

**SR 27 Pine Creek Bridge Replacement Mitigation Site**  
**WIN # F02704A**

**USACE NWP (23) NWS-2009-594**

**Eastern Region**

**2015 MONITORING REPORT**

**Wetlands Program**

*Issued March 2016*



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Environmental Services Office

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# SR 27 Pine Creek Bridge Replacement Mitigation Site

## USACE NWP (23) NWS-2009-594



<b>General Site Information</b>	
<b>USACE NWP 23 Number</b>	NWS-2009-594
<b>Mitigation Location</b>	SR 27 between Tekoa and Oaksdale, Whitman County
<b>Construction Date</b>	2012
<b>LLID</b>	1171931471778
<b>Monitoring Period</b>	2013- 2017
<b>Year of Monitoring</b>	3 of 5
<b>Area of Project Impact<sup>1</sup></b>	557 square feet
<b>Type of Mitigation</b>	Wetland Establishment
<b>Planned Area of Mitigation</b>	0.03 acre

<sup>1</sup>Square footage from (USACE 2009)

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

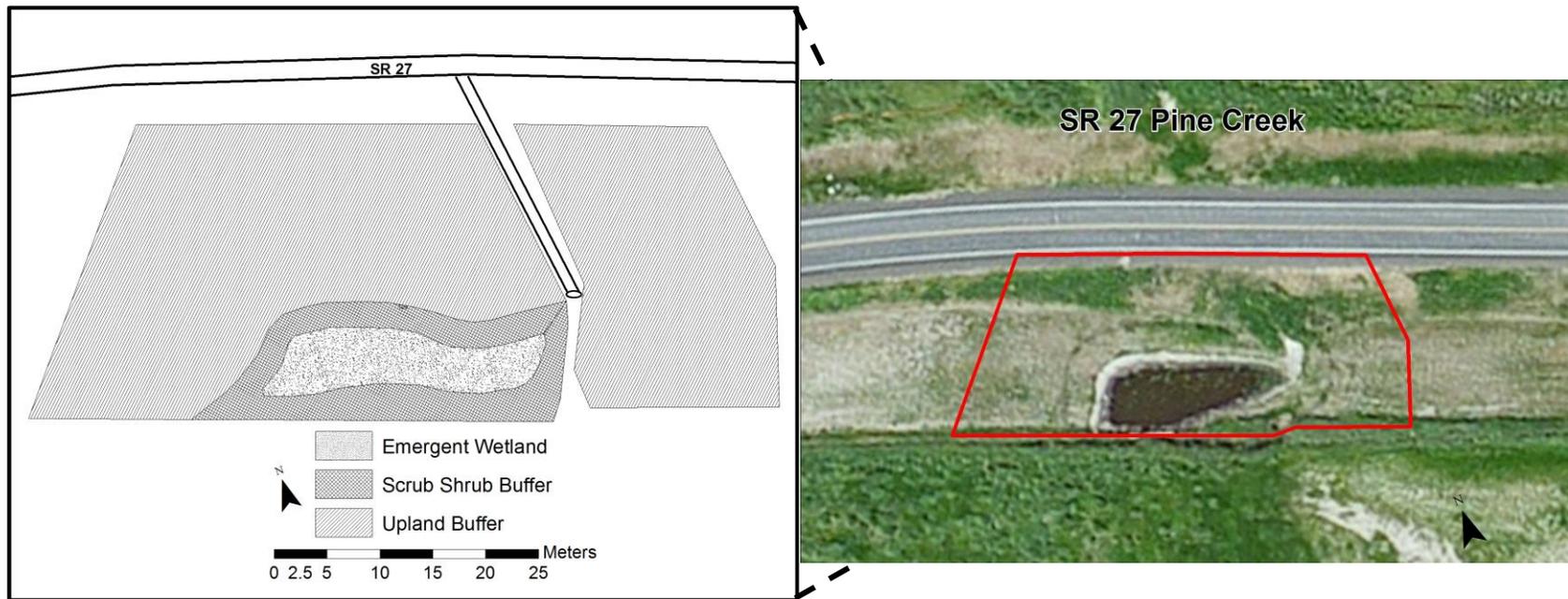
Performance Standards	2015 Results	Management Activities
Hydrology Present	Present (see Appendix 3, Table 1)	
Cover of native, wetland (facultative and wetter) herbaceous plant species will be at least 30% in the emergent community of the created and enhanced wetlands.	15% native wetland herbaceous cover	
Cover of upland herbaceous plant species will be at least 20% in the upland buffer area.	50% upland herbaceous cover	
The native woody species will maintain a minimum average density of four plants per 100 square feet in shrub buffer community.	2 plants/100ft <sup>2</sup>	
No more than 20% cover by non-native invasive species Class A, B, and C as listed in the Whitman County Noxious Weed list 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.	40% invasive cover; no Japanese knotweed or purple loosestrife observed	

