

# **I-5 Blakeslee to Grand Mound (TDA 13) Mitigation Site**

## **USACE IP NWS-2008-744-SOD**

### **Southwest Region**

### **2015 MONITORING REPORT**

### **Wetlands Program**

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## USACE IP NWS-2008-744-SOD



<b>General Site Information</b>	
<b>USACE IP Number</b>	NWS-2008-744-SOD
<b>Ecology WQC#</b>	6701
<b>Mitigation Location</b>	Located just north of the Thurston Co/Lewis Co. line on the west side of Interstate 5
<b>LLID Number</b>	1230055467808
<b>Construction Date</b>	2011-2012
<b>Monitoring Period</b>	2013 to 2022
<b>Year of Monitoring</b>	3 of 10
<b>Area of Project Impact<sup>1</sup></b>	5.61 acres
<b>Type of Mitigation</b>	Wetland Enhancement
<b>Planned Area of Mitigation<sup>2</sup></b>	12 acres

<sup>1</sup> The 5.61 acres of direct wetland impact is sourced from USACE 2009. This impact is mitigated for at the North Fork Newaukum Mitigation Bank with the debit of 6.79 credits.

<sup>2</sup> The type of mitigation for this site is wetland enhancement and restoration and occurs at three total discharge areas (TDA 11, 12, 13) with a combined acreage of approximately 12 acres (WSDOT 2009).

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

Performance Standards	2015 Results <sup>3</sup>	Management Activities
The sites will exhibit floodplain functions including seasonal inundation at various stages/depths compared to baseline conditions.	Not available in 2015, will include in year-5 report.	
Forested areas will have a minimum density of 400 living native trees/acre.	612 trees/acre (CI <sub>80%</sub> = 392-833)	
Forested areas will have a minimum density of 4,000 living native shrubs/acre.	3,964 shrubs/acre (CI <sub>80%</sub> = 3,720-4,208)	
At least two species of native trees and four species of native shrubs will be present in the forested areas. No single species will provide more than 60% total aerial cover.	Two tree species and four shrub species present; none exceed 60% cover.	
Scrub-shrub areas (wetland) will have a minimum density of 4,000 living native shrubs/acre.	5,332 shrubs/acre (CI <sub>80%</sub> = 4,561-6,102)	
At least four species of native shrubs will be present in the scrub-shrub areas. No single species will provide more than 60% total aerial cover.	Four shrub species present; non exceed 60% cover	
50% aerial cover of native facultative wet and wetter species within the emergent zone.	84% cover (CI <sub>80%</sub> = 81-87%)	
The aerial extent of blackberry species ( <i>Rubus</i> species) and Class A noxious weeds will not exceed 15% in the combined scrub-shrub and forested planting areas of the onsite mitigation areas.	1% cover	Weed control activity occurred on 3/18 and 9/2 in 2015
The aerial extent of reed canarygrass ( <i>Phalaris arundinacea</i> ) at the mitigation sites will be managed at the threshold 10% below the existing baseline conditions.	5% cover	
Japanese knotweed ( <i>Reynoutria japonica</i> ) shall not be present in any amount within the mitigation sites.	None observed	

<sup>3</sup> Estimated values are presented with their corresponding statistical confidence interval. For example, 612 trees/acre (CI<sub>80%</sub> = 392-833) means we are 80% confident that the true density value is between 392 and 833 trees per acre.

## **Report Introduction**

This report summarizes third-year (Year-3) monitoring activities at the Interstate 5 (I-5) Total Discharge Areas (TDA) 13 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 July 6-8, 2015.

## What is the I-5 TDA 13 Mitigation Site?

This Total Discharge Areas (TDA) mitigation site (Figure 1) is one of three enhanced floodplain wetlands. The sites offset increased flow volumes from phase 1 of the four mile I-5 widening project by improving and restoring floodplain function including increased water quality, hydrologic, and habitat functions. Nearby drain tiles were removed, drainage ditches were filled, and the site was excavated connecting the wetland with an adjacent stream channel. Enhanced habitat functions include diverse hydroperiods, vegetation communities, strata, and habitat types.



