ANNUAL REPORT FOR 2017

Grimesland Bridge Road Wetland Mitigation Site
Pitt County
TIP No. B-3684
COE Action ID: SAW-2008-01011
NCDWR Project #: 20080356

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North Carolina Department of Transportation
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SUMMARY

The Grimesland Bridge Road Wetland Mitigation Site is located in Pitt County. The site was planted in January and February 2012 and was designed as wetland mitigation for impacts associated with bridge project B-3684.

The mitigation encompasses approximately 2.86 acres total of riverine swamp forest restoration and 0.52 acre of wetland enhancement by removing the existing causeway fill and two bridges on the –L- line and removing the existing causeway fill on the –Y- line at Seine Beach Road. Restoration involved connecting the road back to wetland elevations of the existing adjacent wetlands and planting the area. The enhancement consisted of planting the area where Bridge No. 127 was removed. Unavoidable wetland impacts due to the replacement of Bridge No. 129 over the Tar River and Bridge No. 127 over the Tar River Overflow are 1.44 acres. Therefore, the surplus of 1.42 acres of restoration will be available upon approval for future projects. Also, 3,500 sq. ft. of buffer will be restored along the south bank of the Tar River, all of which will be used to partially offset the unavoidable buffer impacts. The mitigation effort involved re-vegetating the area that was restored and enhanced. The area that was restored and enhanced is being monitored with vegetation plots and photo points for survival of planted seedlings. No hydrologic monitoring is required for this project; however, vegetation monitoring is required for five years.

An onsite Agency meeting was held with NCDOT on October 26, 2017. It was agreed upon at this meeting to discontinue vegetation monitoring within the wetland restoration area but to continue vegetation monitoring within the wetland enhancement and buffer restoration areas.

There were five vegetation monitoring plots (3 plots in wetland restoration area, 1 plot in wetland enhancement area, and 1 plot in buffer restoration area) established throughout the 3.21 acre site. Only the vegetation plots within the wetland enhancement and buffer restoration areas were monitored in 2017. After the sixth year of monitoring, the 2017 vegetation monitoring of the site revealed an average tree density of 618 trees per acre.

NCDOT proposes to continue vegetation monitoring at the Grimesland Bridge Road Wetland Enhancement and Buffer Sites in 2018.
1.0 INTRODUCTION

1.1 Project Description

The Grimesland Bridge Road Wetland Mitigation Site is located at Bridge No. 129 over the Tar River and Bridge No. 127 over the Tar River Overflow on Grimesland Bridge Road in Pitt County, NC. The site consists of approximately 2.86 acres of riverine swamp forest restoration, 3,500 square feet of buffer restoration and 0.52 acre of wetland enhancement (upon approval by the regulatory agencies) to offset wetland impacts associated with bridge project B-3684.

1.2 Purpose

In order for a mitigation site to be considered successful, the site must meet vegetation success criteria. This report details the vegetation monitoring in 2017 at the Grimesland Bridge Road Wetland Mitigation Site. Hydrologic monitoring was not required for the site.

1.3 Project History

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 2009</td>
<td>Herbicide Application on Japanese Knotweed</td>
</tr>
<tr>
<td>May 2010</td>
<td>Herbicide Application on Japanese Knotweed</td>
</tr>
<tr>
<td>July 2010</td>
<td>Herbicide Application on Japanese Knotweed</td>
</tr>
<tr>
<td>August 2010</td>
<td>Herbicide Application on Japanese Knotweed</td>
</tr>
<tr>
<td>April 2011</td>
<td>Herbicide Application on Japanese Knotweed</td>
</tr>
<tr>
<td>January 2012</td>
<td>Restoration Area Planted</td>
</tr>
<tr>
<td>February 2012</td>
<td>Enhancement Area Planted</td>
</tr>
<tr>
<td>March 2012</td>
<td>South Buffer Area Planted</td>
</tr>
<tr>
<td>October 2012</td>
<td>Vegetation Monitoring (Year 1)</td>
</tr>
<tr>
<td>July 2013</td>
<td>Vegetation Monitoring (Year 2)</td>
</tr>
<tr>
<td>July 2014</td>
<td>Vegetation Monitoring (Year 3)</td>
</tr>
<tr>
<td>July 2014</td>
<td>Herbicide Application on Japanese Knotweed</td>
</tr>
<tr>
<td>April 2015</td>
<td>Vegetation Monitoring (Year 4 - Enh. Area)</td>
</tr>
<tr>
<td>August 2015</td>
<td>Vegetation Monitoring (Year 4)</td>
</tr>
<tr>
<td>August 2015</td>
<td>Herbicide Application on Japanese Knotweed</td>
</tr>
<tr>
<td>March 2016</td>
<td>Wetland Enh. Area Supplemental. Planting</td>
</tr>
<tr>
<td>March 2016</td>
<td>South Buffer Area Replanted</td>
</tr>
<tr>
<td>October 2016</td>
<td>Vegetation Monitoring (Year 5)</td>
</tr>
<tr>
<td>October 2017</td>
<td>Veg. Monitoring (Year 6 – Enh. &amp; Buffer Areas)</td>
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<tr>
<td>October 2017</td>
<td>Onsite Agency Meeting</td>
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</table>
1.4 Debit Ledger