## Report Introduction

This report summarizes third-year (Year-3) monitoring activities at the State Route (SR) 27 Pine Creek 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 on July 21, 2015.

## What is the SR 27 Pine Creek Mitigation Site?

This 0.45-acre mitigation site (Figure 1) is a wetland established west of the newly replaced bridge over Pine Creek. This site was created to compensate for the loss of 557 square feet of wetlands due to the bridge replacement along SR 27. The seasonally ponded depression and surrounding scrub-shrub area are designed to provide mitigation for lost wetland functions including sediment removal, nutrient and toxicant removal, and production and export of organic matter.



**Figure 1 Site Sketch**

The SR 27 Pine Creek Mitigation Site contains an established emergent low area within the 100-year floodplain of Pine Creek, which flows through an area of rolling hills in the Columbia Plateau Ecoregion. A narrow band of willows surrounds the emergent depression, which in turn is flanked by an herbaceous buffer. Appendix 2 includes site directions.

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

### **Year 3**

#### Performance Standard 1

The soils in the PEM creation area at the Pine Creek Mitigation Site will be saturated to the surface, or standing water will be present within 12 inches of the surface for at least 16 consecutive days (10 percent) of the growing season in years when rainfall meets or exceeds the 30-year average.

#### Performance Standard 2

Cover of native, wetland (facultative and wetter) herbaceous plant species will be at least 30 percent in the emergent community of the created wetland. Native colonizing vegetation will be included in this coverage calculation.

#### Performance Standard 3

Cover of upland herbaceous plant species will be at least 20 percent in the upland buffer area. Native colonizing vegetation will be included in this coverage calculation.

#### Performance Standard 4

The native woody species will maintain a minimum average density of four plants per 100 square feet in shrub buffer community. Native colonizing vegetation will be included in this coverage calculation.

#### Performance Standard 5

No more than 20 percent cover by non-native invasive species Class A, B, and C as listed in the Whitman County Noxious Weed list across the entire mitigation site. Japanese knotweed and purple loosestrife shall not be tolerated on the mitigation site.

Appendix 1 shows the planting plan (WSDOT 2009).

## How were the performance standards evaluated?

WSDOT staff collected hydrology data using methods described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (USACE 2010) (Performance Standard 1).

Cover of native, wetland herbaceous plants in the emergent area, upland herbaceous plant species, and noxious weeds were all evaluated qualitatively (Performance Standards 2, 3, and 5). Density of native woody species in the shrub buffer was measured with a total count (Performance Standard 4).

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

## How is the site developing?

In general the site continues to struggle to develop a native plant community. Cover in the emergent depression has decreased. The herbaceous cover in the buffer is already exceeding the final year standard of 30 percent, however most of this cover estimate is comprised of crested wheatgrass (*Agropyron cristatum*), a non-native species. The density of native woody species is under the performance standard target possibly due to competition with reed canarygrass and heavy sediment/drift deposits. Invasive species are exceeding the maximum allowable cover and have the potential to be problematic due to the high number of invasive propagules in the surrounding landscape.

