# ANNUAL MONITORING REPORT YEAR 2 (2011) FOX RUN RIPARIAN BUFFER MITIGATION SITE 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:** 

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

And

Axiom Environmental, Inc. 218 Snow Avenue Raleigh, North Carolina 27603



October 2011



#### **EXECUTIVE SUMMARY**

Restoration Systems, LLC has completed riparian buffer restoration at the Fox Run Riparian Buffer Mitigation Site (hereafter referred to as the "Site") through the North Carolina Ecosystem Enhancement Program (NCEEP) Full Delivery Process (RFP 16-001383) to provide 43.72 Riparian Buffer Mitigation Units. The Site is located approximately 2.5 miles southeast of Farmville in western Pitt County. The Site is located in United States Geological Survey Hydrologic Unit and Targeted Local Watershed 03020203070030 (North Carolina Division of Water Quality Subbasin 03-04-07) of the Neuse River Basin. Site streams drain to Little Contentnea Creek (Stream Index 27-86-26), which is included on the draft 2008 and 2010 303(d) lists for impaired biological integrity and low dissolved oxygen resulting from agricultural crop production.

Prior to construction, the Site was characterized by ditched agricultural land used for row crop production. Land use practices including the maintenance and removal of vegetation, regular plowing, and use of agricultural chemicals had resulted in degraded water quality.

The goals and objectives of this project focused on improving local water quality, enhancing flood attenuation, and restoring aquatic and riparian habitat. These goals were accomplished by the following.

- 1. Removing nonpoint sources of pollution associated with agriculture by a) ceasing the application of agricultural herbicides, pesticides, fertilizers, and other agricultural materials into and adjacent to Site ditches and open waterways and b) providing a vegetated buffer adjacent to ditches and waterways to treat surface runoff that may be laden with sediment and/or agricultural pollutants.
- 2. Reducing sedimentation/siltation within on-Site and downstream receiving waters by a) increasing retention time for surface waters entering and leaving the Site, b) reducing erosion associated with vegetation maintenance and agricultural plowing adjacent to Site ditches, and c) planting a forested vegetated buffer adjacent to Site ditches and waterways.
- 3. Promoting floodwater attenuation by ripping compacted soils and revegetating the Site to increase frictional resistance on floodwaters crossing the Site.
- 4. Providing terrestrial wildlife habitat including a forested riparian corridor within an area that was previously cleared and highly dissected by agricultural land use.

This project was constructed in late winter/early spring 2010. Planting of the entire 46.46-acre Site resulted in 43.72 Riparian Buffer Mitigation Units. As a whole, densities of vegetation plots across the Site were above the required 320 stems per acre with an average of 761 planted hardwood stems per acre in the Second Monitoring Year (2011). In addition, each individual plot met success criteria based on planted stems alone.

#### **TABLE OF CONTENTS**

EXEC	UTIVE SUMMARY	.i
1.0	INTRODUCTION	1
1.1	Location and Setting	1
1.2	Project Goals and Objectives	1
1.3	Project Structure, Restoration Type, and Approach	
2.0	MONITORING PLAN	2
2.1	Vegetation Success Criteria	2
2.2	Maintenance and Contingency	2
2.3	Vegetation Sampling Results and Comparison to Success Criteria	2
3.0	CONCLUSIONS	2
Sun	mary of Planted Stem Vegetation Plot Results	3
4.0	REFERENCES	4

#### APPENDICES

Appendix A. Figures

Figure 1. Site Location

Figure 2. Monitoring Plan View

Appendix B. General Tables

 Table 1. Site Restoration Structures and Objectives

 Table 2. Project Activity and Reporting History

Table 3. Project Contacts Table

Table 4. Project Attributes Table

Appendix C. Vegetation Data

Table 5. Planted Woody Species

Vegetation Survey Data Tables

Vegetation Monitoring Plot Photographs

## **1.0 INTRODUCTION**

## 1.1 Location and Setting

Restoration Systems, LLC has completed riparian buffer restoration at the Fox Run Riparian Buffer Mitigation Site (hereafter referred to as the "Site") through the North Carolina Ecosystem Enhancement Program (NCEEP) Full Delivery Process (RFP 16-001383) to provide 43.72 Riparian Buffer Mitigation Units. The Site is located approximately 2.5 miles southeast of Farmville in western Pitt County (Figure 1, Appendix A). The Site is located in United States Geological Survey Hydrologic Unit and Targeted Local Watershed 03020203070030 (North Carolina Division of Water Quality Subbasin 03-04-07) of the Neuse River Basin (USGS 1974).

