

**Kerr Avenue/Burnt Mill Creek
Stormwater Wetland
Wilmington, New Hanover County, North Carolina**

*2005 Annual Monitoring Report
Year 5 of 5*



NCEEP Project Number: .00012
BLWI Project Number: 050027
NCDENR contract: D05056S

Original Design
Firm:

KCI
Woodwinds Industrial Ct.
Cary, NC 27511

Submitted to:

NCDENR Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, NC 27699

Prepared by:

BLUE: Land, Water, Infrastructure, PA
1271 Old US Highway #1 South
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17 February 2006



BLUE Land
Water
Infrastructure

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I. Executive Summary

The Kerr Avenue/Burnt Mill Creek stormwater wetland is located in New Hanover County, Wilmington, North Carolina. The wetland is about 0.8 acres in size and collects runoff from a watershed, about 240 acres in size. Located in a highly commercial area, it is on Burnt Mill Creek, a 303d listed stream. The project was designed to capture as much of the “first flush” or initial run-off as possible. An off-line design, the objective is to use the combination forebay and wetland to filter out pollutants from the run-off before entering the stream. The project was implemented in November 2000.

Initially, 20 species of plants were installed in the system. Plants were obtained from either greenhouse/nursery or from being field collected, locally. Installation was with the use of volunteers. During the first year, survival of the trees and shrubs were low, but supplemental plantings have occurred through the guidance of the Cape Fear River Keeper. No success criteria or mitigation plan was prepared for the project. Water samples have been collected during varying periods to show water quality improvement. No data on plant survival, additional plantings or water quality sampling was made available for this report. Visual observation shows that the project appears to functioning well for both wildlife habitat and water quality improvement. Water is being retained as designed and habitat is present. There were no formal, written monitoring reports prior to 2005. This is the fifth year since project implementation. This is the first formal monitoring report.

Potential problems come from maintenance issues and the presence of undesirable plant species. Located in a shopping center, the site is a receptacle for trash, both water and wind born. The forebay is a trap for sediment. Routine maintenance must occur for the stormwater wetland to perform efficiently. *Ludwigia sp.* (alligator weed) is present though out the channel and restricts the flow back into the stream network. Removal or control may be necessary in the future.

II. Project Background

a. Location and Setting

The project is located in a shopping center within the headwaters of Burnt Mill Creek, Wilmington, NC.

Directions from Raleigh: Take I-40 East towards Wilmington – I-40 becomes NC-132/N College Road. Take the US-17/US-74 exit toward Wilmington/Wrightsville Beach. Turn left onto US-74 W/US-17 S/Market St. Turn left onto Kerr Ave. The stormwater wetland is located on the left in a shopping center. (Figure 1. Vicinity Map)

b. Structure and Objectives

The Kerr Ave/Burnt Mill Creek stormwater wetland was a ‘kick off’ project for the NCEEP local watershed planning initiative. The project was a co-operative effort between the City of Wilmington, the Cape Fear River Keeper and the NC Ecosystem Enhancement Program (formally the NC Wetlands Restoration Program). The objective was to try to improve water quality by placing an off-line wetland on Burnt Mill Creek, a 303d listed stream. The site was 0.8 acres in size and would treat runoff from approximately 240 acres. It was designed to retain as much of the base flow and first flush runoff as possible, prior to the waters reentering Burnt Mill Creek. In addition, the project would serve as an educational tool on the value of treating pollutants and improving water quality.

Table I. Project Structure Table	
Project Number and Name 050027 Burnt Mill Creek (Kerr Ave Stormwater Wetland)	
Area	Acreage
Stormwater channel and wetland	0.8

Table II. Project Objectives Table			
Project Number and Name 050027 Burnt Mill Creek (Kerr Ave Stormwater Wetland)			
Area	Objectives	Acreage	Comment
Stormwater wetland	SW Retention	0.8	Improved water quality.

