

# **US 101 Bone River Bridge Replacement (Bone River) Mitigation Site**

## **USACE NWP (23) 2009-1152**

**Southwest Region**

**2015 MONITORING REPORT**

**Wetlands Program**

*Issued March 2016*



**Washington State  
Department of Transportation**

Environmental Services Office

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# US 101 Bone River Bridge Replacement Mitigation Site

## USACE NWP (23) 2009-1152



General Site Information		
<b>USACE NWP 23 #</b>	NWS-2009-1152	
<b>Mitigation Location</b>	Bone River at the eastern edge of Willapa Bay, Pacific County	
<b>LLID Number</b>	1239190466499	
<b>Construction Date</b>	2012-2014	
<b>Monitoring Period</b>	2015-2019	
<b>Year of Monitoring</b>	1 of 5	
<b>Type of Project Impact<sup>1</sup></b>	Temporary Wetland	Temporary Buffer
<b>Area of Project Impact</b>	0.27 acre	0.05 acre
<b>Type of Mitigation</b>	Wetland Restoration	Buffer Restoration
<b>Planned Area of Mitigation</b>	0.27 acre	0.05 acre

<sup>1</sup>Additional mitigation for 0.11 acre permanent wetland impacts for this project is provided by the Tarlatt Slough Mitigation Site which is reported on separately.

The impact and mitigation acreages are referenced from the *Final Critical Areas Mitigation Report US 101 – Bone River Bridge Replacement MP 45.08 to MP 45.32* (WSDOT 2012).

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

Performance Standards	2015 Results <sup>2</sup>	Management Activities
90% survival in the estuarine restoration areas	Not measured	
90% survival in the palustrine scrub-shrub restoration areas	100% survival (CI <sub>80%</sub> = 100-100%)	50 salmonberry ( <i>Rubus spectabilis</i> ) planted on 1/13/2015 in the southeast corner
90% survival in the buffer restoration areas	95% survival	
Smooth cordgrass ( <i>Spartina alterniflora</i> ), purple loosestrife ( <i>Lythrum salicaria</i> ), and paleyellow iris ( <i>Iris pseudacorus</i> ) will be documented and completely removed from the site	None observed	Weed control activity occurred on 4/14, 6/16, 8/25, and 10/27 in 2015
Less than 15% cover blackberry ( <i>Rubus</i> species) and Class A noxious weeds in the upland buffer	None observed	