Directions to the Site from Farmville, North Carolina:

- Take Maye-Turnage Road east
- > After passing Chinquapin Road the Site is ~ 2 miles ahead on left
- Site coordinates:
  - Latitude 35.5702°N, Longitude 77.54272°W (NAD83/WGS84)

## 1.2 **Project Goals and Objectives**

The goals and objectives of this project focused on improving local water quality, enhancing flood attenuation, and restoring aquatic and riparian habitat. These goals were accomplished by the following.

- 1. Removing nonpoint sources of pollution associated with agriculture by a) ceasing the application of agricultural herbicides, pesticides, fertilizers, and other agricultural materials into and adjacent to Site ditches and open waterways and b) providing a vegetated buffer adjacent to ditches and waterways to treat surface runoff that may be laden with sediment and/or agricultural pollutants.
- 2. Reducing sedimentation/siltation within on-Site and downstream receiving waters by a) increasing retention time for surface waters entering and leaving the Site, b) reducing erosion associated with vegetation maintenance and agricultural plowing adjacent to Site ditches, and c) planting a forested vegetated buffer adjacent to Site ditches and waterways.
- 3. Promoting floodwater attenuation by ripping compacted soils and revegetating the Site to increase frictional resistance on floodwaters crossing the Site.
- 4. Providing terrestrial wildlife habitat including a forested riparian corridor within an area that was previously cleared and highly dissected by agricultural land use.

#### **1.3 Project Structure, Restoration Type, and Approach**

Prior to construction, the Site was characterized by ditched agricultural land used for row crop production. Land use practices including the maintenance and removal of vegetation, regular plowing, and use of agricultural chemicals had resulted in degraded water quality.

As constructed, Site activities restored historic riparian buffer functions by planting the entire 46.46-acre Site with native riparian vegetation. This resulted in 43.72 Riparian Buffer Mitigation Units (Table 1, Appendix B and Figure 2, Appendix A). Approximately 2.32 acres of the Site is surface water associated with Site ditches and 0.42 acre of the Site occurs outside of the 200-foot buffer area or within areas of nondiffuse flow. The target natural community consisted of Coastal Plain Bottomland Hardwood Forest (Schafale and Weakley 1990). Completed project activities, reporting history, completion dates, project contacts, and background information are summarized in Tables 2-4 (Appendix B). Table 5 (Appendix C) outlines woody species planted within the Site.

# 2.0 MONITORING PLAN

Monitoring of Site restoration efforts will be performed for vegetation components of the Site for five years or until success criteria are fulfilled. After planting was completed, an initial evaluation was performed to verify planting methods were successful and to determine initial species composition and density. Twenty-five sample vegetation plots (10-meter by 10-meter) were installed within the Site as per guidelines established in *CVS-EEP Protocol for Recording Vegetation, Version 4.0* (Lee et al. 2006). In each sample plot, vegetation parameters to be monitored include species composition and species density. Visual observations of the percent cover of shrub and herbaceous species will also be documented by photograph.

#### 2.1 Vegetation Success Criteria

An average density of 320 hardwood stems per acre must be surviving after five monitoring years in accordance with North Carolina Division of Water Quality Administrative Code 15A NCAC 02B.0242 (*Neuse River Basin, Mitigation Program for Protection and Maintenance of Existing Riparian Buffers*) (NCDWQ 2007).

#### 2.2 Maintenance and Contingency

In the event that success criteria are not fulfilled, a mechanism for contingency will be implemented. 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 will be performed as needed until achievement of vegetation success criteria.

