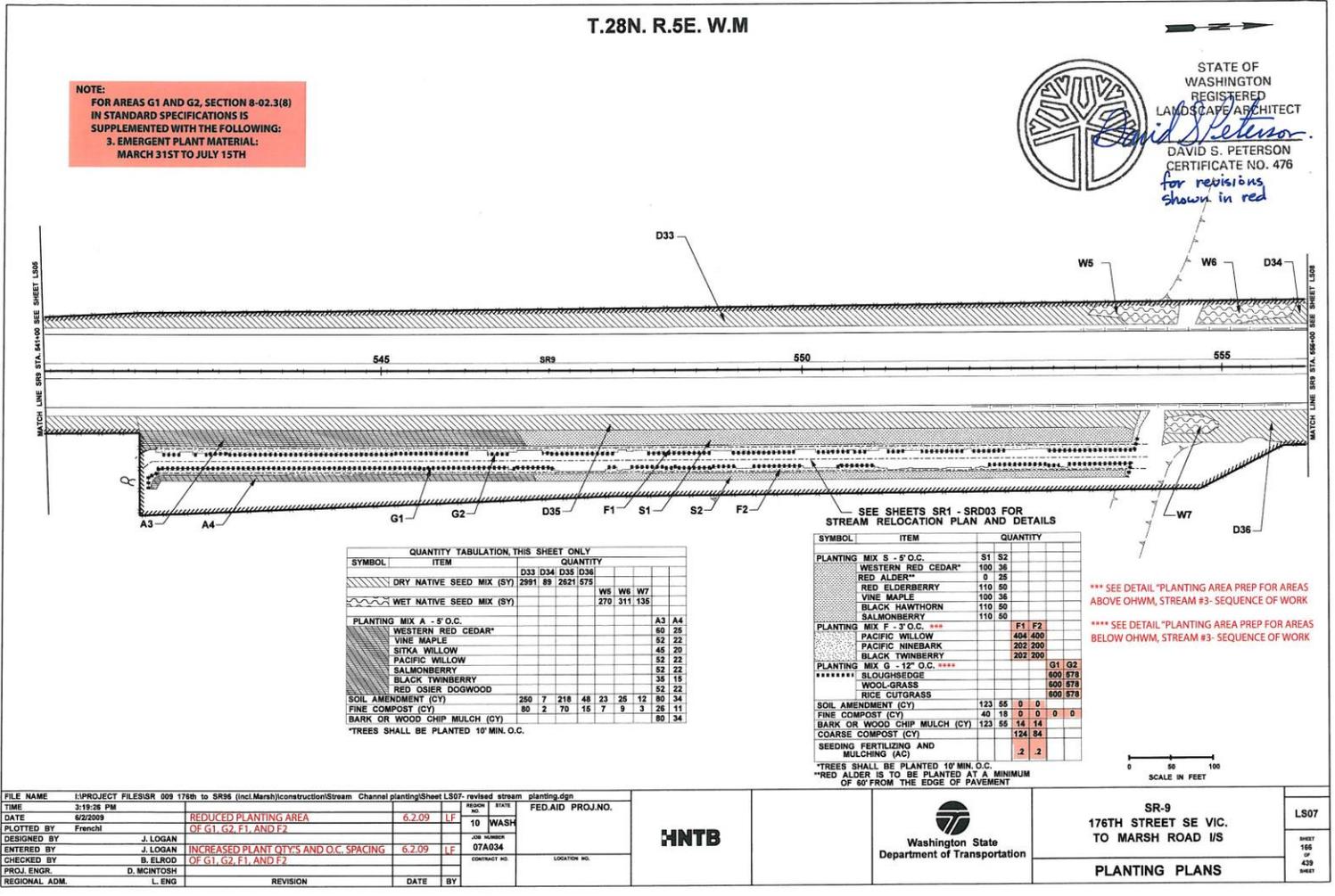
**Photo 2**  
**Woody cover in the enhanced wetland (Aug 2015)**

**What is planned for this site?**

The region plans on conducting continued weed control.

