

FOX RUN RIPARIAN BUFFER MITIGATION SITE RESTORATION PLAN



**PITT COUNTY, NORTH CAROLINA
EEP Contract No. 002281**

Prepared for:

**NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL
RESOURCES
ECOSYSTEM ENHANCEMENT PROGRAM
RALEIGH, NORTH CAROLINA**



Prepared by:



Natural Resources
Restoration & Conservation

**Restoration Systems, L.L.C.
1101 Haynes Street, Suite 211
Raleigh, North Carolina 27604
November 2010**

EXECUTIVE SUMMARY

Restoration Systems, L.L.C. has contracted with EEP (FDP contract #002281) through the Full Delivery Process (RFP #16-001383) to provide 45 Riparian Buffer Mitigation Units through the completion of the **Fox Run Riparian Buffer Mitigation Site** (Site) located approximately 2.5 miles southeast of Farmville in Pitt County. The Site encompasses approximately 46.46 acres of land (hereafter referred to as the "Site"), which has been ditched and cleared for row crop production. Approximately 2.32 acres exist outside of the 200 foot buffer area, included in the surface area of the water in the ditches, or do not qualify for diffuse flow (per NCDWQ's Buffer Interpretation/Clarification Memo #2008-019). The Site includes 43.72 acres of land suitable to provide riparian buffer mitigation units as defined in RFP #16-001383 and Contract No. 002281. A Deed of Conservation Easement and Survey of the Site were recorded with the Pitt County Register of Deeds on 10/28/2010. The final survey is attached as an appendix to this Plan.

The Site is situated along unnamed tributaries to Little Contentnea Creek, a major tributary to the Neuse River. The Site is located within North Carolina Division of Water Quality (NCDWQ) sub-basin 03-04-07 of the Neuse River Basin and is encompassed within USGS 14-digit Hydrologic Unit and Targeted Local Watershed 03020203070030. Site streams drain to Little Contentnea Creek (Stream Index Number 27-86-26). Little Contentnea Creek has a best usage designation of **C, Sw, NSW** and sections are listed as impaired. Sections of Little Contentnea Creek to which the Site drains are listed on the draft 2008 303(d) list for impaired biological and low dissolved oxygen. Impairment results from agricultural crop production.

The surrounding landscape is characterized primarily by agricultural land and silviculture stands. Agricultural land is farmed extensively where soils provide adequate drainage. Agricultural and silviculture fields are fairly contiguous in areas where drainage systems have been implemented. Site land use is characterized by agricultural row-crop production. Row crops identified during field investigations include sweet potatoes and cotton. Ditches vary from 2 to 4 feet in depth and exhibited flow during Site visits.

Site tributaries drain an approximately 1.0-square mile watershed at the Site outfall. Site tributaries are first- and second-order streams that have been altered by ditching, removal of riparian vegetation, and earthwork associated with agricultural practices.

This Restoration Plan defines specific goals and objectives associated with the restoration of native forest on former agricultural fields located within the Site boundaries. The primary goals of this buffer restoration plan include 1) enhancement of water quality functions (reduce nonpoint source sedimentation and nutrient inputs), 2) restoration of natural vegetation buffers along onsite ditches, and 3) creation of wildlife habitat associated with a riparian corridor. Upon successful completion of this Restoration Plan, the Site will be monitored to ensure successful vegetation density of 320 stems per acre for a period of five years.

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FOX RUN RIPARIAN BUFFER MITIGATION SITE DRAFT BUFFER RESTORATION PLAN PITT COUNTY, NORTH CAROLINA

PART 1: INTRODUCTION

This detailed restoration plan describes the **Fox Run Riparian Buffer Mitigation Site** (Site) and is designed specifically to assist in fulfilling North Carolina Department of Environment and Natural Resources (NCDENR) Ecosystem Enhancement Program (EEP) restoration goals in accordance with Request For Proposal #16-001383. The Site is located approximately 2.5 miles southeast of Farmville, in Pitt County (Figure 1, Appendix A). This portion of Pitt County is located centrally within Neuse River Basin 8-digit Cataloging Unit 03020203 (Figure 2, Appendix A).

The following objectives are proposed to provide buffer mitigation credit requested under this solicitation:

- Protect the Site in perpetuity with a conservation easement
- Revegetate the Site.
- Monitor the Site successfully for 5 years

This document provides a buffer restoration plan summarizing activities proposed within the Site. The Site encompasses 46.46 acres of land utilized for timber and agricultural row crop production, but only 43.72 acres are proposed for the generation of Riparian Buffer Mitigation Units. 2.32 acres of land have been placed under conservation easement but do not qualify to generate mitigation credit as they lie outside of the 200 foot buffer zone, do not qualify for diffuse flow (per NCDWQ's Buffer Interpretation/Clarification Memo #2008-019) or include the surface area of the water at the time of surveying. The plan includes 1) project goals and objectives, 2) descriptions of existing conditions, 3) restoration plans, and 4) vegetation monitoring plans.

PART 2: PROJECT GOALS AND OBJECTIVES

The following project is proposed to provide 45* Buffer Mitigation Units, as calculated in accordance with the requirements stipulated in EEP Request for Proposal #16-001383. Note*: The original contracted 45 BMU estimate has been reduced to 43.72 BMUS.

The primary goals of this buffer restoration project focus on improving water quality, enhancing flood attenuation, and restoring aquatic and riparian habitat and will be accomplished by the following.

1. Removing nonpoint sources of pollution associated with agricultural production including a) cessation of broadcasting fertilizer, pesticides, and other agricultural materials into and adjacent to Site streams, ditches, or other open waterways and b) providing a vegetative buffer adjacent to streams and waterways to treat surface runoff which may be laden with sediment and/or agricultural pollutants.

2. Reducing sedimentation within on-site and downstream receiving waters by a) increasing retention time for surface waters entering and leaving the Site, b) reducing bank erosion associated with vegetation maintenance and agricultural plowing to Site ditches, and c) planting a forested vegetative buffer adjacent to Site streams.
3. Promoting floodwater attenuation by ripping soils and revegetating Site floodplains, increasing frictional resistance on lateral surface flow across the Site.
4. Providing terrestrial wildlife habitat including a natural forested corridor in an area that is currently cleared of natural vegetation and highly dissected by agricultural practices.

PART 3: EXISTING CONDITIONS

3.1 PHYSIOGRAPHY, TOPOGRAPHY, AND LAND USE

The Site is located in the Rolling Coastal Plain of the Southeastern Plains ecoregion of North Carolina within United States Geological Survey (USGS) Cataloging Unit 03020203070030 of the Neuse River Basin (North Carolina Division of Water Quality [NCDWQ] sub-basin number 03-04-07). Regional physiography is characterized by dissected irregular plains and smooth plains; broad interstream divides with gentle to steep side slopes dissected by numerous small, low to moderate gradient sandy bottomed streams. On-site elevations are relatively flat, averaging approximately 18 feet National Geodetic Vertical Datum (NGVD) across the Site (USGS Farmville, North Carolina 7.5-minute topographic quadrangle).

The Site provides water quality functions to a 1.0-square mile watershed at the Site outfall. The watershed is characterized by agriculture and silviculture land. Agriculture land is primarily characterized by agriculture fields utilized for row crop production, which is farmed extensively where soils provide adequate drainage. Impervious surfaces account for less than 2 percent of the upstream drainage area. The Site is entirely dominated by agricultural land, including earthen roads, with no impervious surfaces.

