"Simpson Tract"
Non-Riverine Wetland Restoration Project

Beaufort County, NC
Tar-Pamlico River Basin
(Cataloging Unit #03020104)

Annual Monitoring Report – Year 3
(Task 9)

NC EEP Contract #D05027-1

Prepared For:

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Ecosystem Enhancement Program
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EXECUTIVE SUMMARY

Prior to project implementation, the Simpson Tract Property was managed for silvicultural production. The site consisted entirely of mono-culture pine stands with sparse hardwood colonization. Under contract with the EEP, Wetland Resource Center (WRC) restored 30.0 acres of non-riverine wetland which drain into the Pungo Creek (a tributary of the Pungo River) in Beaufort County, NC.

The entire 30.0 acre area has been planted with an appropriate mixture of tree and shrub species at an average density of 616 stems/acre. Planting was completed in February 2007. A total of fifteen (15) 0.10-acre permanent plots corresponding to a total of 1.5 acres (equivalent to 5% of the restoration area) were established throughout the project area. Annual monitoring will be conducted near the end of the growing season (September-October) for a period of five years. Vegetative planting will be deemed successful if survivorship of plantings and volunteers of desirable species meets or exceeds a target stem density of 320 stems/acre.

Annual vegetative monitoring was conducted on September 14-15, 2009. During this monitoring event a total of 1,822 woody stems were counted across the fifteen plots. The observed stems represented either planted species or acceptable volunteers. The woody stem count correlates to an average of 1,215 stems per acre, which provides a sufficient density to meet the stated success criteria. Hydrologic monitoring has been on-going since the initiation of restoration work. Restoration of appropriate wetland hydrologic conditions has been achieved, with five of the six monitoring wells registering water table depths within 12" of the surface for durations exceeding 32 consecutive days (12.5% of the growing season). The sixth well (#5) malfunctioned during the early growing season, limiting the scope of assessment during the third year of monitoring.

The following monitoring report summarizes the project and includes more specific information related to the vegetative and hydrologic conditions throughout the site.

1.0 NARRATIVE

Introduction

As approved by the EEP, WRC implemented the restoration of 30.0 acres of non-riverine wetland habitat located at the headwaters of Pungo Creek, a fourth-order tributary of the Pungo River within the Tar-Pamlico River Basin (USGS 8-digit Hydrologic Unit 03020104; DWQ Subbasin 03-03-07). The project area is part of the "Simpson Tract" located approximately 10 miles south of Plymouth in Beaufort County, NC (refer to Figures 1-5). This tract was intensively managed for silvicultural production prior to implementation of restoration activities. The project will provide for the re-establishment of characteristic tree and shrub species adjacent to open field ditches on the north side of Rodman Road.

Mitigation Goals and Objectives

The proposed restoration project is intended to provide suitable, high-quality non-riverine wetland restoration as compensatory mitigation for wetland impacts authorized through the EEP. The objective of the project is to restore appropriate vegetation and diffuse flow conditions to help reduce non-point source discharge of contaminants into adjacent water bodies and increase flood water retention. The primary functions of the restoration project are to provide surface water storage, nutrient uptake, and sediment retention. In addition, the project will provide ancillary benefits to wildlife by providing refuge for resident and migratory species via enhanced niche habitat and increased food-web support.

Pre-Construction Conditions

The 30-acre restoration area is part of a larger tract of land (1,391 acres). Approximately 950 acres have been determined to be non-jurisdictional ("non-wetlands") by the NRCS (USACE concurrence of this determination has also been provided in previous submittals to the EEP). The remaining acreage has been confirmed to be jurisdictional wetlands. The predominant land use of the tract (both jurisdictional and non-jurisdictional areas) is silvicultural production. Prior land use practices (including herbicide, pesticide, and fertilizer application) serve as potential contributors to decreased water quality of adjacent surface waters (i.e. ditches and 'blue-line' streams). The natural vegetative assemblage of the tract has been modified over the years via prescribed drainage improvements (i.e. ditching), bedding, and planting of loblolly pine (*Pinus taeda*). These silvicultural practices have resulted in a community dominated by pine in more mature stands outside of the proposed restoration area. Hardwood species characteristic of headwater swamp communities of the Coastal Plain are either absent entirely or occur only in sparse locations. Typical canopy species of an undisturbed area would include swamp tupelo (*Nyssa biflora*), bald cypress (*Taxodium distichum*), pond pine (*Pinus serotina*), and Atlantic white cedar (*Chamaecyparis thyoides*). Understory species typical of non-

riverine swamp forest communities include American titi (*Cyrilla racemiflora*), sweet bay (*Magnolia virginiana*), red bay (*Persea borbonia*), fetterbush (*Lyonia lucida*), red maple (*Acer rubrum*), and catbrier (*Smilax* species).

Project Implementation

Site preparation commenced in the fall of 2006. During this period, areas of invasive or non-target species were drum-chopped and bush-hogged. Following these activities, an herbicide was applied to reduce competition within the project area. A water soluble herbicide was used and applied by a licensed applicator to reduce impacts to the surrounding open water areas.

In order to re-establish the appropriate hydrologic conditions throughout the restoration area, a total of four (4) 50' long ditch plugs were installed in ditches draining from the project area. Prior to project construction, appropriate 401/404 authorization was received for placement of clay plugs within those ditches.

Earth work was conducted from February 20-21, 2007. Approximately 100 cubic yards of material was used to form the ditch plugs. Ditch plugs were installed at specified locations. Final grading was conducted in the plugged areas to allow for subsidence and compaction of the fill material. All areas that were disturbed by grading activities were seeded with an appropriate erosion control mix. Refer to the previously submitted mitigation plan for photographs of the initial post-construction conditions. Refer to Table 1 for a complete project timeline.

Site planting was completed on February 23, 2007. The planting of approximately 18,000 seedlings was supervised by LMG to ensure proper spacing and planting depths. LMG obtained a mix of hardwood and shrub seedlings which accurately represent the targeted headwater swamp community discussed in the approved restoration plan (Table 2). Seedlings were planted on approximately 8' centers at a depth sufficient to cover the root collar throughout the project area. Following the planting activities, LMG inspected the project area to ensure that seedlings had been installed correctly.

Supplemental planting was initiated in February 2009. This planting included approximately 15,000 bare root seedlings and 800 larger potted specimens in an effort accelerate site development. Similar species were utilized in this planting including bald cypress, black gum, and green ash. Table 3 provides additional information on the quantity and size of the planted species.

2.0 AS-BUILTS

As defined by the approved restoration plan, a total of fifteen (15) permanent monitoring plots were established, which corresponds to a total of 1.5 acres (equivalent to 5% of the restoration area). A total of six (6) automated wells (RDS, Inc. WM-40s) were also installed to monitor shallow groundwater hydrology and surface inundation within the restoration area. All six wells were paired with vegetation plots.

Two (2) additional wells were installed in reference areas located near the Van Swamp Gameland to the northeast of the project site. These reference sites were selected based on similarities in landscape position, hardwood species assemblages and soil types. Wells were installed in accordance with installation methods outlined in the Wetlands Regulatory Assistance Program (WRAP) Technical Note 00-02. Water levels are being recorded once daily. Data is downloaded from the wells every three months (i.e. once quarterly). Data from well downloads is compiled and graphically displayed to demonstrate the hydroperiods of monitored areas. Refer to the attached survey (Appendix D) of the wetland restoration area for the location and corresponding number of the permanent vegetative monitoring plots and paired hydrologic monitoring equipment on the site.

3.0 MONITORING PLAN

Annual monitoring will be conducted near the end of each growing season for a period of five years. Vegetative monitoring will continue to be conducted at each of the fifteen (15) 0.10-acre permanent plots. Vegetative planting will be deemed successful if survivorship of plantings and volunteers of desirable species[1] meets or exceeds a target stem density of 320 stems/acre. Hydrologic monitoring will deemed successful if static water table at, or within, 12" of the soil surface for 12.5% of the growing season (equivalent to 32 days based upon SCS-established growing season dates) during periods of normal rainfall. Data from the three reference wells will also be included. Monitoring reports will be submitted annually to the EEP (by January 1 of each year). These reports will include results of vegetative monitoring and photographic documentation of site conditions. Monitoring reports will also identify any contingency measures that may need to be employed to remedy any site deficiencies. For instance, deer browse tubes and fencing may need to be used if evidence of significant herbivory or deer browse is observed. In addition, supplemental planting may be necessary in areas of reduced survivorship.