# Appendix 1 – Planting Plan With Photopoint Locations

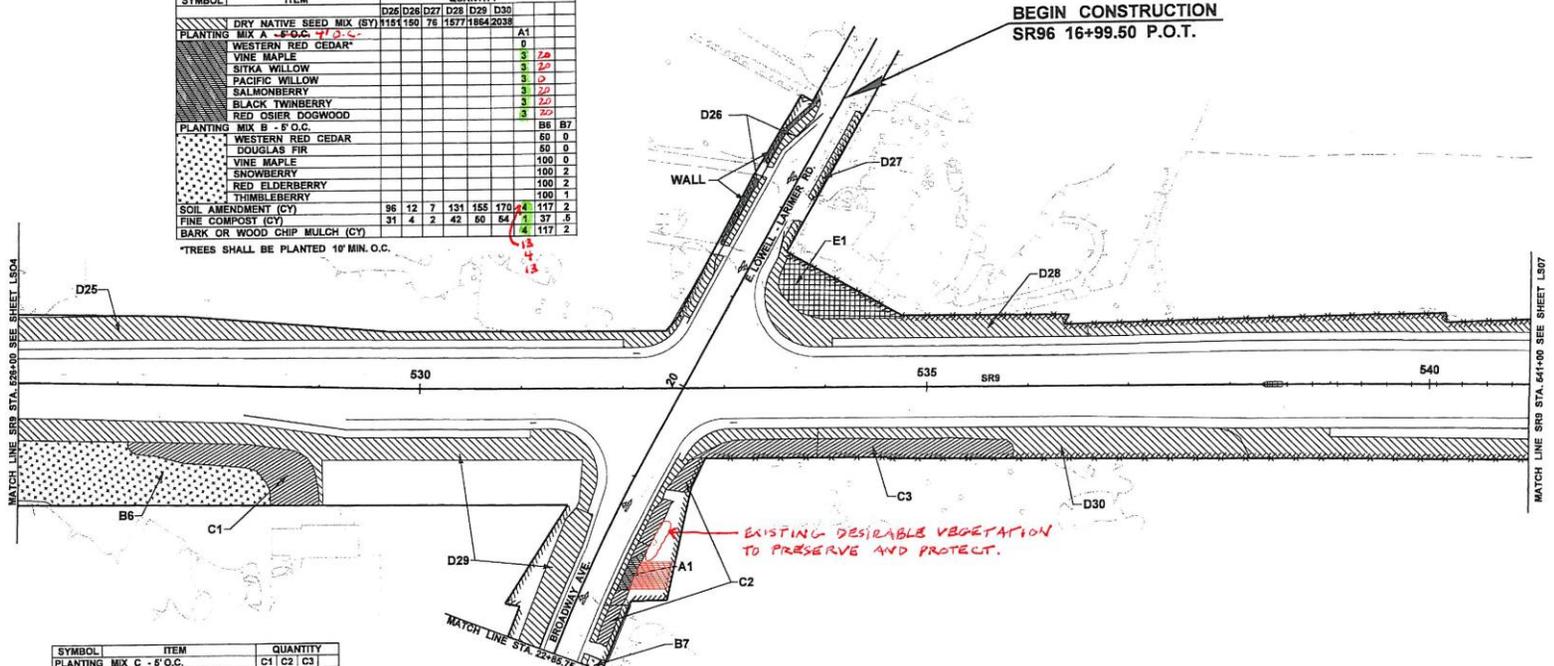
(from WSDOT 2009)



T.28N. R.5E. W.M

QUANTITY TABULATION, THIS SHEET ONLY		QUANTITY			
SYMBOL	ITEM	D26	D27	D28	D29
	DRY NATIVE SEED MIX (BY) 1151150 76 157718642036				
PLANTING	MIX A - 8' O.C.				A1
	WESTERN RED CEDAR*				0
	VINE MAPLE				3 28
	SITKA WILLOW				3 22
	PACIFIC WILLOW				3 0
	SALMONBERRY				3 20
	BLACK TWNBERRY				3 20
	RED OSIER DOGWOOD				3 20
PLANTING	MIX B - 8' O.C.				B6 B7
	WESTERN RED CEDAR				50 0
	DOUGLAS FIR				50 0
	VINE MAPLE				100 0
	SNOWBERRY				100 2
	RED ELDERBERRY				100 2
	THIMBLEBERRY				100 1
SOIL AMENDMENT (CY)		96	12	7	131
FINE COMPOST (CY)		31	4	2	42
BARK OR WOOD CHIP MULCH (CY)					54
					117 2
					1 37 8
					1 4 117 2

\*TREES SHALL BE PLANTED 10' MIN. O.C.

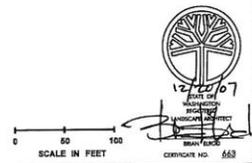


BEGIN CONSTRUCTION  
SR96 16+99.50 P.O.T.

SYMBOL	ITEM	QUANTITY
PLANTING	MIX C - 8' O.C.	C1 C2 C3
	SNOWBERRY	30 26 40
	RED ELDERBERRY	30 26 40
	THIMBLEBERRY	30 27 40
	VINE MAPLE	25 0 0
	BLACK HAWTHORN	30 0 0
	INDIAN PLUM	30 0 40
	TALL OREGON GRAPE	30 0 40
PLANTING	MIX E - 8' O.C.	E1
	NORWAY MAPLE*	8
	SITKA SPRUCE*	8
	INCENSE CEDAR*	15
	CORAL BERRY	62
	SWORD FERN	62
SOIL AMENDMENT (CY)		48 18 52 36
FINE COMPOST (CY)		15 6 17 12
BARK OR WOOD CHIP MULCH (CY)		48 18 52 36

\*TREES SHALL BE PLANTED 10' MIN. O.C.

