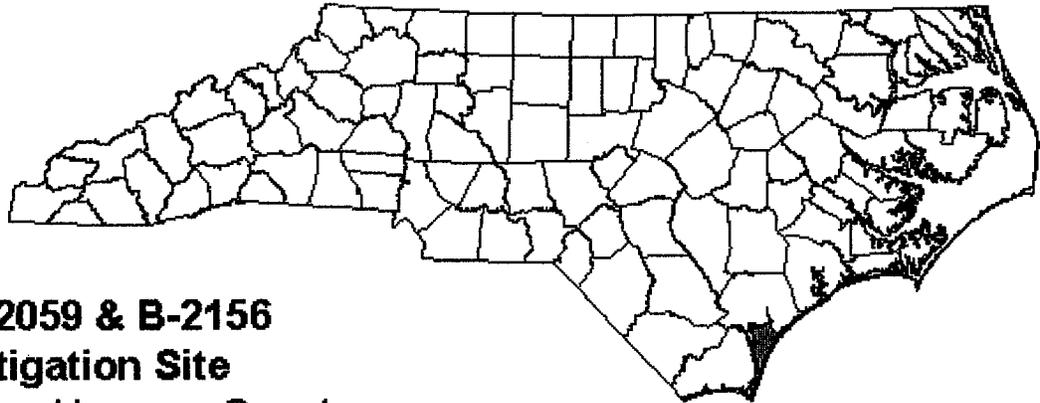


ANNUAL REPORT FOR 1998



B-2059 & B-2156
Mitigation Site
New Hanover County
TIP # B-2059 & B-2156



Prepared By:
Natural Systems Unit
Planning and Environmental Branch
North Carolina Department of Transportation
December 1998

1.0 INTRODUCTION

1.1 Project Description

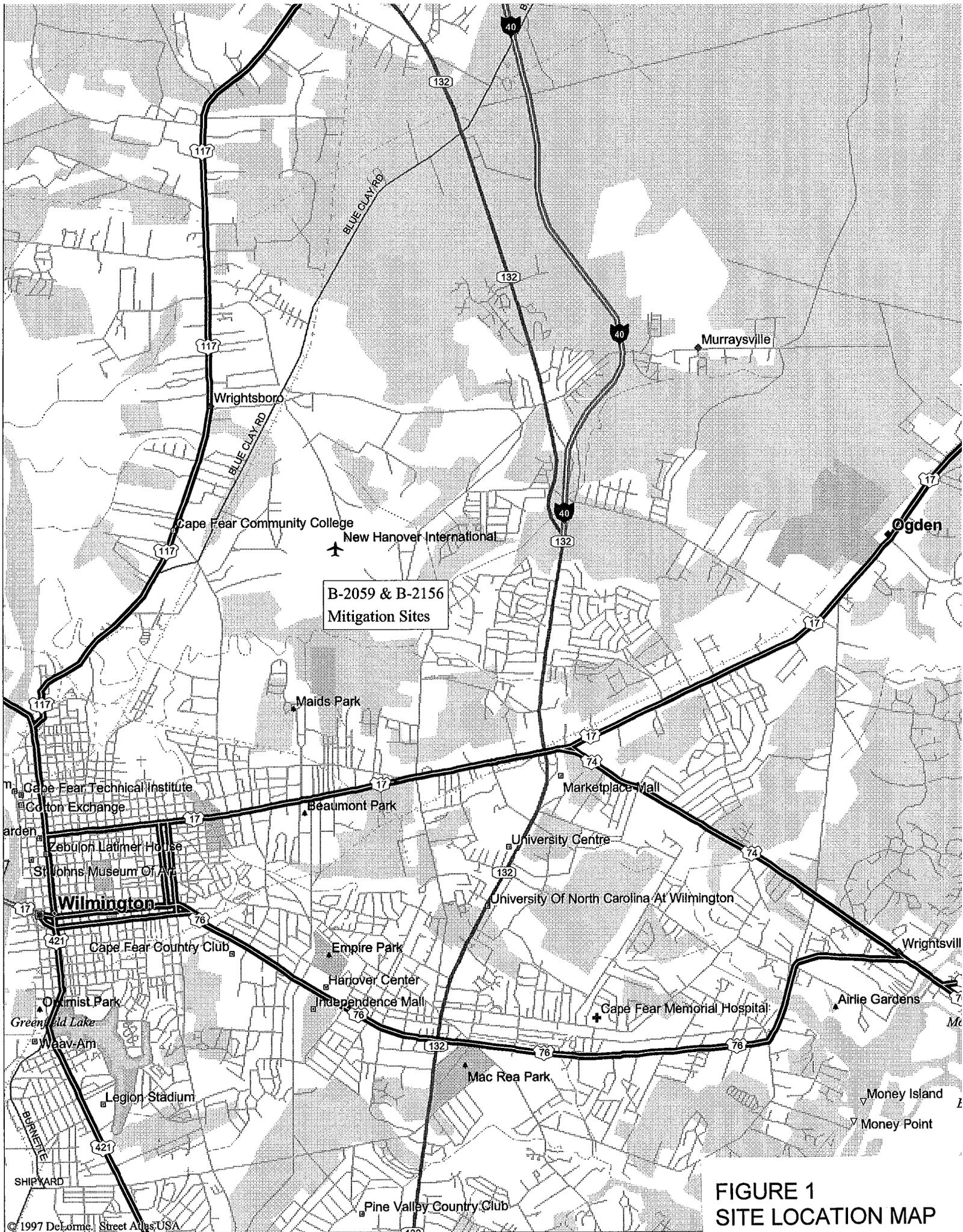
Designed as wetland restoration, the two sites are located in New Hanover County. This project consists of two sites located near bridge 1 over Spring Branch and bridge 2 over Smith Creek on SR 1175, North Kerr Avenue (Figure 1).

