

YEAR 2 (2013) ANNUAL MONITORING REPORT
WALL RIPARIAN BUFFER MITIGATION SITE

RANDOLPH COUNTY, NORTH CAROLINA
EEP PROJECT ID: 95007

DATA COLLECTED JULY 16TH 2013
CONSTRUCTION COMPLETED MARCH 2012
MONITORING REPORT SUBMITTED OCTOBER 2013



PREPARED BY:

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SUBMITTED TO:

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EXECUTIVE SUMMARY

Restoration Systems, LLC has established the Wall Riparian Buffer Mitigation Site (Site), designed specifically to assist in fulfilling the North Carolina Ecosystem Enhancement Program riparian buffer mitigation goals. The Site is located approximately 0.5 mile west of Randleman and three miles northwest of Asheboro, in northern Randolph County (Figure 1, Appendix A), and positioned within the 14-digit Cataloging Unit 03030003010070 of the Cape Fear River Basin. The Site is located within the Carolina Slate Belt ecoregion of the Piedmont province of North Carolina. This ecoregion is characterized by dissected irregular plains, some hills, linear ridges, and isolated monadnocks; low to moderate gradient streams with mostly boulder and cobble substrates (Griffith 2002). The Site watershed is characterized primarily by agriculture with forest land in riparian corridors and upper headwater depressions, and low-density residential development scattered along roadways. Unnamed Site streams drain to a reach of the Deep River that was listed on the NCDWQ final 2010 303(d) list for a standard violation due to reduced aquatic life integrity (NCDWQ 2010).

Measuring 12.6 acres and protected in perpetuity by a conservation easement, the Site includes five unnamed tributaries which flow to the Deep River. Site streams were impacted from channel straightening, clearing of native forest vegetation, continual maintenance, and hoof shear through livestock grazing. The primary goal of this riparian buffer restoration project is to provide 9.8 Riparian Buffer Mitigation Units. Success of this goal is based on the following criteria.

1. Removing nonpoint sources of pollution associated with agricultural production including a) removing livestock and b) ceasing the broadcast application of fertilizer, pesticides, and other agricultural materials into and adjacent to Site streams through treatment of runoff within the forested buffer.
2. Reducing sedimentation within onsite and downstream receiving waters by a) reducing bank erosion, vegetation maintenance, plowing, and hoof shear adjacent to Site streams and b) removing livestock from the Site.
3. Restoring and reestablishing natural community structure, habitat diversity, and functional continuity by the creation of a forested riparian buffer adjacent to stream channels.
4. Promoting floodwater attenuation by increasing frictional resistance on floodwaters crossing Site floodplains.
5. Improving aquatic habitat by enhancing stream bed shading and natural detritus input.
6. Providing a terrestrial wildlife corridor and refuge in an area extensively developed for agricultural production.
7. Protecting the Site's full potential of stream and riparian buffer functions and values in perpetuity.

Construction activities at the Site included the removal of a small farm pond and farm road, the installation of shallow marsh wetland treatment areas, and the restoration of 9.8 acres of riparian buffer by planting pasture with native forest vegetation. Earthwork associated with the Site Mitigation Plan (dam and road removal) was delayed; therefore, in an effort to meet the seasonal planting window, Site planting occurred prior to the initiation of earthwork. The total area associated with earthwork equaled 0.8 acres. Through agency correspondence it was deemed acceptable to proceed with planting prior to earthwork. Areas disturbed by earthwork were planted with 40 3-gallon Green ash (*Fraxinus pennsylvanica*) and 2100 bare root trees in February of 2013 as follows.

700 American elm (*Ulmus americana*)
500 Ironwood (*Carpinus caroliniana*)
300 Swamp chestnut oak (*Quercus michauxii*)
600 Green ash (*Fraxinus pennsylvanica*)

Four vegetation plots (10-meter by 10-meter in size; Plots 1-4) were established and permanently monumented following Site planting. During the comment and review process associated with the Site's *Baseline Monitoring Document & Asbuilt Baseline Report*, the North Carolina Ecosystem Enhancement Program requested an additional four monitoring plots be installed. The additional monitoring plots (Plots 5-8) were installed and baseline data was collected on March 8, 2013. Baseline vegetation sampling of Plots 5-8 was 536 planted stems per acre (excluding livestakes) (Appendix C).

All plots (Plots 1-8) were surveyed in July 2013 for the Year 2 (2013) monitoring season following guidelines established in *CVS-EEP Protocol for Recording Vegetation, Version 4.2* (Lee et al. 2008). Vegetation sampling across the Site was above the required average density with 486 planted stems per acre (excluding livestakes) surviving. Each individual plot was above success criteria based on planted stems alone with the exception of Plots 4 and 5. Portions of the Site with low stem densities are scheduled to be replanted in late 2013/early 2014 with 5000 bare root stems comprised of species from the original planting plan list. It is believed that over toping due to dense fescue throughout the site is the cause for lower stem counts. Site wide fescue treatment is scheduled for the spring of 2014. Additional vegetation data can be found in Appendix B.

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Table 2. Project Activity and Reporting History
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1.0 PROJECT BACKGROUND

1.1 Location and Setting

Located approximately 0.5 mile west of Randleman and three miles northwest of Asheboro, in northern Randolph County (Figure 1, Appendix A), the Site is situated within the Carolina Slate Belt ecoregion of the Piedmont physiographic province of North Carolina, and within the United States Geological Survey (USGS) HUC 03030003 (North Carolina Division of Water Quality [NCDWQ] Subbasin Number 03-06-08) of the Cape Fear River Basin. The Site is positioned near the southwest corner of the 14-digit USGS Cataloging Unit 03030003010070.

The Carolina Slate Belt ecoregion is characterized by dissected irregular plains, some hills, linear ridges, and isolated monadnocks; low to moderate gradient streams with mostly boulder and cobble substrates (Griffith 2002). Onsite elevations range from 750 to 708 feet at the Site outfall (National Geodetic Vertical Datum, [NGVD]) (Randleman, North Carolina USGS 7.5-minute topographic quadrangle). The Site watershed is characterized primarily by agriculture with forest land in riparian corridors and upper headwater depressions, and low-density residential development scattered along roadways. Impervious surfaces account for less than two percent of the watershed land surface. Site streams were historically impacted from channel straightening, clearing of native forest vegetation with continual maintenance, and hoof shear through livestock grazing. Historical land use for the Site was primarily livestock grazing and hay production.