The wildlife exclusion fence is almost completely down along the southern side. Possible deer, raccoon, and duck prints, and deer scat were observed in the emergent area.

Results for Performance Standard 1

(Wetland hydrology will be present 10% of the growing season):

This site is meeting the wetland hydrology requirement. Standing water was present in all intended wet areas during both site visits on March 27 and April 15, 2015. Hydrology observations are included in Appendix 3, Table 1. (Photo 1)



**Photo 1  
Inundation (March 2015)**

Results for Performance Standard 2

(30% cover of native, wetland (facultative or wetter) herbaceous plant species in the emergent area):

The cover of native wetland (facultative or wetter) herbaceous plant species is qualitatively estimated to be 15 percent. This value is below the performance standard target. This area was mostly bare ground with a fringe of bulrush (*Typha latifolia*), hard stem bulrush (*Schoenoplectus acutus*), and soft stem bulrush (*Schoenoplectus tabernaemontani*) on the north side. (Photo 2)



**Photo 2  
Herbaceous cover in the emergent area (July 2015)**

Results for Performance Standard 3

(20% cover of upland herbaceous plant species):

The cover of upland herbaceous species is qualitatively estimated at 50 percent. This value is above the performance standard target (and above the Year 5 target of 30 percent). This estimate includes crested wheatgrass, a non-native and non-noxious species. Cover of crested wheatgrass alone is qualitatively estimated at 45 percent, and native species were estimated at only five percent cover. Reed canarygrass makes up the other 50 percent cover in this area. (Photo 3)



**Photo 3**  
**Herbaceous cover in the upland (July 2015)**

Results for Performance Standard 4

(Native woody species will maintain a minimum average density of 4 plants/100ft<sup>2</sup> in the shrub buffer community):

Density of native woody species is 2 plants/100 square feet in the shrub buffer community based on a total count. This value is below the performance standard target. All are Scouler’s willow (*Salix scouleriana*) that appear stressed from competition with reed canarygrass and were covered in heavy sediment/drift deposits (Photo 4).



