Reeds Creek Wetland Restoration Project

Contract #:	D05016-3
County:	Iredell
Cataloging Unit:	Catawba 03050101
Monitoring Firm POC:	Mid-Atlantic Mitigation, LLC Rich Mogensen (704) 782-4133 Environmental Services, Inc. Paul Petitgout (704) 523-7225
Prepared For:	EEP Project Manager, Guy Pearce

Year 2 Monitoring Report - October 2008

Environmental Services Inc.

Mid-Atlantic Mitigation, LLC

TABLE OF CONTENTS

TABLES

APPENDICES

1.0 EXECUTIVE SUMMARY/PROJECT ABSTRACT

On behalf of the North Carolina Ecosystem Enhancement Program (NCEEP), Mid-Atlantic Mitigation, LLC (MAM) with technical assistance from Environmental Services, Inc. (ESI) restored 4.2 acres of riverine wetlands, enhanced 2.2 acres (there are additional enhancement areas onsite not included in WMU calculation), and preserved approximately 3 acres of wetlands on site not included in the WMU calculation. Grading of the Reeds Creek Site was completed December 2006. Planting and seeding of the site were completed in January 2007. Overall, the project will restore, enhance, and/or preserve approximately 14.66 acres of forested and emergent wetlands and upland buffer, of which 5.3 will be provided as riverine wetland mitigation units (WMUs) to the North Carolina Ecosystem Enhancement Program (EEP).

The goals and objectives of the Reeds Creek Wetland Restoration Project (Reeds Project) are to restore the hydrologic functions, the native vegetation of the degraded and drained wetlands, flood retention and water quality functions within the Reeds Creek watershed of the Catawba River Basin (HUC 03050101).

Existing berms and spoil piles adjacent to Reeds Creek were graded down to a more natural elevation and the other existing fill areas were removed. Native woody vegetation has been established in this area. Jurisdictional wetlands were preserved in the semi-permanently impounded area associated with Lake Norman. Jurisdictional wetlands were enhanced and/or restored in the area south of Reeds Creek.

2.0 PROJECT BACKGROUND

2.1 LOCATION AND SETTING

The Reeds Project is a 14.66-acre tract located southwest of Mooresville, Iredell County, North Carolina off of U.S. Highway 21, approximately 1.3 miles northeast of the U.S. Highway 21 and Interstate 77 intersection (see Figure 1). The project site is located in the Catawba River Watershed (USGS 8-digit Hydrologic Unit 03050101, and NCDWQ River Basin 03-08-32). NCDWQ has assigned Reeds Creek within the project site the Stream Index Number (SIN) of 11-104(2). The site is immediately adjacent to Lake Norman and is characterized by a variable floodplain associated with Reeds Creek. The site is currently owned by Mid-Atlantic Mitigation, LLC with the Conservation Easement being held by the State of North Carolina.

2.2 STRUCTURE AND OBJECTIVES

The goals and objectives of the Reeds Creek Wetland Restoration Project are to restore the hydrologic functions, the native vegetation of the degraded and drained wetlands, flood retention and water quality functions within the Reeds Creek watershed of the Catawba River Basin (HUC 03050101). A Project Location Map is provided in Figure 1.

Existing berms and spoil piles adjacent to Reeds Creek were graded down to a more natural elevation and the other existing fill areas were removed. The material was graded to the surrounding landscape to provide microtopographic complexity and woody planting zones. These areas where the topography was enhanced will create diverse habitats instead of the monotypical, flat lake fringe area that previously existed. Surface hydrology will be reintroduced to the restoration areas via more frequent overbank flooding from Reeds Creek. Native woody vegetation has been established in this area.

Jurisdictional wetlands were preserved in the semi-permanently impounded area associated with Lake Norman. Jurisdictional wetlands were enhanced and/or restored in the area south of Reeds Creek. Minor grading, adjacent to the wettest areas, was done to expand the wetland hydrology and create microtopography within the contiguous floodplain and wetland area.

The riparian wetland and buffer vegetation community will transition as the system seeks its hydrologic and vegetative equilibrium. Sediments on site were initially unconsolidated and mucky with saturation due to Lake Norman water level fluctuations. While water level fluctuations are still anticipated, the areas and duration of inundation can only be determined through post-construction observation and monitoring. It is anticipated that settling and subsidence would occur throughout the initial growing season, first through evaporation and then through transpiration as the herbaceous cover (seeded and natural propagation) established. Areas that are not saturated/ponded (i.e. fringe areas and/or microtopographic mounds) were planted with bare root seedlings to establish a bottomland hardwood riparian wetland community. Additional plantings may be necessary, as the site continues to consolidate and settle and inundation patterns are determined.

In order to stabilize the newly constructed wetlands and flood plain areas, both temporary and permanent grass seed were applied to all restored areas. The types of seeds used were: *Leersia oryzoides* (Rice Cut grass); *Panicum clandestinum* (Deertongue grass); *Panicum virgatum* (Switchgrass); *Trisacum dactyloides* (Gama grass), *Juncus effusus* (soft rush) and *Secale cereale* (Annual rye). Three hardwood planting zones were established as follows: Zone 1-Swamp Forest Zone, Zone 2- Bottomland Forest Zone, and Zone 3-Levee Forest Zone. The location of each Zone is identified on the As-built plan located in Attachment A. Approximately 400 stems per acre were planted throughout the project. Livestakes were installed in some of the wetter areas but further livestaking along Reeds Creek may be necessary as the new streambank/floodplain area stabilizes with its associated wetlands.

Table I. Project Mitigation Structure and Objectives Table

Project Segment	Mitigation Type	Linear Footage or Acerage	WMUs	Comment
Wetland	R	4.2	4.2	Restoration areas are located along Reeds Creek and front, center of site near access road(s)
Wetland	E1	2.2	1.1	Enhancement areas are located between the restored areas and the existing wetlands (preservation area)
Wetland	P and E1	8.26	-	Not included in WMU's

Table II. Project Activity and Reporting History

Activity or Report	Calendar Year of Completion or Planned Completion	Actual Completion Date
Restoration Plan	October 2005	March 2006
Site Work Completed	February 2006	December 2006
Site Planting and installation of monitoring devices	March 2006	January 2007
Mitigation Plan	April 2006	April 2007
Year 1 Monitoring	December 2006	November 2007
Year 2 Monitoring	December 2007	October 2008
Year 3 Monitoring	December 2008	December 2009
Year 4 Monitoring	December 2009	December 2010
Year 5 Monitoring	December 2010	December 2011

Project was delayed 9 months due to issues with the Duke Power 760 Contour Lake Easement for Lake Norman. These issues had been addressed prior to proposal submittal, however Duke Power's merger with Cinergy created changes in personnel and policy which required Mid-Atlantic to re-apply for these approvals.