Directions to the Site from the City of Asheboro, NC:

- Travel north on I-73 for approximately 7.9 miles
- Exit onto US 311 toward High Point, NC
- Turn left onto US 311 North/US 311 Extension
- Travel north on US 311 for approximately 2.5 miles
- Turn right onto Wall Brothers Road
- Travel approximately 0.5 mile to Site entrance gate located on the left side of the road.
- Latitude: 35.825437°N, Longitude: 79.850840°W

1.2 Project Goals / Objectives

Project goals include the following:

- Improving Water Quality
 - Removing nonpoint sources of pollution associated with agricultural production including a) removing livestock and b) ceasing the broadcast application of fertilizer, pesticides, and other agricultural materials into and adjacent to Site streams through treatment of runoff within the forested buffer.
 - Reducing sedimentation within onsite and downstream receiving waters by a) reducing bank erosion, vegetation maintenance, plowing, and hoof shear adjacent to Site streams and b) removing livestock from the Site.
- Enhancing Flood Attenuation
 - Promoting floodwater attenuation by increasing frictional resistance on floodwaters crossing Site floodplains.

- Restoring Wildlife Habitat
 - Improving aquatic habitat by enhancing stream bed shading and natural detritus input.
 - Providing a terrestrial wildlife corridor and refuge in an area extensively developed for agricultural production.
 - Restoring and reestablishing natural community structure, habitat diversity, and functional continuity.
 - Protecting the Site’s full potential of stream and riparian buffer functions and values in perpetuity.

Project goals will be accomplished by providing a minimum of 9.8 Riparian Buffer Mitigation Units, as calculated in accordance with the requirements stipulated in RFP #16-003567. The achievement of the following objectives will insure the success of providing said mitigation units.

Objective	Buffer Restoration Activity
Removing a pond impounding a reach of UT3 and UT4.	Pond removal occurred in April 2012 – see permanent photo point #4 on Figure 2 (Appendix B).
Removing a section of paved road at the upper reach of UT5.	Paved road removal occurred in April 2012 and planting of the area occurred in early 2013.
Removing invasive species along the upper reach of UT2.	Invasive species removal and monitoring will be ongoing throughout the monitoring period, with the first treatment in early 2013.
Installing shallow marsh wetland treatment areas on two ephemeral ditches entering the Site from Wall Brothers Road.	Shallow marsh wetland treatment areas were installed in April 2012 including log outfalls, planting with erosion control seed, and planting native forest vegetation.
Restoring approximately 9.8 acres of riparian buffer by planting with native forest vegetation.	Site revegetation occurred in March 2012, with supplemental planting of disturbed areas occurred in early 2013 (Appendix C).
Protecting the Site in perpetuity with a conservation easement.	The Site is protected by a conservation easement held by the State of North Carolina (SPO # 76-BD).

1.3 Project Structure, Restoration Type, and Approach

Project Structure

The Site includes 5 unnamed tributaries that drain to Randleman Lake and the Deep River (Figure 1, Appendix A). The lower reach of UT1 is depicted as a perennial stream on the USGS 7.5-minute topographic quadrangle while the upper reach of UT1 and the entirety of UT2 are depicted as intermittent streams [USGS Randleman, NC 7.5-minute topographic quadrangle (1981, 2010)]. UTs 3, 4, and 5 are not depicted on the USGS topographic quadrangle, but exhibited characteristics of ditched intermittent streams during field investigations. Geomorphology scores for these streams are generally low due to historical manipulation and disturbance.

Existing Stream Characteristics

Stream Reach	USGS Stream Order	¹ USGS Stream Classification	Field Stream Classification	NCDWQ Stream Identification Form Score
UT1	1-2	intermittent/perennial	Perennial	30.5
UT2	1	intermittent	Perennial	36.25
UT3	0-1	not shown/intermittent	Ephemeral / Intermittent	11/22
UT4	0	not shown	Ephemeral	11
UT5	0	not shown	Intermittent	22

¹USGS Stream Classification: UT3 is depicted only downstream of the pond on the USGS 7.5-minute topographic quadrangle.

Restoration Type and Approach

Site restoration activities include the cessation of agricultural practices; removal of an agricultural pond and abandoned road crossing; installation of marsh treatment areas; and revegetation with native, forest communities. These activities will ultimately result in the generation of 9.8 Riparian Buffer Mitigation Units.

Completed project activities, reporting history, completion dates, and project contacts are summarized in Tables 1-3 (Appendix A).

2.0 ANNUAL MONITORING

Monitoring of restoration efforts will be performed for a minimum of 5 years or until success criteria are fulfilled. Monitoring activities for the Site, including relevant structures, project features, specific project structures, and monitoring features are detailed in the monitoring plan view in Figure 2 (Appendix A).

2.1 Vegetation

Monitoring of planted vegetation will follow the *Carolina Vegetation Survey (CVS)-North Carolina Ecosystem Enhancement Program (EEP) Protocol for Recording Vegetation, Version 4.2* (Lee et al. 2008). The Site will be measured between June 1 and September 30 until the vegetation success criteria are achieved. A total of eight 10-meter by 10-meter vegetation plots have been installed within the 9.8 acres of restored riparian buffer (Figure 2, Appendix A). Vegetation will receive a visual evaluation on a periodic basis to ascertain the degree of overtopping of planted elements by nuisance species.

Invasive exotic species will be located and treated on a yearly basis, dependent upon species, by a NC Department of Agriculture & Consumer Services licensed pesticide applicator.

2.1.1 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. Additional success criteria are dependent upon the density and growth of “Characteristic Tree Species.” Characteristic Tree Species include planted species, species identified through visual inventory of an approved, relatively undisturbed, reference forest community, and species outlined in Schafale and Weakley (1990) for a Piedmont/Low Mountain Alluvial Forest. An average density of 320 stems per acre of Character Tree Species must be surviving after five monitoring years.

2.1.2 Vegetative Contingency Plan

If vegetation success criteria are not achieved based on average density calculations from combined plots over the entire restoration area, supplemental planting may be performed with tree species approved by regulatory agencies. Supplemental planting may be performed as needed until achievement of vegetation success criteria.