3.2 WATER QUALITY

The Site is located within NCDWQ subbasin 03-04-07 of the Neuse River Basin and is encompassed within USGS 14-digit Hydrologic Unit and Targeted Local Watershed 03020203070030. Site streams drain to Little Contentnea Creek (Stream Index Number 27-86-26). Little Contentnea Creek has a best usage designation of **C, Sw, NSW** (NCDWQ 2008b) and downstream sections are listed as impaired. Streams with a best usage designation of **C** are suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Secondary recreation includes wading, boating, and other uses not involving human body contact with waters on an organized or frequent basis. The supplemental classification **Sw** (Swamp Waters) is intended for waters which have low velocities and other natural characteristics which are different from adjacent streams. The supplemental classification of **NSW** (Nutrient Sensitive Waters) is intended for waters needing additional nutrient management due to their being subject to excessive growth of microscopic or macroscopic vegetation.

NCDWQ has assembled a list of impaired waterbodies according to the Clean Water Act Section 303(d) and 40 CFR 130.7. The list is a comprehensive public accounting of all impaired waterbodies. An impaired waterbody is one that does not meet water quality standards including designated uses, numeric and narrative criteria, and anti-degradation

requirements defined in 40 CFR 131. Little Contentnea Creek is listed on both the NCDWQ final 2006 303(d) and the draft 2008 303(d) list (NCDWQ 2007a, 2008a) for impaired biological integrity and low dissolved oxygen. Based on NCDWQ documentation, impairment results are from crop production and agriculture.

3.3 SOILS

Soils that occur within the Site, according to a *Custom Soil Report for Pitt County, North Carolina* (USDA 2008) are depicted in Figure 5 (Appendix A) and are described in Table 1.

Table 1. USDA Soils Mapped within the Site

Soil Series	Family	Description
Bladen	<i>Typic Albaquults</i>	This series consists of very deep, poorly drained, slowly permeable soils that formed in clayey fluvial or marine sediments. Slopes are generally less than 2 percent.
Coxville	<i>Typic Paleaquults</i>	This series consists of very deep, poorly drained, moderately slowly permeable soils that formed in marine deposits or fluviomarine sediments. Slopes are generally less than 2 percent.
Exum	<i>Aquic Paleudults</i>	This series consists of very deep, moderately well drained, moderately slowly permeable soils that formed in loamy marine sediments. Slopes are less than 5 percent.
Goldsboro	<i>Aquic Paleudults</i>	This series consists of very deep, moderately well drained, moderately permeable soils that formed in marine sediments or fluviomarine sediments. Slopes range from 0 to 10 percent.
Ocilla	<i>Arenic Paleudults</i>	This series consists of very deep, somewhat poorly drained, moderately permeable soils that formed in sandy and loamy marine sediments. Slopes range from 0 to 10 percent.

PART 4: RESTORATION PLAN

The primary goals of this buffer restoration project include 1) enhancement of water quality functions (reduce nonpoint source sedimentation and nutrient inputs), 2) restoration of a natural vegetation buffers along onsite stream reaches, 3) creation of wildlife habitat associated with a riparian corridor.

Restoration of forest and stream-side habitat allows for development and expansion of characteristic species across the landscape. Ecotonal changes between community types contribute to diversity and provide secondary benefits, such as enhanced feeding and nesting opportunities for mammals, birds, amphibians, and other wildlife.

4.1 VEGETATION PLAN

Onsite observations and community descriptions from *Classification of the Natural Communities of North Carolina* (Schafale and Weakley 1990) were used to develop the primary plant community associations that will be promoted during community restoration efforts. Areas will be planted with species characteristic of the Coastal Plain Bottomland Hardwood Forest (Table 2).

Bare-root seedlings of tree and shrub species may be planted within the Site at a density of up to 680 stems per acre. Planting will be performed between December 1 and March 15 to allow plants to stabilize during the dormant period and set root during the spring season. A total of 50,000 diagnostic tree and shrub seedlings will be planted in support of Site buffer restoration (Table 2).

Table 2. Vegetation Plan

Plant Common Name	Species Name	Number Planted (% of Total)
Loblolly pine	<i>Pinus taeda</i>	7,500 (15)
Northern red oak	<i>Quercus rubra</i>	5,000 (10)
American sycamore	<i>Plantanus occidentalis</i>	5,000 (10)
Willow oak	<i>Quercus phellos</i>	7,500 (15)
Swamp chestnut oak	<i>Quercus michauxii</i>	7,500 (15)
Black gum	<i>Nyssa sylvatica</i>	2,500 (5)
Sugarberry	<i>Celtis laevigata</i>	2,500 (5)
American elm	<i>Ulmus Americana</i>	7,500 (15)
Elderberry	<i>Sambucus Canadensis</i>	2,500 (5)
River birch	<i>Betula nigra</i>	2,500 (5)
TOTAL		50,000

Final distribution and densities will be reported in the detailed mitigation plan.

4.2 GRADING PLAN

There will be no grading on the Site.

4.3 FERTILIZATION PLAN

No fertilization will be done on the Site. The application of fertilizers and pesticides may compound water quality degradation within onsite and downstream receiving waters.

4.4 PROJECT PHASING

Task	Description	Weeks from Contract Execution
Task 1	Environmental Screening (CE Document)	5
	Public Meeting	10
Task 2	Conservation Easement Recorded	20
Task 3	Develop Mitigation Plan	43
	EEP Approval	49
Task 4	Mitigation Site Earthwork	NA
Task 5	Site Planting	78*
	Install Monitoring Equipment	87*
Task 6	Prepare Mitigation Plan and As Built Plans	87*
Task 7	Submit Year 1 Monitoring Report	Dec. after implementation
Task 8	Submit Year 2 Monitoring Report	Dec. – 2 yrs after implementation
Task 9	Submit Year 3 Monitoring Report	Dec. – 3 yrs after implementation

Task 10 Submit Year 4 Monitoring Report Dec. – 4 yrs after implementation
Task 11 Submit Year 5 Monitoring Report Dec. – 5 yrs after implementation
* Time frame is dependent upon seasonal conditions at completion of Site implementation.

4.5 MONITORING AND SUCCESS CRITERIA

The Monitoring Plan ensures vegetation growth and survival. Monitoring of restoration efforts will be performed for 5 years or until success criteria are fulfilled.

Vegetation monitoring will follow the 2006 *CVS-EEP Vegetation Monitoring Protocol* set forth by EEP (Lee et al. 2006). After planting has been completed in winter or early spring, an initial evaluation will be performed to verify planting methods and to determine initial species composition and density. Supplemental planting and additional Site modifications will be implemented, if necessary.

During quantitative vegetation sampling between June 1 and September 31 of the first year, 10-meter by 10-meter square sample plots will be randomly placed within the Site. In each sample plot, vegetation sampling will follow Level 1-2 CVS-EEP sampling methods (Lee et al. 2006).

Vegetation Success Criteria

Success criteria have been established to verify that the vegetation component supports community elements necessary for forest development. Success criteria are dependent upon the density and growth of characteristic forest species. An average density of 320 stems per acre of Character Tree Species must be surviving after five monitoring years.