**Photo 4**  
**Stressed willows in the shrub buffer (July 2015)**

Results for Performance Standard 5

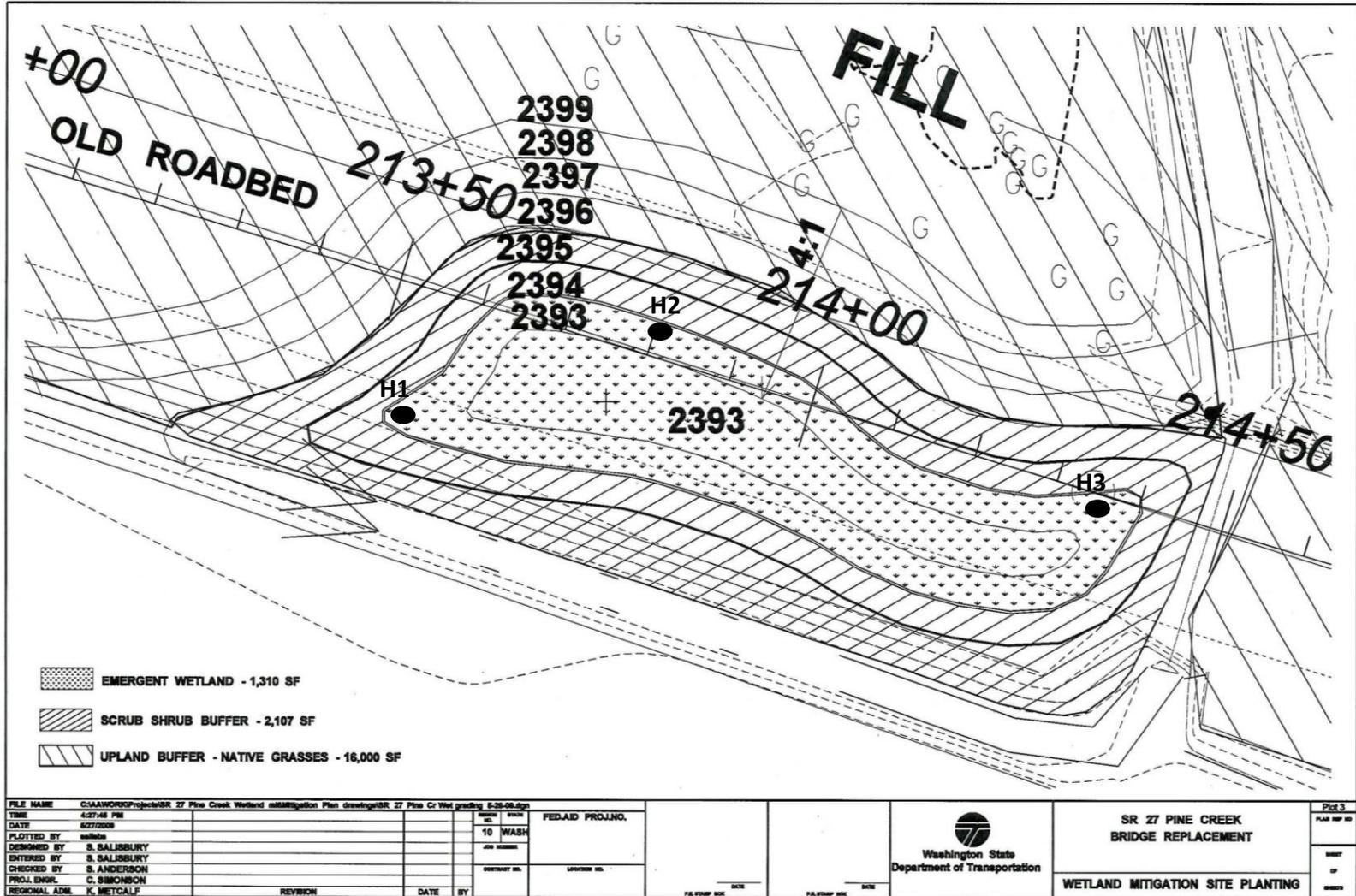
(No more than 20 percent cover by non-native invasive species. Japanese knotweed and purple loosestrife shall not be tolerated on the mitigation site):

Overall cover of noxious weeds was qualitatively estimated at 40 percent. This exceeds the performance standard threshold. Most of this estimate is reed canarygrass found throughout the site. A few common tansy (*Tanacetum vulgare*) were scattered throughout the site as well. No Japanese knotweed or purple loosestrife was observed.

**What is planned for this site?**

Weed control across the site is recommended. Additional planting in the scrub-shrub area will occur in fall of 2015 or spring of 2016. The wildlife exclusion fence is in need of repair.

# Appendix 1 – Planting Plan with Hydrology Stake Locations and Photo Point Map



(from WSDOT 2009)

### PLANT MATERIAL LIST

BOTANICAL NAME	COMMON NAME	QUANT.	ASNS	SIZE	ROOT CONDITION			SPACING	REMARKS
					BR	BBB	CONT. DIA.		
<b>EMERGENT ZONES (ELEV. 2393 - 2394)</b>									
<i>Scheuchzeria palustris</i>	Hardstem Bulrush	460	1.7	40 cu. in.		X		1' O.C.	
<i>Scheuchzeria palustris</i>	Softstem Bulrush	460	1.7	40 cu. in.		X		1' O.C.	
<i>Typha latifolia</i>	Broadleaf Cattail	390	1.7	40 cu. in.		X		1' O.C.	
<b>SCRUB SHRUB ZONE (ELEV. 2394 - 2396)</b>									
<i>Salix scouleriana</i>	Scouler's Willow	150		3 FT			X	3' O.C.	1/2 INCH DIAMETER MIN. 1 INCH DIAM. MAX. PER STAKE
<i>Salix scouleriana</i>	Scouler's Willow	150	1.7	40 cu. in.		X		3' O.C.	