**Figure 1 Site Sketch**

TDA 13 consists of a riparian buffer sloping down to a scrub-shrub and forested wetland area. An emergent area is connected to an adjacent stream, creating a back water area. Creation of this hydrologic connection increases wildlife habitat, hydrologic, and water quality functions in the floodplain.

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

### **Year 3**

#### Performance Standard 1

The sites will exhibit floodplain functions including seasonal inundation at various stages/depths compared to baseline conditions.

#### Performance Standard 2

There will be a minimum density of 400 living native trees per acre in the forested areas (wetland, wetland buffer, riparian).

#### Performance Standard 3

There will be a minimum density of 4,000 living native shrubs per acre in the forested areas (wetland, wetland buffer, riparian).

#### Performance Standard 4

At least two species of native trees and four species of native shrubs will be present in the forested areas. No single species will provide more than 60 percent cover.

#### Performance Standard 5

There will be a minimum density of 4,000 living native shrubs per acre in the scrub-shrub areas (wetland, wetland buffer, riparian).

#### Performance Standard 6

At least four species of native shrubs will be present in the scrub-shrub areas. No single species will provide more than 60 percent cover.

#### Performance Standard 7

There will be a minimum of 50 percent aerial cover of native facultative wet and wetter species within the emergent zone.

#### Performance Standard 8

The aerial extent of blackberry species and Class A noxious weeds will not exceed 15 percent in the combined scrub-shrub and forest planting areas of the onsite mitigation areas, TDA 11, TDA 12, and TDA 13 restoration/enhancement areas.

Performance Standard 9

The aerial extent of reed canarygrass at the mitigation sites will be managed at a threshold 10 percent below the existing baseline conditions.

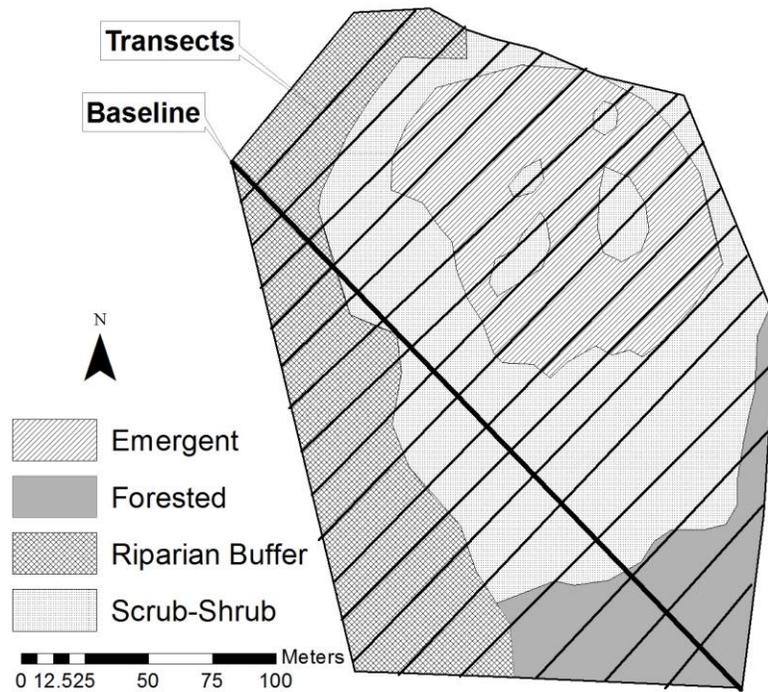
Performance Standard 10

Japanese knotweed shall not be present in any amount within the mitigation sites.

Appendix 1 shows the planting plan (WSDOT 2011).