PART 5: REFERENCES

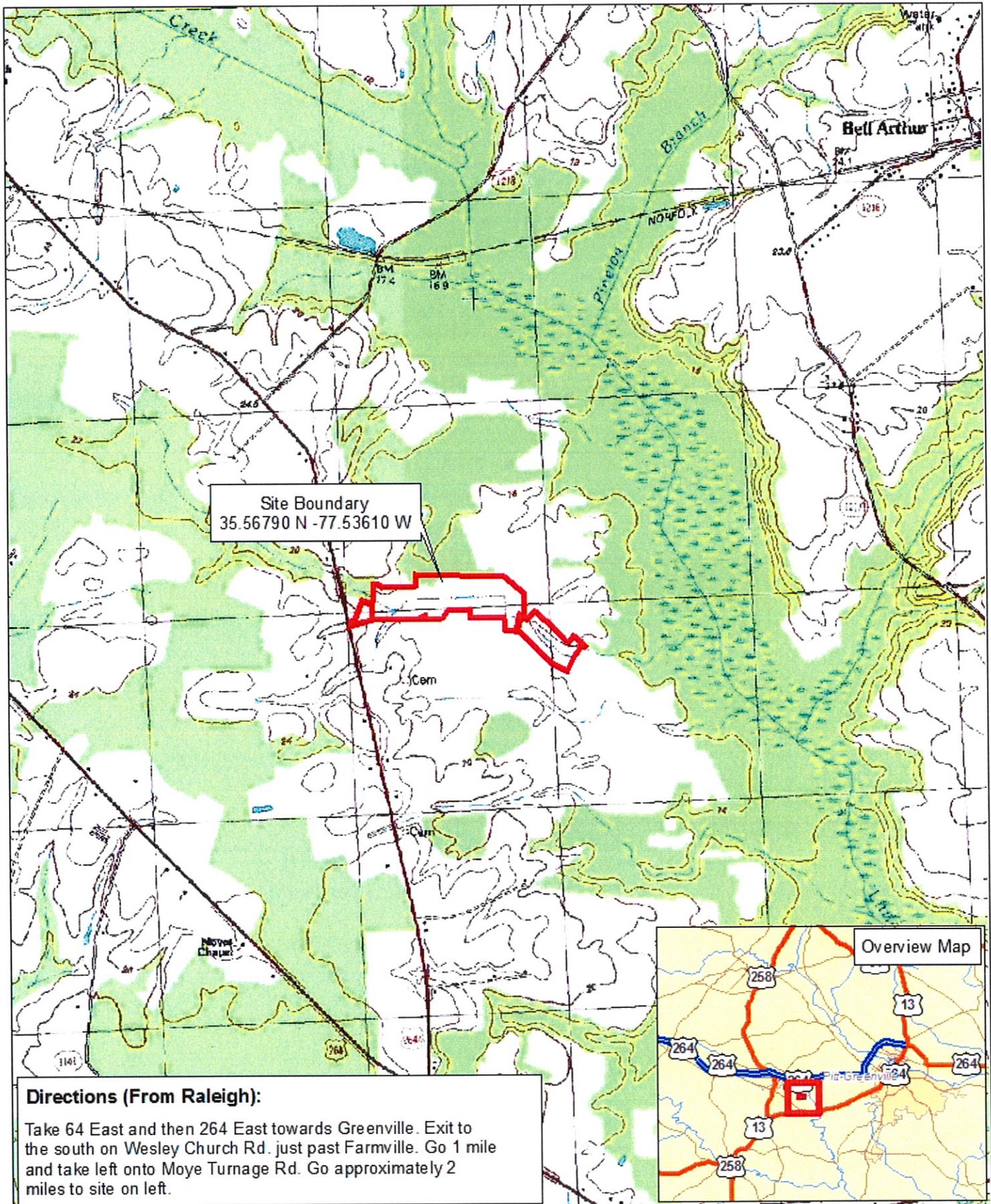
- Lee, M.T., R.K. Peet, S.D. Roberts, and T.R. Wentworth. 2006. CVS-EEP Protocol for Recording Vegetation. Version 4.0. North Carolina Department of Environment and Natural Resources, Ecosystem Enhancement Program. Raleigh, North Carolina.
- North Carolina Division of Water Quality (NCDWQ). 2007a. Final North Carolina Water Quality Assessment and Impaired Waters List (2006 Integrated 305(b) and 303(d) Report) (online). Available: http://h2o.enr.state.nc.us/tmdl/documents/303d_Report.pdf [November 10, 2008]. North Carolina Department of Environment and Natural Resources, Raleigh, North Carolina.
- North Carolina Division of Water Quality (NCDWQ). 2007b. Redbook, Surface Waters and Wetlands Standards. North Carolina Department of Environment and Natural Resources, Division of Water Quality. Raleigh, North Carolina.
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- North Carolina Division of Water Quality (NCDWQ). 2008b. Draft Basinwide Planning Program: Neuse River Basinwide Water Quality Plan - June 2008. North Carolina Department of Environment and Natural Resources, Raleigh, North Carolina.
- Schafale, M.P. and A.S. Weakley. 1990. Classification of the Natural Communities of North Carolina: Third Approximation. North Carolina Natural Heritage Program, Division of Parks and Recreation, N.C. Department of Environment, Health, and Natural Resources. Raleigh, North Carolina.
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Appendix A