Table III. Project Contacts

Project Manager Mid-Atlantic Mitigation, LLC	1960 Derita Road Concord, NC 28027 Rich Mogensen (704) 782-4133
Designer Environmental Services Inc.	9401-C Southern Pine Blvd. Charlotte, NC 28273 Paul Petitgout (704) 523-7225
Construction Contractor Environmental Services Inc.	9401-C Southern Pine Blvd. Charlotte, NC 28273 Paul Petitgout (704) 523-7225
Planting & Seeding Contractor Southeastern Tree And Mid-Atlantic Mitigation, LLC	271 Windrush Trail Walhalla, SC 29691 Bill Knowles (864) 710-5970 1960 Derita Road Concord, NC 28027 Kristy Rodrigue (704) 277-3383
Monitoring Performers Mid-Atlantic Mitigation, LLC	1960 Derita Road Concord, NC 28027 Christine Cook (704) 782-4140

Table IV. Project Background

Project Background Table	
Project County	Iredell
Drainage Area	4.9 square miles
Drainage Cover Estimate (%)	10%
Physiographic Region	Piedmont
Ecoregion	Southern Outer Piedmont 45b
Wetland Type	Palustrine, Forested, Broad-leaved Deciduous
Cowardin Classification	PFO1Fh
Dominant soil types	Chewacla with inclusions of Wehadkee
Reference site ID	Reeds Creek
USGS HUC for Project and Reference	03050101
NCDWQ Sub-basin for Project and Reference	03-08-32; SIN 11-104(2)
% of project easement fenced	0 – Urban site surrounded by private residence

3.0 PROJECT CONDITION AND MONITORING RESULTS

3.1 VEGETATION ASSESSMENT

3.1.1 Soil Data

Table V. Preliminary Soil Data

Series	Max Depth (in)	% Clay on Surface	K	T	OM %
Chewacla	60	10 - 27	.28	5	1-4
Wehadkee	62	6 - 20	.24 - .28	3	<1

3.1.2 Vegetative Problem Areas

At this time, no vegetative problem areas have been noted or invasive species problems. The site has been stabilized and vegetated with native woody and herbaceous species

3.1.3 Stem Counts

The prevalent vegetation should consist of macrophytes that typically are adapted for life in saturated soil conditions. These species should have the ability to grow, compete, reproduce, and persist in anaerobic soil conditions. A maximum of 15% nuisance vegetation in wetland areas with planted and volunteer vegetation will successfully indicate establishment of native wetland vegetation. Study plots showing that the composition and density of vegetation in the restoration areas compares closely to the reference areas will indicate restoration success for vegetation. The initial success of riparian and wetland vegetation will be evaluated based on herbaceous ground cover as the site is stabilized in the initial growing season, as well as planted woody vegetation. Stem counts of over 320 trees per acre after 3 years, and 260 trees per acre after 5 years will be considered successful. Photos taken at established photo points should indicate maturation of riparian vegetation community. Photographs will help to illustrate the health of the planted vegetation and the severity of the invasive or exotic species that are found within the site. Permanent vegetation sampling plots have been established at 2 random locations and sample each planting zone. The success of vegetation plantings will be measured through stems counts. These plots will be used to sample both the riparian buffer and restored wetlands. Each plot will cover 100 square meters for tree counts. Within each plot, a 1 meter plot will be sampled to measure herbaceous coverage. During the counts, the health of the vegetation will be noted. In addition to stem counts, the samples will inventory species diversity to allow for comparison between the reference and restoration wetlands and track the percent cover of nuisance species. The vegetation survey will occur during the growing season. On July 23rd, 2008, the second year-vegetative monitoring was performed on the established vegetation sampling plots.

Exhibit Table VI. Stem Counts for Each Species Arranged by Plot (Part A)						
Species	Plots A	Plots B	Initial	Year 1	Year 2	Survival (%)
Shrubs						
Cephalanthus occidentalis	7	4	13	11	11	85%
Cornus amomum	7	8	19	15	15	79%
Totals	14	12	32	26	26	81%
Trees						
Betula nigra	2	3	10	5	5	50%
Fraxinus pennsylvanica	2	4	11	6	6	55%
Liriodendron tulipifera	0		1	1	0	0%
Quercus lyrata		3	4	3	3	75%
Quercus michauxii	1	3	6	5	4	67%
Quercus pagodifolia	5		7	7	5	71%
Quercus phellos		3	3	3	3	100%
Salix nigra		3	3	3	3	100%
Totals	10	19	45	33	29	64%
Woody Stems Total:	**24**	**31**	**77**	**59**	**55**	**71%**

Part B	Survival 2007	Survival 2008	SPA 2007	SPA 2008
Plot A	70%	65%	1040	960
Plot B	83%	78%	1320	1240
Total	**77%**	**71%**	**1180**	**1100**

3.1.4 Vegetation Assessment Summary

Vegetation success will be defined as tree survival to meet 320 stems per acre after 3 years and 260 stems per acre after 5 years inside the permanent vegetation sampling plots and herbaceous cover evaluated with photos showing 75% coverage, after 5 years.

In general, the site was over planted to allow for mortality. The site as a whole shows an average of 1100 planted stems per acre and demonstrates 71 percent survival of planted species. The community is diverse and rich with healthy volunteers. Large numbers of *Cephalanthus occidentalis*, *Cornus amomum*, and *Salix nigra* volunteers are present on site and in plots.

The herbaceous cover plant community was monitored in a 1 m by 1 m square at one corner of each plot. Each herbaceous quadrant showed at least 75% cover and were actually at or close to 100%.

3.2 WETLAND ASSESSMENT

3.2.1 Wetland Criteria Attainment

There are three water level monitoring gages located on the Reeds Project. Gages 1 and 2 are located in the restoration area and Gage 3 is located in the enhancement area in the same location as the pre-construction gage. There are both mature forested and emergent areas of preservation which were not included in the WMU calculations adjacent to the small unnamed tributary entering the site from the southeast corner and flowing into the cove for the Huntington neighborhood. There is a 4th gage located in the preservation/fringe area of the site to be used as an on site reference. The data will be downloaded once a month throughout the monitoring period. A USGS rain gage located on Lake Norman (Gage #35301408052495 CRN-42 Norman Shores) will be used to monitor the amount of rainfall. This will be correlated with the ground water data. Lake Norman lake levels will also be monitored if the site becomes inundated from high lake levels. As stated in the Mitigation Plan, jurisdictional hydrology for the site will be defined as saturation within the upper 12 inches of the surface of the soils for a period of approximately 24 consecutive days during the growing season (239 days between March and October) or approximately 10% of the growing season. The NC Cooperative Extension Service actually lists the average growing season for Iredell County as 179 days. Therefore, in a year of average precipitation hydrological success for the Reeds Creek site will be a minimum of 18 days.