[1] Desirable species are considered as noninvasive species characteristic of non-riparian wetland.

4.0 MONITORING RESULTS (YEAR 3)

Vegetation Monitoring

Monitoring of the on-site vegetation was conducted on September 14-15, 2009. A total of 1,822 stems were counted throughout the fifteen plots, which correlates to an average of 1,215 stems/acre within the project area (Table 4). Bald cypress (*Taxodium distichum*) was the most abundant woody species, with a total of 175 individuals. Other planted species such as loblolly bay (*Gordonia lasianthus*) and wax myrtle (*Morella cerifera*) were also prevalent within the monitored plots. Overall, each of the fifteen plots surpassed the minimum success criteria of 320 stems/acre during the Year 3 monitoring event. The increase in observed stem density is due in part to the supplemental planting that was conducted in February 2009. This planting was comprised of approximately 15,000 bare root seedlings and 800 potted specimens, which were installed to accelerate reforestation within the project area.

In addition to the supplemental plantings, observed survivorship within the plots was aided by the success of acceptable volunteer species such as loblolly bay (*Gordonia lasianthus*) and sweet pepperbush (*Clethra alnifolia*). Several of these individuals now exceed 3' in height and will likely continue develop as co-dominants within the shrub layer. The growth of these individuals may also provide valuable shelter for the planted species which have experienced elevated levels of herbivory during the development of the project.

Refer to Appendix A for photographs of current site conditions and Appendix B for information regarding individual plot totals.

Hydrologic Monitoring

Monitoring of water table depths has been conducted throughout 2009 (Appendix C). Five of the six monitoring wells documented water tables within 12" of the surface for at least 108 consecutive days between March 14th and November 17th, 2008. This period represents 43% of the growing season in Beaufort County. Several of the wells exhibited water table depths within 12" of the surface for an even longer duration, exceeding 120 consecutive days. The remaining well that did not meet the success criteria malfunctioned during the early growing season, resulting in a loss of data from this critical period. However, given the previous data from Year 2, it is likely that the antecedent rainfall levels were sufficient to maintain water table depths above 12 inches for a period of 32 consecutive days. Note that precipitation totals during a majority of the growing season were below the 30% normal rainfall distribution provided in the WETS data tables. Totals peaked above the normal levels during late July and early August before returning normal in September.

As in Year 2, groundwater levels exhibited a discernable increase following individual precipitation events greater than 0.25". Events totaling more than 1.0" of precipitation typically resulted in brief periods of surface ponding. Discharge rates following these events were found to be gradual, average 0.6 inches/day which is consistent with very poorly drained soil units.

Data collected from monitoring wells #10 and #11 (reference) during 2009 did not meet jurisdictional criteria for hydrology. However, abnormally low precipitation during the late winter months coupled with high evapotranspiration rates during the summer months likely contributed to the observed lower water table depths.

5.0 CONCLUSION

WRC has completed the implementation of 30.0 acres of non-riverine restoration located in TAR-7 of the lower Tar-Pamlico Basin. At the end of Year 3 monitoring, the vegetative success criteria has been met and the site appears to be progressing towards the target headwater swamp forest community. An increase in overall plant density was observed due to the supplemental planting and favorable conditions in the early growing season. These factors have combined to accelerate site development to a level commensurate with wetland restoration projects of a similar age and reduced the negative impacts associated with the droughts experienced in 2007 and 2008. Hydrologic conditions since project construction have also become more characteristic of these systems, showing water table depths at or near the surface for significant durations during the growing season. It is anticipated that similar durations will be observed during the remaining monitoring period, ensuring the restoration of the target wetland functions throughout the site. The reversion of land previously managed for silvicultural purposes to wetlands will decrease source nutrient loading and concurrently increase nutrient removal capacity. In addition, the project will provide ancillary benefits to aquatic and wildlife habitat via enhanced niche habitat and increased food-web support. By doing so, the proposed project will help to effectively mitigate for authorized loss of wetlands within the Tar-Pamlico Basin.

TABLES

Table 1. Simpson Wetland Restoration Timeline

Task	Project Milestone	Completion Date	COMMENTS
1	Feasibility Study, CE Document, and Public Meeting	July 1, 2005	
2	Record a Conservation Easement on the Site	September 22, 2006	Recorded in Beaufort County Register of Deeds
3	Restoration Plan Approved by EEP	April 2006	Restoration Plan complete
4	Mitigation Site Earthwork Completed	February 15, 2007	Ditch Plug Installation approved by NWP #27
5	Mitigation Site Planting and Installation of Monitoring Devices	February 21, 2007	Approved by EEP
6	Submittal of Mitigation Plan (including as-built drawings)	June, 2007	Approved by EEP
7	Submittal of Monitoring Report #1 to EEP	December 31, 2007	Approved by EEP
8	Submittal of Monitoring Report #2 to EEP	December 31, 2008	Approved by EEP
9	Submittal of Monitoring Report #3 to EEP	December 31, 2009	
10	Submittal of Monitoring Report #4 to EEP	December 31, 2010	
11	Submittal of Monitoring Report #5 to EEP	December 31, 2011	

Table 2. Listed of Planted Species (February 2007)

Species	# planted	(% of total)
Bald cypress (*Taxodium distichum*)	4,000	21.6%
White Cedar (*Chamaemycyparis thyoides*)	2,500	13.5%
Black Gum (*Nyssa sylvatica*)	5,000	27.0%
Red Bay (*Persea borbonia*)	3,000	16.2%
Fetterbush (*Lyonia lucida*)	1,000	5.4%
Sweet Bay (*Magnolia virginiana*)	2,000	10.8%
Wax Myrtle (*Myrica cerifera*)	1,000	5.4%
Total Plants	**18,500**	

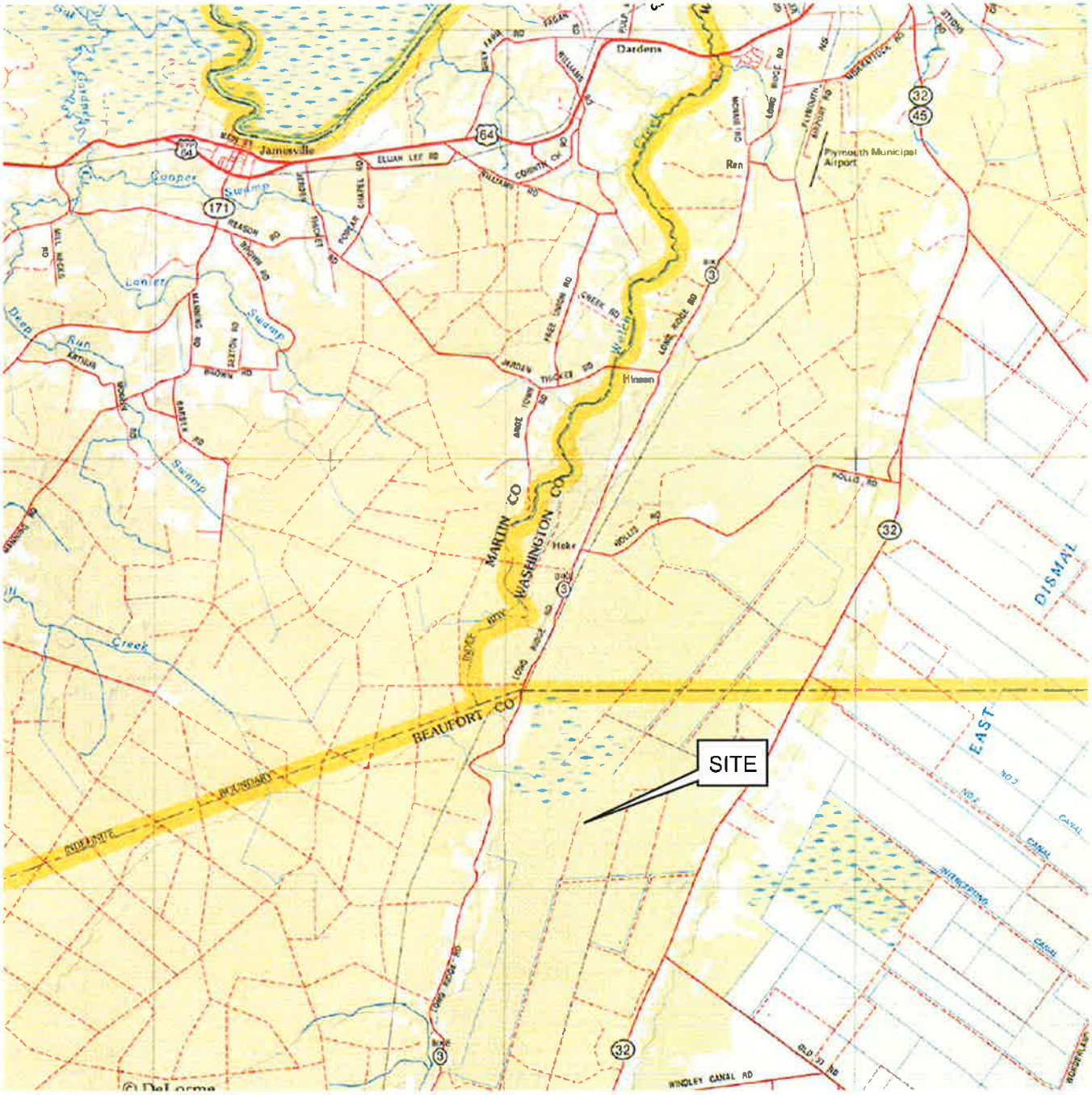
Table 3. Listed of Planted Species - Supplemental Planting (February 2009)