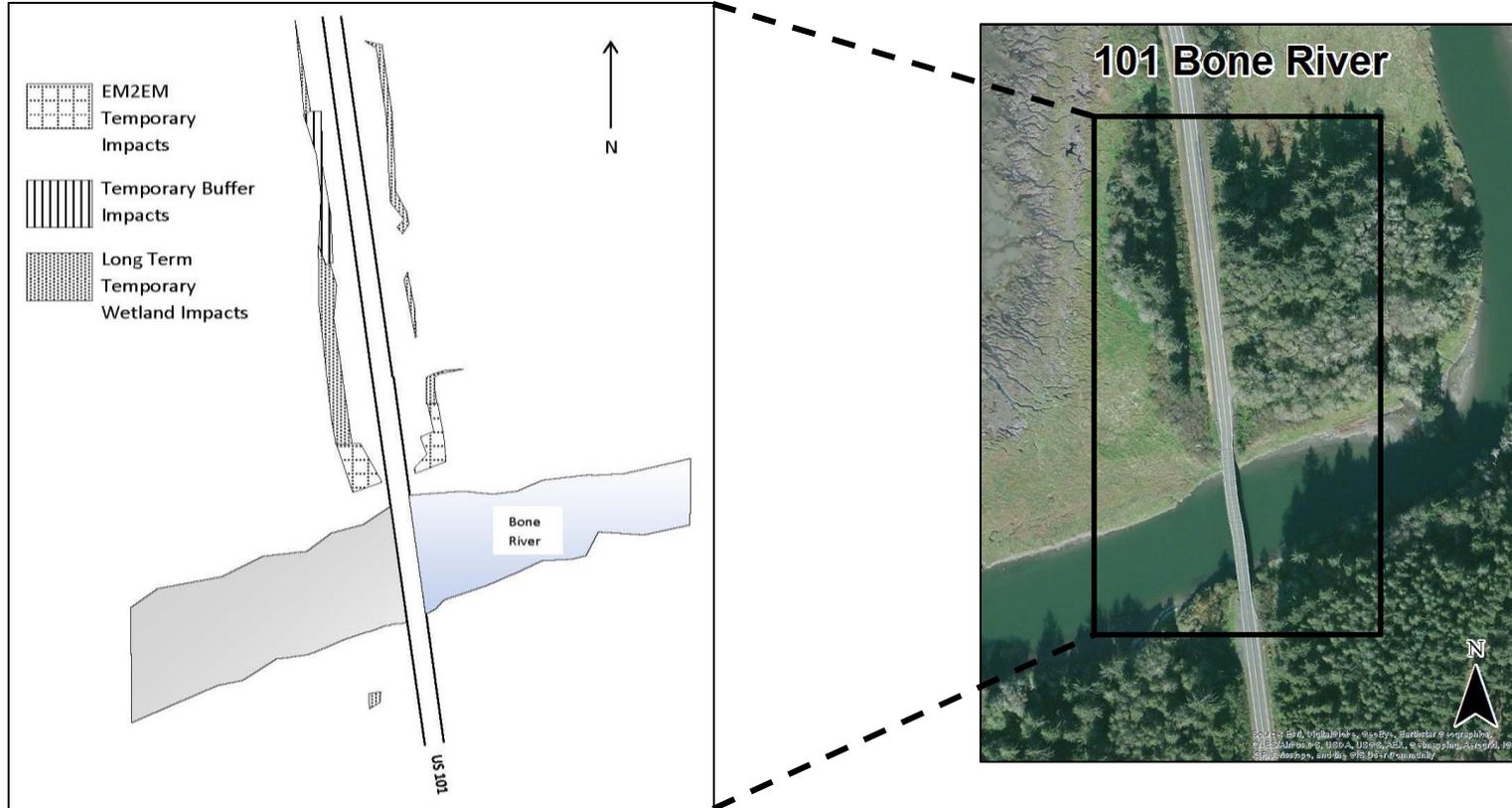
## Report Introduction

This report summarizes first-year (Year-1) monitoring activities at the US (United States) 101 Bone River 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 and photo-documentation on August 10, 2015.

<sup>2</sup> Estimated values are presented with their corresponding statistical confidence interval. For example, 100% survival (CI<sub>80%</sub> = 100-100%) means we are 80% confident that the true survival value is between 100% and 100%.

## What is the US 101 Bone River Mitigation Site?

This 0.32-acre mitigation site (Figure 1) is a restored wetland and buffer area within the US 101 Bone River Bridge Replacement project limits. This site was restored to compensate for the temporary impacts to 0.27 acre of wetlands and 0.05 acre buffer due to the bridge replacement. The emergent and scrub-shrub wetland areas and buffer are designed to provide mitigation for temporary lost estuarine wetland functions including wildlife habitat, biological support, and sediment stabilization and accretion.



**Figure 1 Site Sketch**

The US 101 Bone River Mitigation Site contains restored emergent and scrub-shrub wetland areas on both sides of US 101 on the north side of Bone River. There is also a restored buffer area to the north along the west side of US 101. Appendix 1 includes site directions.

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

### **Year 1**

#### Performance Standard 1

At monitoring year 1, there will be a minimum survival rate of 90 percent in areas identified on the planting plan as estuarine restoration areas.

#### Performance Standard 2

At monitoring year 1, there will be a minimum survival rate of 90 percent in onsite restoration areas identified as palustrine scrub shrub.

#### Performance Standard 3

At monitoring year 1, there will be a minimum survival rate of 90 percent in areas identified as buffer restoration areas.

#### Performance Standard 4

In all monitoring years, invasive species [smooth cordgrass, purple loosestrife, and yellow-flag iris] will be documented and completely removed from the site.

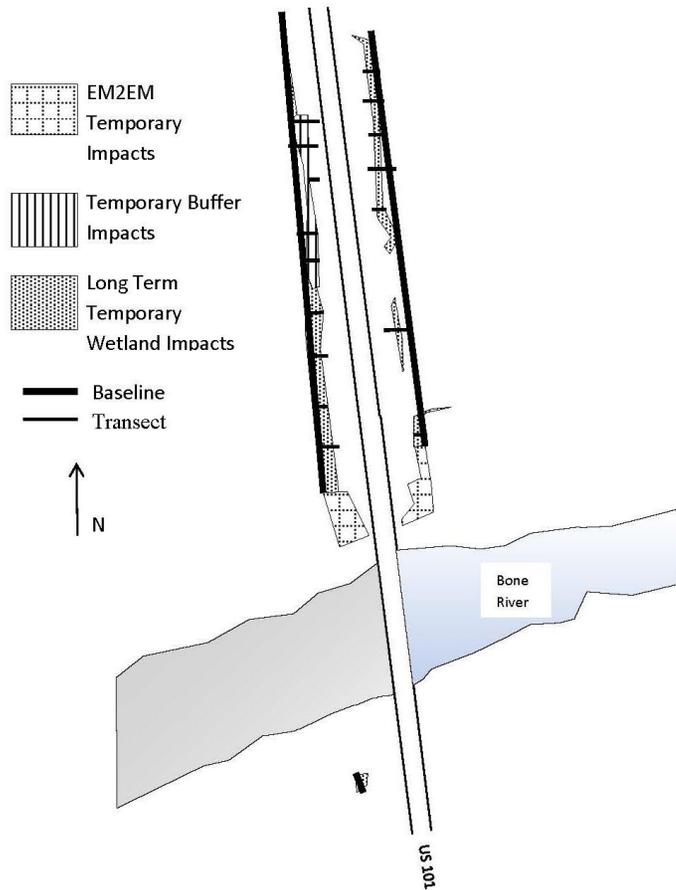
#### Performance Standard 5

The aerial extent of blackberry species and Class A noxious weeds in the upland buffer will not exceed 15 percent of that area.