STATE OF WASHINGTON  
REGISTERED  
LANDSCAPE ARCHITECT  
*David S. Peterson*  
DAVID S. PETERSON  
CERTIFICATE NO. 476  
*for change, only 0516/109*



FILE NAME	IP PWP-dms1457042080-ls-e-806.dgn	REGION	10	STATE	WASH	FED.AID PROJ.NO.	
TIME	13-DEC-2007 16:42	DATE	13-DEC-2007	JOB NUMBER	07A034	CONTRACT NO.	
DESIGNED BY	J. LOGAN	ENTERED BY	J. LOGAN	LOCATION NO.			
CHECKED BY	B. ELROD	PROJ. ENGR.	D. MCINTOSH	REVISION			
REGIONAL ADM.	L. ENG	DATE		BY			

**HNTB**

Washington State  
Department of Transportation

SR-9  
176TH STREET SE VIC.  
TO MARSH ROAD US

**PLANTING PLANS**

LS05  
SHEET 154 OF 439

## Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on August 24, 2015 and document current site development.



**Photo Point 1a**



**Photo Point 1b**



**Photo Point 1c**



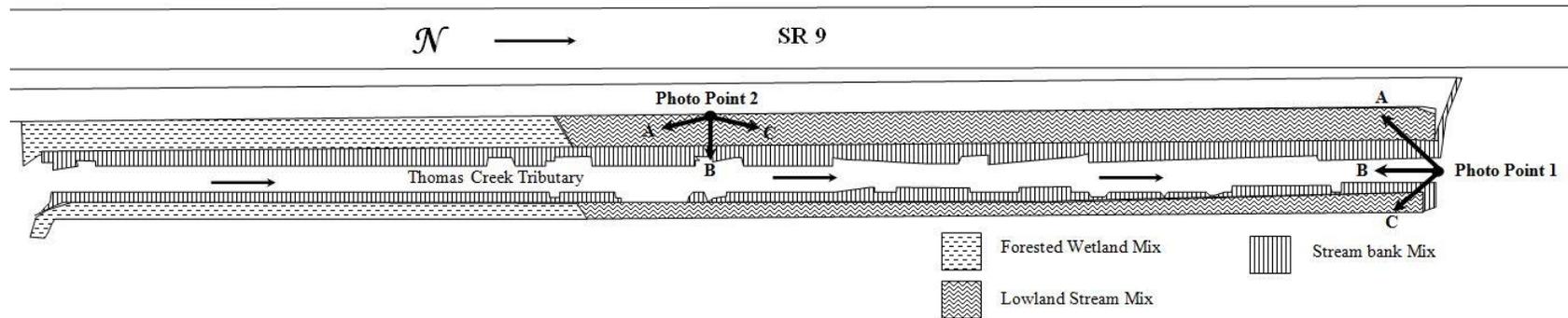
**Photo Point 2a**



**Photo Point 2b**



**Photo Point 2c**



**Driving Directions:**

Follow I-5 N<sup>th</sup> to exit 142A toward WA-18E to Auburn. Follow WA 18E to WA 167 N toward Kent/Renton. Follow 167 N to I-405 N toward Bellevue/Renton. From I405 take exit 23 toward Woodinville/Wenatchee/US2 Merge onto WA 522 E. Take the WA 9 N exit toward Snohomish/Arlington. The site is approximately 7 miles N once you get on WA 9, on the east side of WA 9.

## Appendix 3 – Data Tables

**Table 1.** Non-native invasive species<sup>1</sup>

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

<sup>1</sup> Management activities to control reed canary grass will be restricted to the area landward of the ordinary high water mark of all waterbodies as established by GPS to avoid adverse impacts to fisheries resources from herbicide application.

## Literature Cited

1. Miller, T. 2007. SR 9: 176th Street SE to Marsh Road Project Final Wetland and Stream Mitigation Memorandum. Seattle (WA): Washington State Department of Transportation, Northwest Region.
2. [USACE] US Army Corps of Engineers. 2008. Department of the Army Individual Permit Number NWS-2007-471-SOD.
3. [USACE] US Army Corps of Engineers. 2009. Permit Modification Approval for the Department of the Army Individual Permit Number NWS-2007-471-SOD.
4. [WSDOT] Washington State Department of Transportation. 2009. SR-9 176<sup>th</sup> Street SE Vic. To Marsh Road I/S Planting Plans. Sheets LS05 and LS07.
5. [WSDOT] Washington State Department of Transportation. 2008. WSDOT Wetland Mitigation Site Monitoring Methods. <http://www.wsdot.wa.gov/NR/rdonlyres/C211AB59-D5A2-4AA2-8A76-3D9A77E01203/0/MethodsWhitePaper052004.pdf>