Figures

Appendix A

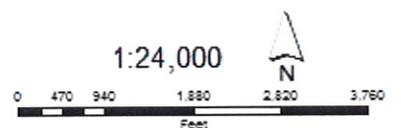
Figures

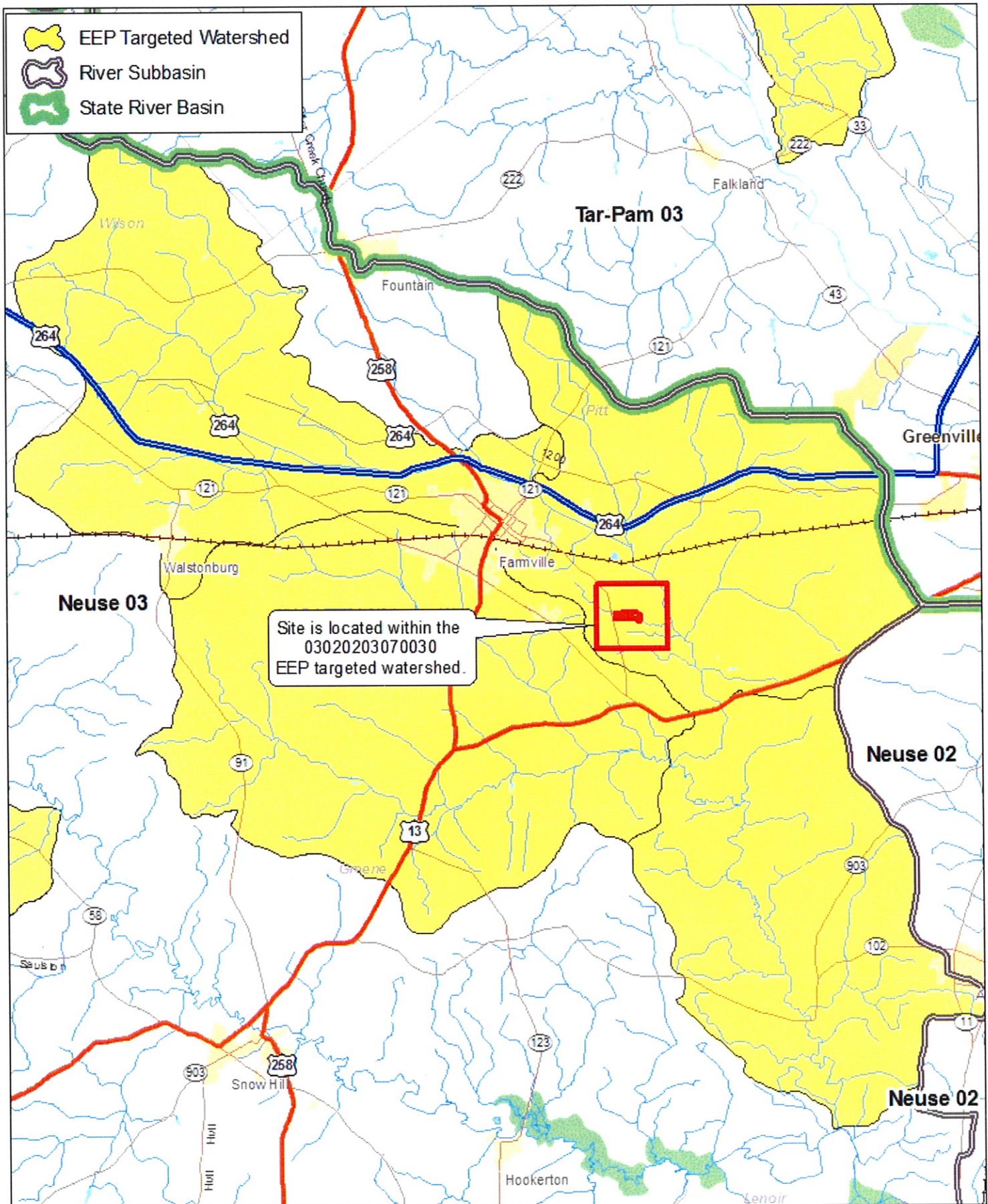


Restoration Systems, LLC
1101 Haynes St. Suite 211
Raleigh, NC 27604
tel. 919.755.9490

Figure 1:
Site
Location

**Fox Run Riparian Buffer
Mitigation Site
Pitt County, NC**

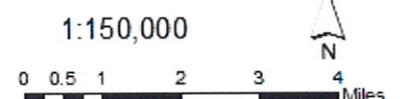


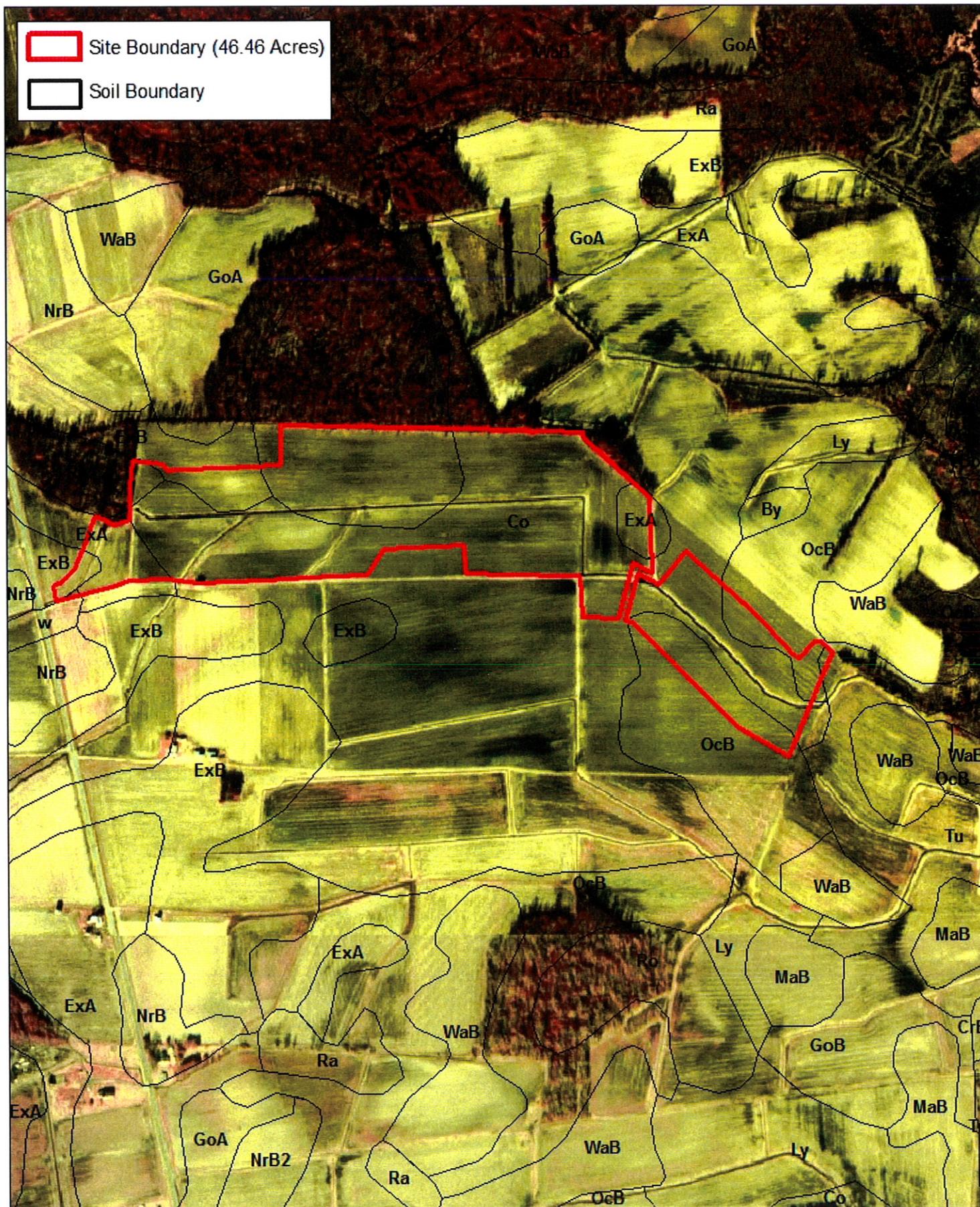


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 Raleigh, NC 27604
 tel: 919.755.9490

Figure 2:
 Watershed
 Location

**Fox Run Riparian Buffer
 Mitigation Site
 Neuse 03
 Pitt County, NC**





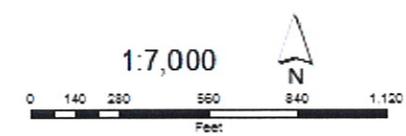
Site Boundary (46.46 Acres)
 Soil Boundary

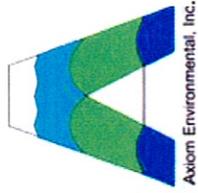


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 1101 Haynes St. Suite 211
 Raleigh, NC 27604
 tel: 919.755.9490

Figure 3:
 Soils

**Fox Run Riparian Buffer
 Mitigation Site
 Pitt County, NC**





Prepared for:



Project:

FOX RUN
RIPARIAN
BUFFER
MITIGATION
SITE

Pitt County, NC

Title:

EXISTING
CONDITIONS

Drawn by: CLF

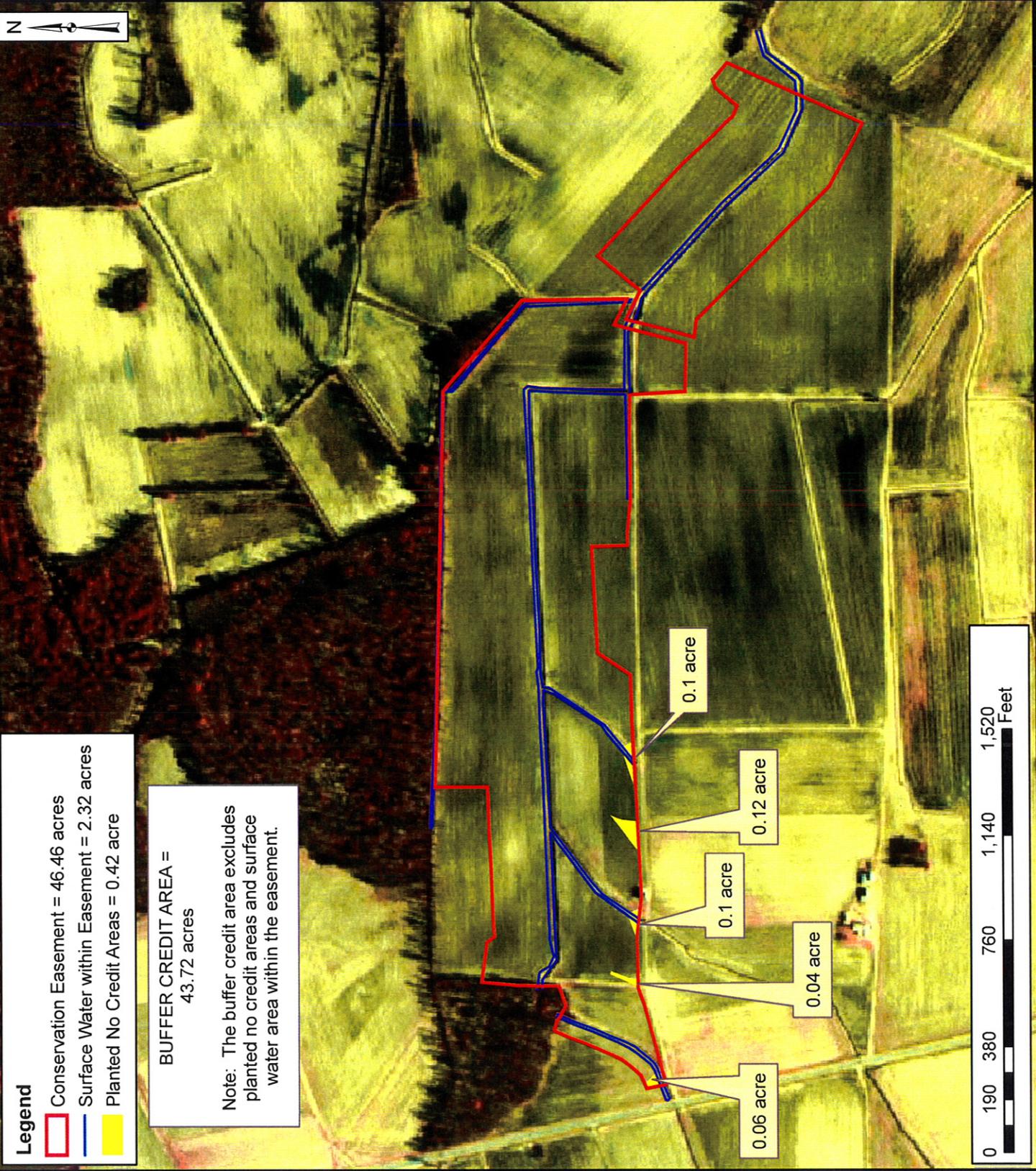
Date: NOV 2010

Scale: 1:5700

Project No.: 10-001

FIGURE

4

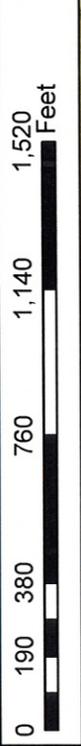


Legend

-  Conservation Easement = 46.46 acres
-  Surface Water within Easement = 2.32 acres
-  Planted No Credit Areas = 0.42 acre

BUFFER CREDIT AREA =
43.72 acres

Note: The buffer credit area excludes planted no credit areas and surface water area within the easement.



Appendix B

EEP Floodplain Checklist



EEP Floodplain Requirements Checklist

This form was developed by the National Flood Insurance program, NC Floodplain Mapping program and Ecosystem Enhancement Program to be filled for all EEP projects. The form is intended to summarize the floodplain requirements during the design phase of the projects. The form should be submitted to the Local Floodplain Administrator with three copies submitted to NFIP (attn. Edward Curtis), NC Floodplain Mapping Unit (attn. John Gerber) and NC Ecosystem Enhancement Program.

Project Location

Name of project:	Fox Run Riparian Buffer Mitigation Site
Name if stream or feature:	Unnamed tributaries to Contentnea Creek
County:	Pitt
Name of river basin:	Neuse 03020203070030
Is project urban or rural?	rural
Name of Jurisdictional municipality/county:	Pitt County
DFIRM panel number for entire site:	4636
Consultant name:	Worth Creech
Phone number:	919-334-9114
Address:	1101 Haynes Street, Suite 211 Raleigh, NC 27604

Design Information

Restoration Systems, L.L.C. has contracted with EEP (FDP contract #002281) through the full Delivery Process (RFP #16-001383) to provide 43.29 Riparian Buffer Mitigation Units through the completion of the **Fox Run Riparian Buffer Mitigation Site** (Site) located approximately 2.5 miles southeast of Farmville in western Pitt County. The Site encompasses approximately 46.46-acres of land (hereafter referred to as the "Site"), which has been ditched and cleared for row crop production. The Site is situated along unnamed tributaries to Contentnea Creek, a major tributary to the Neuse River. The Site is located within DWQ sub-basin 03-04-07 of the Neuse River Basin and is encompassed within USGS 14-digit Hydrologic Unit and Targeted Local Watershed 03020203070030. The primary goals of this buffer restoration project focus on improving water quality, enhancing flood attenuation, and restoring aquatic and riparian habitat. Restoration activities include recording of a permanent conservation easement and reforestation of Site. There are no stream or wetland restoration components to the project, only buffer restoration.

Floodplain Information

Is project located in a Special Flood Hazard Area (SFHA)? <input type="radio"/> Yes <input checked="" type="radio"/> No
If project is located in a SFHA, check how it was determined: <input type="checkbox"/> Redelineation <input type="checkbox"/> Detailed Study <input type="checkbox"/> Limited Detail Study <input type="checkbox"/> Approximate Study <input type="checkbox"/> Don't know
List flood zone designation:
Check if applies: <input checked="" type="checkbox"/> AE Zone <input type="checkbox"/> Floodway <input type="checkbox"/> Non-Encroachment <input checked="" type="radio"/> None <input type="checkbox"/> A Zone <input type="checkbox"/> Local Setbacks Required <input type="checkbox"/> No Local Setbacks Required
If local setbacks are required, list how many feet:

Does proposed channel boundary encroach outside floodway/non-encroachment/setbacks?