Gage 1 achieved jurisdictional hydrology well before the onset of the growing season and maintained it throughout the season except for 20 days from August 7th through 26th. Gage 2 achieved jurisdictional hydrology well before the onset of the growing season and maintained it for approximately 71 days into the season, but began to fluctuate on May 25th, 2008. Gage 3, which is located in the enhancement area also maintained jurisdictional hydrology from before the onset of the growing season and approximately 126 days into the season and began to fluctuate on July 18th, 2008. The reference gage followed the same pattern of increasing inundation leading up to the onset of the growing season, but did not achieve prolonged jurisdictional conditions. This gage did indicate 10 days of jurisdictional conditions from April 1st through 10th, 2008, however given site conditions. The reference area is thickly vegetated, including a large stand if mature Black Willows near the gage and is far removed from the inundation effect of Lake Norman both of these factors could affect the hydrology of this gage. Graphs showing water levels and corresponding rainfall data are located in Appendix C.
Based on the gage data for 2008, the site has achieved jurisdictional hydrology for the second consecutive monitoring year.

Exhibit Table VII: Success Criteria Attainment

Well ID	Well Hydrology Threshold Met?	Mean	Vegetation Plot ID	Vegetation Survival Threshold Met?	Mean
Reeds 1	Y	100	Plot A	Y	100
Reeds 2	Y				
Reeds 3	Y		Plot B	Y	
Reeds Ref	N				

Exhibit Table VIII: Wetland Criteria Attainment

Well ID	Well Hydrology Threshold Met?	Total days w/ Jurisdictional Hydrology	Percent of Growing Season w/ Jurisdictional Hydrology
Reeds 1	Y	199	111%
Reeds 2	Y	71	40%
Reeds 3	Y	126	70%
Reeds Ref	N	10	6%

3.2.2 Photo Reference Points

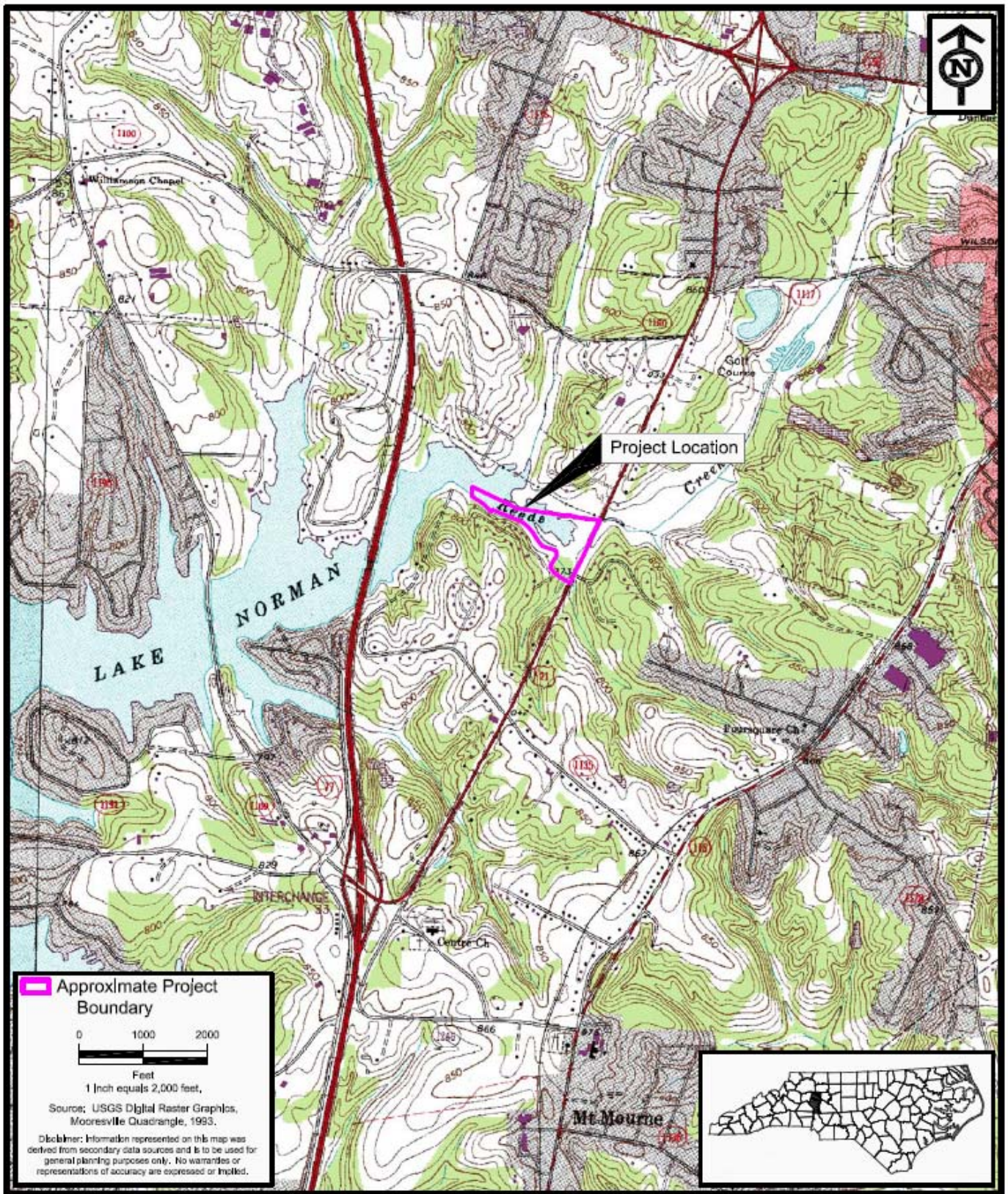
There are seven permanent photo reference points located throughout the Reeds Project and will be included in each monitoring report. Two of the photo reference points are located in the southwest corner of each vegetation plot and it will include two photographs taken from each point; one showing the health of the vegetation plot and one showing the 1 meter plot within the vegetation plot. All the Photographs will help to illustrate the health of the planted vegetation, the surface water hydrology (e.g. standing water). The Photo Log is located in Appendix B.

4.0 SITE SUCCESS ASSESSMENT SUMMARY

Overall, the adjacent Reeds Creek stream channel has developed and stabilized well after the berm was lowered. The herbaceous vegetative cover has also developed a healthy and diverse community. The planted trees and shrubs have also done very well and are supplemented by a robust existing buffer community which provides seed source for volunteers well suited to the current site conditions. Ground water gages demonstrate favorable trends and jurisdictional wetland hydrology throughout the entire site.