## How were the performance standards evaluated?

The tables below document the sampling methodology utilized for all of the performance standards (PS) as required by the mitigation plan. 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:** Through the center of the site from the northwest corner to the southeast corner.  
 Length: 284 meters Transects: 24

	PS 2&3	PS 6	PS 7
<b>Attribute</b>	Density	Density	Cover
<b>Target pop.</b>	Native Woody	Native Woody	Herbaceous
<b>Zone</b>	Forested	Scrub-Shrub	Emergent
<b>Sample method</b>	UBT	UBT	Point-Intercept
<b>SU length</b>	Entire	Entire	10 m
<b>SU width</b>	1 m	1m	NA
<b>Points per SU</b>	NA	NA	20
<b>Total # of SU</b>	24	20	35

## How is the site developing?

Woody vegetation on site is becoming well established. Shrub plantings are doing well, but the tree plantings appear stressed in the riparian buffer. The forested wetland has a higher density of native woody plants and the Oregon ash (*Fraxinus latifolia*) trees are healthy. The emergent wetland was inundated at the time of monitoring and includes a well-established native herbaceous plant community.

The site provides diversity of hydroperiods with long-duration seasonal ponding and saturation. The hydrologic regimes, newly established connection to the creek, and developing vegetative structure are anticipated to provide the hydrologic, water quality, and habitat functions intended for this site. The herbaceous community is already providing water quality and hydrologic functions by slowing water velocity, allowing sediment to settle, and taking up nutrients and toxicants.

Garter snakes, chorus frogs, mice, deer scat and prints, several bird nests, amphibian egg masses, cedar waxwings, violet-green swallows, red wing blackbirds, Wilson's flycatchers, common yellowthroat, great blue herons, mallards, song sparrows, American robins, and black capped chickadees were observed on site.

Results for Performance Standard 1

(Sites will exhibit floodplain functions including seasonal inundation at various stages/depths):

Hydrograph data was not obtained in time to include in this report. It will be included in the year-5 (2017) wetland monitoring report.

Results for Performance Standard 2

(Density of 400 living native trees/acre in the forested areas):

Density of native trees in the forested areas is estimated at 612 trees per acre (CI<sub>80%</sub> = 392-833). This value likely exceeds the performance standard target. Dominant species include black cottonwood (*Populus balsamifera*) and Oregon ash. Trees appeared much denser in the forested wetland (Photo 1) than the riparian buffer (Photo 2). Both areas were sampled together.



**Photo 1**  
**Native woody density in the forested wetland (July 2015)**



**Photo 2**  
**Native woody density in the riparian buffer (July 2015)**

Results for Performance Standard 3

(Density of 4,000 living native shrubs/acre in the forested areas):

Density of shrubs in the forested areas is estimated at 3,964 plants per acre (CI<sub>80%</sub>= 3,720-4,208). This value is likely below the performance standard target. Dominant species include snowberry (*Symphoricarpos albus*), redosier dogwood (*Cornus alba*), Sitka willow (*Salix sitchensis*), and western serviceberry (*Amelanchier alnifolia*). (Photos 1 and 2)

Results for Performance Standard 4

(At least two species of native trees and four species of native shrubs will be present in the forested areas. No single species will provide more than 60% cover):

Five tree species and 16 shrub species were present in the forested areas. No single species exceeded 60 percent cover. (Photos 1 and 2)

Results for Performance Standard 5

(Density of 4,000 living native shrubs/acre in the scrub-shrub areas):

Density of native woody plants in the scrub-shrub wetland is estimated at 5,332 shrubs per acre (CI<sub>80%</sub>= 4,561-6,102). This value exceeds the performance standard target. Dominant species include redosier dogwood, Pacific willow (*Salix lasiandra*), Sitka willow, and Pacific crabapple (*Malus fusca*). (Photo 3)



**Photo 3**  
**Density in the scrub-shrub wetland (July 2015)**

Results for Performance Standard 6

(At least four species of native shrubs will be present in the scrub-shrub area. No single species will provide more than 60% cover):

Fifteen species of shrubs were present in the scrub-shrub area. No single species exceeded 60 percent cover.

