

ANNUAL REPORT FOR 2012



Tommy's Road Wetland Mitigation Site
Wayne County
TIP No. R-2554BA
COE Action ID: SAW 2008-00252
DWQ: 20080570



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North Carolina Department of Transportation
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SUMMARY

The following report summarizes the wetland monitoring activities conducted during 2012 at the Tommy's Road mitigation site. This site, situated adjacent to the new NC 44/Future US 70 Goldsboro Bypass near Goldsboro, was designed and constructed during 2011 by the North Carolina Department of Transportation (NCDOT) in order to provide mitigation for wetland impacts associated with the construction of Transportation Improvement Program (TIP) number R-2554BA. This report provides the monitoring results for the first formal year of monitoring (Year 2012). The site must demonstrate hydrologic and vegetative monitoring success for a minimum of five years or until the site is deemed successful.

The site hydrology is monitored with two groundwater gauges including one gauge in the restoration area and one reference gauge in the wetland preservation area. Both of the groundwater gauges met the jurisdictional criteria for wetland hydrology (>12.5% of the growing season) in 2012.

Two vegetation plots were established to monitor the vegetation planted in the 0.11 acre restoration site. The 2012 vegetation monitoring revealed an average density of 327 trees per acre, which is above the minimum success criteria of 320 trees per acre for year one. NCDOT will complete a supplemental planting at the Tommy's Road Mitigation Site between November 15, 2012 and March 15, 2013 to increase plant survival.

NCDOT will continue hydrologic and vegetation monitoring at the Tommy's Road mitigation site in 2013.

1.0 INTRODUCTION

1.1 Project Description

The following report summarizes the wetland monitoring activities that have occurred during 2012 at the Tommy's Road mitigation site. The site is located adjacent to the new NC 44/Future US 70 Goldsboro Bypass near Goldsboro (Figure 1). The site was constructed to provide mitigation for wetland impacts associated with R-2554BA in Wayne County. The 3.91 acre site provides 2.37 acres of wetland preservation, 0.11 acre wetland restoration, 61 linear feet of stream restoration and 691 linear feet of stream preservation. The site also provides 7,792 ft² of Neuse buffer restoration (4,459 ft² in Zone 1 and 3,333 ft² in Zone 2).

1.2 Purpose

In order to demonstrate successful mitigation, hydrologic and vegetative monitoring must be conducted for a minimum of five years or until success criteria are satisfied. Success criteria are based on federal guidelines for wetland mitigation. Criteria for hydrologic conditions and vegetation survival are included in these documents. The following report details the results of hydrologic and vegetation monitoring during the 2012-growing season at the Tommy's Road mitigation site.

1.3 Project History

September 2011	Site Constructed
January 2012	Gauges Installed
February 2012	Site Planted
March-November 2012	Hydrologic Monitoring (Year 1)
August 2012	Vegetation Monitoring (Year 1)

1.4 Debit Ledger

The entire Tommy's Road mitigation site was used for the R-2554BA project to compensate for unavoidable wetland and stream impacts.