## 2.3 Vegetation Sampling Results and Comparison to Success Criteria

Quantitative sampling of vegetation was conducted in June 2011. Results are provided in Appendix C. Vegetation success criteria for year 2 (320 hardwood stems per acre) were exceeded for the 2011 annual monitoring year with an average density of 761 planted hardwood stems per acre across the Site. In addition, each individual plot met success criteria based on planted stems alone.

#### 3.0 CONCLUSIONS

As a whole, the densities of vegetation plots across the Site were above the required 320 stems per acre with an average of 761 planted hardwood stems per acre in the Second Monitoring Year (2011). In addition, each individual plot met success criteria based on planted stems alone. The following table summarized planted stem data collected throughout the monitoring period.

	Planted Stems/Acre							
Plot	Year 1	Year 2	Year 3	Year 4	Year 5			
	(2010)	(2011)	(2012)	(2013)	(2014)			
1	688	688						
2	769	729						
3	809	729						
4	688	810						
5	850	810						
6	607	729						
7	931	850						
8	688	810						
9	728	769						
10	769	607						
11	971	931						
12	688	648						
13	769	810						
14	769	769						
15	728	769						
16	688	810						
17	567	607						
18	567	607						
19	688	769						
20	607	648						
21	1133	1053						
22	728	729						
23	809	769						
24	728	648						
25	931	931						
Average Plots 1-25	756	761						

# Summary of Planted Hardwood Stem Vegetation Plot Results

#### 4.0 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). 2007. Redbook, Surface Waters and Wetlands Standards. North Carolina Department of Environment and Natural Resources, Division of Water Quality. Raleigh, North Carolina.
- North Carolina Division of Water Quality (NCDWQ). 2008a. Draft North Carolina Water Quality Assessment and Impaired Waters List (2008 Integrated 305(b) and 303(d) Report) (online). Available: http://h2o.enr.state.nc.us/tmdl/documents/B.Draft2008303dList.pdf [November 10, 2008]. North Carolina Department of Environment and Natural Resources, Raleigh, North Carolina.
- 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, Division of Water Quality. Raleigh, North Carolina.
- North Carolina Division of Water Quality (NCDWQ). 2010. Draft North Carolina Water Quality Assessment and Impaired Waters List (2010 Integrated 305(b) and 303(d) Report) (online). Available: http://portal.ncdenr.org/c/document\_library/get\_file? uuid=33a71505-6cdf-4497-b090aadf79b1f02c&groupId=38364 [August 23, 2010]. 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.

United States Geological Survey (USGS). 1974. Hydrologic Unit Map - 1974. State of North Carolina.

Appendix A. Figures

Figure 1. Site Location Figure 2. Monitoring Plan View





Appendix B. General Tables

Table 1. Site Restoration Structures and ObjectivesTable 2. Project Activity and Reporting HistoryTable 3. Project Contacts TableTable 4. Project Attributes Table

# Table 1. Site Restoration Structures and Objectives

Component Summation					
Restoration Level	Riparian buffer mitigation was completed by planting the entire 46.46-acre				
Riparian Buffer Restoration	Site with native forest vegetation; credit was received for 43.72 acres of the				
43.72 Buffer Mitigation Units	Site.				

# Table 2. Project Activity and Reporting History

	Data Collection	Completion
Activity or Report	Complete	or Delivery
Final Restoration Plan		November 2010
Site Planting		Late winter/early spring 2010
Asbuilt Mitigation Plan	April 2010	November 2010
Year 1 Monitoring	September 2010	November 2010
Year 2 Monitoring	June 2011	June 2011

#### Table 3. Project Contacts Table

Designer	Restoration Systems, LLC
0	1101 Haynes Street, Suite 211
	Raleigh, North Carolina 27604
	(919) 755-9490
Planting Contractor	Carolina Silvics
	908 Indian Trail Road
	Edenton, North Carolina 27932
	Dwight McKinney (252) 482-8491
Monitoring Performer	Axiom Environmental, Inc.
	218 Snow Avenue
	Raleigh, North Carolina 27603
	Grant Lewis (919) 215-1693