1.2 Purpose

The purpose of this report is to detail the vegetation monitoring for 1998 at the B-2059 and B-2156 Mitigation Site. No hydrologic monitoring was required on this site.

1.3 Project History

December 1994	Site planted
August 1995	Vegetation Monitoring (1 yr.)
October 1996	Vegetation Monitoring (2 yr.)
January 1997	Supplemental Planting
August 1997	Vegetation Monitoring (3 yr.)
August 1998	Vegetation Monitoring (3 yr.)



B-2059 & B-2156
Mitigation Sites

FIGURE 1
SITE LOCATION MAP

2.0 VEGETATION

2.1 Success Criteria

Success Criteria states that there must be a survival rate of 32 stems per 0.1 acre (320 per acre).

2.2 Description of Species

The following tree species were planted in the Wetland Restoration Area:

Taxodium distichum, Bald Cypress

Nyssa sylvatica, Black Gum

Quercus nigra, Water Oak

2.3 Results of Vegetation Monitoring (3 year)

No monitoring plots were established; however, site inspection revealed that the replanted trees were doing well throughout both planted areas. The site is thriving well as a brackish (tidal) marsh with a dense stand of Juncus and Spartina. Site #1 (east side of bridge) continues to grow well at this time with a mixture of Bald Cypress, Tupelo Gum, Juncus, and cattails. Site #2 (west side of bridge) also continues to grow well with a predominant mixture of Bald Cypress and Black Gum; however, some Wax Myrtle, Alder, and Pine were identified along the bottom of the fill slope. By visual observation, it is clearly evident that the average tree density is well above 320 stems/acre. There is also some volunteer juncus, cattail, and water lily.

2.4 Conclusions

Areas under both old bridge approaches were graded to natural grade and planted with the appropriate hardwood species. There were no plots established; however, by visual observation during the third year vegetation monitoring, it is obvious that the average tree density is greater than 320 stems per acre on both of the planted sites. The naturalization of marsh species is also continuing throughout the site.

3.0 OVERALL CONCLUSIONS/ RECOMMENDATIONS

Due to the success of the vegetation after three years of monitoring, NCDOT recommends that monitoring of the site be closed.