Additionally, a local chapter of the North Carolina Wildlife Federation, the Lake Norman Wildlife Conservationists has taken a special interest in the Reeds Creek project. The group is working with Boy Scouts and other local volunteers to build and install wood duck, barred owl, blue bird, and warbler nesting boxes on the site. A chimney swift tower and basking logs for the turtle population are among the group's future projects. The

group regularly visits the site to pick up litter and prevent trespassing and vandalism. The group and the site have received lots of positive press this year. A report on wildlife usage of the site can be found at www.lakenormanwildlife.org/reeds_creek.htm. Also, the report and additional information the LNWC has shared with MAM is included in Appendix C.



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Project Location Map

Reeds Creek Wetland Restoration Site

Iredell County, North Carolina

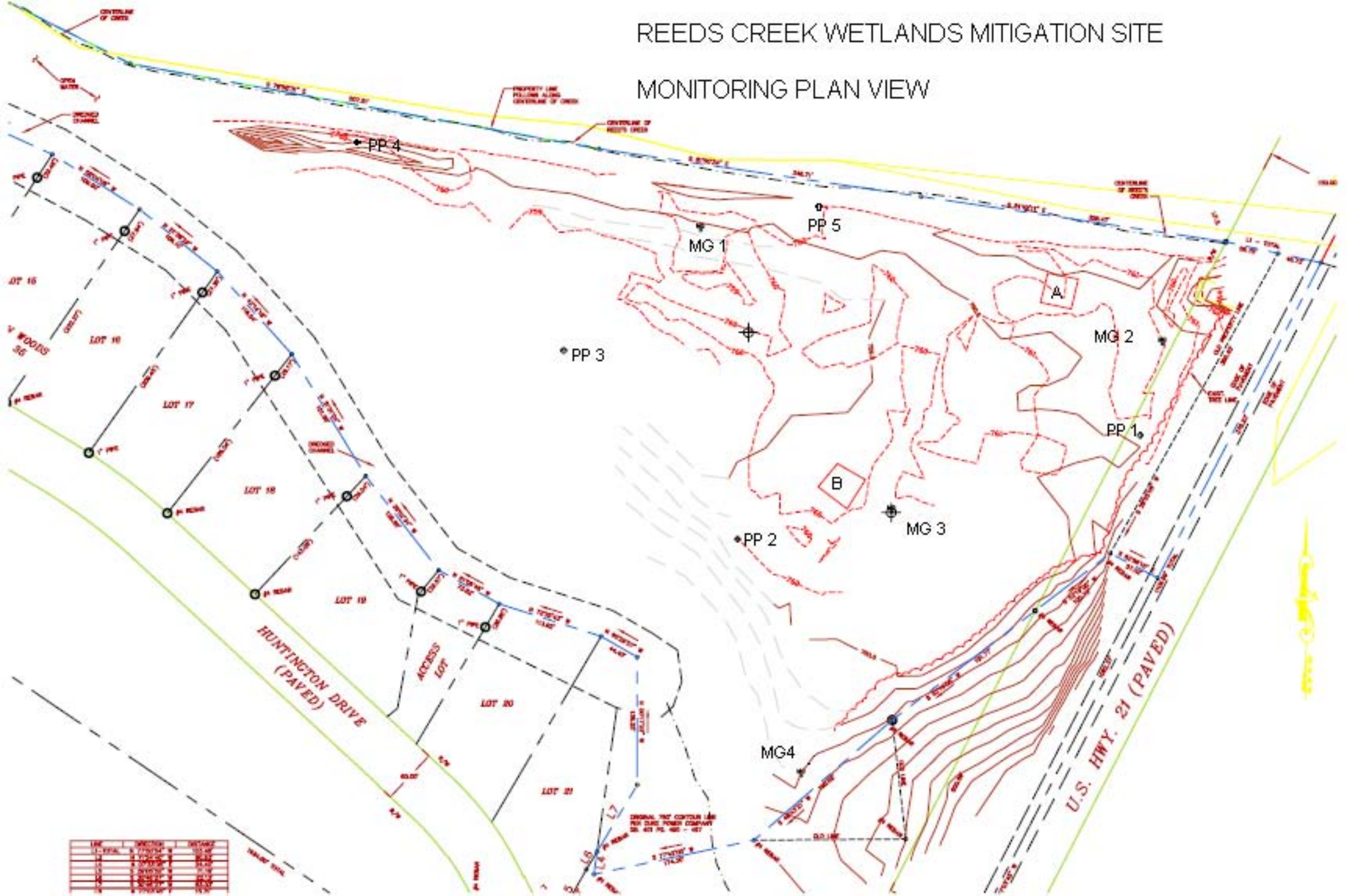
Project #: D05016-3

Drwn/Chkd: KT/CA

Figure: 1

REEDS CREEK WETLANDS MITIGATION SITE

MONITORING PLAN VIEW



APPENDIX A. Vegetation Raw Data

Vegetation Raw Data

Site Photo Log w/ Vegetation Monitoring Plot Photos

Exhibit Table VI. Stem Counts for Each Species Arranged by Plot (Year 2)							
Species	Plots		Initial	Year 1	Year 2	Survival (%)	
	A	B					
Shrubs							
Cephalanthus occidentalis	7	8	13	13	15	100%	plus 2 volunteers
Cornus amomum	11	10	19	19	21	100%	plus 2 volunteers
Totals	18	18	32	32	36	100%	
Trees							
Betula nigra	2	3	10	5	5	50%	
Fraxinus pennsylvanica	2	6	11	6	8	73%	
Liriodendron tulipifera	0		1	1	0	0%	
Quercus lyrata		3	4	3	3	75%	
Quercus michauxii	1	3	6	5	4	67%	
Quercus pagodifolia	5		7	7	5	71%	
Quercus phellos		3	3	3	3	100%	
Salix nigra		11	3	3	11	100%	plus 8 volunteers
Totals	10	29	45	33	39	87%	
Woody Stems Total:	28	47	77	65	75	97%	
					63	82%	

Reeds Creek Photo Log

Photo Point 1 – Facing NE

Photo Point 2 – Facing NNE

Photo Point 3 – Facing N

Photo Point 4 – Facing W

Photo Point 5 – Facing S

Photo Point 6 – Facing W (Overview from HWY 21 bridge)

Vegetation Plot A – Facing W

Vegetation Plot B – Facing NNE

Additional Photos

Wood Duck Box Installed by LNWC

Wood Duck Box 2

Warbler Nesting Box Installed by LNWC

APPENDIX B: Water Level and Rainfall Data

Water Level Gage Graphs
USGS CRN 42 Rainfall Data

Exhibit Table VII: Success Criteria Attainment

Well ID	Well Hydrology Threshold Met?	Mean	Vegetation Plot ID	Vegetation Survival Threshold Met?	Mean
Reeds 1	Y	100	Plot A	Y	100
Reeds 2	Y				
Reeds 3	Y		Plot B	Y	
Reeds Ref	Y*				