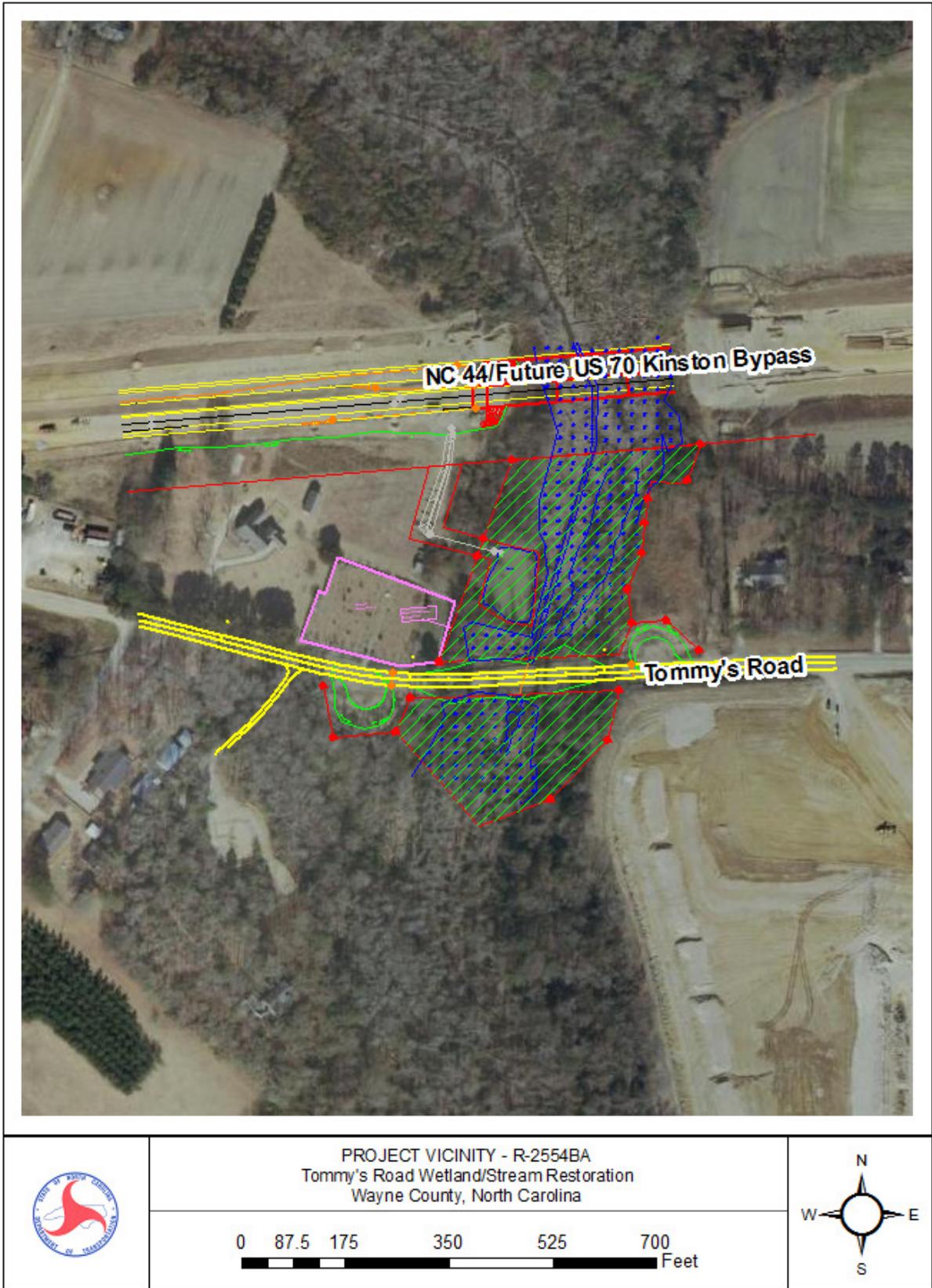


Figure 1. Site Location Map

2.0 HYDROLOGY

2.1 Success Criteria

In accordance with the mitigation plan and permit for wetland mitigation, the success criteria for hydrology states that the area must be inundated or saturated (within 12" of the surface) by surface or ground water for at least a consecutive 12.5% of the growing season. The hydrologic monitoring shall persist for a total of five years with monitoring reports submitted annually.

The growing season in Wayne County begins March 17 and ends November 14. These dates correspond to a 50% probability that temperatures will remain above 28° F or higher after March 17 and before November 14. The growing season is 243 days; therefore hydrology for 12.5% of the growing season is at least 30 consecutive days. Local climate must represent average conditions for the area in order for the hydrologic data to be valid.

2.2 Hydrologic Description

Two groundwater monitoring gauges are used to record site hydrologic data including one in the restoration area and one reference gauge in the preservation area. The groundwater gauges are set to record daily water levels. The hydrologic response (groundwater) to rainfall events is evaluated using data provided by the North Carolina State Climate Office.

Appendix A contains a plot of the water depth for each of the groundwater monitoring gauges for 2012. Precipitation events, provided by the State Climate Office, are included on each groundwater graph as bars.

2.3 Results of Hydrologic Monitoring

2.3.1 Site Data

The total number of consecutive days that the groundwater was within twelve inches of the surface was determined for each groundwater monitoring gauge. This number was converted into a percentage of the growing season. Table 1 presents the hydrologic results for 2012. Figure 3 is a graphical representation of the hydrologic monitoring results for 2012.

