I-5 Blakeslee Junction to Grand Mound Interchange
(Thurston Co) (Blakeslee to Grand Mound)
Mitigation Site

USACE NWS-2008-744

Southwest Region

2017 MONITORING REPORT

Wetlands Program

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Department of Transportation

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<table>
<thead>
<tr>
<th>General Site Information</th>
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<tbody>
<tr>
<td>USACE IP Number</td>
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<tr>
<td>Mitigation Location</td>
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<tr>
<td>LLID Number</td>
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<tr>
<td>Construction Date</td>
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<tr>
<td>Monitoring Period</td>
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<tr>
<td>Year of Monitoring</td>
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<tr>
<td>Type of Impact</td>
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<tr>
<td>Area of Project Impact¹</td>
</tr>
<tr>
<td>Type of Mitigation</td>
</tr>
</tbody>
</table>

¹ Impact numbers sourced from I-5 Mellen Street to Grand Mound Stage 1 Final Mitigation Plan (WSDOT 2009). In addition to the re-vegetation of temporarily impacted areas, a debt of 1.13 credits has been used from the North Fork Newaukum Mitigation Bank to compensate for long-term temporary impacts to 3.42 acres of forested and scrub-shrub wetlands (USACE 2008).
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Summary of Monitoring Results and Management Activities (2017)

<table>
<thead>
<tr>
<th>Performance Standards</th>
<th>2017 Results²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onsite restoration areas contain the estimated amount of restored scrub-shrub and forested wetland and wetland buffer areas</td>
<td>Present</td>
</tr>
</tbody>
</table>
| Density of 300 living native trees per acre and 3,000 living native shrubs per acre in the forested and scrub-shrub areas | 5,554 all woody plants/acre (CI80%= 4,585-6,524)  
5,244 shrubs/acre (CI80%= 4,116-6,373)  
740 trees/acre (CI80%= 220-1,261) |
| At least two species of native trees and four species of native shrubs in the forested and scrub-shrub areas each with less than 60% of the total cover | Present        |
| Less than 15% cover blackberry (Rubus) species and Class A noxious weeds               | 1% cover (qualitative) |
| Reed canarygrass (Phalaris arundinacea) not outcompeting the dominant tree and shrub species | Reed canarygrass not outcompeting the dominant tree and shrub species |
| No Japanese knotweed (Reynoutria japonica) within the mitigation sites               | None observed   |

Report Introduction

This report summarizes final-year (Year-5) monitoring activities at the 005 Blakeslee to Grand Mound 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 October 16, 2017.

² Estimated values are presented with their corresponding statistical confidence interval. For example, 5,554 woody plants/acre (CI80%= 4,585-6,524) means we are 80% confident that the true density value is between 4,585 and 6,524 woody plants/acre.
What is the 005 Blakeslee to Grand Mound Mitigation Site?

This site (Figure 1) restores the temporary wetland and buffer impacts areas associated with the widening of I-5 between Mile Post (MP) 83.66 and 87.50 on I-5 in Lewis and Thurston counties. In addition, credits at the NFN Bank were debited for long-term temporary impacts to shrubs and trees. The enhancement/restoration of hydrologic and floodplain functions on approximately 12 acres of degraded wetlands was done at the TDA sites 11, 12, and 13 that are reported on separately. This project expands I-5 from four to six lanes and occurs within the Chehalis River watershed.

Figure 1  Site Sketch

The I-5 Blakeslee to Grand Mound Roadside Restoration Site contains restored herbaceous, scrub-shrub, and forested wetland communities and upland buffer areas on either side of I-5 within the project area. Appendix 1 includes site directions.
What are the performance standards for this site?

**Year 5**

Performance Standard 1  
At monitoring Year 5, the onsite mitigation areas will be surveyed to demonstrate that the onsite restoration areas contains (to be developed) acres of restored scrub-shrub and forested wetland and wetland buffer areas in compliance with the estimated acreages of Tables 3 and 4 [in WSDOT 2009]. Visual acreage estimates of the various Cowardin vegetation classes will be conducted to document the development of plant communities on the site.