*If 2007 is considered a dry year and threshold is set at 10 days

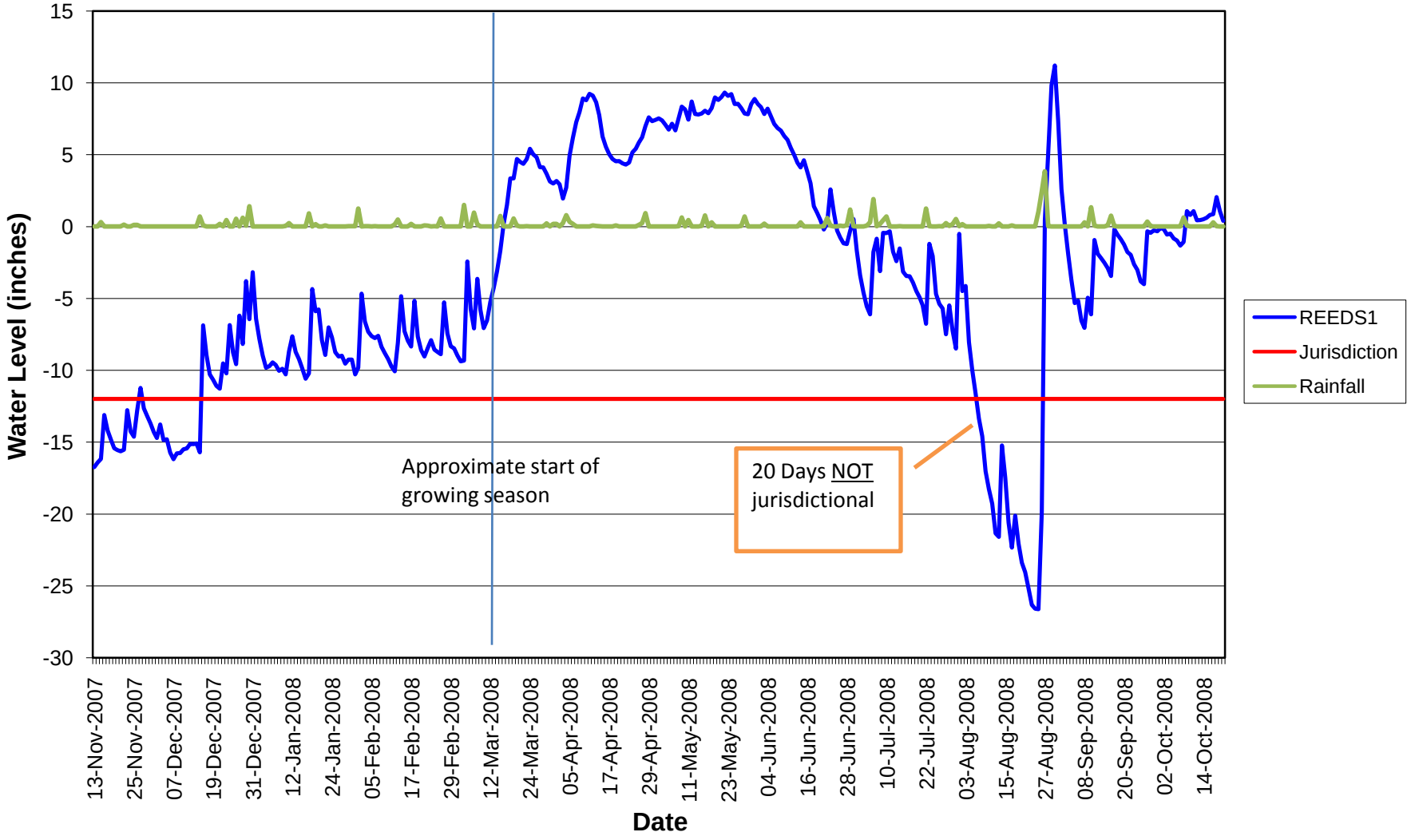
Exhibit Table VIII: Wetland Criteria Attainment

Well ID	Well Hydrology Threshold Met?	Total days w/ Jurisdictional Hydrology	Percent of Growing Season w/ Jurisdictional Hydrology
Reeds 1	Y	199	91%
Reeds 2	Y	71	32%
Reeds 3	Y	126	58%
Reeds Ref	Y	10	5%