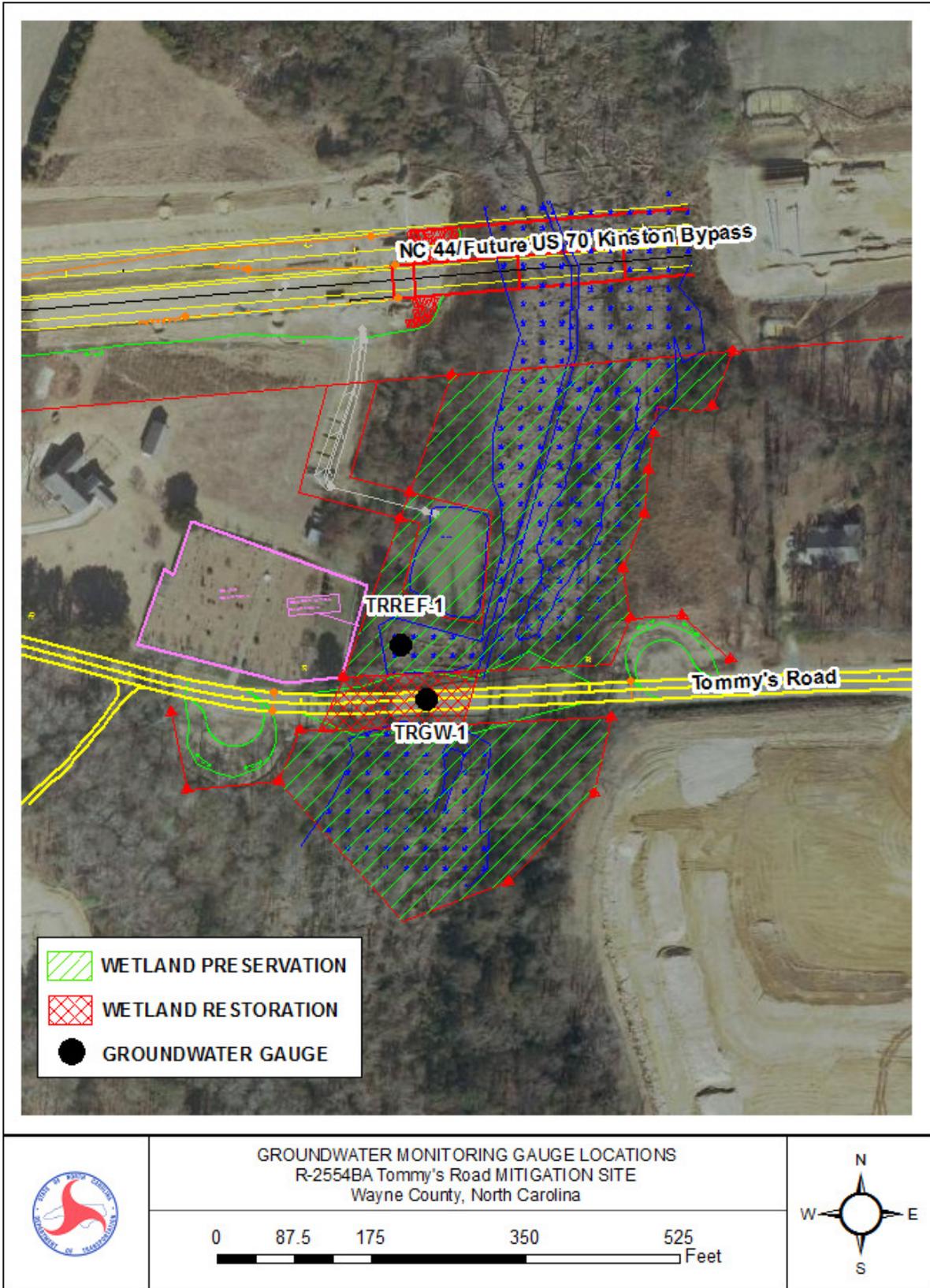


Figure 2. Monitoring Gauge Location Map

Table 1. 2012 Hydrologic Monitoring Results

Monitoring Gauge	< 5%	5 – 12.5%	> 12.5%	Actual %	Dates of Success
TRGW-1			X	51.4	Mar 17-Jul 19; July 21-Nov 14
*TRREF-1			X	100.0	Mar 17-Nov 14

*TRREF-1 is located in the preservation area.

*Appendix A contains plots of groundwater data during 2012.

2.3.2 Climatic Data

Figure 4 is a comparison of monthly rainfall for the period of January 2012 through November 2012 to historical precipitation (collected between 1982 and 2011) for Cherry Research Station in Wayne County. This comparison gives an indication of how 2012 relates to historical data in terms of climate conditions. The NC State Climate Office provided all local rainfall information.

For the 2012-year, January, February, June, August and September experienced average rainfall. The months of March, April, May and October recorded above average rainfall while July and November recorded below average rainfall. Overall 2012 experienced an average to above average rainfall year.

2.4 Conclusions

The 2012 year represents the first full growing season that hydrologic data has been collected on the Tommy's Road mitigation site. Both of the groundwater monitoring gauges met the jurisdictional criteria for wetland hydrology (>12.5% of the growing season) in the 2012 monitoring year.

NCDOT will continue to monitor the hydrology at the Tommy's Road mitigation site in 2013.