APPENDIX A
SITE PHOTOS

B-2059 & B-2156



APPENDIX B

MONITORING PARTNERSHIP MEETING MINUTES



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JAMES B. HUNT JR.
GOVERNOR

P.O. BOX 25201, RALEIGH, N.C. 27611-5201

E. NORRIS TOLSON
SECRETARY

December 4, 1998

Dr. G. Wayne Wright, Chief
Regulatory Branch
U.S. Army Corps of Engineers
Post Office Box 1890
Wilmington, North Carolina 28402

Dear Wayne:

Re: NCDOT/Resource Agency Partnering Meeting - Monitoring Guidelines

A meeting was held on July 22, 1998 in the NCDOT Photogrammetry Conference Room in Raleigh to discuss monitoring guidelines for the 1998 Annual Monitoring Reports. Please find attached a list of those in attendance and the meeting agenda. Following introductions, Charles Bruton described the purpose of the meeting and opened the floor to David Franklin for any opening comments. David said he looked forward to resolving any previous discrepancies in the 1997 Annual Monitoring Reports and discussing ways to better present monitoring results in this year's monitoring reports. Phil Harris moderated the meeting.

HYDROLOGIC MONITORING

NCDOT and the Corps agreed wetland mitigation sites must meet the guideline for hydrology (1987 Manual) using *consecutive* days and not cumulative days of the locally designated growing season. Wetland hydrology criteria in the 1987 Manual notes that a site must be seasonally inundated or saturated (within 12 inches of the surface) greater than 12.5 percent of the local growing season. NCDOT will re-evaluate the 1997 monitoring data to reflect consecutive days rather than cumulative days of the growing season.

Regarding monitoring well data, David wants to see compliance is met and that the sites are working. Phil noted that NCDOT is taking a close look at recurring problems associated with monitoring well installation and maintenance. In cases where hydrology was failing for a particular site, NCDOT would be unable to remediate the site until the following year due to seasonal constraints and the necessity to collect specific hydrographic information. In discussing what was considered to be hydrologic success,



David Franklin said the 1987 Manual was the official guideline. However, he went on to suggest that the Corps would be interested to see a more detailed breakdown of the well data and would not be opposed to hydrologic success based on a longer monitoring period with less than a 12.5 % success criteria. He also mentioned well data that falls below the 12 inch threshold may also be examined as a special case. Mike Bell suggested site remediation should occur now rather than waiting until December. NCDOT, in coordination with the Corps, will identify unsuccessful sites and work together to determine how the site is failing and the best remediation techniques to implement.

VEGETATION MONITORING ISSUES

Due to NCDOT's demand for hardwood seedlings there is a shortage of seedlings this year and there was none available for remediation efforts. There is a minimum one year lead time for ordering seedlings. In a situation on a site where the well data is good but the vegetation is not successful the Corps stated they would review it on a site by site basis. In cases of remediation, Charles said it was almost impossible to grade and plant a site before the winter deadline.

Randy Wise requested an extension of the August/September time period to obtain the vegetation monitoring data for the sites. After discussing this issue, it was agreed that the marsh sites would be evaluated in August and the hardwood sites could be evaluated as late as October and November before leaf drop. The NCDOT will send a "blanket" letter to the Corps to modify all permits to reflect the revised vegetation monitoring period. Phil mentioned that although there would be an extension of the monitoring period for vegetation, monitoring reports would continue to be completed and distributed by the end of December. Randy said they often perform random site visits throughout the year to see how vegetation is performing and would perform supplemental planting if noted early enough in the growing season.

Ken Jolly asked who was responsible for downloading wells and did they look at vegetation. Beth Smyre said the Geotechnical Unit downloaded well data and notified her of any vegetation issues. The Corps requested that proposed remediation for hydrology and vegetation be included in monitoring reports. NCDOT and the Corps will coordinate any remediation measures. Randy expressed their commitment to remediate vegetation as soon as possible.

The discussion turned toward planted versus volunteer species. The Corps does not want to see volunteer species included in survival rate calculations for planted species. Randy noted the survival rate is set at 50% or higher. David wanted to make sure that the sites meet the target species requirement in stems per acre, not a percentage (except for older sites set up for percentage). David also wanted to see the distribution of species planted and volunteer. Randy said it is often difficult to identify certain species during the first two years (several oak species often look alike as saplings). Generally it is easier to differentiate the species by the third year. The Corps wanted to know if there was a way to identify the planted species at planting. However, the planting procedure is

so labor intensive now it would make it impossible to do so. The 50 foot by 50 foot monitoring plots are chosen and staked in the field after planting has occurred. The Corps wants NCDOT to note the unwanted volunteer species and to identify possible remediation to make sure these species do not dominate the site. The NCDOT and the Corps agreed that the distribution of species is such that no species dominates more than 20 % of the distribution. Red maple and sweet gum are generally not to be planted to insure good numbers of target species.