Results for Performance Standard 7

(50% cover native facultative wet and wetter species within the emergent zone):

Cover of native facultative wet and wetter species in the emergent zone is estimated at 84% (CI<sub>80%</sub> = 81-87%). This value exceeds the performance standard target. Dominant species include common spikerush (*Eleocharis palustris*), and slough sedge (*Carex obnupta*). (Photo 4)

Results for Performance Standard 8

(Less than 15% blackberry species and Class A noxious weeds in the scrub-shrub and forested planting areas)

Cover of non-native blackberry species is qualitatively estimated at less than one percent. Small patches of blackberry were scattered primarily throughout the forested areas. No Class A weeds were observed.



**Photo 4**  
**Herbaceous cover in the emergent area (July 2015)**

Results for Performance Standard 9

(Less than 10% cover below the baseline reed canarygrass for the entire site):

Baseline measurements were not taken. The cover of reed canarygrass is qualitatively estimated at less than five percent for the entire site. Reed canarygrass is primarily concentrated in the southeast corner and along the east fence line.

Results for Performance Standard 10

(Japanese knotweed shall not be present in any amount within the mitigation sites):

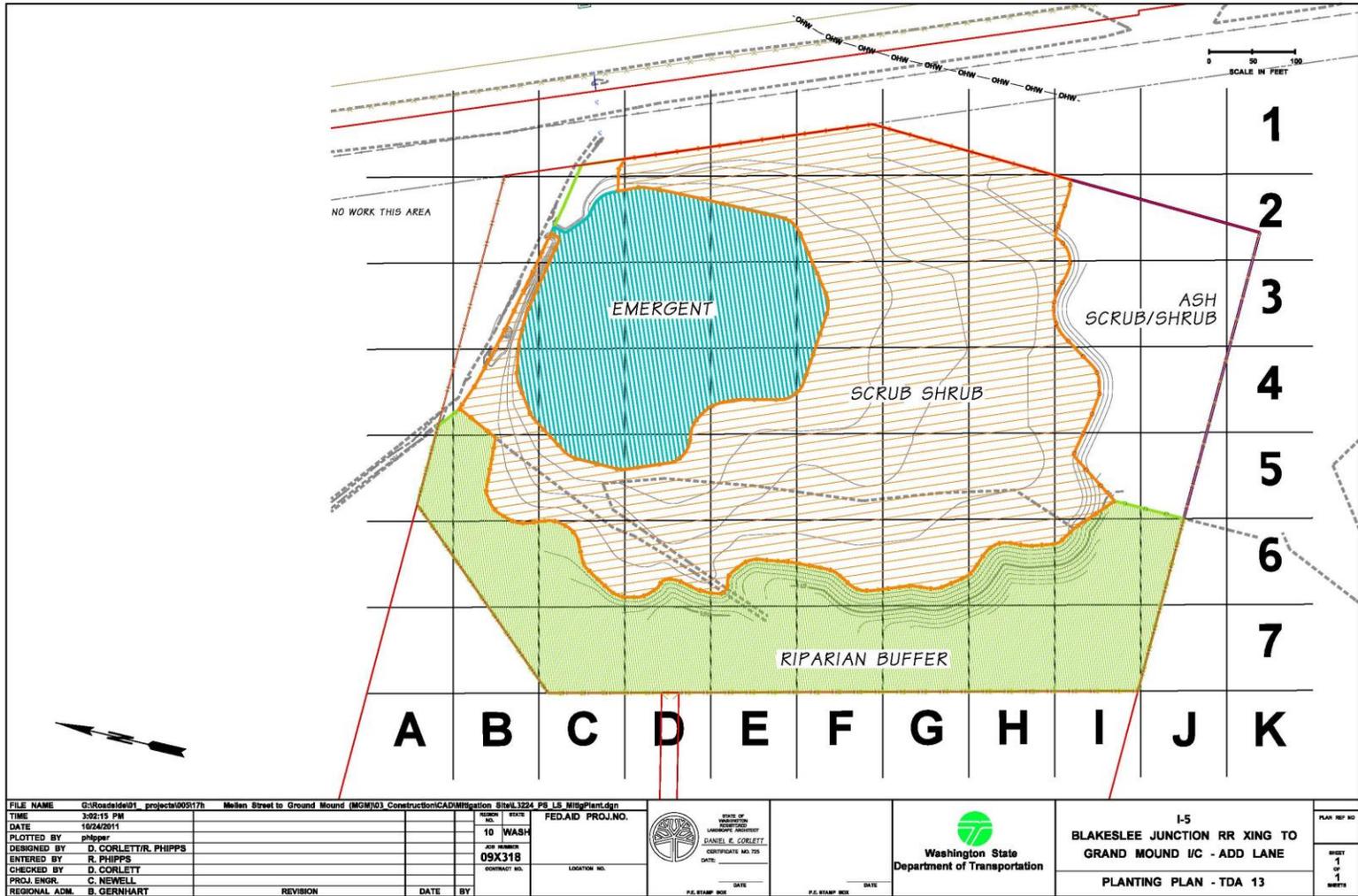
No Japanese knotweed was observed.