#### ABBREVIATIONS

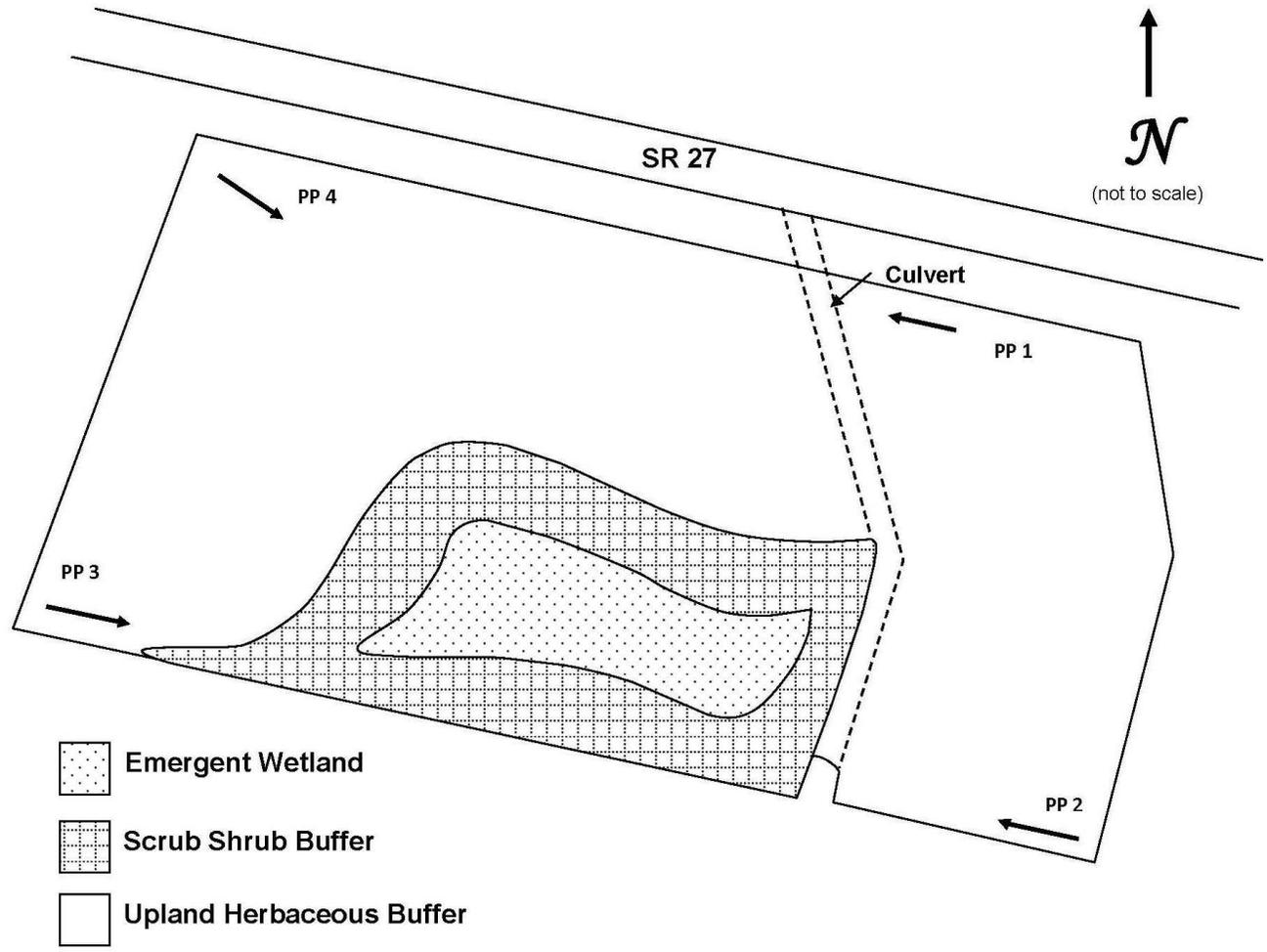
A.S.N.S.-A.N.S.I. 240.1-2004, AMERICAN ASSOCIATION OF NURSERYMEN.  
 B & B - BALLED & BURLAPPED  
 BR - BARE ROOT  
 CONT. - CONTAINER  
 FT. - FOOT/FEET  
 O.C. - ON CENTER  
 QUANT. - QUANTITY  
 DIA. - DIAMETER  
 IN - INCH  
 CU IN - CUBIC INCH  
 GAL. - GALLON