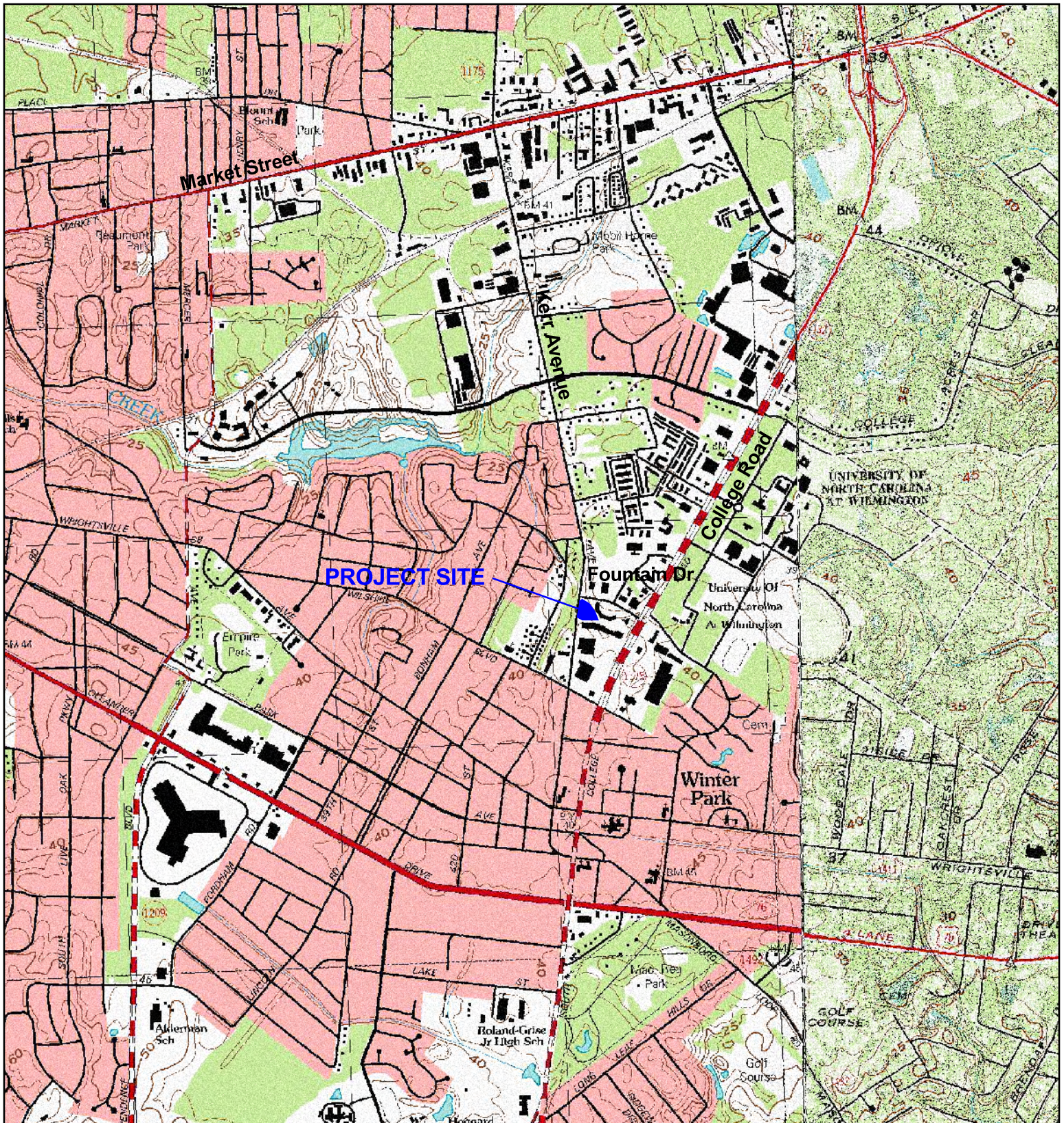


Figure 1. Vicinity Map
 Burnt Mill Creek (Kerr Avenue)
 Stormwater Wetland

Wilmington, New Hanover County, NC
 2005 Annual Monitoring

EEP Project Number: .00012
 BLWI Project Number: 050027



BLUE Land
 Water
 Infrastructure

2000 0 2000 Feet



Scale: 1" = 2000' November 2005



c. Project History and Background

Table III. Project Activity and Reporting History		
Project Number and Name: 050027 Burnt Mill Creek (Kerr Ave Stormwater Wetland)		
Activity or Report	Calendar Year of Completion or Planned Completion	Actual Completion Date
Restoration Plan (plan set)	June 1999	2000
Mitigation Plan	None	
Construction	2000	Nov 2000
Temporary S&E mix applied to entire project area	n/a	n/a
As-Built Report	2001	2001
Permanent seed mix applied to wetland areas	n/a	n/a
Wetland plantings	2000	2000
Containerized and B&B plantings for wetland buffer areas	2000	ongoing
Initial - Year 1 Monitoring Cape Fear River Keeper	No report	No report
Year 2 Monitoring Cape Fear River Keeper	No report	No report
Year 3 Monitoring Cape Fear River Keeper	No report	No report
Year 4 Monitoring Cape Fear River Keeper	No report	No report
Year 5 Monitoring (BLWI)	2005	9/20/2005

Table IV. Project Contact Table	
Project Number and Name: 050027 Burnt Mill Creek (Kerr Ave Stormwater Wetland)	
Designer	KCI
Primary project design POC	Woodwinds Industrial Ct., Cary NC 27511 Joe Pfeiffer (919) 388-3144
Property Contact	NCEEP
NCEEP POC	1652 Mail Service Center, Raleigh, NC 27699 Mac Haupt (919) 715-1070
Construction Contractor (Stone Sill)	KCI
Construction contractor POC	Woodwinds Industrial Ct., Cary NC 27511 Joe Pfeiffer (919) 388-3144
Planting Contractor	KCI
Planting contractor POC	Woodwinds Industrial Ct., Cary NC 27511 Joe Pfeiffer (919) 388 3144
Seeding Contractor	none
Temporary Seed Mix Sources	none
Nursery Stock Suppliers	Locally collected field-dug plants (herbaceous) Unknown for trees/shrubs
Monitoring Performers	BLUE: Land, Water, Infrastructure, PA
Monitoring POC	1271 Old US Highway #1 South Southern Pines, NC 28387 Larry Hobbs (919) 306-2410

Table V. Project Background Table	
Project Number and Name: 050027 Burnt Mill Creek (Kerr Ave Stormwater Wetland)	