**What is planned for this site?**

Continued weed control activities are planned.

# Appendix 1 – Planting Plan

(from WSDOT 2011)



## Appendix 2 – Photo Points

The photographs below were taken from permanent photo-points on July 8, 2015 and document current site development.



**Photo Point 1**



**Photo Point 2**



**Photo Point 3**

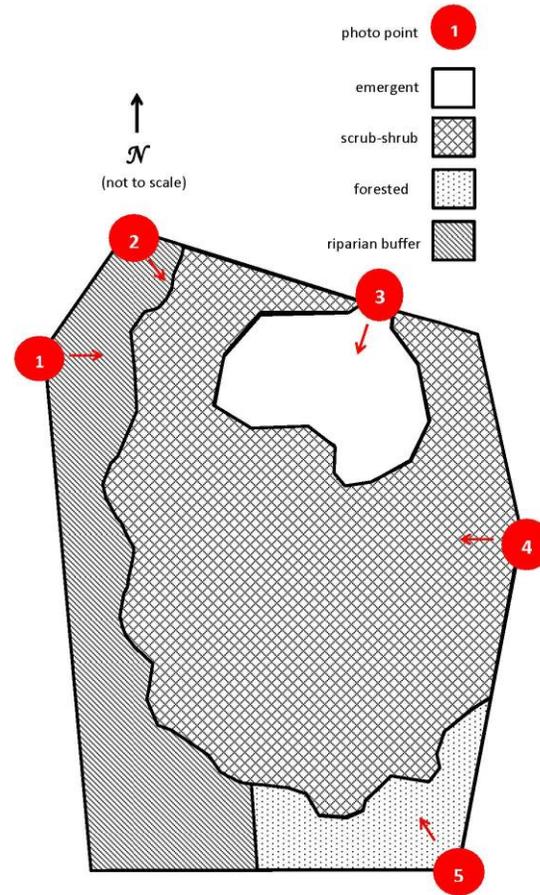


**Photo Point 4**



**Photo Point 5**

## Photo Point Map



## Literature Cited

1. [USACE] US Army Corps of Engineers. 2009. Department of the Army Individual Permit Number NWS-2008-744-SOD.
2. [WSDOT] Washington State Department of Transportation. 2009. Amended April 2009. I-5 Mellen Street to Grand Mound Stage 1 Final Mitigation Plan. Vancouver (WA): Washington State Department of Transportation, Southwest Region.
3. [WSDOT] Washington State Department of Transportation. 2011. I-5 Blakeslee Junction RR xing to Grand Mound I/C – Add Lane (TDA 12) As-built Planting Plan.
4. [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>