2.1.3 Vegetative Problem Areas

Earthwork associated with the Site Mitigation Plan (dam and road removal) was delayed; therefore, in an effort to meet the seasonal planting window Site planting occurred prior to the initiation of earthwork. The total area associated with earthwork equals 0.8 acre and it was deemed acceptable to proceed with planting prior to earthwork. Areas disturbed by earthwork were planted with 40 3-gallon Green ash (*Fraxinus pennsylvanica*) and 2100 bare root trees in February of 2013. In addition, portions of the Site with low stem densities are scheduled to be replanted with 5000 bare root plants in late 2013/early 2014. It is

believed that over toping due to dense fescue throughout the site is the cause for lower stem counts. Site wide fescue treatment is scheduled for the spring of 2014. Additional vegetation data can be found in Appendix B.

3.0 CONCLUSIONS

Vegetation sampling across the Site was above the required average density with 486 planted stems per acre surviving. Each individual plot was above success criteria based on planted stems alone with the exception of Plots 4 and 5.

Summary of Planted Vegetation Plot Results

Plot	Planted Stems/Acre Counting Towards Success Criteria				
	Year 1 (2012)	Year 2 (2013)	Year 3 (2014)	Year 4 (2015)	Year 5 (2016)
1	648	324			
2	567	567			
3	648	445			
4	486	243			
5*	--	202			
6*	--	526			
7*	--	1093			
8*	--	486			
Average of All Plots	587	486			

*Plots 5-8 were installed in March 2013 prior to Year 2 (2013) monitoring in response to agency comments during the review of baseline documentation/data.

4.0 REFERENCES

Griffith, G.E., J.M. Omernik, J.A. Comstock, M.P. Schafale, W.H. McNab, D.R. Lenat, T.F. MacPherson, J.B. Glover, and V.B. Shelbourne. 2002. Ecoregions of North Carolina and South Carolina. U.S. Geological Survey, Reston, Virginia.

Lee, Michael T., R.K. Peet, S.D. Roberts, and T.R. Wentworth. 2008. CVS-EEP Protocol for Recording Vegetation, Version 4.2. (online). Available: <http://cvs.bio.unc.edu/methods.htm>.

North Carolina Division of Water Quality (NCDWQ). 2010. Final North Carolina Water Quality Assessment and Impaired Waters List (2010 Integrated 305(b) and 303(d) Report) (online). Available: http://h2o.enr.state.nc.us/tmdl/documents/draft_2010_Cat_5.pdf [February 1, 2011]. 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, North Carolina Department of Environment, Health, and Natural Resources. Raleigh, North Carolina.

Appendix A: General Tables and Figures

Table 1. Site Restoration Structures and Objectives

Table 2. Project Activity and Reporting History

Table 3. Project Contacts

Table 4. Project Baseline Information & Attributes

Figure 1. Site Location

Figure 2. Monitoring Plan

Table 1. Site Restoration Structure and Objectives

Wall Riparian Buffer Restoration Site, Randolph County, EEP Contract #: 003985

Mitigation Credits				
Riparian Buffer				
Restoration			Restoration Equivalent	
9.8			--	
Projects Components				
Existing Acreage	Restoration/ Restoration Equivalent	Restoration Acreage	Mitigation Ratio	Comment
9.8	Restoration	9.8	1:1	Cessation of current land use practices, removing an agricultural pond and road crossing, removing invasive species, and planting with native forest vegetation.
Component Summation				
Restoration Level		Riparian Buffer (acreage)		
Restoration		9.8		
Totals		9.8		
Mitigation Units		9.8 Riparian BMUs		

Table 2: Project Activity and Reporting History

Wall Riparian Buffer Restoration Site, Randolph County, EEP Contract #: 003985

Activity or Report	Data Collection Complete	Completion or Delivery
CE Document	NA	February - 2012
Conservation Easement	NA	April - 2012
Mitigation Plan	NA	February - 2012
Construction	NA	March - 2012
Bare Root Planting	NA	March - 2012
Baseline Monitoring Document	April-2012	October 2012
Annual Monitoring Year 1 (2012)	September 2012	November 2012
Planting Disturbed Areas	NA	January/February 2013
Annual Monitoring Year 2 (2013)	July 2013	October 2013
Annual Monitoring Year 3 (2014)		
Annual Monitoring Year 4 (2015)		
Annual Monitoring Year 5 (2016)		