HYDROLOGIC SUCCESS CRITERIA

The incorporation of reference systems in determining success was discussed. David concluded that if a particular site failed under the 1987 Manual guidelines, then NCDOT had the option of comparing site parameters to reference site parameters in determining success. The purpose of reference systems was to allow NCDOT a second option in achieving success. The determination of a reference system with its success criteria would need to be addressed in the mitigation plan. The use of the hydrogeomorphic system (HGM) was also discussed. The Corps is not going to use HGM as a reference system, but will probably look at it as a tool. There are no guidelines out yet on HGM.

The use of 20-80 versus 30-70 probability graphs, as defined by WETS, was discussed. These graphs compare the specific year rain data to the historical data for the mitigation site area. The NRCS and WETS use the 30-70 probability graphs and NCDOT would like to use these as well. It was decided to use the 30-70 information and to go to the nearest gage station as long as the source was cited. David determined that if a site's hydrology performs at 12.5%, then hydrologic success has been achieved. If a site performs in the 5% to 12.5% range, then there is "marginal" hydrologic success. If this trend continues, then the entire success criteria for the site will be reviewed.

The target percentage for hydrological success should be included in the permit and shown in the mitigation plan. The Corps will be willing to negotiate on the success of the site, but include adequate information in the permit and the mitigation plan.

Charles Bruton suggested placing monitoring wells in the impacted wetland areas to assess and compare to mitigation areas. David wanted to insure that the best mitigation site attainable is created. David also asked that well performance be broken out in the report.

An interim report was given on Mud Creek. It was noted that wells placed in the reference wetland and wells placed in the created wetland were an inappropriate method to determine hydrologic success because the difference in soil type, hydrology, and cover type.

Mike Bell discussed results of a workshop he attended on monitoring wells. He also discussed the use of piezometers.

There was no further discussion and the meeting adjourned. Please advise if you have any questions regarding the meeting, minutes, or agenda.

Sincerely,

A handwritten signature in cursive script that reads "V. Charles Bruton".

V. Charles Bruton, Ph.D.
Assistant Branch Manager
Planning and Environmental Branch

VCB/el

Attachments

July 22, 1998—9:30 @ Century Center in Photographic Conference Room

NCDOT/Resource Agency Partnering Meeting to Discuss Monitoring Issues

AGENDA

Introductions

Purpose & Goals of Meeting

Standardize the monitoring reports

Hydrologic Monitoring

Consecutive vs. Cumulative days

Data interpretation

Vegetation Monitoring Issues

Planted vs. Voluntary plants

Monitoring timeframe

Success Criteria

Geographical considerations

Reference systems

Monitoring Report Presentation

Text

Figures to be included

Tables

Photographs

Submittal dates

1/22/98

NCDOT/RESOURCE AGENCY PARTNERING MEETING

<u>NAME</u>	<u>AGENCY</u>	<u>PHONE NO.</u>
Phil Harris	NCDOT - P&E	(919) 733-7844 (x-301)
Ed Lewis	NCDOT - P&E	" (240)
Hal Bain	P&E	(919) 733-7844 x 309
Scott McLendon	Corps of Engineers	910-251-4725
David Franklin	"	910 251-4952
Mike Bell	"	919-825-1616 x76
DAVE TIMM	"	910-251-4634
David Cox	NCWRC	(919) 528-9886
Eric Hismeyer	Corps - Raleigh	919 876-2441 x23
Ken Jolly	" "	(919) 876-8441, x22
Beth Smyre	NCDOT - P&E	(919) 733-7844, x33
Kendra Williamson	NCDOT - P&E	" x335
Leilani Paugh	NCDOT P&E	" x 332
Tanner Holland	NCDOT P&E	" x 280
Jim [unclear]	NCDOT P&E	"
Randy K. Wise	NCDOT - REU	(919) 733-2920
Charles Tomlinson	NCDOT-REU	733-2920
RANDY GRIFFIN	NCDOT - REU	733-2920
Charles Bruto	NCDOT - P&E	733-7844 x 308