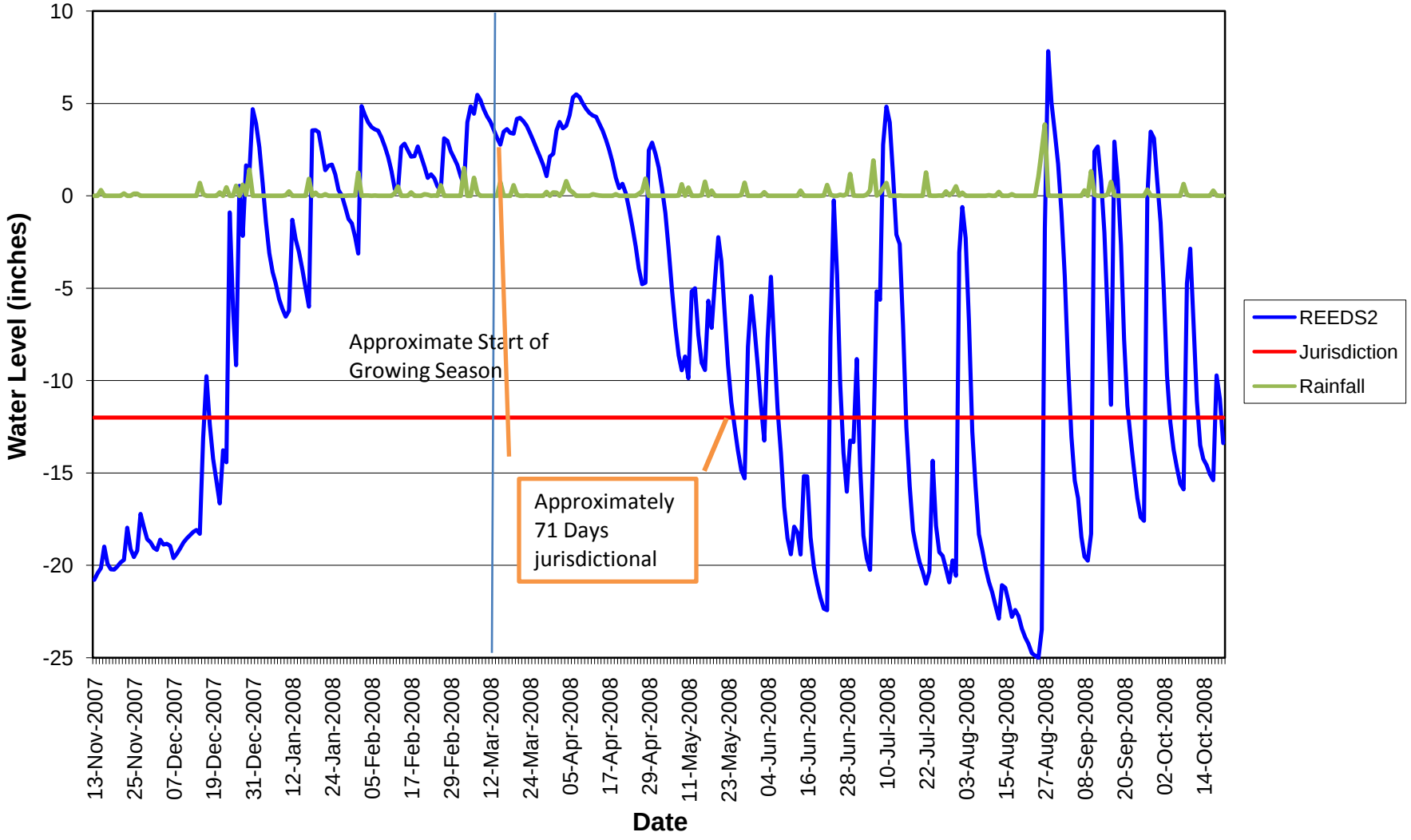
Rainfall USGS CRN 42 Norman Shores

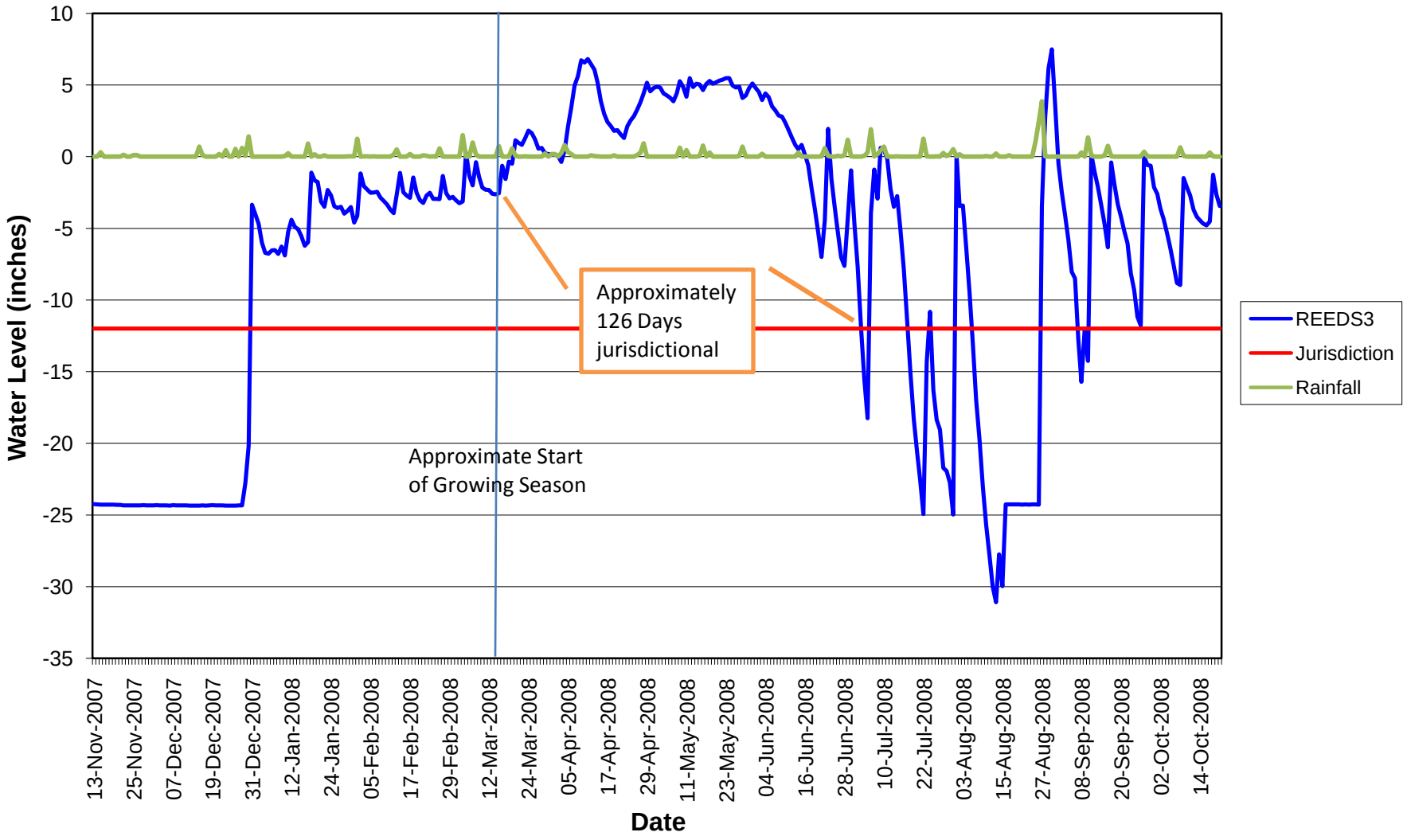
	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Aug-08	Sep-08
1					1.24		0.17				0.01	
2											0.16	
3					0.02		0.24		0.2			
4					0.02	1.49	0.79			0.06		
5							0.32			0.29		
6					0.01		0.18			1.9		
7						0.97				0.01		
8						0.15		0.01		0.17		0.29
9	0.02							0.62		0.42		
10				0.03						0.69	0.03	1.33
11				0.23				0.44				0.05
12					0.14		0.08					
13					0.49		0.04				0.21	
14							0.02		0.28	0.01		
15		0.31	0.69			0.73		0.03				0.07
16			0.08					0.76				0.74
17				0.91	0.18						0.08	0.01
18								0.28				
19	0.39			0.16		0.56	0.08					
20						0.05						
21			0.18		0.08				0.01			
22		0.13		0.08	0.06				0.58	1.25		
23			0.45			0.01			0.05	0.01		
24	0.87				0.01							
25	1.11	0.11									1.04	-
26	0.59	0.11	0.54		0.56		0.11		0.05	0.01	2.45	-
27							0.24	0.04	0.01		3.85	0.33
28			0.6				0.93	0.7	0.09	0.24	0.01	0.01
29			0.05	0.01		0.21			1.17	0.03		
30			1.41	0.01					0.02	0.16		
31				0.02		0.18				0.51		
TOTAL	2.98	0.66	4	1.45	2.81	4.35	3.2	2.88	2.46	5.76	7.84	2.83

Water Level for Reeds Creek Well #1 (REEDS1)