Table 3: Project Contacts Table

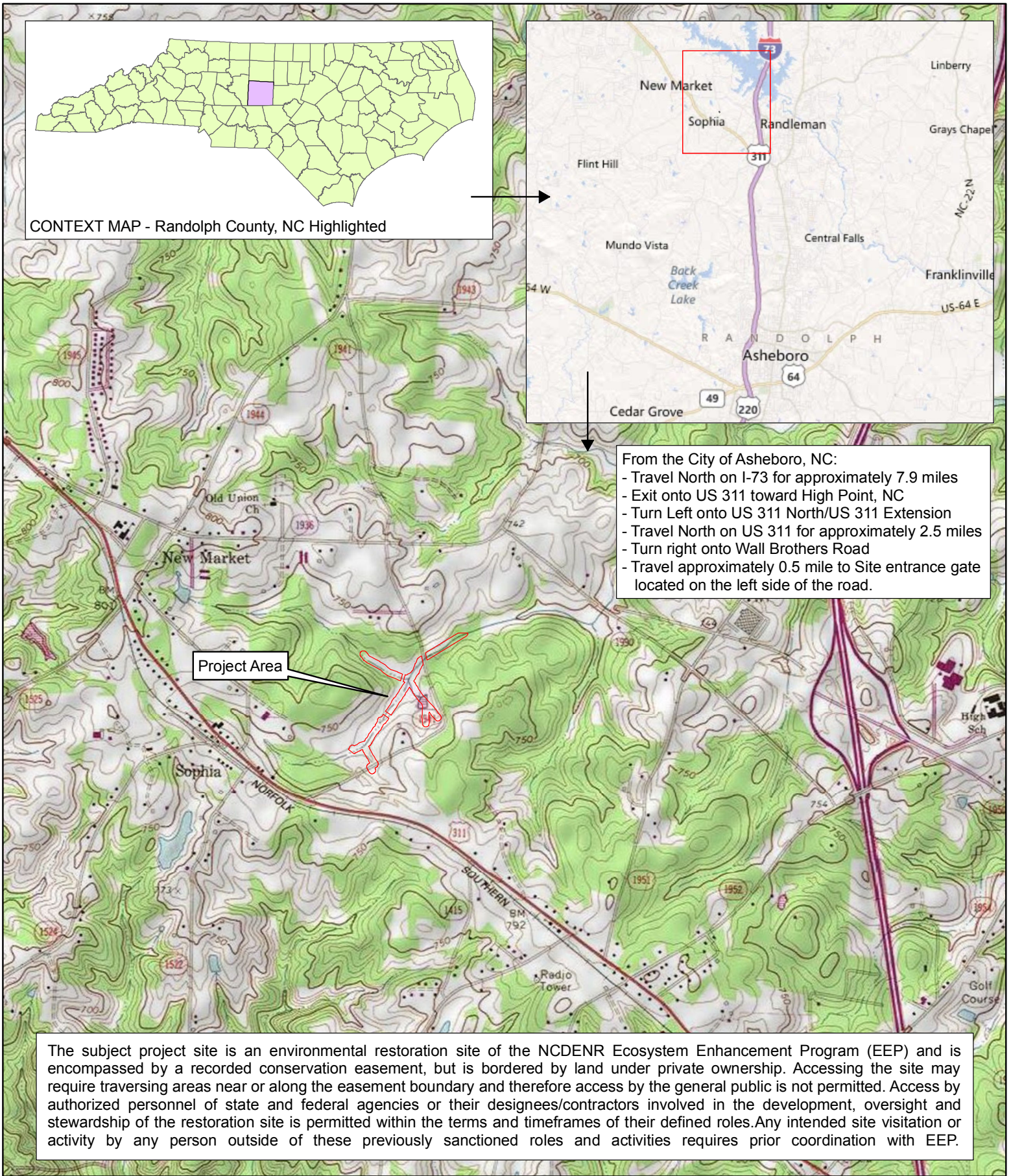
Wall Riparian Buffer Restoration Site, Randolph County, EEP Contract #: 003985

	Firm	POC & Address
Full Delivery Provider	Restoration Systems, LLC	1101 Haynes Street, Suite 211 Raleigh, North Carolina 27604 George Howard and John Preyer 919-755-9490
Designer:	Axiom Environmental, Inc.	Grant Lewis; 919.215.1693 218 Snow Ave. Raleigh, NC 27603
Construction Contractor:	Axiom Green Build.	Grant Lewis; 919.215.1693 218 Snow Ave. Raleigh, NC 27603
Planting Contractor:	Carolina Silvics	Dwight McKinney 252.482.8491 908 Indian Trail Road Edenton, NC 27932
Seeding Contractor:	Axiom Green Build	Grant Lewis; 919.215.1693 218 Snow Ave. Raleigh, NC 27603
Nursery Stock Suppliers:	ArborGen	1.888.888.7158
Baseline Data Collection	Restoration Systems, LLC	Ray Holz; 919.604.9314 1101 Haynes St. Raleigh, NC 27604
Annual Monitoring:	Axiom Environmental, Inc	Grant Lewis; 919.215.1693 218 Snow Ave. Raleigh, NC 27603

Table 4: Project Baseline Information & Attributes Table

Wall Riparian Buffer Restoration Site, Randolph County, EEP Contract #: 003985

Project Information			
Project Name		Wall	
County		Randolph	
Project Area (acres)		12.6	
Project Coordinates (latitude and longitude)		35.4927319589, -79.5056974787 (NAD 83/WGS 84)	
Project Watershed Summary Information			
Physiographic Province		Northern Inner Piedmont section of Carolina Slate Belt	
River Basin		Cape Fear	
USGS Hydrologic Unit 8-digit	03030003	USGS Hydrologic Unit 14-digit	03030003010070
DWQ Sub-basin		03-06-08	
Project Drainage Area, Total Outfall (acres)		+/- 448	
Project Drainage Area Percentage of Impervious Area		< 5%	
CGIA Land Use Classification		Cropland and Pasture	
Reach Summary Information			
Parameters	UT 1 & UT 2	UT 3 & UT 4	UT 5
Length of reach (linear feet)	2,030	850	400
Valley classification	VIII	VIII	VIII
Drainage area (acres)	+/- 448		
NCDWQ stream identification score	UT 1 – 30.5 UT 2 – 35.25	UT 3 & UT 4 (above pond) – 11	UT 5 – 22
NCDWQ Water Quality Classification	Portion of Deep River where unnamed tributaries enter ((Randleman Lake): WS-IV; CA		
Morphological description (stream type)	Perennial	Intermittent / Ephemeral	Intermittent
Drainage class	Rural	Rural	Rural
303d listed?	No	No	No
Upstream of a 303d listed	Yes	Yes	Yes
Dominant Soil Series	Georgeville silty clay loam	Badin-Tarrus complex	Georgeville silty clay loam
Soil Hydric status	Non-Hydric	Non-Hydric	Non-Hydric
Slope	8-15 %	2-8 %	8-15 %
Native vegetation community	Piedmont/Low Mountain Alluvial Forest (Schafale and Weakley 1990)		
Percent exotic invasive vegetation	< 5%		
Regulatory Considerations			
Regulation	Applicable?	Resolved?	Supporting Documentation
Waters of the United States – Section 404	No		
Waters of the United States – Section 401	No		
Endangered Species Act	No		
Historic Preservation Act	No		
Coastal Zone Management Act [CZMA/Coastal Area Management Act (CAMA)]	No		
FEMA Floodplain Compliance	No		
Essential Fisheries Habitat	No		
Sediment & Erosion Control Plan (S&EC)	No		