Non-Riverine Wetland	**Bare Root Seedlings**	
Species	**# planted**	**Size**
Bald cypress *(Taxodium distichum)*	4,500	1'-2'
Black Gum *(Nyssa sylvatica)*	4,500	1'-2'
Pond Pine *(Pinus serotina)*	3,000	1'-2'
Green Ash *(Fraxinus pennsylvanica)*	3,600	1'-2'
Total	**15,600**	
	Potted Trees	
Species	**# planted**	**Size**
Bald cypress *(Taxodium distichum)*	246	4'-6'
Sweet Bay *(Magnolia virginiana)*	130	2'-4'
White Cedar *(Chamaemycyparis thyoides)*	113	2'-5'
Green Ash *(Fraxinus pennsylvanica)*	329	2'-5'
Total	**818**	

TABLE 4. Monitoring Plot Comparison (Year 3)
Simpson Wetland Restoration

SPECIES	PLOT 1	PLOT 2	PLOT 3	PLOT 4	PLOT 5	PLOT 6	PLOT 7	PLOT 8	PLOT 9	PLOT 10	PLOT 11	PLOT 12	PLOT 13	PLOT 14	PLOT 15	TOTAL
Atlantic White Cedar	3		2	2	3		1		1	1		1				14
Bald Cypress	36	9	8	15	22	19	18	4	7	6	6	6	1	4	14	175
Highbush Blueberry				3							15	11			1	30
Green Ash	3	1	1	8	1	3		2	3	1	7	1	1	1	5	38
Black Gum	3	6	3	4	1	1			4				1		1	24
Wax Myrtle	28	9	1	30		20	1	2	13	2	3	4			8	121
Fetterbush	2	1	1		4		5	13	8	9	6	6		16	11	82
Sweetbay	1															1
Red Bay		6	34		1	2		8	2		6	2		1		62
Galberry	4	9	8	8	4	2	6	5	1	4	4	4	150	47	8	264
Loblolly Pine	8	1	1		1					1		3				15
Loblolly Bay	27	49	67	36	58	80	43	48	100	48	28	33	24	22	79	742
American Holly				1	1											2
American Ti-ti								1								1
Blueberry	3	3	4			1		11								22
Red Maple	4	1	1	3								2	17			28
Sweet Pepperbush		5	2		1		6	10	3	14		17	150	20	1	229
TOTAL	**122**	**100**	**133**	**110**	**97**	**128**	**80**	**104**	**142**	**86**	**75**	**90**	**344**	**111**	**128**	**1850**
Total Counted toward Success	**118**	**99**	**132**	**107**	**97**	**128**	**80**	**104**	**142**	**86**	**75**	**88**	**327**	**111**	**128**	**1822**
Stem Density (per ac)	**1180**	**990**	**1320**	**1070**	**970**	**1280**	**800**	**1040**	**1420**	**860**	**750**	**880**	**3270**	**1110**	**1280**	**1215**

FIGURES



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SCALE: 1" = 2 miles

Simpson Tract
Tar-Pamlico River Basin
HUC: 03020104
Subbasin:03-03-07

Figure 1.
Vicinity Map

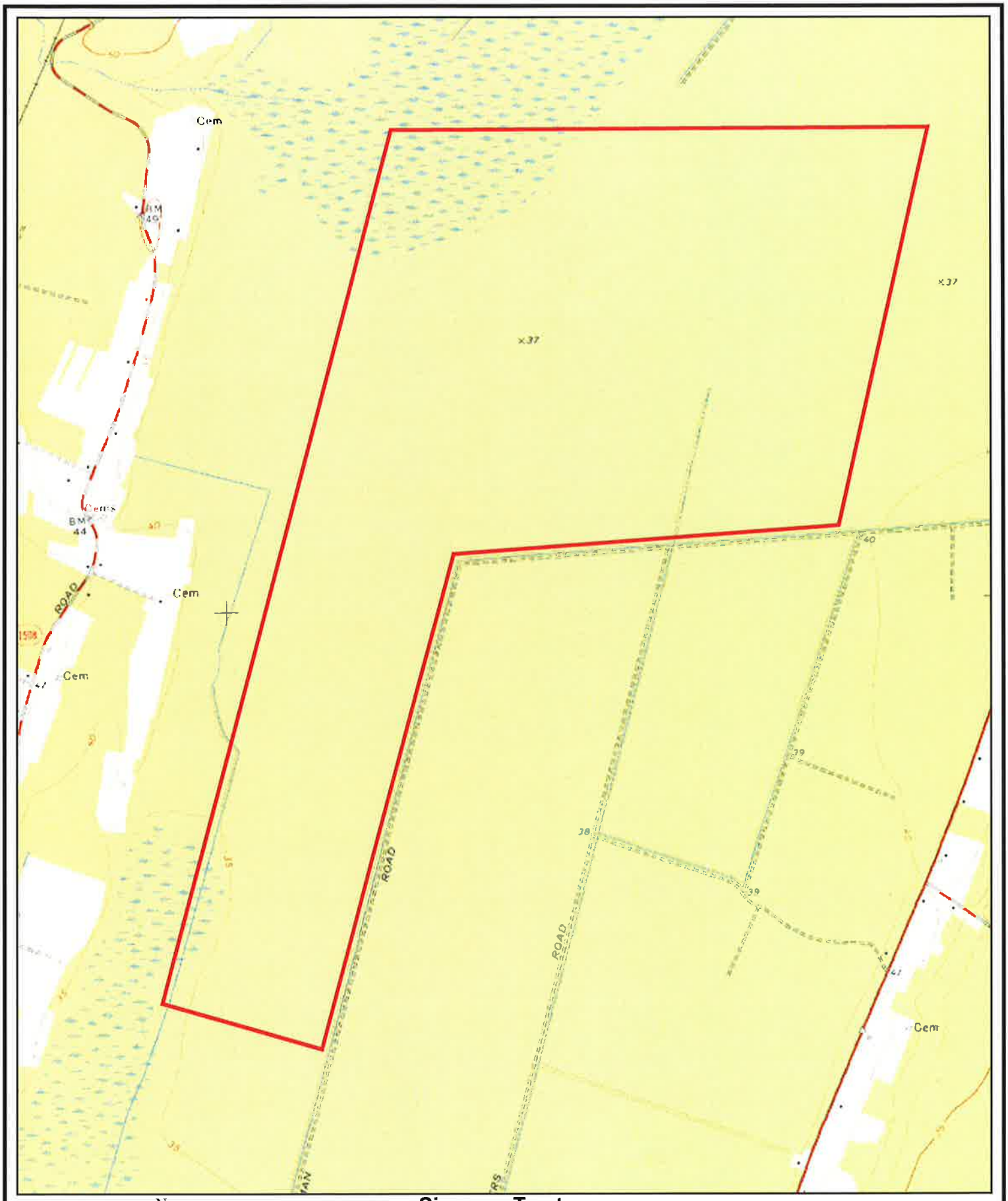
Delorme Gazetteer

Land Management Group, Inc.