#### NOTES

- All plant material specifications for size and condition are minimum requirements at the time of planting, and are in accordance with the current edition of "American Standards for Nursery Stock". If a conflict occurs between these specifications and the "A.S.N.S.", these specifications shall apply.
- All containerized plants shall have root systems which fully fill the container, without having roots that circle the pot.
- All containerized plants shall have root systems which have been inoculated with the appropriate mycorrhizae.
- Immediately before installation, plant's roots that are broken, damaged, or twisted must be pruned. Hedged or circling roots of containerized plants must be pruned or straightened and the sides of the rootball must be roughened from top to bottom to a depth of approximately one half inch in three places.
- Contractor is advised that a growing contract may be necessary to obtain the amounts and container sizes of plants specified.

FILE NAME: C:\AA\HW\Projects\SR 27 Pine Creek Wetland m&M\Bidding Plan drawings\SR 27 Pine Cr Wet grading 6-26-09.dgn		FED.AID PROJ.NO.		 <b>Washington State</b> Department of Transportation		<b>SR 27 PINE CREEK</b> <b>BRIDGE REPLACEMENT</b>		Part 11 PAGE 10P 00
TIME: 4/28/07 P.M.	DATE: 02/27/2008	ISSUE NO.	DATE			Washington State Department of Transportation		<b>PLANT MATERIALS LIST</b>
PLOTTED BY: salsbu	DESIGNED BY: S. SALISBURY	CHECKED BY: S. ANDERSON	PROJ. ENGR.: C. SIMONSON	REGIONAL ADM.: K. METCALF	REVISION	DATE	BY	

(from WSDOT 2009)



## Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on July 21, 2015 and document current site development.



**Photo Point 1**



**Photo Point 2**



**Photo Point 3**



**Photo Point 4**

**Driving Directions:**

From I-5 take Exit 142A to WA-18E. Merge from WA-18 onto I-90, travel 253 miles to Exit 279 merge onto US-195 S. Travel south for 32 miles to Washington 271 S towards Rosalia/Oaksdale. After 8.5 miles turn left onto WA-27, travel 3.7 miles. The mitigation site is on the south side of the road, there is a large pullout just east of the mitigation site.

# Appendix 3 – Data Table

Table 1 Hydrology Observations

Date	Observations	Hydrology Stake	Inundation Level (inches above soil surface)
March 27, 2015	Very early spring in Eastern Region, however buds were out on willows and there was green grass at the site. Temperature was in the mid 50's.	H1	4
		H2	5
		H3	8
April 15, 2015	Monitoring took place in the morning when the temperature was in the high 40's.	H1	3
		H2	3.5
		H3	6

## Literature Cited

1. [USACE] US Army Corps of Engineers. 2009. Department of the Army Nationwide (23) Permit Number NWS-2009-594.
2. [USACE] US Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), Wakeley JS, Lichvar RW, Noble CV, editors. Vicksburg (MS): US Army Engineer Research and Development Center. ERDC/EL TR-10-3. Available at: [http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg\\_supp/west\\_mt\\_finalsupp.pdf](http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/west_mt_finalsupp.pdf)
3. [WSDOT] Washington State Department of Transportation. 2009. SR 27 Pine Creek Bridge Replacement Final Wetland and Stream Mitigation Report. Olympia (WA): Washington State Department of Transportation, Headquarters Region.
4. [WSDOT] Washington State Department of Transportation. 2009. SR 27 Pine Creek Bridge Replacement Mitigation Planting Plan.
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>