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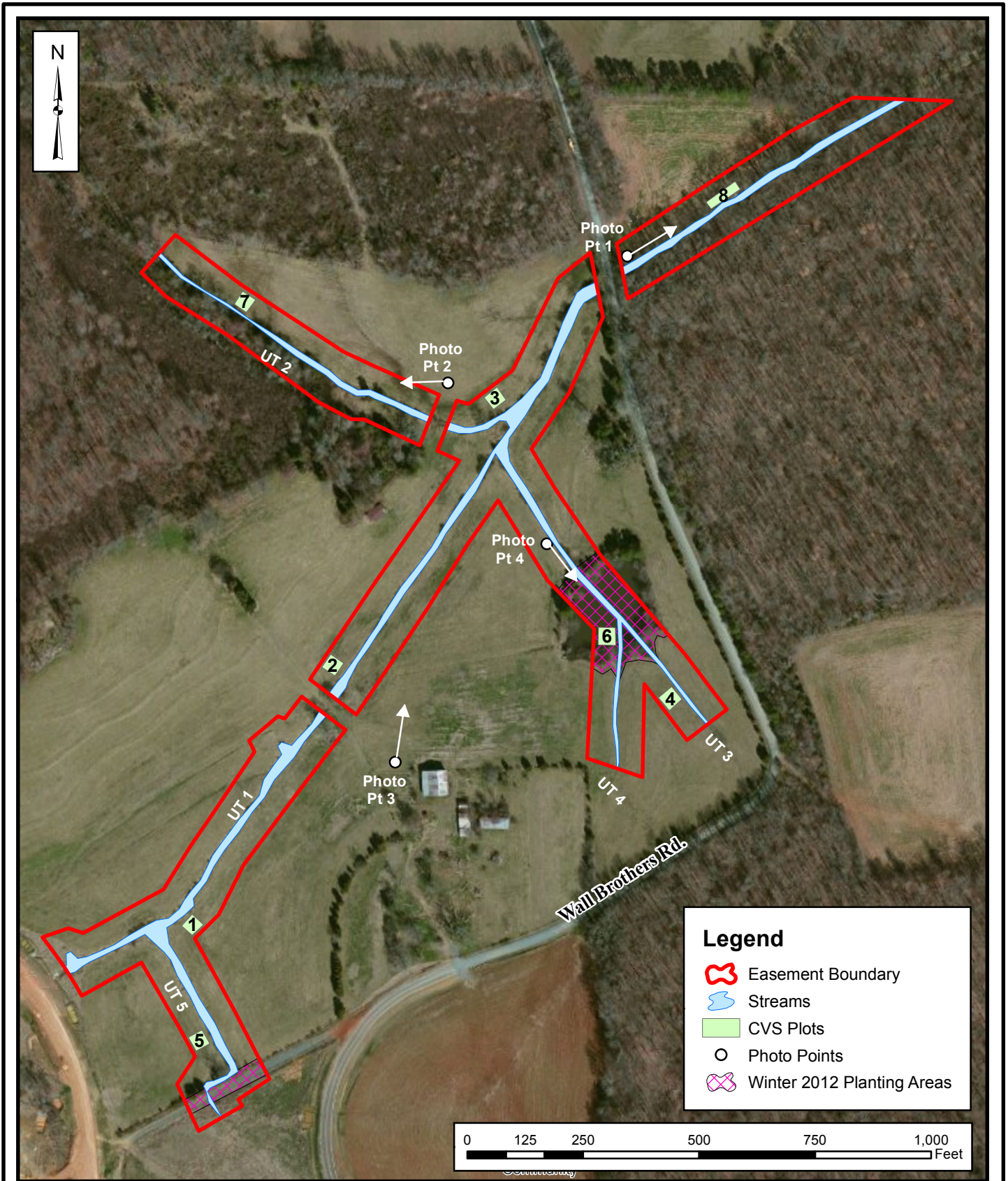
SCALE: 1 inch = 2,000 feet
 DATE: June - 2012
 PROJECT: Wall

**FIGURE 1:
 SITE LOCATION MAP**

Figure indicates where the Site's physical location is along with directions to the Site

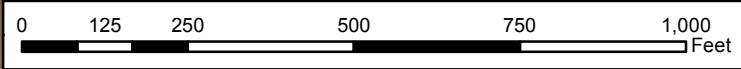
Wall Riparian Buffer Mitigation Site
 RFP # 16-003571 Contract # 003985
 Randolph County, North Carolina

Aerial Imagery USGS Topographical Map
 COORDINATE SYSTEM: NAD 1983 NC FEET



Legend

- Easement Boundary
- Streams
- CVS Plots
- Photo Points
- Winter 2012 Planting Areas



Axiom Environmental
218 Snow Ave
Raleigh, NC 27603

**CURRENT CONDITIONS PLAN VIEW
WALL RIPARIAN BUFFER RESTORATION SITE
Randolph County, North Carolina**

Dwn. by:
WGL/KRJ
Date:
Oct 2013
Project:
10-001

FIGURE
2

APPENDIX B: VEGETATION DATA

Table 5 - 2013 (Year 2) Planted Stem and Natural Recruit Totals by Plot
2013 (Year 2) Vegetation Monitoring Photographs
2013 (Year 2) Photo Point Photographs

Table 5. Total Planted and Natural Recruits Stems by Plot and Species
CVS Project Code Wall. Project Name: Wall Riparian Buffer Mitigation Site

			Current Plot Data (MY2 2013)																							
Scientific Name	Common Name	Species Type	Wall-01-0005			Wall-01-0006			Wall-01-0007			Wall-01-0008			Wall-RS-0001			Wall-RS-0002			Wall-RS-0003			Wall-RS-0004		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer floridanum	Southern Sugar Maple,	Tree							1	1	1	1	1	1												
Acer rubrum	red maple	Tree																								
Asimina triloba	pawpaw	Tree													1	1	1									
Carpinus caroliniana	American hornbeam	Tree	1	1	1																1	1	1			
Carya ovata	shagbark hickory	Tree										9	9	9												
Cephalanthus occidentalis	common buttonbush	Shrub							8	8	8										1	1	1			
Cornus amomum	silky dogwood	Shrub	2	2	2																					
Cornus florida	flowering dogwood	Tree													1	1	1	6	6	6				2	2	2
Fraxinus pennsylvanica	green ash	Tree				5	5	5	11	11	11				3	3	3	1	1	1	1	1	1			
Liquidambar styraciflua	sweetgum	Tree																								
Liriodendron tulipifera	tuliptree	Tree										1	1	1	1	1	1				5	5	5	1	1	1
Morus rubra	red mulberry	Tree										1	1	1												
Quercus	oak	Tree	2	2	2	3	3	3																		
Quercus michauxii	swamp chestnut oak	Tree				4	4	4	3	3	3							4	4	4	1	1	1	3	3	3
Quercus pagoda	cherrybark oak	Tree							2	2	2				1	1	1	3	3	3	2	2	2			
Salix nigra	black willow	Tree																								
Ulmus alata	winged elm	Tree							1	1	1															
Ulmus americana	American elm	Tree				1	1	1	1	1	1				1	1	1									
Unknown		Shrub or Tree																								
Stem count			5	5	5	13	13	22	27	27	42	12	12	19	8	8	8	14	14	14	11	11	11	6	6	6
size (ares)			1			1			1			1			1			1			1			1		
size (ACRES)			0.02			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
Species count			3	3	3	4	4	5	7	7	9	4	4	5	6	6	6	4	4	4	6	6	6	3	3	3
Stems per ACRE			202.3	202.3	202.3	526.1	526.1	890.3	1093	1093	1700	485.6	485.6	768.9	323.7	323.7	323.7	566.6	566.6	566.6	445.2	445.2	445.2	242.8	242.8	242.8