<table>
<thead>
<tr>
<th>Site name</th>
<th>Site TIP</th>
<th>HUC</th>
<th>River Basin</th>
<th>Division</th>
<th>County</th>
<th>Mitigation Type</th>
<th>Notes</th>
<th>As Built Quantity</th>
<th>Available</th>
<th>Debit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grimesland Bridge</td>
<td>B-3684</td>
<td>3020103</td>
<td>Tar-Pamlico</td>
<td>2</td>
<td>Pitt</td>
<td>Riverine</td>
<td>2.86 (1:1 ratio)</td>
<td>1.42</td>
<td>1.44</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Enhancement</td>
<td>0.52 (ratio TBD)</td>
<td>0.52</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Buffer Restoration</td>
<td>3,500 ft² (1:1 ratio)</td>
<td>0</td>
<td>3,500 ft²</td>
<td></td>
</tr>
</tbody>
</table>

Note: Debit ledger information up to date as of December 7, 2017.
2.0 VEGETATION: GRIMESLAND BRIDGE ROAD WETLAND MITIGATION SITE (YEAR 6 MONITORING)

2.1 Success Criteria

Mitigation Plan States:
NCDOT shall monitor the mitigation site by visual observation and photo points for survival and aerial cover of vegetation. NCDOT shall monitor the site for a minimum of three years or until the site is deemed successful. Monitoring will be initiated upon completion of the site planting.

No specific hydrological monitoring is proposed for this mitigation site. The target elevation will be based on the adjacent wetland elevation and verified during construction. Constructing the site at the adjacent wetland elevation will ensure the hydrology and connectivity of the restored areas are similar to the hydrology in the reference areas.

Condition #6 of the DWQ Permit States:
For the wetland mitigation sites located along the –L- line and the –Y- line, the permittee shall plant 680 stems/acre. Vegetation success shall be measured by survivability over a 5-year monitoring period. Survivability will be based on 320 stems/acre after three years and 260 stems/acre after five years. A survey of vegetation during the growing season shall be conducted annually over the five year monitoring period and submitted to the NC Division of Water Quality. If the surviving vegetation densities are below the required thresholds after the five year monitoring period, the site may still be declared successful at the discretion of and with written approval from the NC Division of Water Quality.

2.2 Description of Species

The following tree species were planted in the following areas:

Wetland Restoration and Enhancement Areas
- *Nyssa aquatica*, Water Tupelo
- *Taxodium distichum*, Baldcypress
- *Fraxinus pennsylvanica*, Green Ash

Buffer Restoration Area
- *Fraxinus pennsylvanica*, Green Ash
- *Platanus occidentalis*, American Sycamore
- *Betula nigra*, River Birch
## 2.3 Results of Vegetation Monitoring

<table>
<thead>
<tr>
<th>Plot #</th>
<th>Water Tupelo</th>
<th>Baldcypress</th>
<th>Green Ash</th>
<th>Sycamore</th>
<th>River Birch</th>
<th>Total (Year 6)</th>
<th>Total (at planting)</th>
<th>Density (Trees/Acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1</td>
<td>46</td>
<td>2</td>
<td></td>
<td></td>
<td>49</td>
<td>60</td>
<td>555</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>10</td>
<td>24</td>
<td>18</td>
<td>52</td>
<td>52</td>
<td>52</td>
<td>680</td>
</tr>
</tbody>
</table>

**Year 6 Average Density (Trees/Acre)**: 618

- Year 5 Average Density: 497
- Year 4 Average Density: 463
- Year 3 Average Density: 493
- Year 2 Average Density: 553
- Year 1 Average Density: 610
Enhancement Area Site Notes: The enhancement area was based on the footprint of the old bridge that was removed. The total acreage in this area from Right-of-Way to the edge of the new bridge is approximately 0.75 acres. The footprint of the old bridge is 0.23 acre and is predominantly open water. However the remaining 0.52 acre was supplementally planted in March 2016 and a vegetation plot (Plot #4) was set within the planted area to determine the trees per acre surviving. If plantings are successful, an on-site meeting will be held at the end of the monitoring period to determine the amount of enhancement credit available.

South Buffer Restoration Area Site Notes: This area was originally planted in March 2012. It became apparent to NCDOT this past year that the buffer area trees had been cut down. This area was replanted in March 2016 and a vegetation plot (Plot #5) was set within the planted area to determine the trees per acre surviving.

2.4 Conclusions
There were 2 vegetation monitoring plots evaluated during the 2017 monitoring year. The 2017 vegetation monitoring of the site revealed an average density of 618 trees per acre for the sixth year of monitoring.

3.0 OVERALL CONCLUSIONS AND RECOMMENDATIONS
The 2017 year represents the sixth year of monitoring activities that have occurred at the Grimesland Bridge Road Wetland Mitigation Site. The site must demonstrate vegetation success for a minimum of five years or until the site is deemed successful.

The 2017 vegetation monitoring of the site revealed an average density of 618 trees per acre.

NCDOT proposes to continue vegetation monitoring at the Grimesland Bridge Road Wetland Enhancement and Buffer Sites in 2018.
APPENDIX A

SITE PHOTOS and SITE MAPS
Grimesland Bridge Road

Overview Photo of Site (Enhancement Area)

Enhancement Area (Plot 4)

South Buffer (Plot 5)

October 2017