Yes No

Land Acquisition (Check)

State owned (fee simple)

Conservation easment (Design Bid Build)

Conservation Easement (Full Delivery Project)

Note: if the project property is state-owned, then all requirements should be addressed to the Department of Administration, State Construction Office (attn: Herbert Neily, (919) 807-4101)

Is community/county participating in the NFIP program?

Yes No

Note: if community is not participating, then all requirements should be addressed to NFIP (attn: Edward Curtis, (919) 715-8000 x369)

Name of Local Floodplain Administrator: Paul Ellis

Phone Number: 252 753 5921

Floodplain Requirements

This section to be filled by designer/applicant following verification with the LFPA

No Action

No Rise

Letter of Map Revision

Conditional Letter of Map Revision

Other Requirements

List other requirements:

Comments:

Name: Walt Reed

Signature: 

Title: Project Manager

Date: 10/17/10

Worth Creech

From: Jonathan Anders
Sent: Wednesday, November 03, 2010 10:15 AM
To: Worth Creech
Subject: FW: FEMA Floodplain Checklist

From: Jonathan Anders
Sent: Monday, May 24, 2010 9:49 AM
To: Barrett Jenkins
Subject: FW: FEMA Floodplain Checklist

From: Paul Ellis [mailto:pellis@farmville-nc.com]
Sent: Tuesday, May 04, 2010 9:54 AM
To: Jonathan Anders
Subject: RE: FEMA Floodplain Checklist

Mr. Anders,

I have reviewed the information and it appears to be correct. Let me know if you need additional information.

Thanks,

Paul A. Ellis
Developmental Services Director
Post Office Box 86
3672 North Main Street
Farmville, NC 27828
(252) 753-6711 phone
(252) 753-2963 fax

From: Jonathan Anders [mailto:janders@restorationsystems.com]
Sent: Friday, April 30, 2010 2:42 PM
To: Paul Ellis
Subject: FEMA Floodplain Checklist

Mr. Ellis,

My name is Jonathan Anders and I am an employee of Restoration Systems, based out of Raleigh, NC. We were instructed by the Ecosystem Enhancement Program to fill out a FEMA Floodplain Checklist and send it to the local floodplain administrator, to get this form approved and verified. The site, Fox Run, is located near Farmville, NC. I received your contact information from Cindy Thomas. Attached is the FEMA Floodplain Checklist along with an image of the Site Location. If you would, please look this over and verify that all of the information is correct, and return it.

Thanks,

Jonathan Anders, Intern
.....

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1101 Haynes Street, Suite 211
Raleigh, NC 27604

Appendix C
DWQ Buffer Interpretation/Clarification #2008-019



August 19, 2008
Buffer Interpretation/Clarification #2008-019

MEMORANDUM

RE: The Division of Water Quality's (DWQ's) stance on whether diffuse flow of stormwater through the newly restored buffers on mitigation sites should be a requirement. Diffuse flow is a requirement for buffer restoration or enhancement in the Neuse River Basin Buffer Rule 15A NCAC 02B.0242(9)(d)(iii), the Tar-Pamlico River Basin Buffer Rule 15A NCAC 02B.0260(9)(d)(iii), and the Catawba River Basin Buffer Rule 15A NCAC 02B.0244 (9)(d)(iii).

Diffuse flow is a requirement for all sites in a buffered basin for buffer mitigation and for for sites providing nutrient offset credit as well.

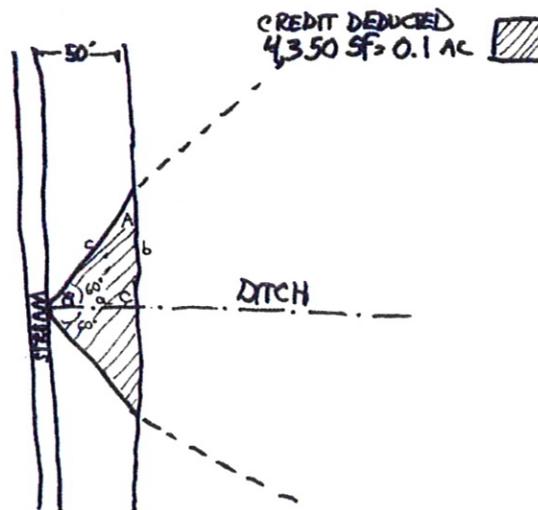
Current Policy: According to the Mitigation rules in the Neuse, Tar-Pamlico and Catawba buffer rules, a grading plan must be provided for buffer mitigation sites. In addition, those rules state that "The site shall be graded in a manner to ensure diffuse flow through the riparian buffer".

Problem: The question has been raised as to whether stormwater carried by lateral ditches that enter buffered streams should provide diffuse flow prior to that stormwater entering the restored buffers.

Solution: The Neuse, Tar-Pamlico and Catawba buffer rules with respect to buffer mitigation sites contain a very clear requirement that states that diffuse flow of stormwater must be maintained through the buffer. Unless otherwise approved by DWQ, all buffer mitigation sites must provide diffuse flow of stormwater from ditches and similar conveyances through the restored buffer.

Where such diffuse flow cannot be attained and where DWQ agrees that such treatment is not possible, deduction of buffer credit will be calculated as follows:

SCENARIO 1



A, B and C are angles. a, b, and c are distances (lengths)

DWQ believes that using an immediate drainage area extending at a 60-degree angle from the point of discharge to the stream is a reasonable approach to the issue of determining the area which is not draining through the restored buffer. To calculate the area of buffer being "short-circuited" by the ditch, the area of the right triangles shown in the figure above must be determined.

$$a = 50'$$

$$A = 30^\circ$$

$$B = 60^\circ$$

$$b = a \cot A$$

$$b = 50 (1.732)$$

$$b = 86.6' (87')$$

The area to be excluded from credit would be the area of the two right triangles:

$$\text{Area} = (a \times b)/2$$

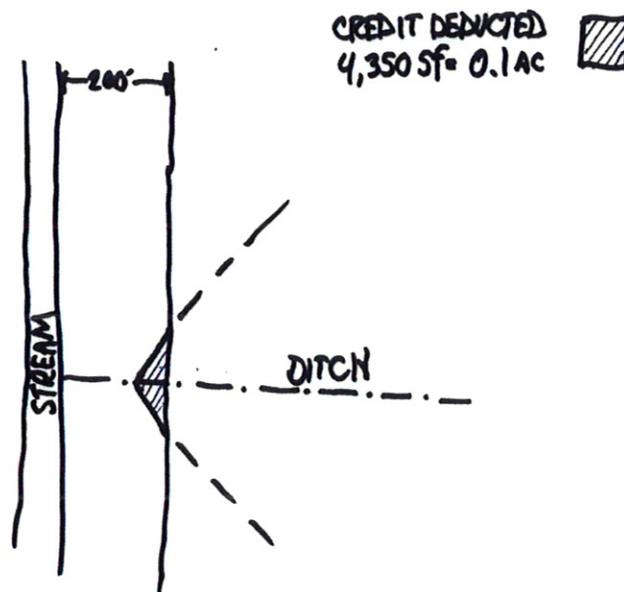
$$\text{Area} = (50 \text{ feet} \times 87 \text{ feet})/2$$

$$\text{Area} = 2,175 \text{ SF}$$

Total deducted area = $2,175 \times 2 = 4,350 \text{ SF}$ or 0.1 acres.