Simpson Tract
Tar-Pamlico River Basin
HUC: 03020104
Subbasin:03-03-07

Figure 2.
USDA Soil Survey

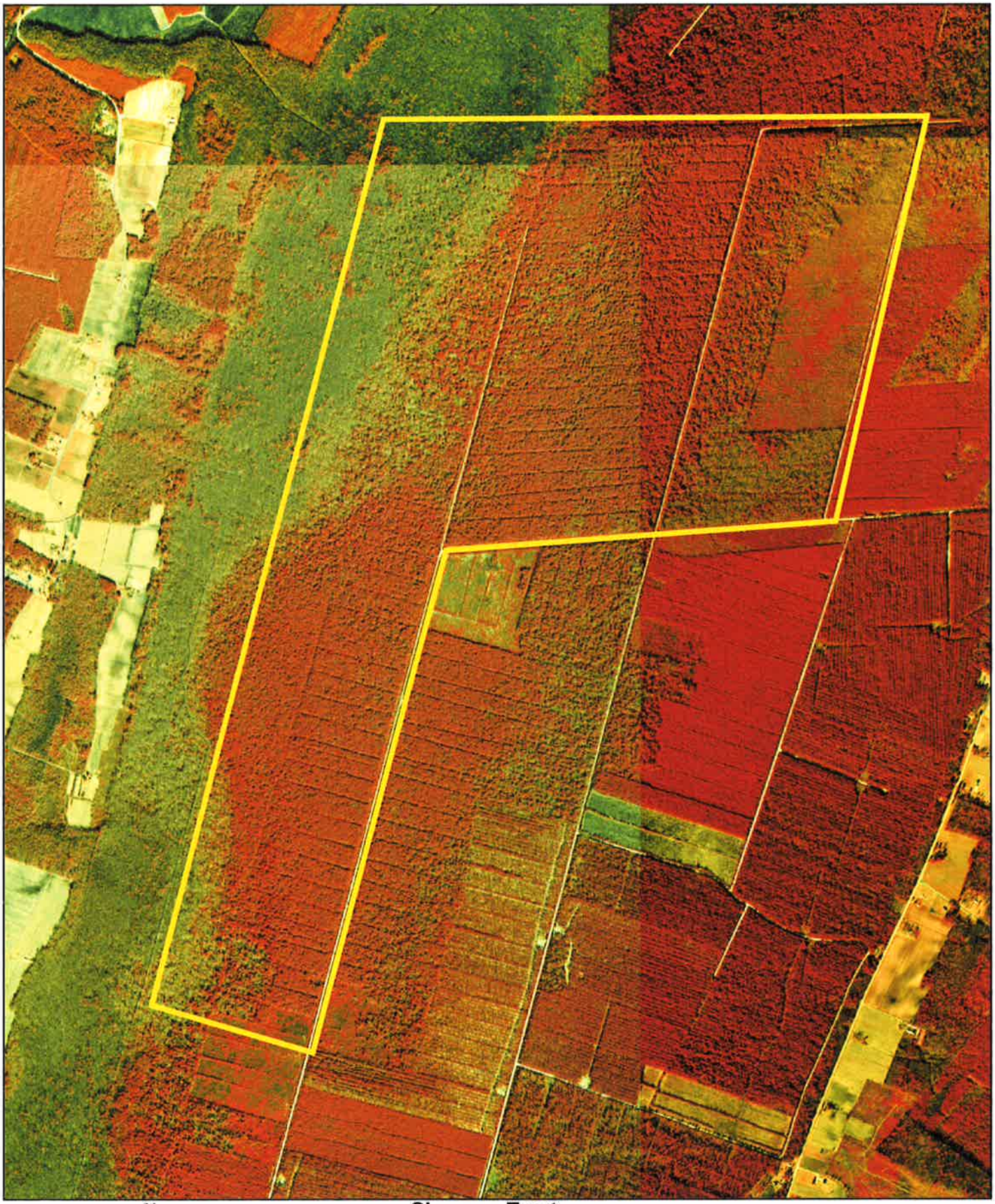
Beaufort County
Land Management Group, Inc.



Simpson Tract
Tar-Pamlico River Basin
HUC: 03020104
Subbasin:03-03-07

Figure 3.
USGS Topographic Map
Hoke, NC

Land Management Group, Inc.



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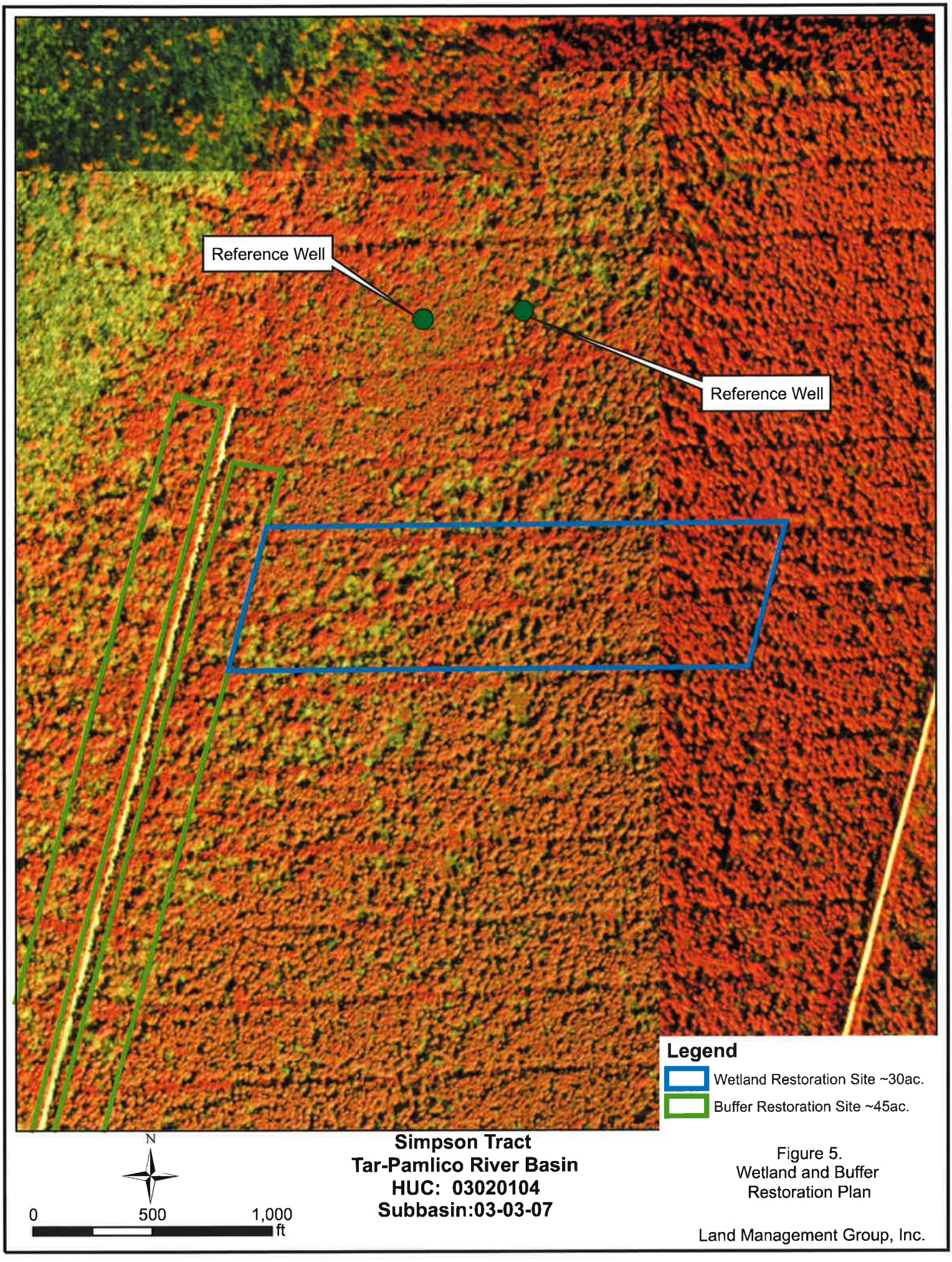
0 2,000 4,000 ft

Simpson Tract
Tar-Pamlico River Basin
HUC: 03020104
Subbasin:03-03-07

Figure 4.
1998 Aerial Photography

Land Management Group, Inc.



Simpson Tract
Tar-Pamlico River Basin
HUC: 03020104
Subbasin:03-03-07

Figure 5.
Wetland and Buffer
Restoration Plan

Land Management Group, Inc.