Performance Standard 2  
At monitoring Year 5, there will be a minimum density of native trees and/or shrubs in onsite forested and scrub-shrub areas as follows:
- Minimum density of 300 living native trees per acre
- Minimum density of 3,000 living native shrubs per acre

Performance Standard 3  
At least two species of native trees and four species of native shrubs will be present in the forested areas. At least four species of native shrubs will be present in the scrub-shrub areas. No single species will provide more than 60 percent total aerial cover.

Performance Standard 4  
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, and the Dillenbaugh Creek Mitigation Site.

Performance Standard 5  
The aerial extent of reed canarygrass at the mitigation sites will be managed at a threshold 10 percent below the existing baseline conditions established in Performance Standard 6A [in WSDOT 2009]. In monitoring Year 5 (final year of monitoring), reed canarygrass will exist as an understory component that does not outcompete the dominant native tree and shrub species or exceed existing baseline conditions.
Performance Standard 6
Japanese knotweed shall not be present in any amount within the mitigation sites.

Appendix 1 shows the as-built plan (WSDOT 2011).
How were the performance standards evaluated?

Forested and scrub-shrub areas were sampled together. Six transects fell within the forested planting areas and density of trees was calculated from these (Performance Standard 2). The table below documents 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).

<table>
<thead>
<tr>
<th>Attribute</th>
<th>PS 1</th>
<th>PS 2</th>
<th>PS 3</th>
<th>PS 4</th>
<th>PS 5</th>
<th>PS 6</th>
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<tr>
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<td>Presence/Absence</td>
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<td>Noxious weeds</td>
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<tr>
<td>Total # of SU</td>
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</tbody>
</table>
Placement of Baseline: Baselines were established parallel to northbound and southbound to I-5 (Figure 2). Total baseline length was 6,342 meters with 20 transects.
Is this site a success?

This site is successful. Forested and scrub-shrub wetland and wetland buffer were restored in all intended roadside areas. Both density and diversity of native woody species is high. Cover of invasive species is low.
Results for Performance Standard 1
(Onsite restoration areas contain the estimated amount of restored scrub-shrub and forested wetland and wetland buffer areas):

Forested and scrub-shrub wetland, and vegetated wetland buffer were observed in all intended areas.

Results for Performance Standard 2
(Density of 300 native living trees and 3,000 native living shrubs in the forested and scrub-shrub areas):

Density of all native woody species is estimated at 5,554 plants/acre (CI80% = 4,585-6,524) (Photo 1). Density of shrubs is estimated at 5,244 plants/acre (CI80% = 4,116-6,373). This exceeds the performance standard target. Density of trees is estimated at 740 plants/acre (CI80% = 220-1261).

Results for Performance Standard 3
(At least two species of native trees and four species of native shrubs in the forested and scrub-shrub areas. No single species providing more than 60% cover):

More than two species of native trees and four species of native shrubs were observed in the forested and scrub-shrub areas. Some of the species observed include quaking aspen (*Populus tremuloides*), Oregon white oak (*Quercus garryana*), snowberry (*Symphoricarpos albus*), Nootka rose (*Rosa nutkana*), western serviceberry (*Amelanchier alnifolia*), and tall oregongrape (*Mahonia aquifolium*). Each provides less than 60 percent of the total aerial cover.

![Photo 1](Density of native woody plants in the roadside planting areas (October 2017))
**Results for Performance Standard 4**  
(Less than 15% cover blackberry species and Class A noxious weeds in the combined scrub-shrub and forested planting areas):

Cover of blackberry species in the roadside planting areas is qualitatively estimated at one percent. This is below the performance standard threshold. No Class A noxious weeds were observed at the time of monitoring.

**Results for Performance Standard 5**  
(Reed canarygrass not outcompeting the dominant tree and shrub species):

Reed canarygrass does not appear to be outcompeting the native woody species. Cover is qualitatively estimated at less than 10 percent.

**Results for Performance Standard 6**  
(No Japanese knotweed):

No Japanese knotweed was observed at the time of monitoring.

**What is planned for this site?**

Routine weed control will continue in 2018.
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Driving Directions:
All of these planting areas are accessible from the shoulder of I-5 between mileposts 83.6 to 87.5.
Literature Cited