Color for Density

- Exceeds requirements by 10%
- Exceeds requirements, but by less than 10%
- Fails to meet requirements, by less than 10%
- Fails to meet requirements by more than 10%

- PnoLS = Planted excluding livestakes
- P-all = Planting including livestakes
- T = All planted and natural recruits including livestakes
- T includes natural recruits

Table 5. Total Planted and Natural Recruits Stems by Plot and Species (continued)
CVS Project Code Wall. Project Name: Wall Riparian Buffer Mitigation Site

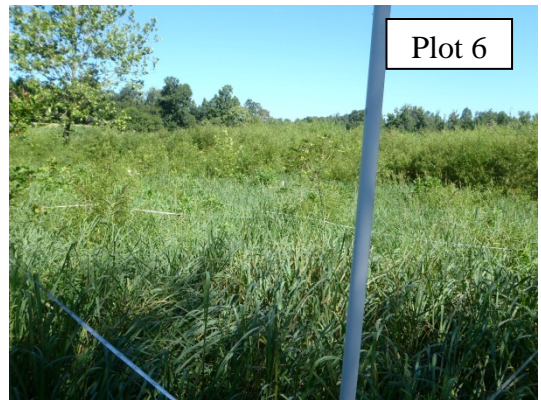
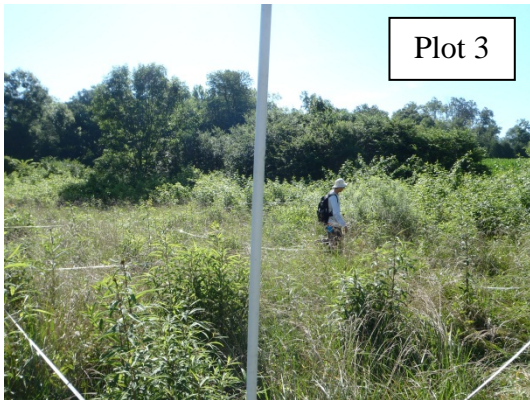
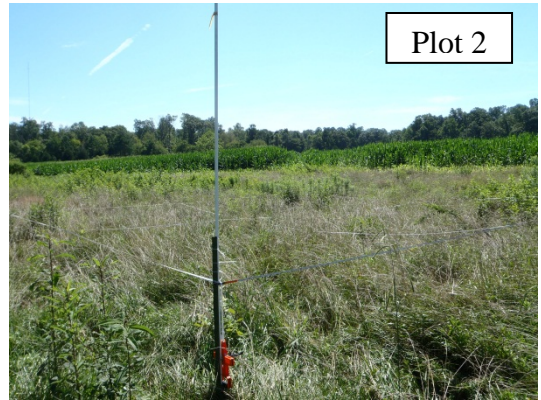
Scientific Name	Common Name	Species Type	Annual Means								
			MY2 (2013)			MY1 (2012)			MY0 (2012)		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer floridanum	Southern Sugar Maple,	Tree	2	2	2			1	1	1	1
Acer rubrum	red maple	Tree			7						
Asimina triloba	pawpaw	Tree	1	1	1	1	1	1	1	1	1
Carpinus caroliniana	American hornbeam	Tree	2	2	2	4	4	6	7	7	7
Carya ovata	shagbark hickory	Tree	9	9	9						
Cephalanthus occidentalis	common buttonbush	Shrub	9	9	9						
Cornus amomum	silky dogwood	Shrub	2	2	2						
Cornus florida	flowering dogwood	Tree	9	9	9	14	14	20	24	24	24
Fraxinus pennsylvanica	green ash	Tree	21	21	21	2	2	2	3	3	3
Liquidambar styraciflua	sweetgum	Tree			15						
Liriodendron tulipifera	tuliptree	Tree	8	8	8	10	10	10	10	10	10
Morus rubra	red mulberry	Tree	1	1	1						
Quercus	oak	Tree	5	5	5						
Quercus michauxii	swamp chestnut oak	Tree	15	15	15	8	8	8	8	8	8
Quercus pagoda	cherrybark oak	Tree	8	8	8	6	6	7	8	8	8
Salix nigra	black willow	Tree			9						
Ulmus alata	winged elm	Tree	1	1	1						
Ulmus americana	American elm	Tree	3	3	3	2	2	3	4	4	4
Unknown		Shrub or Tree									
Stem count			96	96	127	47	47	58	66	66	66
size (ares)			8			4			4		
size (ACRES)			0.20			0.10			0.10		
Species count			15	15	18	8	8	9	9	9	9
Stems per ACRE			485.6	485.6	642.4	475.5	475.5	586.8	667.7	667.7	667.7

Color for Density

- Exceeds requirements by 10%
- Exceeds requirements, but by less than 10%
- Fails to meet requirements, by less than 10%
- Fails to meet requirements by more than 10%

- PnoLS = Planted excluding livestakes
- P-all = Planting including livestakes
- T = All planted and natural recruits including livestakes
- T includes natural recruits

Wall Buffer
2013 (Year 2) Vegetation Monitoring Photographs
Taken July 2013



**Wall Buffer
2013 (Year 2) Photo Point Photographs
Taken September 2013**



APPENDIX C: AGENCY CORRESPONDENCE

May 15, 2012

Ms. Kristie Corson
DENR-Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, North Carolina
27699-1652

Subject: Task IV Construction, Contact #: 003997

Dear Ms. Corson:

I wanted to provide you with an update regarding the status of construction and planting at the Wall Riparian Buffer Mitigation Project in Randolph County. Due to the late closing date on the property (April 11th), we opted to plant the site in March and then due the construction following closing. On March 22nd, Carolina Silvics planted the entire site except for two small areas totaling 0.8 acres. During the week of April 23rd, Axiom Green Build worked in these two areas to remove a) short section of gravel road along with a concrete culvert and b) a small earthen dam. Attached is a figure showing both the area planted and the area of construction.