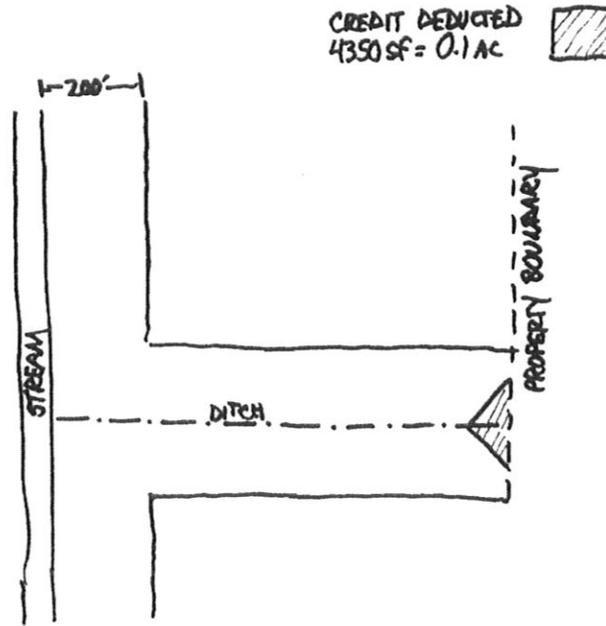
The example shown above assumes a buffer width of 50 feet from the top of bank (riparian buffer mitigation site). For nutrient offset sites, credit can be generated out to 200 feet from the top of bank. The policy applies to sites with larger buffers as follows:

SCENARIO 2



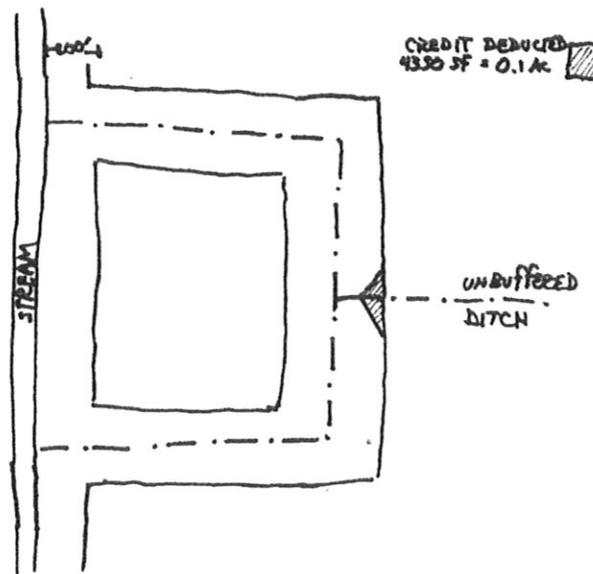
If a ditch leading to a buffered stream is buffered, then no credit is deducted from the stream buffer. If the upstream origin of the ditch is within the buffer, no credit is deducted. If the upstream origin of the ditch is not buffered (e.g. if the ditch begins upstream offsite), the credit deduction is applied to the most upstream portion of the ditch on the property.

SCENARIO 3



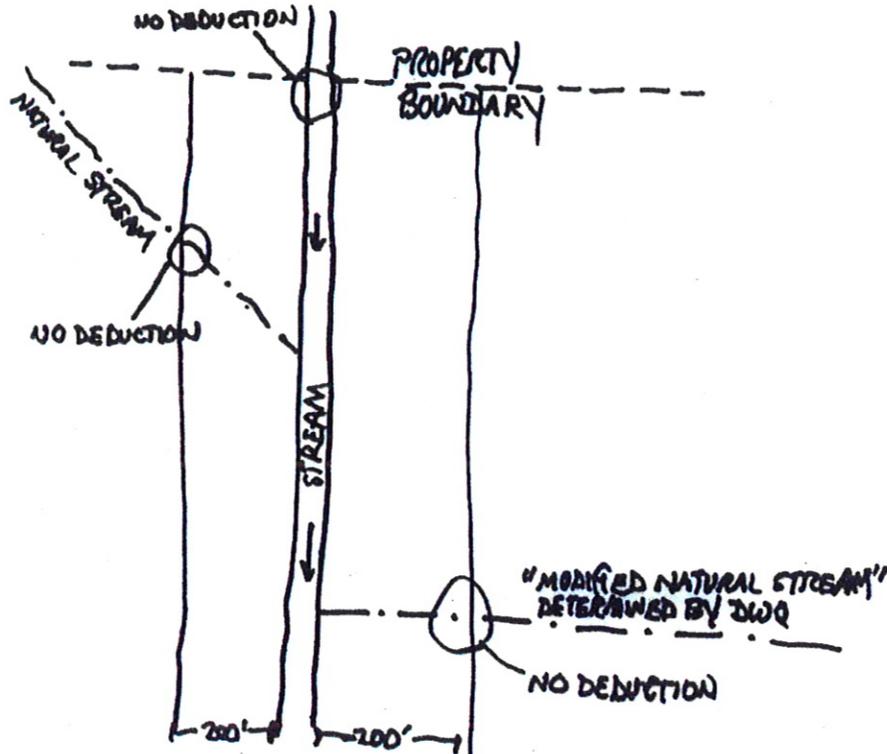
Where a network of interconnecting ditches occurs on a site, and all of the ditches are buffered, the only credit deduction would be at the point where an unbuffered ditch enters the project:

SCENARIO 4



Where a natural stream enters the project site, no deduction of credit will occur. Also, when a natural stream or a modified natural stream flow into a buffered stream, no deduction of credit will occur. The modified natural stream must be subject to the buffer rules, and must be verified to be a modified natural stream (as opposed to a ditch) through an on-site determination by DWQ personnel.

SCENARIO 5



For any additional questions or clarifications on this issue, please contact Eric Kulz or Amy Chapman at (919) 733-1786.

Signature: Matt Matthews Date: 8/19/2008

Signature: Paul R... Date: 8/19/2008



North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Coleen H. Sullins
Director

Dee Freeman
Secretary

November 1, 2010

DWQ Project # 2010-0690 v2
Pitt County

Restoration Systems, LLC
1101 Haynes Street
Suite 211
Raleigh, NC 27604

Subject Property: Fox Run Riparian Buffer Mitigation Site
UT to Contentnea Creek, Neuse River Basin

**On-Site Determination for Applicability to the Neuse River Riparian Area
Protection Rules (15A NCAC 2B .0233)**

Dear Mr. Creech:

At your request I conducted an on-site determination to review drainage features located on the subject property for applicability to the Neuse Buffer Rules (15A NCAC 2B .0233). The project area is labeled as "2010-0690 v2" on the attached map initialed by me on November 1, 2010. The project is located on the east side of Moye-Turnage Road (SR)Road,

The Division of Water Quality (DWQ) has determined that the surface water circled, highlighted in blue, and labeled as "2010-0690 v2 - Fox Run" on the attached map is at least intermittent and is SUBJECT to the Neuse Buffer Rule. The portion of the surface water highlighted in red and labeled as "2010-0690 v2" on the attached map is ephemeral, and NOT SUBJECT to the Neuse Buffer Rule. These features and their associated buffers should be identified on any future plans for this property. The owner (or future owners) should notify the DWQ (and other relevant agencies) of this decision in any future correspondences concerning this property. This on-site determination shall expire five (5) years from the date of this letter.