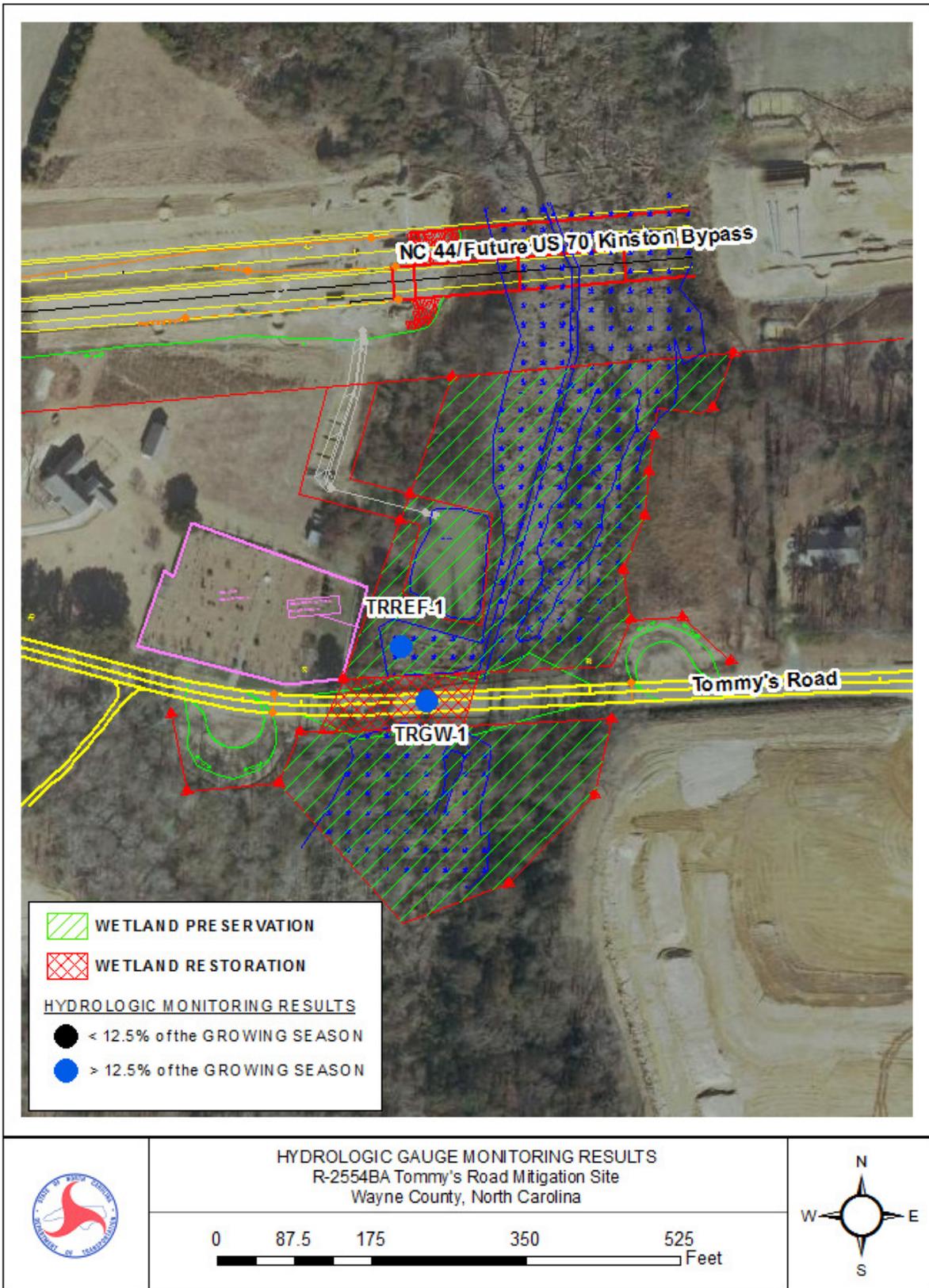


Figure 3. 2012 Hydrologic Monitoring Results

**Tommy's Road 30-70 Graph
Goldsboro, NC Monthly Precipitation**

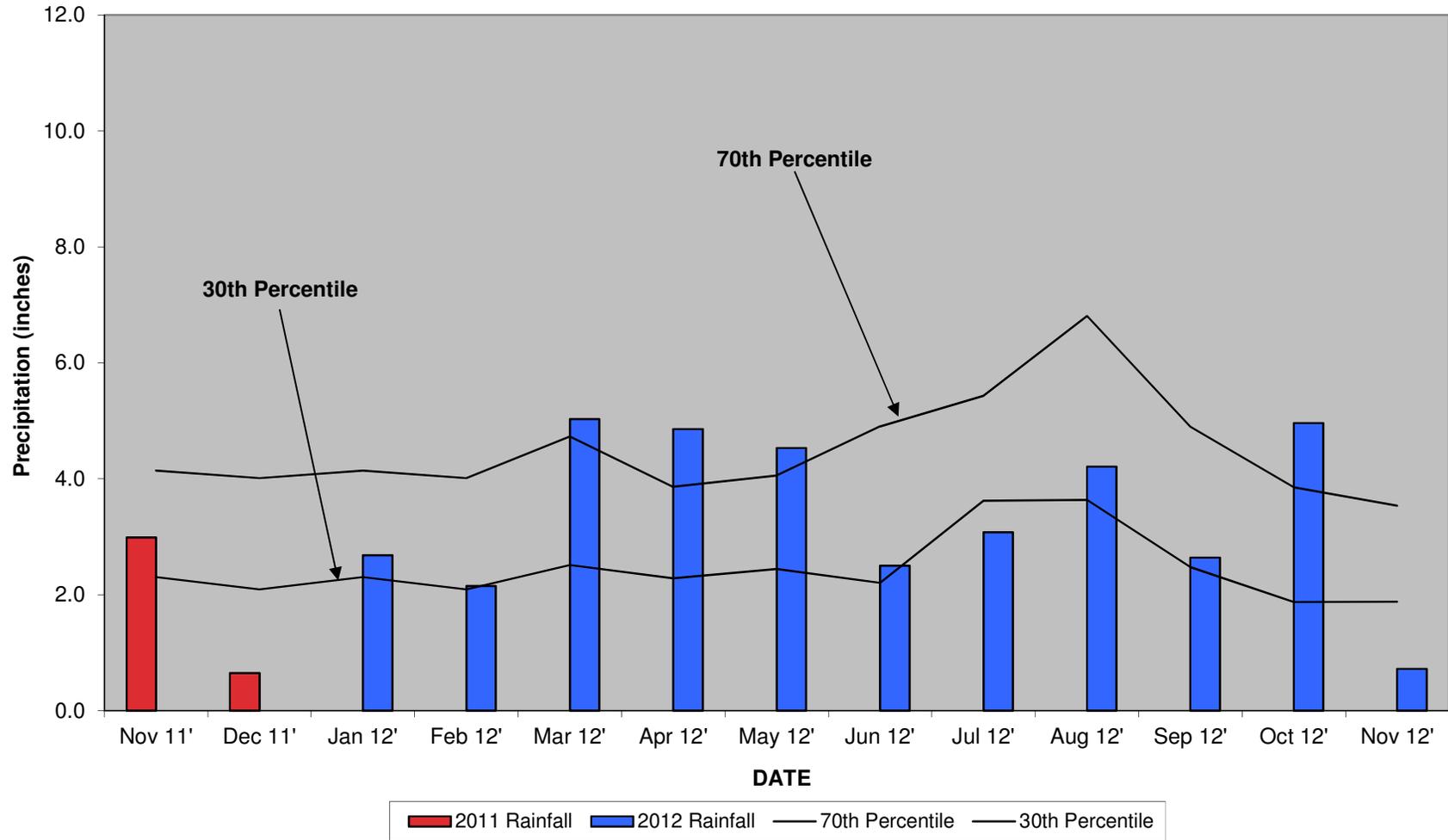


Figure 4. 30-70 Percentile Graph 2012

3.0 VEGETATION: TOMMY'S ROAD MITIGATION SITE (YEAR 1 MONITORING)

3.1 Success Criteria

For the onsite wetland mitigation sites, 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 (3) years and 260 stems after five (5) 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.

For the onsite buffer mitigation sites, the permittee shall monitor the sites. An annual report shall be submitted to DWQ for a period of 5 years showing monitoring results survival rate/ success of tree and vegetation establishment, and that diffuse flow through the riparian buffer has been maintained. The first annual report shall be submitted within one year of final planting. Failure to achieve a buffer density of 320 trees per acre after 5 years will require the annual report to provide appropriate remedial actions to be implemented and a schedule for implementation. Approval of the final annual report, and a formal "close out" of the mitigation site by the DWQ is required.

3.2 Description of Species

The following live stakes were planted along Streambank:

Salix nigra, Black Willow

Cornus amomum, Silky Dogwood

The following tree species were planted in the Wetland Restoration and Buffer Areas:

Platanus occidentalis, American Sycamore

Fraxinus pennsylvanica, Green Ash

Betula nigra, River Birch

Liriodendron tulipifera, Tulip Poplar

3.3 Results of Vegetation Monitoring

Table 2. Vegetation Monitoring Statistics

Plot #	Sycamore	Green Ash	River Birch	Tulip Poplar	Total (Year 1)	Total (at planting)	Density (Trees/Acre)
1	3		8	13	24	53	308
2	7	16		6	29	57	346
Average Density (Trees/Acre)							327

Site Notes: The stream restoration is stable at this time. The live stakes along the streambank are surviving. Some of the planted seedlings in the wetland and buffer areas have been disturbed by beaver activity but many of the seedlings have already re-sprouted. The U.S. Department of Agriculture has been contacted to trap and remove the beaver from the site. Other species noted onsite included: sweetgum, fennel, *Juncus* sp., cattail, trumpet creeper, bermuda grass, clover, goldenrod, morning glory, bacharris, and various grasses

3.4 Conclusions

There were two vegetation monitoring plots established throughout the wetland restoration and buffer areas. The 2012 vegetation monitoring of the site revealed an average tree density of 327 trees per acre. This average is just above the minimum success criteria of 320 trees per acre for year one. NCDOT will complete a supplemental planting at the Tommy's Road Mitigation Site between November 15, 2012 and March 15, 2013 to increase plant survival.