APPENDIX A.
SITE PHOTOGRAPHS
(September 2009)

(1)View of volunteer Loblolly Bay seedlings in Plot 8

(2) View of current conditions at Plot 11

Simpson Tract Wetland Restoration Beaufort County, NC	LMG LAND MANAGEMENT GROUP INC. *Environmental Consultants*	Site Photographs September 2009 (Annual Monitoring Year 3 of 5)

(3) View of planted Bald Cypress seedling at Plot 1

(4) View of current conditions at Plot 3

(5) View of volunteer Sweet Pepperbush at Plot 11

(6) View of planted Wax Myrtle seedling in Plot 1

Simpson Tract Wetland Restoration Beaufort County, NC	LMG LAND MANAGEMENT GROUP INC. *Environmental Consultants*	Site Photographs September 2009 (Annual Monitoring Year 3 of 5)

APPENDIX B.
INDIVIDUAL PLOT DATA SHEETS
(September 2009)

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 1

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	11	1	Planted	11
Bald Cypress	T/SA	20	2	Planted	20
Bald Cypress	T/SA	4	4	Planted	4
Bald Cypress	T/SA	1	6	Planted	1
Atlantic White Cedar	T/SA	2	3	Planted	2
Atlantic White Cedar	T/SA	1	4	Planted	1
Green Ash	T/SA	1	3	Planted	1
Green Ash	T/SA	2	4	Planted	2
Black Gum	T/SA	2	2	Planted	2
Black Gum	T/SA	1	3	Planted	1
Wax Myrtle	SH	2	2	Planted	2
Wax Myrtle	SH	7	3	Planted	7
Wax Myrtle	SH	11	4	Planted	11
Wax Myrtle	SH	4	5	Planted	4
Wax Myrtle	SH	3	6	Planted	3
Wax Myrtle	SH	1	7	Planted	1
Loblolly Bay	SH	10	1	Volunteer	10
Loblolly Bay	SH	12	2	Volunteer	12
Loblolly Bay	SH	3	3	Volunteer	3
Loblolly Bay	SH	1	5	Volunteer	1
Loblolly Bay	SH	1	6	Volunteer	1
Gallberry	SH	1	2	Volunteer	1
Gallberry	SH	2	3	Volunteer	2
Gallberry	SH	1	4	Volunteer	1
Fetterbush	SH	1	1	Volunteer	1
Fetterbush	SH	1	3	Volunteer	1
Sweetbay	SH	1	2	Volunteer	1
Blueberry	SH	1	1	Volunteer	1
Blueberry	SH	1	2	Volunteer	1
Blueberry	SH	1	3	Volunteer	1
Red Maple	T/SA	1	1	Volunteer	0
Red Maple	T/SA	2	2	Volunteer	0
Red Maple	T/SA	1	1	Volunteer	0
Loblolly Pine	T/SA	4	1	Volunteer	4
Loblolly Pine	T/SA	4	2	Volunteer	4
	TOTAL SHRUBS	**65**		**OBSERVED DENSITY (PER PLOT)**	**118**

	TOTAL TREES OF PLANTED SPECIES	45		OBSERVED DENSITY (PER ACRE)	1180
	TOTAL TREES OF VOLUNTEER SPECIES	12			
	TOTAL INDIVIDUALS	122			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 2

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	6	1	Planted	6
Bald Cypress	T/SA	2	2	Planted	2
Bald Cypress	T/SA	1	4	Planted	1
Black Gum	T/SA	2	1	Planted	2
Black Gum	T/SA	4	2	Planted	4
Green Ash	T/SA	1	3	Planted	1
Wax Myrtle	SH	1	1	Planted	1
Wax Myrtle	SH	5	2	Planted	5
Wax Myrtle	SH	1	3	Planted	1
Wax Myrtle	SH	2	4	Planted	2
Loblolly Bay	SH	21	1	Volunteer	21
Loblolly Bay	SH	22	2	Volunteer	22
Loblolly Bay	SH	6	3	Volunteer	6
Gallberry	SH	4	1	Volunteer	4
Gallberry	SH	5	2	Volunteer	5
Fetterbush	SH	1	1	Volunteer	1
Red Bay	SH	1	1	Volunteer	1
Red Bay	SH	3	2	Volunteer	3
Red Bay	SH	2	4	Volunteer	2
Blueberry	SH	1	1	Volunteer	1
Blueberry	SH	1	2	Volunteer	1
Blueberry	SH	1	3	Volunteer	1
Sweet Pepperbush	SH	5	2	Volunteer	5
Red Maple	T/SA	1	1	Volunteer	0
Loblolly Pine	T/SA	1	2	Volunteer	1
	TOTAL TREES OF PLANTED SPECIES	**82**		**OBSERVED DENSITY (PER ACRE)**	**99**
	TOTAL TREES OF PLANTED SPECIES	**16**		**OBSERVED DENSITY (PER ACRE)**	**990**
	TOTAL TREES OF VOLUNTEER SPECIES	**2**			
	TOTAL INDIVIDUALS	**18**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 3

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	5	1	Planted	5
Bald Cypress	T/SA	3	2	Planted	3
Black Gum	T/SA	1	1	Planted	1
Black Gum	T/SA	2	2	Planted	2
American White Cedar	T/SA	2	5	Planted	2
Green Ash	T/SA	1	3	Planted	1
Wax Myrtle	SH	1	1	Planted	1
Loblolly Bay	SH	23	1	Volunteer	23
Loblolly Bay	SH	28	2	Volunteer	28
Loblolly Bay	SH	15	3	Volunteer	15
Loblolly Bay	SH	1	4	Volunteer	1
Sweet Pepperbush	SH	1	1	Volunteer	1
Sweet Pepperbush	SH	1	3	Volunteer	1
Red Bay	SH	5	1	Volunteer	5
Red Bay	SH	10	2	Volunteer	10
Red Bay	SH	12	3	Volunteer	12
Red Bay	SH	5	4	Volunteer	5
Red Bay	SH	2	5	Volunteer	2
Gallberry	SH	3	1	Volunteer	3
Gallberry	SH	5	2	Volunteer	5
Fetterbush	SH	1	2	Volunteer	1
Blueberry	SH	1	1	Volunteer	1
Blueberry	SH	1	2	Volunteer	1
Blueberry	SH	2	3	Volunteer	2
Loblolly Pine	T/SA	1	2	Volunteer	1
Red Maple	T/SA	1	2	Volunteer	0
	TOTAL SHRUBS	**117**		**OBSERVED DENSITY (PER PLOT)**	**132**
	TOTAL TREES OF PLANTED SPECIES	**14**		**OBSERVED DENSITY (PER ACRE)**	**1320**
	TOTAL TREES OF VOLUNTEER SPECIES	**2**			
	TOTAL INDIVIDUALS	**133**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 4

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Green Ash	T/SA	7	2	Planted	7
Green Ash	T/SA	1	4	Planted	1
Bald Cypress	T/SA	9	1	Planted	9
Bald Cypress	T/SA	4	2	Planted	4
Bald Cypress	T/SA	1	3	Planted	1
Bald Cypress	T/SA	1	4	Planted	1
Black Gum	T/SA	2	< 1	Planted	2
Black Gum	T/SA	1	1	Planted	1
Black Gum	T/SA	1	2	Planted	1
Atlantic White Cedar	T/SA	1	2	Planted	1
Atlantic White Cedar	T/SA	1	4	Planted	1
Wax Myrtle	SH	3	1	Planted	3
Wax Myrtle	SH	3	2	Planted	3
Wax Myrtle	SH	6	3	Planted	6
Wax Myrtle	SH	14	4	Planted	14
Wax Myrtle	SH	4	5	Planted	4
Loblolly Bay	SH	10	1	Volunteer	10
Loblolly Bay	SH	19	2	Volunteer	19
Loblolly Bay	SH	6	3	Volunteer	6
Loblolly Bay	SH	1	4	Volunteer	1
Gallberry	SH	4	1	Volunteer	4
Gallberry	SH	3	2	Volunteer	3
Gallberry	SH	1	3	Volunteer	1
Blueberry	SH	3	2	Volunteer	3
Red Maple	T/SA	2	1	Volunteer	0
Red Maple	T/SA	1	2	Volunteer	0
American Holly	T/SA	1	1	Volunteer	1
	TOTAL SHRUBS	**77**		**OBSERVED DENSITY (PER PLOT)**	**107**
	TOTAL TREES OF PLANTED SPECIES	**29**		**OBSERVED DENSITY (PER ACRE)**	**1070**
	TOTAL TREES OF VOLUNTEER SPECIES	**4**			
	TOTAL INDIVIDUALS	**110**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 5