## Table 4. Project Attribute Table

Project County	Pitt County, North Carolina
Physiographic Region	Coastal Plain
Ecoregion	Southeastern Plains
Project River Basin	Neuse
USGS 14-digit HUC	03020203070030
NCDWQ Subbasin	03-04-07
Within EEP Watershed Plan Extent?	Yes-Targeted Local Watershed
WRC Class	Warm
% of project easement fenced	0 %
Beaver activity observed during design phase	No

# Appendix C. Vegetation Data

Table 5. Planted Woody SpeciesVegetation Survey Data TablesVegetation Monitoring Plot Photographs

Table 5. Planted Woody Vegetation

Species		Quantity
American elm (Ulmus americana)		7500
Black gum (Nyssa sylvatica)		2500
Elderberry (Sambucus canadensis)		2500
Loblolly pine (Pinus taeda)		7500
Northern red oak (Quercus rubra)		5000
River birch (Betula nigra)		2500
Sugarberry (Celtis laevigata)		2500
Swamp chestnut oak (Quercus michauxii)		7500
Sycamore (Platanus occidentalis)		3200
Willow oak (Quercus phellos)		7500
	TOTAL	50,000

#### **CVS Database Output**

# Living planted stems, excluding live stakes, per acre: Negative (red) numbers indicate the project failed to reach requirements in a particular year.

Project Code	Project Name	<b>River Basin</b>	Year 1
Fox Run	Fox Run	Neuse	785.09

Total stems, including planted stems of all kinds (including live stakes) and natural/volunteer stems:

Project Code	Project Name	River Basin	Year 1
Fox Run	Fox Run	Neuse	1754.716948

#### Vigor

vigor	Count	Percent				
0	8	1.6				
2	8	1.6				
3	134	26.7				
4	343	68.5				
Missing	8	1.6				

#### Vigor by Species

Species	CommonName	4	3	2	1	0	Missing	Unknown
Betula nigra	river birch	22	2			1		
Celtis laevigata	sugarberry	6	4	3				
Fraxinus								
pennsylvanica	green ash		1					
Nyssa biflora	swamp tupelo		2					
Nyssa sylvatica	blackgum	18	17					
Pinus taeda	loblolly pine	72	2			2	1	
	swamp chestnut							
Quercus michauxii	oak	54	13	2		1	1	
Quercus nigra	water oak		1					
Quercus phellos	willow oak	68	16			1	4	
Sambucus								
canadensis	Common Elderberry	7	7	1		2		
Quercus	oak	1	1				1	
Quercus rubra	northern red oak	30	55	2		1		
Nyssa	tupelo	1						
Platanus occidentalis	American sycamore	40	3					
Ulmus americana	American elm	24	10				1	
15	15	343	134	8		8	8	

# Damage

Damage	Count	Percent Of Stems
(no damage)	440	87.8
Deer	40	8
Insects	12	2.4
Unknown	5	1
Human Trampled	2	0.4
Site Too Dry	1	0.2
Rodents	1	0.2

# Damage by Species

Species	CommonName	Count of Damage Categories	(no damage)	Deer	Human Trampled	Insects	Rodents	Site Too Dry	Unknown
Betula nigra	river birch	0	25						
Celtis laevigata	sugarberry	4	9	1			1		2
Fraxinus pennsylvanica	green ash	1		1					
Nyssa	tupelo	0	1						
Nyssa biflora	swamp tupelo	0	2						
Nyssa sylvatica	blackgum	8	27	6	1	1			
Pinus taeda	loblolly pine	0	77						
Platanus occidentalis	American sycamore	4	39			4			
Quercus	oak	0	3						
Quercus michauxii	swamp chestnut oak	5	66	2		2		1	
Quercus nigra	water oak	0	1						
Quercus phellos	willow oak	2	87	2					
Quercus rubra	northern red oak	27	61	1 9	1	5			2
Sambucus	Common	2		2					1
canadensis	Elderberry	3	14	2					1
Ulmus americana	American elm	7	28	7 4					
15	15	61	440	4	2	12	1	1	5