NCDOT will continue to monitor the vegetation at the Tommy's Road mitigation site in 2013.

4.0 OVERALL CONCLUSIONS/ RECOMMENDATIONS

The 2012 year represents the first full growing season that hydrologic data has been collected on the Tommy's Road mitigation site. Both of the groundwater monitoring gauges met the jurisdictional criteria for wetland hydrology (>12.5% of the growing season).

There were two vegetation monitoring plots established throughout the wetland restoration and buffer areas. The 2012 vegetation monitoring of the site revealed an average tree density of 327 trees per acre. This average is just above the minimum success criteria of 320 trees per acre for year one. NCDOT will complete a supplemental planting at the Tommy's Road mitigation site between November 15, 2012 and March 15, 2013 to increase plant survival.

NCDOT will continue hydrologic and vegetation monitoring at the Tommy's Road mitigation site in 2013.

APPENDIX A

DEPTH TO GROUNDWATER CHARTS

APPENDIX B

**SITE PHOTOS, PHOTO LOCATIONS, AS-BUILT PLAN SHEETS
AND PLOT LOCATIONS MAP**

Tommy's Road



Photo Point #1 Looking at Vegetation Plot 1



Photo Point #2 Looking Upstream



Photo Point #2 Looking Downstream

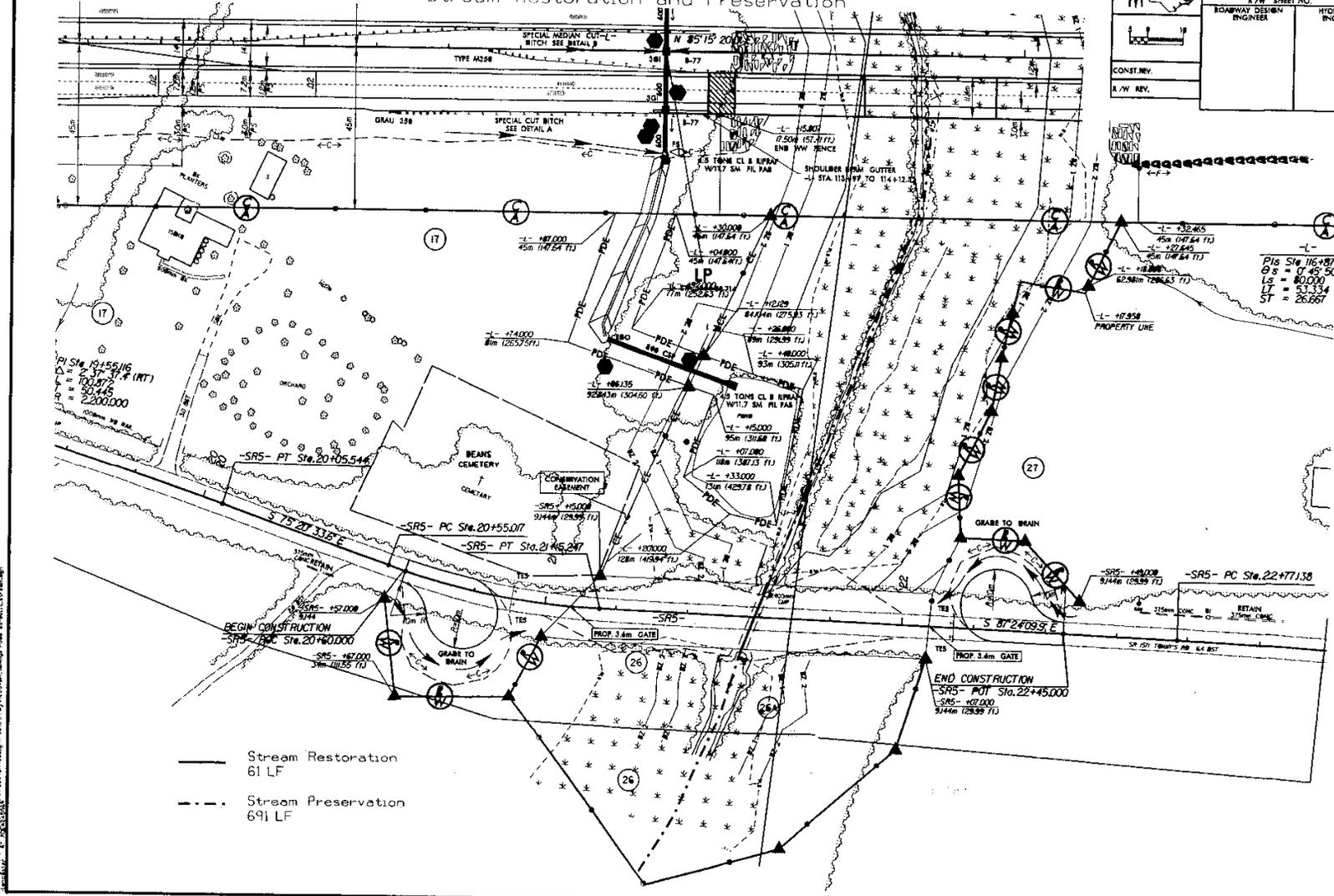


Photo Point #3 Looking at Vegetation Plot 2

August 2012

Tommy's Road As-built Stream Restoration and Preservation

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	R-2554AA	
	R/W SHEET NO.	
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CONSTR. REV.		
R/W REV.		

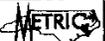


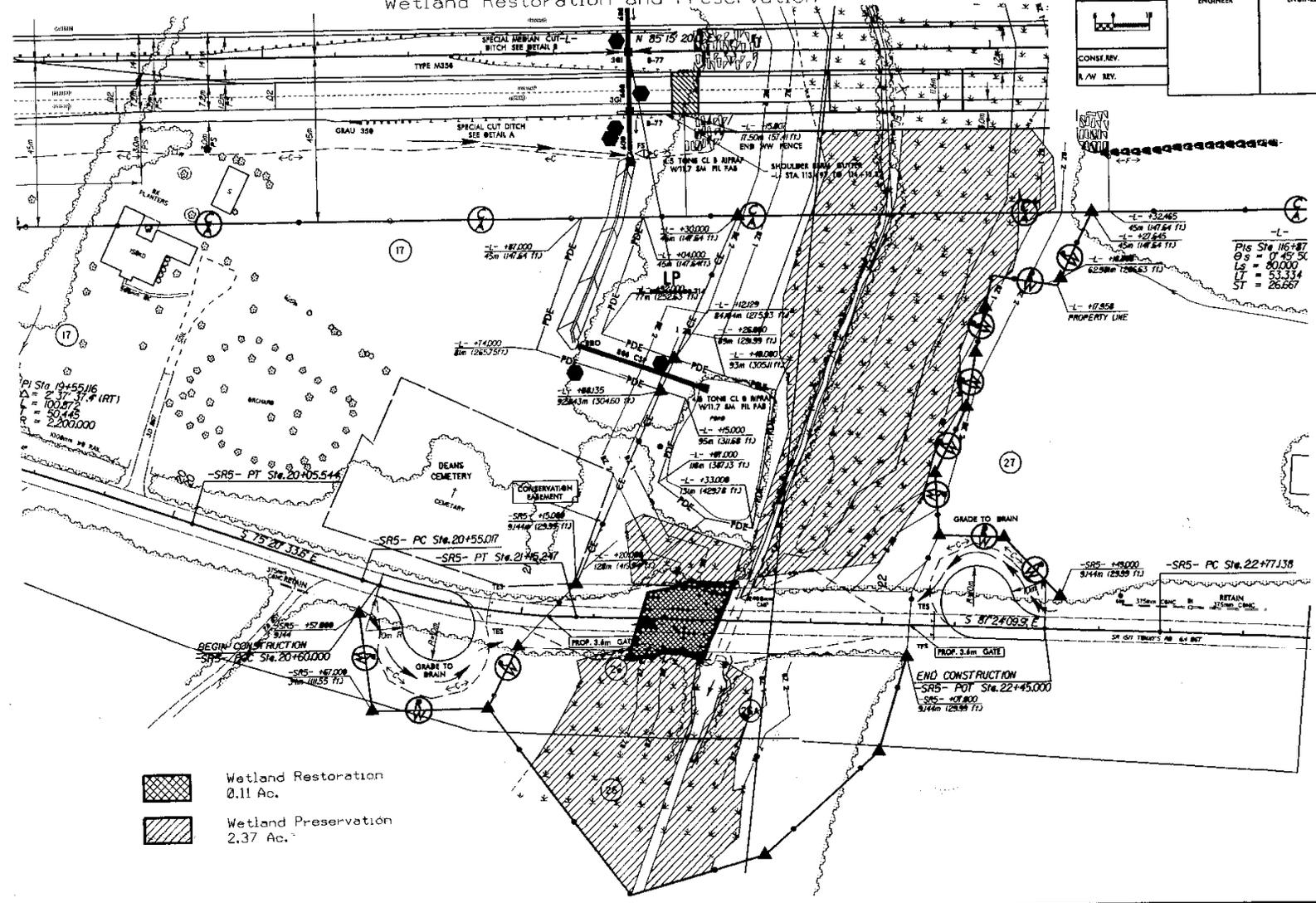
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Tommy's Road As-built Wetland Restoration and Preservation