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	11	1	Planted	11
Bald Cypress	T/SA	10	2	Planted	10
Bald Cypress	T/SA	1	5	Planted	1
Green Ash	T/SA	1	2	Planted	1
Black Gum	T/SA	1	1	Planted	1
Atlantic White Cedar	T/SA	3	4	Planted	3
Red Bay	SH	1	3	Volunteer	1
Loblolly Bay	SH	11	<1	Volunteer	11
Loblolly Bay	SH	20	1	Volunteer	20
Loblolly Bay	SH	19	2	Volunteer	19
Loblolly Bay	SH	7	3	Volunteer	7
Loblolly Bay	SH	1	4	Volunteer	1
Fetterbush	SH	1	1	Volunteer	1
Fetterbush	SH	3	2	Volunteer	3
Gallberry	SH	1	1	Volunteer	1
Gallberry	SH	2	2	Volunteer	2
Gallberry	SH	1	5	Volunteer	1
Sweet Pepperbush	SH	1	1	Volunteer	1
Loblolly Pine	T/SA	1	1	Volunteer	1
American Holly	T/SA	1	1	Volunteer	1
	TOTAL SHRUBS	**68**		**OBSERVED DENSITY (PER PLOT)**	**97**
	TOTAL TREES OF PLANTED SPECIES	**27**		**OBSERVED DENSITY (PER ACRE)**	**970**
	TOTAL TREES OF VOLUNTEER SPECIES	**2**			
	TOTAL INDIVIDUALS	**97**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 6

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	14	1	Planted	14
Bald Cypress	T/SA	5	2	Planted	5
Green Ash	T/SA	2	2	Planted	2
Green Ash	T/SA	1	3	Planted	1
Black Gum	T/SA	1	2	Planted	1
Wax Myrtle	SH	3	2	Planted	3
Wax Myrtle	SH	5	3	Planted	5
Wax Myrtle	SH	7	4	Planted	7
Wax Myrtle	SH	4	5	Planted	4
Wax Myrtle	SH	1	6	Planted	1
Red Bay	SH	1	2	Volunteer	1
Red Bay	SH	1	3	Volunteer	1
Gallberry	SH	2	2	Volunteer	2
Loblolly Bay	SH	8	1	Volunteer	8
Loblolly Bay	SH	30	2	Volunteer	30
Loblolly Bay	SH	26	3	Volunteer	26
Loblolly Bay	SH	7	4	Volunteer	7
Loblolly Bay	SH	2	5	Volunteer	2
Loblolly Bay	SH	3	10	Volunteer	3
Loblolly Bay	SH	2	12	Volunteer	2
Loblolly Bay	SH	2	15	Volunteer	2
Blueberry	SH	1	1	Volunteer	1
	TOTAL SHRUBS	**105**		**OBSERVED DENSITY (PER ACRE)**	**128**
	TOTAL TREES OF PLANTED SPECIES	**23**		**OBSERVED DENSITY (PER ACRE)**	**1280**
	TOTAL TREES OF VOLUNTEER SPECIES	**0**			
	TOTAL INDIVIDUALS	**128**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 7

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	11	1	Planted	11
Bald Cypress	T/SA	7	2	Planted	7
Atlantic White Cedar	T/SA	1	3	Planted	1
Wax Myrtle	SH	1	2	Planted	1
Loblolly Bay	SH	11	1	Volunteer	11
Loblolly Bay	SH	9	2	Volunteer	9
Loblolly Bay	SH	18	3	Volunteer	18
Loblolly Bay	SH	5	4	Volunteer	5
Fetterbush	SH	2	1	Volunteer	2
Fetterbush	SH	2	2	Volunteer	2
Fetterbush	SH	1	3	Volunteer	1
Gallberry	SH	3	2	Volunteer	3
Gallberry	SH	1	3	Volunteer	1
Gallberry	SH	2	4	Volunteer	2
Sweet Pepperbush	SH	5	1	Volunteer	5
Sweet Pepperbush	SH	1	3	Volunteer	1
	TOTAL SHRUBS	**61**		**OBSERVED DENSITY (PER PLOT)**	**80**
	TOTAL TREES OF PLANTED SPECIES	**19**		**OBSERVED DENSITY (PER ACRE)**	**800**
	TOTAL TREES OF VOLUNTEER SPECIES	**0**			
	TOTAL INDIVIDUALS	**80**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 8

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	4	1	Planted	4
Green Ash	T/SA	1	2	Planted	1
Wax Myrtle	SH	2	2	Planted	2
Loblolly Bay	SH	14	1	Volunteer	14
Loblolly Bay	SH	21	2	Volunteer	21
Loblolly Bay	SH	9	3	Volunteer	9
Loblolly Bay	SH	1	4	Volunteer	1
Loblolly Bay	SH	2	6	Volunteer	2
Loblolly Bay	SH	1	9	Volunteer	1
Loblolly Bay	SH	1	10	Volunteer	1
Red Bay	SH	2	1	Volunteer	2
Red Bay	SH	3	2	Volunteer	3
Red Bay	SH	3	3	Volunteer	3
Fetterbush	SH	3	1	Volunteer	3
Fetterbush	SH	6	2	Volunteer	6
Fetterbush	SH	2	3	Volunteer	2
Fetterbush	SH	2	4	Volunteer	2
Blueberry	SH	3	1	Volunteer	3
Blueberry	SH	3	2	Volunteer	3
Blueberry	SH	5	3	Volunteer	5
Sweet Pepperbush	SH	2	1	Volunteer	2
Sweet Pepperbush	SH	1	2	Volunteer	1
Sweet Pepperbush	SH	6	3	Volunteer	6
Sweet Pepperbush	SH	1	6	Volunteer	1
Gallberry	SH	1	1	Volunteer	1
Gallberry	SH	3	3	Volunteer	3
Gallberry	SH	1	5	Volunteer	1
Titi	SH	1	4	Volunteer	1
	TOTAL SHRUBS	99		OBSERVED DENSITY (PER PLOT)	104
	TOTAL TREES OF PLANTED SPECIES	5		OBSERVED DENSITY (PER ACRE)	1040
	TOTAL TREES OF VOLUNTEER SPECIES	0			
	TOTAL INDIVIDUALS	104			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 9

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Atlantic White Cedar	T/SA	1	7	Planted	1
Bald Cypress	T/SA	6	1	Planted	6
Bald Cypress	T/SA	1	2	Planted	1
Black Gum	T/SA	1	1	Planted	1
Black Gum	T/SA	3	2	Planted	3
Green Ash	T/SA	1	2	Planted	1
Green Ash	T/SA	2	3	Planted	2
Wax Myrtle	SH	1	1	Planted	1
Wax Myrtle	SH	3	2	Planted	3
Wax Myrtle	SH	1	3	Planted	1
Wax Myrtle	SH	3	4	Planted	3
Wax Myrtle	SH	5	5	Planted	5
Loblolly Bay	SH	20	1	Volunteer	20
Loblolly Bay	SH	30	2	Volunteer	30
Loblolly Bay	SH	41	3	Volunteer	41
Loblolly Bay	SH	7	4	Volunteer	7
Loblolly Bay	SH	2	6	Volunteer	2
Gallberry	SH	1	1	Volunteer	1
Sweet Pepperbush	SH	1	1	Volunteer	1
Sweet Pepperbush	SH	1	2	Volunteer	1
Sweet Pepperbush	SH	1	3	Volunteer	1
Red Bay	SH	2	2	Volunteer	2
Fetterbush	SH	2	1	Volunteer	2
Fetterbush	SH	2	2	Volunteer	2
Fetterbush	SH	3	3	Volunteer	3
Fetterbush	SH	1	6	Volunteer	1
	TOTAL SHRUBS	**127**		**OBSERVED DENSITY (PER PLOT)**	**142**
	TOTAL TREES OF PLANTED SPECIES	**15**		**OBSERVED DENSITY (PER ACRE)**	**1400**
	TOTAL TREES OF VOLUNTEER SPECIES	**0**			
	TOTAL INDIVIDUALS	**142**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 10