#### **Damage by Plot**

	Count of							
	Damage	(no		Human			Site to	
plot	Categories	damage)	Deer	Trampled	Insects	Rodents	Dry	Unknown
1	1	17			1			
2	1	19						1
3	0	21						
4	0	20						
5	3	18		1				2
6	1	20					1	
7	1	23			1			
8	1	19	1					
9	2	19	2					
10	3	17	3					
11	2	22	2					
12	10	7	9	1				
13	5	15	5					
14	5	14	3		2			
15	0	20						
16	2	18	1		1			
17	3	12	3					
18	0	15						
19	1	18						1
20	6	11	5		1			
21	5	24	1		3			1
22	0	18						
23	3	17	3					
24	2	16	1		1			
25	4	20	1		2	1		
25	61	440	40	2	12	1	1	5

## **Plot Information**

-		папо												
Plot	Plot Level	Year	Planted Living Stems	Planted Living Stems EXCLUDING Live Stakes	Dead/Missing Stems	Natural (Volunteer) Stems	Total Living Stems	Total Living Stems EXCLUDING Live Stakes	Planted Living Stems per ACRE	Planted Living Stems EXCLUDING Live Stakes PER ACRE	Natural (Volunteer) Stems PER ACRE	Total Living Stems PER ACRE	Total Living Stems EXCLUDING Live Stakes PER ACRE	# species
1	2	2	17	17	1	5	22	22	688	688	202	890	890	7
2	2	2	20	20	0	1	21	21	809	809	40	850	850	7
3	2	2	21	21	0	3	24	24	850	850	121	971	971	6
4	2	2	20	20	0	0	20	20	809	809	0	809	809	6
5	2	2	20	20	1	5	25	25	809	809	202	1012	1012	5
6	2	2	18	18	3	0	18	18	728	728	0	728	728	7
7	2	2	21	21	3	3	24	24	850	850	121	971	971	5
8	2	2	20	20	0	22	42	42	809	809	890	1700	1700	5
9	2	2	20	20	1	8	28	28	809	809	324	1133	1133	8
10	2	2	18	18	2	49	67	67	728	728	1983	2711	2711	9
11	2	2	23	23	1	22	45	45	931	931	890	1821	1821	6
12	2	2	16	16	1	157	173	173	647	647	6354	7001	7001	5
13	2	2	20	20	0	18	38	38	809	809	728	1538	1538	5
14	2	2	19	19	0	66	85	85	769	769	2671	3440	3440	5
15	2	2	19	19	1	65	84	84	769	769	2630	3399	3399	5
16	2	2	20	20	0	50	70	70	809	809	2023	2833	2833	5
17	2	2	15	15	0	3	18	18	607	607	121	728	728	4
18	2	2	15	15	0	0	15	15	607	607	0	607	607	4
19	2	2	19	19	0	21	40	40	769	769	850	1619	1619	4
20	2	2	17	17	0	44	61	61	688	688	1781	2469	2469	4
21	2	2	29	29	0	6	35	35	1174	1174	243	1416	1416	9
22	2	2	18	18	0	2	20	20	728	728	81	809	809	5
23	2	2	20	20	0	0	20	20	809	809	0	809	809	8
24	2	2	17	17	1	2	19	19	688	688	81	769	769	8
25	2	2	23	23	1	47	70	70	931	931	1902	2833	2833	6