Appendix 1 shows the planting plan (WSDOT 2012).

## How were the performance standards evaluated?

Appendix 2, Table 1 documents the sampling methodology utilized for all of the performance standards (PS) as required by the mitigation plan or permits. 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:** Parallel to US 101, through the planting areas.

## How is the site developing?

This site is developing well with high rates of survival and a limited presence of invasive species.

Results for Performance Standard 1

(90% survival in the estuarine restoration areas):

Herbaceous vegetation is the dominant component of the estuarine restoration area; therefore survival is not possible to estimate. Cover of native salt-tolerant herbaceous species was qualitatively estimated at 90 percent. Dominant species observed in this zone included tufted hairgrass (*Deschampsia caespitosa*), and Lyngbye's sedge (*Carex lyngbyei*). (Photo 1)

Results for Performance Standard 2

(90% survival in the palustrine scrub-shrub areas):

Survival in the palustrine scrub-shrub areas is estimated at 100 percent ( $CI_{80\%} = 100-100\%$ ). No dead plants were observed. This value exceeds the performance standard target. Dominant species include salmonberry (*Rubus spectabilis*), willows (*Salix* species), and red alder (*Alnus rubra*). (Photo 2)



**Photo 1**  
**Herbaceous cover in the estuarine restoration area**  
**(August 2015)**



**Photo 2**  
**Survival in the palustrine scrub-shrub areas**  
**(August 2015)**

Results for Performance Standard 3

(90% survival in the buffer restoration areas):

Survival in the buffer restoration areas is estimated at 95 percent. This value exceeds the performance standard target. Dominant species include twinberry honeysuckle (*Lonicera involucrata*) and salmonberry. (Photo 3)

Results for Performance Standard 4

(Smooth cordgrass, purple loosestrife, and yellow-flag iris documented and removed from the entire site):

None observed at the time of monitoring.

Results for Performance Standard 5

(Less than 15% cover blackberry species and Class A noxious weeds in the upland buffer):

No blackberry or Class A noxious weeds observed. Bull thistle (*Cirsium vulgare*) is present in small quantities in the upland buffer.

**What is planned for this site?**

Routine weed control will continue in 2016.



**Photo 3**  
**Survival in the buffer restoration areas**  
**(August 2015)**

# Appendix 1 – Planting Plan

(from WSDOT 2012)



**Driving Directions:**

From I-5, take US 101 North to SR 8 and US 12 West to Montesano. Take the exit toward WA-107/Montesano/Raymond. Turn left onto WA-107 South/South Main Street. Turn left onto US 101 South and follow for approximately 32 mi.

# Appendix 2 – Data Table

Table 1. Sampling Methodology

	<b>PS 1</b>	<b>PS 2</b>	<b>PS 3</b>	<b>PS 4</b>	<b>PS 5</b>	<b>HPA</b>
<b>Attribute</b>	Cover	Survival	Survival	Presence	Cover	Survival
<b>Target pop.</b>	Herbaceous	Woody Species	Woody Species	Smooth Cordgrass, Purple Loosestrife, Yellow-flag Iris	Blackberry Species and Class A Noxious Weeds	Vegetative Cuttings
<b>Zone</b>	Estuarine	PSS	Buffer	Entire Site	Buffer	Riparian
<b>Sample method</b>	Qualitative	UBT	UBT	Qualitative	Qualitative	Qualitative
<b>SU length</b>	NA	NA	NA	NA	NA	NA
<b>SU width</b>	NA	1m	1m	NA	NA	NA
<b>Points per SU</b>	NA	NA	NA	NA	NA	NA
<b>Total # of SU</b>	NA	9	20	NA	NA	NA

## Literature Cited

1. [USACE] US Army Corps of Engineers. 2012. Department of the Army Nationwide Permit 23 NWS-2009-1152.
2. [WDFW] Washington Fish and Wildlife. 2012. Hydraulic Project Approval Permit # 125262-2.
3. [WSDOT] Washington State Department of Transportation. 2012. Final Critical Areas Mitigation Report US 101 – Bone River Bridge Replacement MP 45.08 to 45.32. Vancouver (WA): Washington State Department of Transportation, Southwest Region.
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