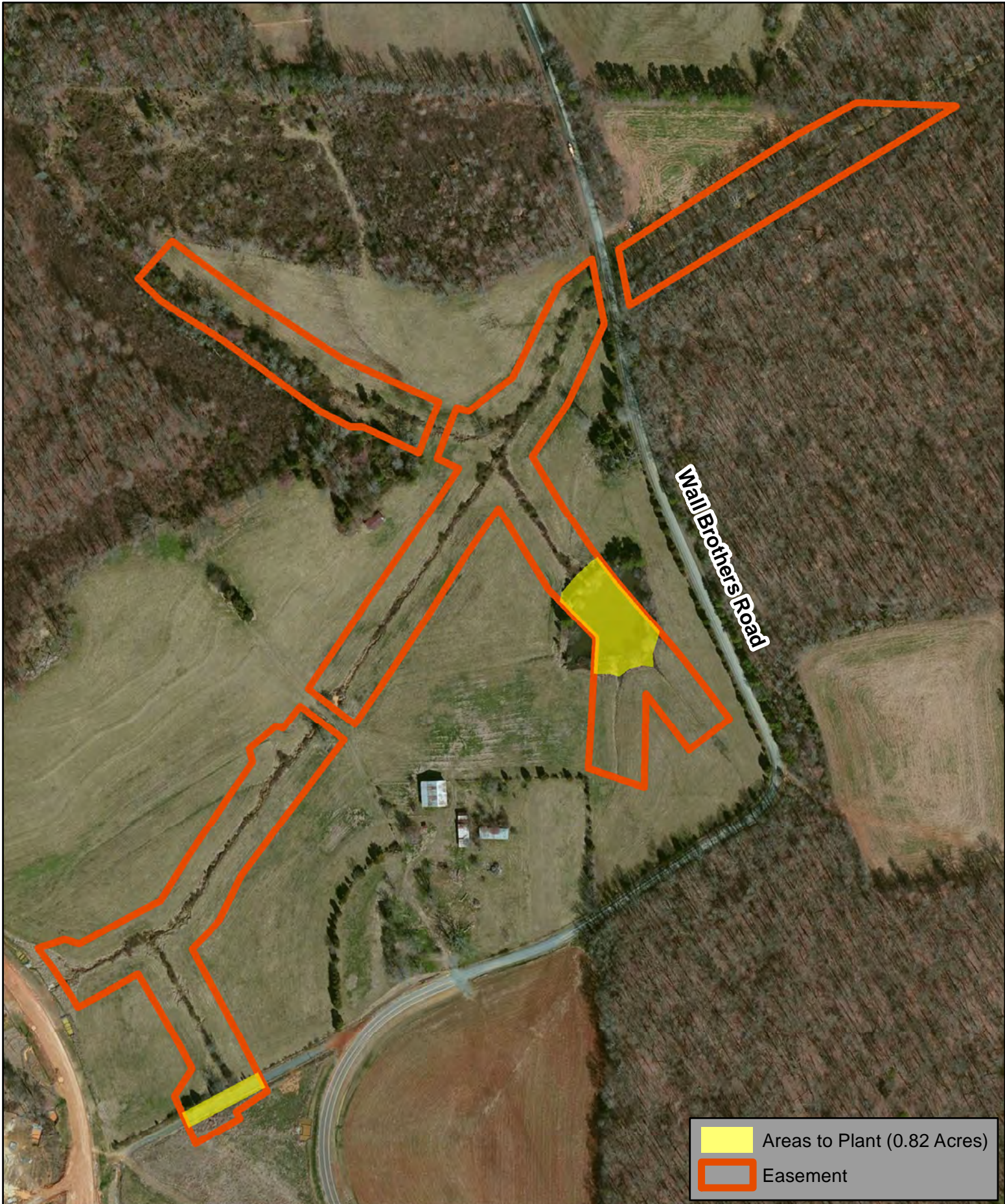
As a result of doing the construction after the planting season had passed, the two areas totaling 0.8 acres still need to be planted. I had hoped to do this immediately following construction but due to the unseasonably warm weather it simply would not be successful. If agreeable to you, I would like to use this year's growing season for the first year of monitoring with the stipulation that during the winter of 2012/2013 we will plant the 0.8 acre area with 1-gallon containerized trees (as opposed to bare root seedlings).



Removal of the road and dam were successful and we are waiting for the bottom of the impoundment to dry out a bit more before
Please feel free to contact at me 919.334.9112 if you have any questions.

Sincerely,

Travis Hamrick, Project Manager

Attachments (3): Invoice Task IV
Figure- Planting Needs
Project History



	Areas to Plant (0.82 Acres)
	Easement




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

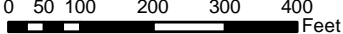
Figure 1:
 Construction Status

Wall Buffer Restoration Project
 Randolph County, NC

1:3,188



0 50 100 200 300 400 Feet



Raymond Holz

From: Raymond Holz
Sent: Monday, October 22, 2012 6:13 PM
To: Kristie.Corson@ncdenr.gov
Cc: Travis Hamrick (travis@restorationsystems.com)
Subject: Wall Riparian Buffer Mitigation Site: Additional Vegetation Monitoring Plots
Attachments: Additional Monitoring Plots at Wall.pdf