# Planted Stems by Plot

Species	Common Name	Stems	# plots	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
etula nigra	river birch	24	9	2.67	1	3				3		3	4	4											4		1
Celtis laevigata	sugarberry	13	7	1.86		1			3						2				4					1			
raxinus pennsylvanica	green ash	1	1	1										1													
Nyssa	tupelo	1	1	1	1																						
Nyssa biflora	swamp tupelo	2	1	2							2																
lyssa sylvatica	blackgum	35	12	2.92	2		5	4	2			4		2		1									3	3	5
Pinus taeda	loblolly pine	74	24	3.08	4	2	4	4	2	3	4	1	3	1	3	3		1	3	4	5	4	4	1	5	1	5
Platanus occidentalis	American sycamore	43	15	2.87			1	1	1				1	1			3	4	9		2	4	4		3	4	2
Quercus	oak	2	2	1										1											1		
Quercus michauxii	swamp chestnut oak	69	20	3.45	3	2	1	6		3	7	3	1	3	5		4	3	2	1	3	6			6		1
Quercus nigra	water oak	1	1	1						1																	
Quercus phellos	willow oak	84	19	4.42	4	8	7		12	1	6	9	3	2	2	2	6			5		1	5		1	5	3
Quercus rubra	northern red oak	87	20	4.35	2	2		1		5	2		3		2	6	4	4	1	9	5		6	14	3	5	2
Sambucus canadensis	Common Elderberry	15	8	1.88		2	3						1	3										1	3		1
Ulmus americana	American elm	34	8	4.25				4		2			4		9	4	3	7		1							
15	1	5 485	15		17	20	21	20	20	18	21	20	20	18	23	16	20	19	19	20	15	15	19	17	29	18	20

# Total Stems by Plot

Species	Common Name	Stems	# plots	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Acer rubrum	red maple	8	5	1.6									2			3		1	1	1								
Baccharis halimifolia	eastern baccharis	75	16	4.69	2		1		5		2	5		2	1	2		1	1	4	1		3	41				1
Betula nigra	river birch	25	9	2.78	1	3				4		3	4	4											4		1	1
Celtis laevigata	sugarberry	13	7	1.86		1			3						2				4					1				1
Fraxinus pennsylvanica	green ash	1	1	1										1														
Liquidambar styraciflua	sweetgum	508	19	26.74	1	1	2				1	17	6	47	21	148	18	64	63	45	2		18	3	6	2	1	1
Liriodendron tulipifera	tuliptree	5	2	2.5												4												1
Nyssa	tupelo	2	2	1	1																						1	1
Nyssa biflora	swamp tupelo	2	1	2							2																	1
Nyssa sylvatica	blackgum	35	12	2.92	2		5	4	2			4		2		1									3	3	5	3
Pinus taeda	loblolly pine	76	24	3.17	4	2	4	4	2	3	5	1	3	1	3	3		1	3	4	5	4	4	1	5	1	5	3
Platanus occidentalis	American sycamore	43	15	2.87			1	1	1				1	1			3	4	9		2	4	4		3	4	2	3
Populus deltoides	eastern cottonwood	2	1	2	2																							
Quercus	oak	2	2	1										1											1		1	1
Quercus michauxii	swamp chestnut oak	70	20	3.5	3	2	1	6		3	7	3	1	4	5		4	3	2	1	3	6			6		1	3
Quercus nigra	water oak	1	1	1						1																		1
Quercus phellos	willow oak	85	19	4.47	4	8	7		12	1	7	9	3	2	2	2	6			5		1	5		1	5	3	
Quercus rubra	northern red oak	88	20	4.4	2	2		1		5	2		4		2	6	4	4	1	9	5		6	14	3	5	2	2
Sambucus canadensis	Common Elderberry	17	8	2.12		2	3						1	4										1	3		1	2
Ulmus americana	American elm	34	8	4.25				4		2			4		9	4	3	7		1								
20	20	1092	20		22	21	24	20	25	19	26	42	29	69	45	173	38	85	84	70	18	15	40	61	35	20	20	20

# Fox Run Year 2 (2011) Vegetation Monitoring Plot Photos Taken June 2011



Plot 3



Plot 5















Plot 8

# Fox Run Year 2 (2011) Vegetation Monitoring Plot Photos Taken June 2011 (continued)



Plot 10





Plot 14



Plot 16



# Fox Run Year 2 (2011) Vegetation Monitoring Plot Photos Taken June 2011 (continued)











# Fox Run Year 2 (2011) Vegetation Monitoring Plot Photos Taken June 2011 (continued)