Project county	New Hanover
Drainage area	244 acres
Drainage impervious cover estimate (%)	unknown
Stream order	n/a
Physiographic region	coastal plain
Ecoregion	Carolina Flatwoods (63H)
Rosgen classification of as-built	n/a
Cowardin classification	n/a
Dominant soil types	Johnston soils
Reference site ID	none
USGS HUC (project and reference)	03030007
NCDWQ subbasin (project and reference)	03-06-23
NCDWQ classification (project and reference)	C Sw (Burnt Mill Creek)
Any portion of the project area 303d listed?	Downstream Burnt Mill Creek is 303d listed
Any upstream portion 303d listed?	No
Reasons for 303d listing or stressor	Impaired biological integrity from urban runoff/storm sewers and dredging
% of project easement fenced	none

d. Monitoring Plan View (see Figure 2)

There was no monitoring plan for this project.



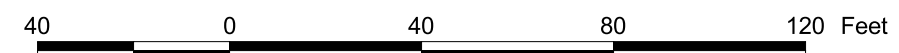
Problem Area 1: Bank erosion
 Problem Area 2: Presence of alligator weed, could choke out other plants/close off outlet

Legend

-  Photo Stations
-  2 ft Contours
-  Project Boundary
-  Weir
-  Burnt Mill Creek
-  New Hanover County Soil Survey



Figure 2. Monitoring Plan View
 Burnt Mill Creek (Kerr Avenue Stormwater Wetland)
 Wilmington, New Hanover County, NC
 2005 Annual Monitoring



Scale: 1" = 40'
 November 2005

EEP Project Number: .00012
 BLWI Project Number: 050027



III. Project Condition and Monitoring Results

a. Vegetation Assessment and Recommendations

Initially, 166 1 gallon containerized tree/shrubs were planted. The herbaceous material was harvested locally and placed in the wetland. Twenty different species of plants were installed during the initial process. Verbal communication with staff of the Cape Fear River Keeper Program indicates that first year survival of the containerized plants was poor. The staff had performed additional plantings of native and non – native material. No planting plan was followed during this process. Except for the shrubs (mainly *Morella cerifera*), growth of the trees is fair to poor. The herbaceous material *Juncus sp.* and *Pontederia cordata* appear to be surviving well and spreading.