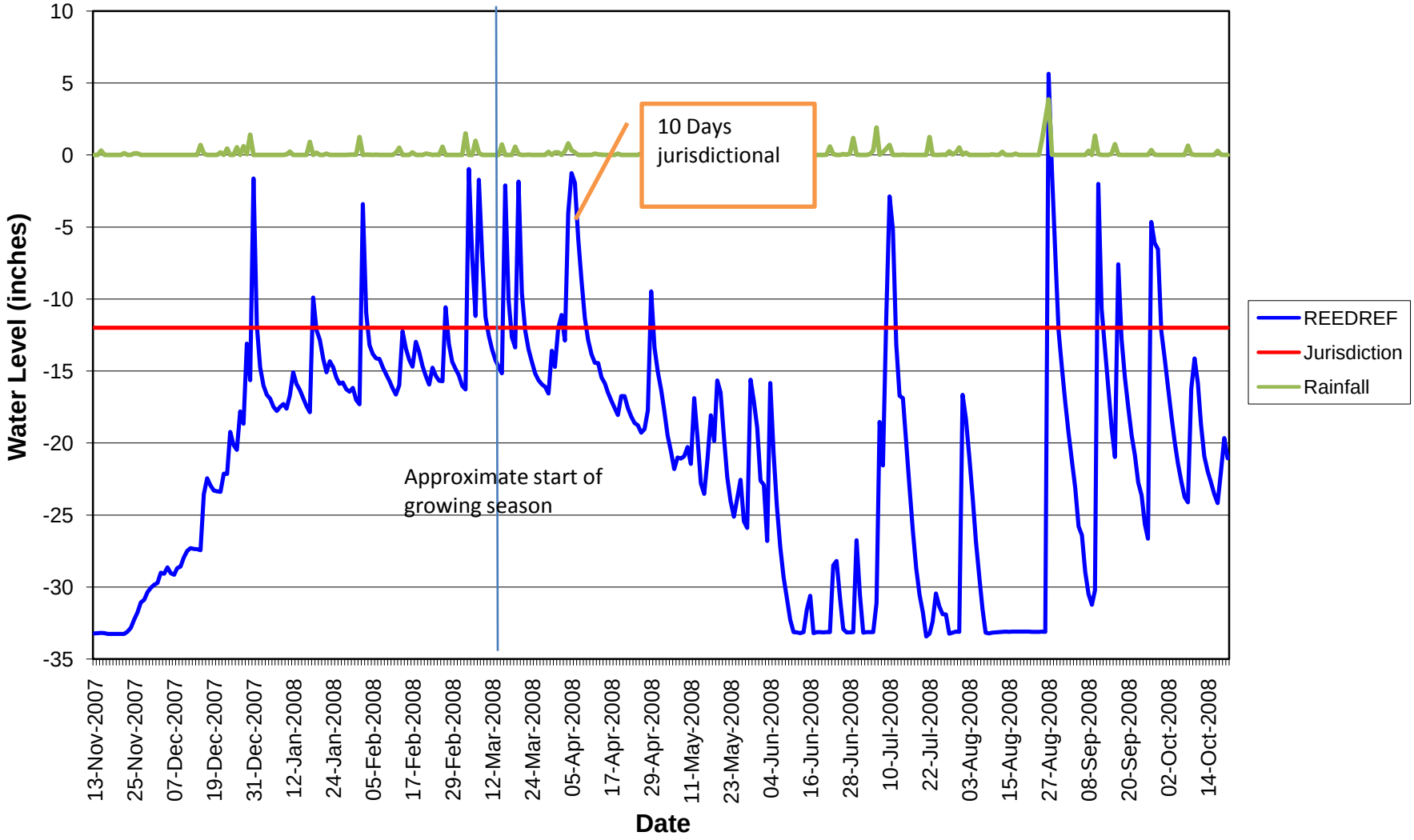


Water Level for Reeds Creek Well #2 (REEDS2)




Water Level for Reeds Creek Well #3 (REEDS3)
Water Level (inches)
10
5
0
-5
-10
-15
-20
-25
-30
-35
Approximately
126 Days
jurisdictional
Approximate Start
of Growing Season
13-Nov-2007
25-Nov-2007
07-Dec-2007
19-Dec-2007
31-Dec-2007
12-Jan-2008
24-Jan-2008
05-Feb-2008
17-Feb-2008
29-Feb-2008
12-Mar-2008
24-Mar-2008
05-Apr-2008
17-Apr-2008
29-Apr-2008
11-May-2008
23-May-2008
04-Jun-2008
16-Jun-2008
28-Jun-2008
10-Jul-2008
22-Jul-2008
03-Aug-2008
15-Aug-2008
27-Aug-2008
08-Sep-2008
20-Sep-2008
02-Oct-2008
14-Oct-2008
Date
REEDS3
Jurisdiction
Rainfall

Water Level for Reeds Creek Reference Well (REEDREF)



APPENDIX C: LNWC Information

Mid-Atlantic Wetland Compensation Site-Habitat Enhancements

Bird Box	Lat/Lon*	Comment	Note
Wood Duck #1	35° 34.163N 080° 50.957W	West edge of parcel near canal	To be mounted on post within standing water with predator guard
Wood Duck #2	35° 34.155N 080° 50.930W	West edge of parcel near site interior. Within small shallow slough	To be mounted on post within standing water with predator guard
Screech **or** Barred Owl Box #1	35° 34.095N 080° 50.884W	On large tuliptree within wooded strip along canal	Mounted at least 20 feet up on trunk. Parcel only large enough to accommodate one owl box
Wood Duck #3	35° 34.084N 080° 50.887W	South edge of parcel along canal just off wooded edge.	To be mounted on post within standing water with predator guard. Good quiet location
Bluebird Box #1	35° 34.079N 080° 50.825W	Southeast border of property near pine stand and highway	Mount on post with predator guard in upland open area edge. Make sure within parcel boundary
Bluebird Box #2	35° 34.108N 080° 50.787W	East border of property near small access road	Mount on post with predator guard in upland open area edge. Make sure within parcel boundary. This location is also the only good upland area for a Chimney Swift tower. Good location