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Green Ash	T/SA	1	3	Planted	1
Bald Cypress	T/SA	4	1	Planted	4
Bald Cypress	T/SA	2	2	Planted	2
Atlantic White Cedar	T/SA	1	4	Planted	1
Wax Myrtle	SH	1	2	Planted	1
Wax Myrtle	SH	1	3	Planted	1
Fetterbush	SH	4	1	Volunteer	4
Fetterbush	SH	3	2	Volunteer	3
Fetterbush	SH	2	3	Volunteer	2
Gallberry	SH	3	1	Volunteer	3
Gallberry	SH	1	2	Volunteer	1
Sweet Pepperbush	SH	2	1	Volunteer	2
Sweet Pepperbush	SH	7	2	Volunteer	7
Sweet Pepperbush	SH	5	3	Volunteer	5
Loblolly Bay	SH	13	1	Volunteer	13
Loblolly Bay	SH	17	2	Volunteer	17
Loblolly Bay	SH	15	3	Volunteer	15
Loblolly Bay	SH	3	4	Volunteer	3
Loblolly Pine	T/SA	1	1	Volunteer	1
	TOTAL SHRUBS	**77**		**OBSERVED DENSITY (PER PLOT)**	**86**
	TOTAL TREES OF PLANTED SPECIES	**8**		**OBSERVED DENSITY (PER ACRE)**	**860**
	TOTAL TREES OF VOLUNTEER SPECIES	**1**			
	TOTAL INDIVIDUALS	**86**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 11

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	5	1	Planted	5
Bald Cypress	T/SA	1	2	Planted	1
Green Ash	T/SA	7	2	Planted	7
Wax Myrtle	SH	2	2	Planted	2
Wax Myrtle	SH	1	3	Planted	1
Loblolly Bay	SH	22	1	Volunteer	22
Loblolly Bay	SH	6	2	Volunteer	6
Red Bay	SH	4	1	Volunteer	4
Red Bay	SH	2	2	Volunteer	2
Gallberry	SH	2	1	Volunteer	2
Gallberry	SH	2	2	Volunteer	2
Blueberry	SH	5	1	Volunteer	5
Blueberry	SH	9	2	Volunteer	9
Blueberry	SH	1	3	Volunteer	1
Fetterbush	SH	5	1	Volunteer	5
Fetterbush	SH	1	2	Volunteer	1
	TOTAL SHRUBS	**62**		**OBSERVED DENSITY (PER PLOT)**	**75**
	TOTAL TREES OF PLANTED SPECIES	**13**		**OBSERVED DENSITY (PER ACRE)**	**750**
	TOTAL TREES OF VOLUNTEER SPECIES	**0**			
	TOTAL INDIVIDUALS	**75**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 12

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	3	1	Planted	3
Bald Cypress	T/SA	3	2	Planted	3
American White Cedar	T/SA	1	1	Planted	1
Green Ash	T/SA	1	3	Planted	1
Wax Myrtle	SH	3	2	Planted	3
Wax Myrtle	SH	1	3	Planted	1
Loblolly Bay	SH	12	1	Volunteer	12
Loblolly Bay	SH	13	2	Volunteer	13
Loblolly Bay	SH	7	3	Volunteer	7
Loblolly Bay	SH	1	6	Volunteer	1
Sweet Pepperbush	SH	2	1	Volunteer	2
Sweet Pepperbush	SH	7	2	Volunteer	7
Sweet Pepperbush	SH	8	3	Volunteer	8
Blueberry	SH	2	1	Volunteer	2
Blueberry	SH	4	2	Volunteer	4
Blueberry	SH	3	3	Volunteer	3
Blueberry	SH	1	4	Volunteer	1
Blueberry	SH	1	5	Volunteer	1
Gallberry	SH	3	1	Volunteer	3
Gallberry	SH	1	2	Volunteer	1
Red Bay	SH	1	1	Volunteer	1
Red Bay	SH	1	3	Volunteer	1
Fetterbush	SH	3	1	Volunteer	3
Fetterbush	SH	2	2	Volunteer	2
Fetterbush	SH	1	3	Volunteer	1
Loblolly Pine	T/SA	3	1	Volunteer	3
Red Maple	T/SA	2	1	Volunteer	0
	TOTAL SHRUBS	**77**		**OBSERVED DENSITY (PER PLOT)**	**88**
	TOTAL TREES OF PLANTED SPECIES	**8**		**OBSERVED DENSITY (PER ACRE)**	**880**
	TOTAL TREES OF VOLUNTEER SPECIES	**5**			
	TOTAL INDIVIDUALS	**90**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 13

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	1	5	Planted	1
Green Ash	T/SA	1	3	Planted	1
Black Gum	T/SA	1	4	Planted	1
Sweet Pepperbush	SH	110	3	Volunteer	110
Sweet Pepperbush	SH	40	4	Volunteer	40
Loblolly Bay	SH	4	4	Volunteer	4
Loblolly Bay	SH	7	6	Volunteer	7
Loblolly Bay	SH	4	8	Volunteer	4
Loblolly Bay	SH	9	10	Volunteer	9
Gallberry	SH	20	3	Volunteer	20
Gallberry	SH	10	4	Volunteer	10
Gallberry	SH	120	5	Volunteer	120
Red Maple	T/SA	5	4	Volunteer	0
Red Maple	T/SA	6	5	Volunteer	0
Red Maple	T/SA	6	10	Volunteer	0
	TOTAL SHRUBS	**324**		**OBSERVED DENSITY (PER PLOT)**	**327**
	TOTAL TREES OF PLANTED SPECIES	**3**		**OBSERVED DENSITY (PER ACRE)**	**3270**
	TOTAL TREES OF VOLUNTEER SPECIES	**17**			
	TOTAL INDIVIDUALS	**344**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 14

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	1	2	Planted	1
Bald Cypress	T/SA	1	3	Planted	1
Bald Cypress	T/SA	1	5	Planted	1
Bald Cypress	T/SA	1	6	Planted	1
Green Ash	T/SA	1	2	Planted	1
Red Bay	SH	1	2	Volunteer	1
Loblolly Bay	SH	1	1	Volunteer	1
Loblolly Bay	SH	4	2	Volunteer	4
Loblolly Bay	SH	3	3	Volunteer	3
Loblolly Bay	SH	7	4	Volunteer	7
Loblolly Bay	SH	1	5	Volunteer	1
Loblolly Bay	SH	1	6	Volunteer	1
Loblolly Bay	SH	1	7	Volunteer	1
Loblolly Bay	SH	1	9	Volunteer	1
Loblolly Bay	SH	3	10	Volunteer	3
Gallberry	SH	9	3	Volunteer	9
Gallberry	SH	33	4	Volunteer	33
Gallberry	SH	1	5	Volunteer	1
Gallberry	SH	4	6	Volunteer	4
Fetterbush	SH	12	1	Volunteer	12
Fetterbush	SH	4	2	Volunteer	4
Sweet Pepperbush	SH	9	3	Volunteer	9
Sweet Pepperbush	SH	11	4	Volunteer	11
	TOTAL SHRUBS	**106**		**OBSERVED DENSITY (PER PLOT)**	**111**
	TOTAL TREES OF PLANTED SPECIES	**5**		**OBSERVED DENSITY (PER ACRE)**	**1110**
	TOTAL TREES OF VOLUNTEER SPECIES	**0**			
	TOTAL INDIVIDUALS	**111**			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 3 - 2009
PLOT NUMBER 15

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	10	1	Planted	10
Bald Cypress	T/SA	4	2	Planted	4
Green Ash	T/SA	4	2	Planted	4
Green Ash	T/SA	1	3	Planted	1
Black Gum	T/SA	1	2	Planted	1
Wax Myrtle	SH	6	1	Planted	6
Wax Myrtle	SH	1	2	Planted	1
Wax Myrtle	SH	1	5	Planted	1
Loblolly Bay	SH	71	1	Volunteer	71
Loblolly Bay	SH	4	2	Volunteer	4
Loblolly Bay	SH	1	3	Volunteer	1
Loblolly Bay	SH	1	4	Volunteer	1
Loblolly Bay	SH	1	6	Volunteer	1
Loblolly Bay	SH	1	10	Volunteer	1
Fetterbush	SH	6	1	Volunteer	6
Fetterbush	SH	5	2	Volunteer	5
Blueberry	SH	1	1	Volunteer	1
Gallberry	SH	8	4	Volunteer	8
Sweet Pepperbush	SH	1	2	Volunteer	1
	TOTAL SHRUBS	**108**		**OBSERVED DENSITY (PER PLOT)**	**128**
	TOTAL TREES OF PLANTED SPECIES	**20**		**OBSERVED DENSITY (PER ACRE)**	**1280**
	TOTAL TREES OF VOLUNTEER SPECIES	**0**			
	TOTAL INDIVIDUALS	**128**			