i. Soil Data

Table VI. Preliminary Soil Data					
Project Name and Number: 050027 Burnt Mill Creek (Kerr Ave Stormwater Wetland)					
Series	Max Depth (in)	% Clay on Surface	K	T	OM %
Johnston	64	7-18	-	-	8-15

ii. Vegetative Problem Areas

The vegetative problem areas would be mainly in the upland fringe/border. Survival of the planted trees and shrubs was poor. Supplemental plantings of native and non – native plants have been ongoing through the efforts of the Cape Fear River Keeper. Survival of the plantings is fair.

The plan view shows the location of the noted problems. Potential problems exist from the presence of invasive vegetation, *Ludwigia sp.* blocking the outlet channel, bank erosion depositing sediment in the wetland and trash from the nearby parking lots/shopping center.

Table VII. Vegetative Problem Areas			
Project Number and Name: 050033 Hammocks Beach Wetland			
Feature/Issue	Area	Probable Cause	Photo #
Invasive Species	Channel	<i>Ludwigia sp.</i>	VPA-1
Bank Erosion	Parking Lot Side	Foot traffic and runoff	VPA-2
Poor Vegetative Growth	Upland zones	Lack of nutrient or site conditions	VPA-3
Trash	Forebay	Parking lot or runoff	VPA-4

iii. Vegetative Problem Area Plan View (see Figure 3)

As previously reported, there have been no formal monitoring reports regarding vegetation plantings and survival and water quality sampling. Any information gathered has been through verbal communication with the Cape Fear River Keeper Program. Recent changes in staff have created problems in attaining information that may exist, as the program is in transition. The site had been previously used as an educational tool for this Program. For this purpose, the site is doing well.

It is recommended that during the next year, attempts be made to document what modifications the River Keeper Program have implemented. Three 5m X 5m plots should be established in the upland area to document existing vegetation. Discussions should continue with the River Keeper Program to insure that the site is being properly maintained, if any water quality sampling is currently on-going and if any vegetative plantings will occur. Spraying of herbicides may be necessary to maintain channel opening an unrestricted flow of the water.

iv. Stem Counts

There was no vegetative data collected at this site.

v. Vegetation Plot Photos (see Appendix A)

There was no vegetative data collected at this site.

b. Wetland Assessment

i. Wetland Criteria Attainment

There are no wells present on the Hammocks Beach project.

IV. Methodology Section

Visual observation and verbal communication with the members of the Cape Fear River Keeper Program were used to evaluate this project.

V. References

Soil Survey of New Hanover, North Carolina. US Department of Agriculture, Soil Conservation Service. April 1977.

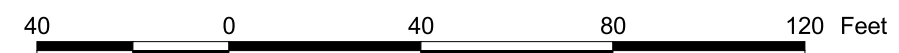


Problem Area 1: Bank erosion
 Problem Area 2: Presence of alligator weed, could choke out other plants/close off outlet

- Legend**
- * Problem Areas
 - P Photo Stations
 - 2 ft Contours
 - Project Boundary
 - Weir
 - Burnt Mill Creek
 - New Hanover County Soil Survey



Burnt Mill Creek (Kerr Avenue Stormwater Wetland)
 Wilmington, New Hanover County, NC
 2005 Annual Monitoring - Year ?



Scale: 1" = 40'
 October 12, 2005

EEP Project Number: .00012
 BLWI Project Number: 050027



APPENDIX A

Photos

Vegetation Monitoring Plot Photos

There were no vegetative plots sampled.

Vegetative problem areas.

VPA-1 Invasive vegetation



VPA-2 Bank erosion



VPA-3 Poor vegetative growth



VPA-4 Trash in forebay



Site photos

SW-1



SW-2



SW-3



SW-4



SW-5



SW-6



SW-7