Landowners or affected parties that dispute a determination made by the DWQ or Delegated Local Authority that a surface water exists and that it is subject to the buffer rule may request a determination by the Director. A request for a determination by the

North Carolina Division of Water Quality
943 Washington Square Mall
Washington, NC 27889

Internet: www.ncwaterquality.org
Phone: 252-946-6481
FAX 252-946-9215

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Director shall be referred to the Director in writing c/o Cyndi Karoly, DWQ, 401 Oversight/Express Review Permitting Unit, 2321 Crabtree Blvd., Suite 250, Raleigh, NC 27604-2260. Individuals that dispute a determination by the DWQ or Delegated Local Authority that "exempts" a surface water from the buffer rule may ask for an adjudicatory hearing. You must act within 60 days of the date that you receive this letter. Applicants are hereby notified that the 60-day statutory appeal time does not start until the affected party (including downstream and adjacent landowners) is notified of this decision. DWQ recommends that the applicant conduct this notification in order to be certain that third party appeals are made in a timely manner. To ask for a hearing, send a written petition, which conforms to Chapter 150B of the North Carolina General Statutes to the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, N.C. 27699-6714. This determination is final and binding unless you ask for a hearing within 60 days.

This letter only addresses the applicability to the buffer rules and does not approve any activity within the buffers. Nor does this letter approve any activity within Waters of the United States or Waters of the State. If you have any additional questions or require additional information please call Chris Pullinger at (252) 948-3920.

Sincerely,



Chris Pullinger
Division of Water Quality
Surface Water Protection
Washington Regional Office

Enclosures: copy of 1:24,000 scale USGS topographic map, Farmville quadrangle

cc: DWQ 401 Oversight/Express Unit
WaRO File Copy
USACE - Washington Field Office

Filename: 2010-0690 v2



North Carolina Department of Environment and Natural Resources

Division of Water Quality
Coleen H. Sullins
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

November 17, 2010

Pitt County
DWQ #: 10-0690

Mr. Tim Baumgartner
EEP Full Delivery Section
1652 Mail Service Center
Raleigh, NC 27604

Re: Fox Run Preliminary Restoration Approval

Dear Mr. Baumgartner:

The Division of Water Quality received a draft restoration plan for the Fox Run Riparian Buffer Mitigation Site on November 8, 2010. On October 26, 2010, Chris Pullinger conducted a site visit to the above referenced site. By copy of this correspondence, DWQ approves the concept presented in the restoration plan and that it is expected to produce 43.72 acres of nutrient offset credit for Tar-Pamlico 8-digit HUC 03020203. The As-built report will provide a more accurate credit accounting.

Please copy DWQ with the As-built report and yearly monitoring reports, referencing the DWQ number.

Please feel free to contact Lia Myott Gilleski at (919) 733-1786 if you have any questions regarding this correspondence.

Sincerely,

Lia M. Gilleski
for Ian McMillan, Acting Supervisor
401 Oversight/Express Review Program

Cc (w/out encl.) File Copy (Lia M. Gilleski)
Chris Pullinger – DWQ WaRO
John Huisman – DWQ Nonpoint Source Planning Unit
Cyndi Karoly – DWQ Wetlands and Stormwater Branch

Appendix D

Performance Bond



**NORTH AMERICAN
SPECIALTY INSURANCE COMPANY**

**North American Specialty Insurance Company
1200 Arlington Heights Road, Suite 400, Itasca, IL 60143-2625**

Performance Bond

Bond No. **2094524**

KNOW ALL MEN BY THESE PRESENTS, that we, **Restoration Systems, LLC**, as Principal, and **North American Specialty Insurance Company**, licensed to do business in the State of, **NC** as Surety, are held and firmly bound unto **North Carolina Department of Environment and Natural Resources** (Obligee), in the penal sum of **Four Hundred Thirty Thousand Six Hundred Twenty Five and 35/100** Dollars (**\$430,625.35**), lawful money of the United States of America, for the payment of which sum, well and truly to be made, the Principal and Surety do bind themselves, their heirs, executors, administrators, and successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the above bounden Principal has entered into certain written Contract with the above named Obligee, effective the **26th** day of **June, 2009**, for **Fox Run Riparian Buffer Mitigation Site, Contract #002281** and more fully described in said Contract, a copy of which is attached, which Agreement is made a part hereof and incorporated herein by reference, except that nothing said therein shall alter, enlarge, expand or otherwise modify the term of the bond as set out below.

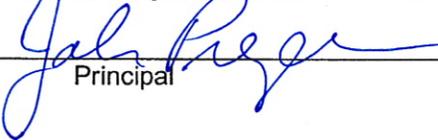
NOW, THEREFORE, if Principal, its executors, administrators, successors and assigns shall promptly and faithfully perform the Contract, according to the terms, stipulations or conditions thereof, then this obligation shall become null and void, otherwise to remain in full force and effect subject to the following:

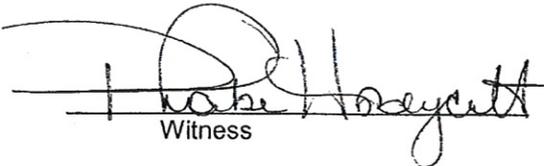
Notwithstanding the provisions of the Contract, this bond will commence on the date of the submittal of Task 3 (submittal of Restoration Plan) and will terminate the earlier of two years from the submittal of the Restoration Plan or receipt of written notification from EEP that the requirements of Task 6 (Submittal of Mitigation Plan) have been met.

Sealed with our seals and dated this **21st** day of **October, 2009**.

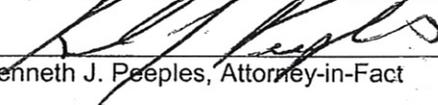
Witness

Restoration Systems, LLC


Principal


Witness

North American Specialty Insurance Company


Kenneth J. Peeples, Attorney-in-Fact

Agreed and acknowledged this ____ day of _____, 2009

By: _____
Obligee

Restoration Systems, LLC
1101 Haynes Street, Ste. 211
Raleigh, NC 27604
(919) 755-9490
(919) 755-9492

North American Specialty (NAS)

PERFORMANCE BONDS - PREMIUM IS BASED ON CONTRACT VALUE NOT BOND PENALTY

Fox Run

Contract Price: \$ 782,955

<i>Contract Price</i>	<i>Exposure Units</i>	<i>Rate</i>	<i>Premium</i>
First 100,000	\$ 100,000	\$20.00	\$ 2,000.00
Next 400,000	\$ 400,000	\$13.50	\$ 5,400.00
Next 2,000,000	\$ 282,955	\$12.50	\$ 3,536.94
Next 2,500,000	\$ -	\$9.38	\$ -
Next 2,500,000	\$ -	\$8.75	\$ -
Over 7,500,000	\$ -		\$ -
	\$ 782,955		\$ 10,937