Afternoon Kristie,

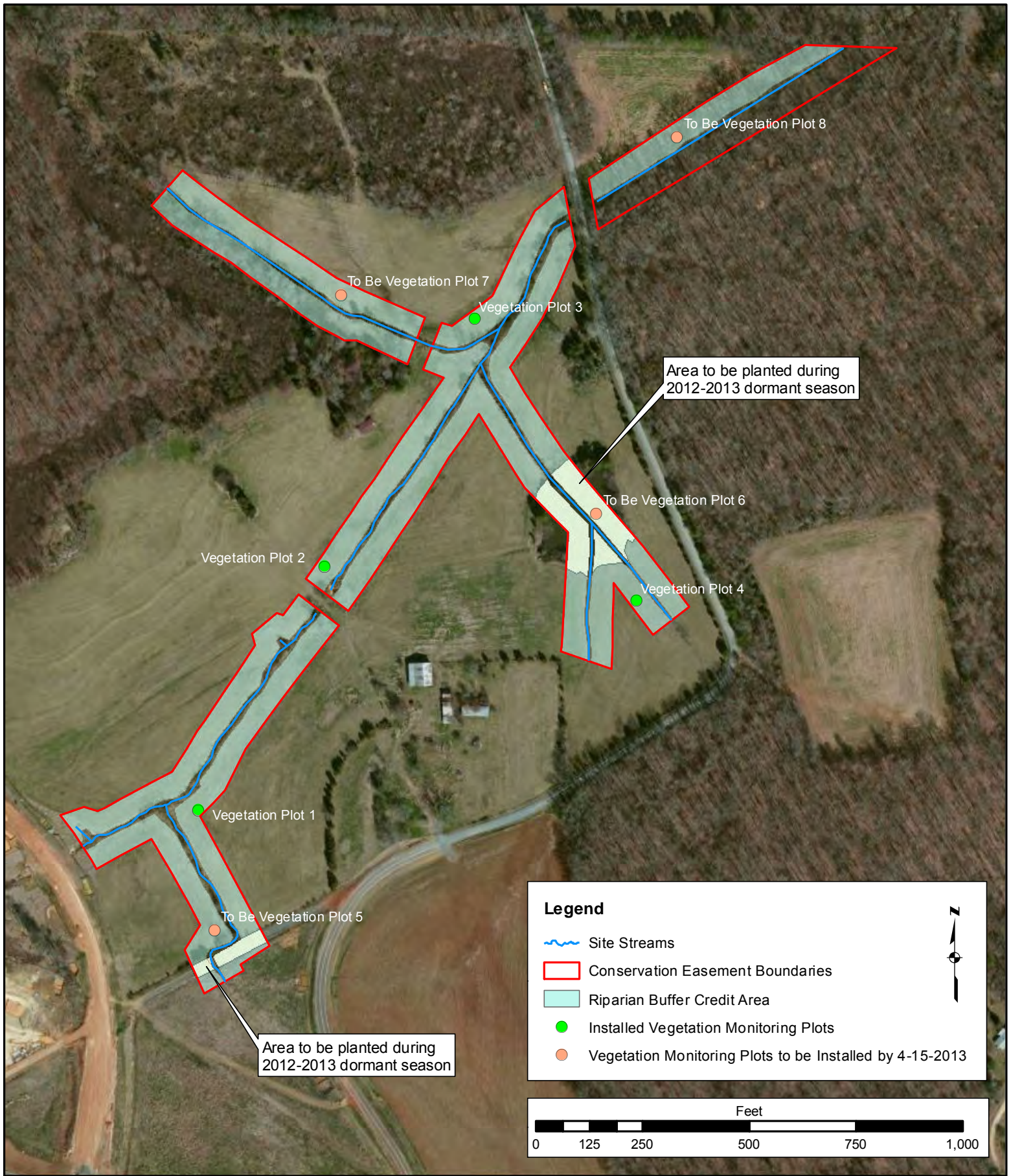
After receiving and reviewing the comments you provided regarding the Wall Riparian Buffer Mitigation Site's Draft Baseline Monitoring Document and As Built Baseline Report dated October 16, 2012 Restoration Systems (RS) is prepared to install an additional four (4) vegetation monitoring plots as requested. CVS protocol stipulates that baseline vegetation data be collected within 30 days of the project being planted. Additionally, 60 day must pass between vegetation baseline data collection and EEP as-built review. With this in mind and with an EEP on-site as built review already conducted (September 20, 2012), RS recommends the additional four monitoring plots be installed no later than April 1st of 2013.

Restoration Systems is recommending this timeline because an additional .80 acres of the Site must be planted during the 2012 – 2013 dormant season. It is planned that one of the four additional monitoring plots will be located in the soon to be planted area. Baseline vegetation data will be conducted simultaneously with the installation of the additional plots and will be included within the 2013, year 2, annual monitoring report. RS understands the addition of these monitoring plots will not prolong the vegetation monitoring of the Site, so long as all current and additional monitoring plots achieve the success criteria outlined in the Mitigation Plan. Installation of the additional monitoring plots will follow CVS protocol and will measure 10 by 10 meters. Please see the attached figure depicting the approximate location of these additional monitoring plots, as well as the areas to be planted during the 2012 – 2013 dormant season.

Thank you for your time, please contact me at 919.604.9314 if you have any questions.

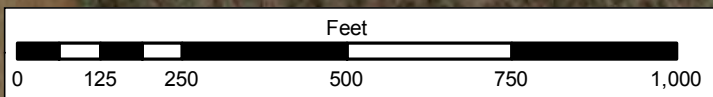
Sincerely,

Raymond Holz



Legend

- Site Streams
- Conservation Easement Boundaries
- Riparian Buffer Credit Area
- Installed Vegetation Monitoring Plots
- Vegetation Monitoring Plots to be Installed by 4-15-2013



RESTORATION SYSTEMS, LLC
 1101 HAYNES ST, SUITE 211
 RALEIGH, NC 27604
 PHONE : 919.755.9490
 FAX : 919.755.9492

This map and all data contained within are supplied as is with no warranty. Restoration Systems, LLC expressly disclaims responsibility for damages or liability from any claims that may arise out of the use or misuse from any claims that may arise out of the use or misuse of this map. It is the sole responsibility of the user to determine if the data on this map is compatible with the user's needs. This map was not created as survey data, nor should it be used as such. It is the user's responsibility to obtain proper survey data, prepared by a licensed surveyor, where required by law.

SCALE: 1 inch = 292 feet
 DATE: October - 2012
 PROJECT: Wall

Location of Additional Vegetation Monitoring Plots

Figure indicates where the physical location of all monitoring devices.

Wall Riparian Buffer Mitigation Site
 RFP # 16-003571 Contract # 003985
 Randolph County, North Carolina

Aerial Imagery USGS Topographical Map
 COORDINATE SYSTEM: NAD 1983 NC FEET