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PROJECT REFERENCE NO. # 25546A	SHEET NO.						
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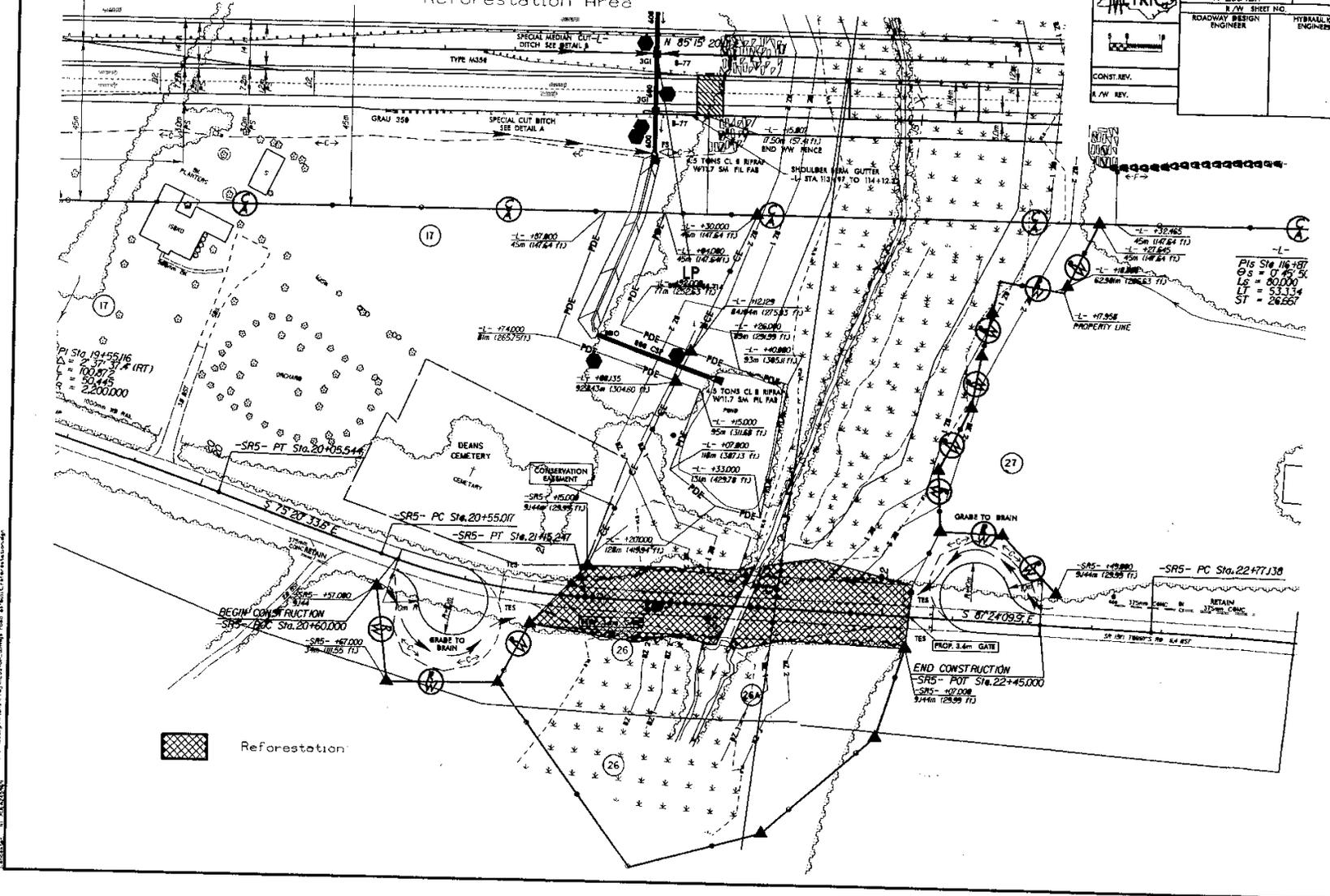
 Wetland Restoration
0.11 Ac.

 Wetland Preservation
2.37 Ac.

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Tommy's Road As-built Reforestation Area

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	R/W SHEET NO.	
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CONST. REV.		
R/W REV.		



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Reforestation

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