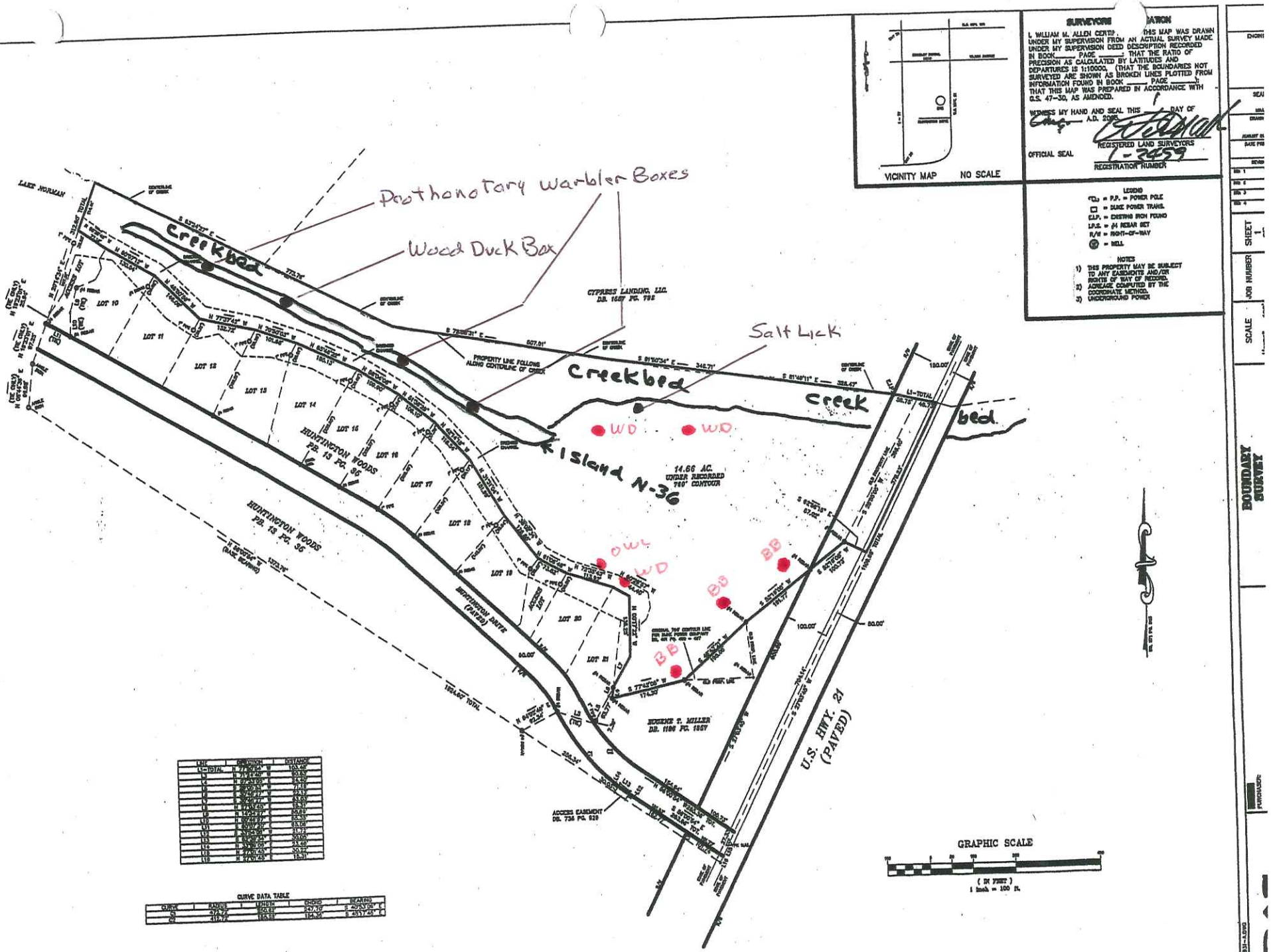
			for both
Bluebird Box #3	35° 34.126N 080° 50.779W	East border of property near two pines and parcel gate	Mount on post with predator guard in upland open area edge. Make sure within parcel boundary

Lat/Lon. is associated with State Plane NAD 83 coordinate system. All locations are also marked with designated pink flagging (e.g, Wood Duck Box #1).

<u>Other site observations (2/23/08 and 3/8/08)</u>

American beaver, white-tailed deer, coyote, raccoon, mallards (10), wood duck (3), white-throated sparrow, field sparrow, red-tailed hawk, song sparrow, Eastern bluebird, Carolina chickadee, Eastern phoebe, spring peepers, northern chorus frogs, yellow-bellied slider.

Approximately 85% of the site was inundated with at least 6 inches standing water. No suitable wood duck box sites along stream-water too swift. However, adjacent wetland area on north side of the stream has several suitable sites. Relatively high value wetland in that area.


Prothonotary Warbler Boxes
Wood Duck Box
Salt Lick
Creekbed
Creek
bed.
Island N-36
WD
WD
BB
BB
BB
OWL
WD
LAKE NORMAN
CYPRESS LANDING, LLC.
DB. 1687 PG. 792
PROPERTY LINE FOLLOWS
ALONG CONTOURS OF CREEK
14.66 AC.
UNDER RECORDED
780' CONTOUR
HUNTINGTON WOODS
PB. 13 PG. 35
HUNTINGTON DRIVE
(PAVED)
ROBERT T. MILLER
DB. 1196 PG. 1667
ACCESS EASEMENT
DB. 736 PG. 520
U.S. HWY. 21
(PAVED)
LOT 10
LOT 11
LOT 12
LOT 13
LOT 14
LOT 15
LOT 16
LOT 17
LOT 18
LOT 19
LOT 20
LOT 21
ACCESS LOT
L1-TOTAL
VICINITY MAP
NO SCALE
SURVEYOR'S CERTIFICATION
OFFICIAL SEAL
REGISTERED LAND SURVEYORS
REGISTRATION NUMBER
L-2659
LEGEND
P.P. = POWER POLE
DUKE POWER TRANS.
E.I.P. = EXISTING IRON FOUND
I.P.S. = ¾ REBAR SET
R/W = RIGHT-OF-WAY
MAIL
NOTES
1) THIS PROPERTY MAY BE SUBJECT TO ANY EASEMENTS AND/OR RIGHTS OF WAY OF RECORD.
2) ACREAGE COMPUTED BY THE COORDINATE METHOD.
3) UNDERGROUND POWER
GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.
CURVE DATA TABLE
BOUNDARY SURVEY
SHEET 1
SCALE
JOB NUMBER

Reeds Creek Wetland Monitoring Report

Submitted By Julie Higgie, LNWC Volunteer

Time Period: May 22 to June 1, 2008

Birds Observed:

Male and female **wood duck** couple is regularly feeding and roosting in Huntington Woods channel near wood duck nesting box posted by LNWC volunteers.

Prothonotary warbler spotted feeding in large water willow on island, not far from warbler box posted by LNWC volunteers. Warblers heard calling from surrounding trees.

Three **green herons,** possibly part of a small colony, demonstrating nesting behavior in the wetlands as they did last summer.

Also spotted were: **osprey, little blue heron, great blue heron, mallard** family (4-5 ducklings), 6 **red-winged blackbirds,** 4 **Canada geese,** 5 **black vultures**, **summer tanager, great egret, chimney swifts, belted kingfisher, Eastern bluebirds, rubythroated hummingbird.** Plus many common birds, of course, such as cardinal, Carolina chickadee, Carolina wren, blue jay, crow, mockingbird, mourning dove, house finch and goldfinch.

Other Animals Observed and/or Heard:

Brown bat, muskrat, barking frog, Fowlers toad, chorus frog, gray tree frog, aquatic turtles (size of slider), newly-hatched fish (minnows).