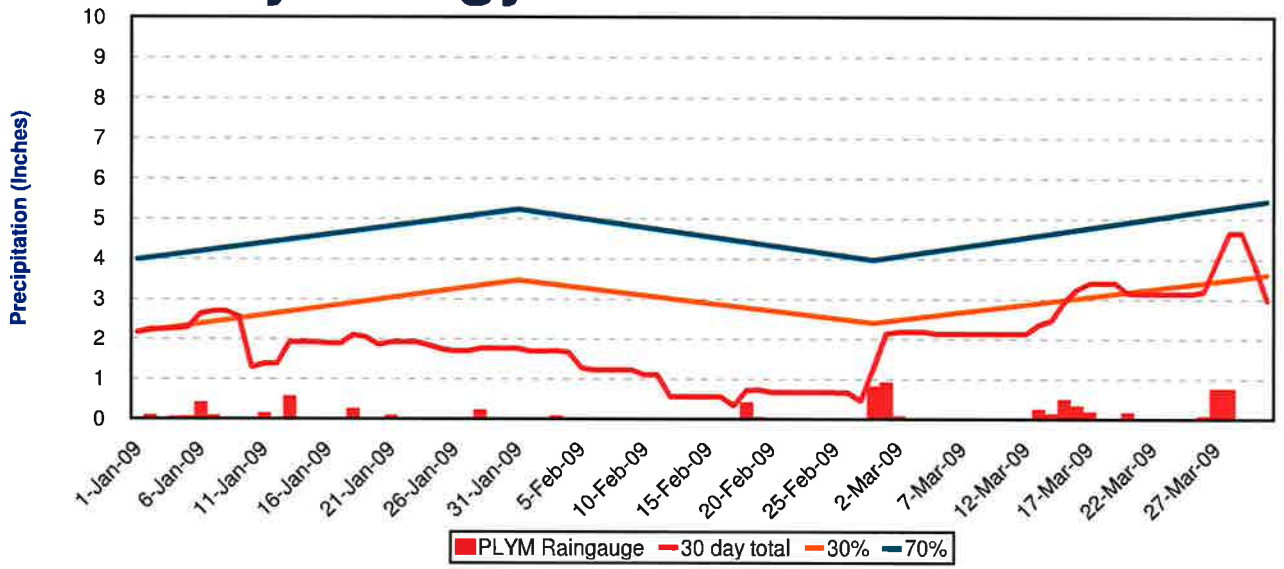
APPENDIX C.
2009 Hydrographs
Wells 1-6 On-site Wetland Wells
Wells 10-11 New Reference Wells (installed May 2007)

Hydrology Assessment

March, 2009

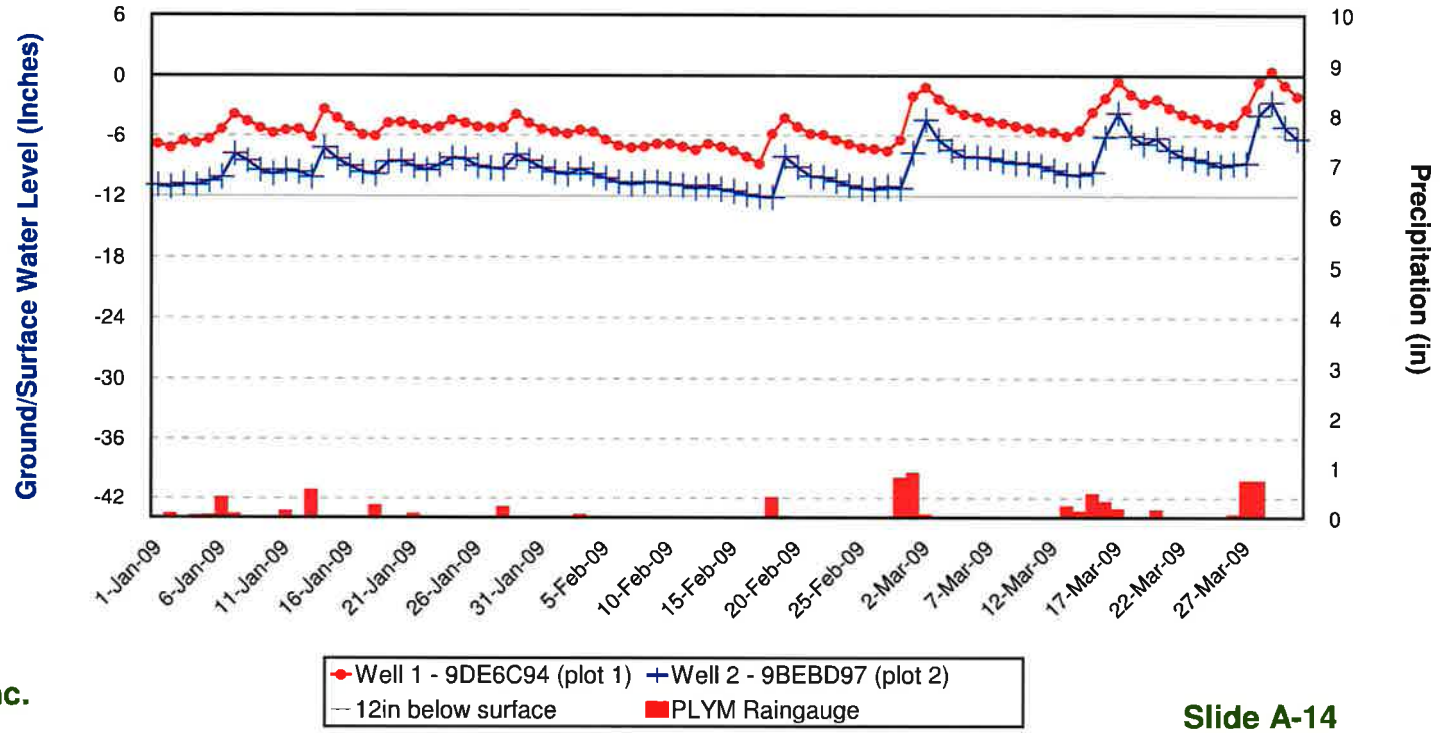
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 1 & 2
- Ecotone - WM 40
- January 1, 2009 -
- March 31, 2009
- One reading per day
- at 7:00am



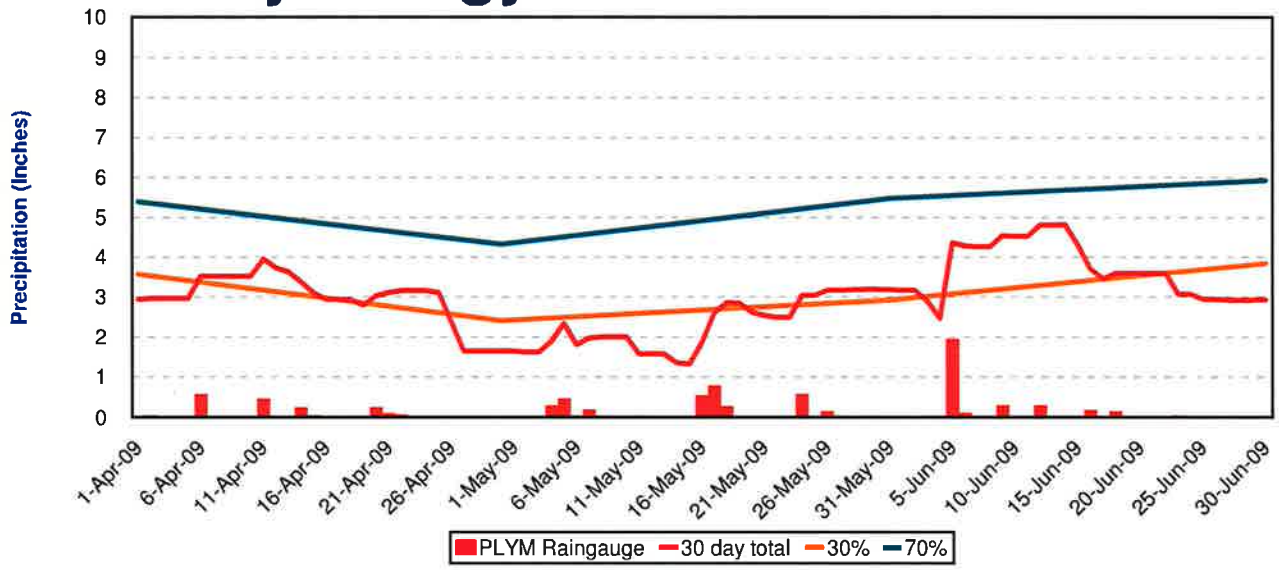
Land Management Group, Inc.
www.lmgroup.net

Hydrology Assessment

June, 2009

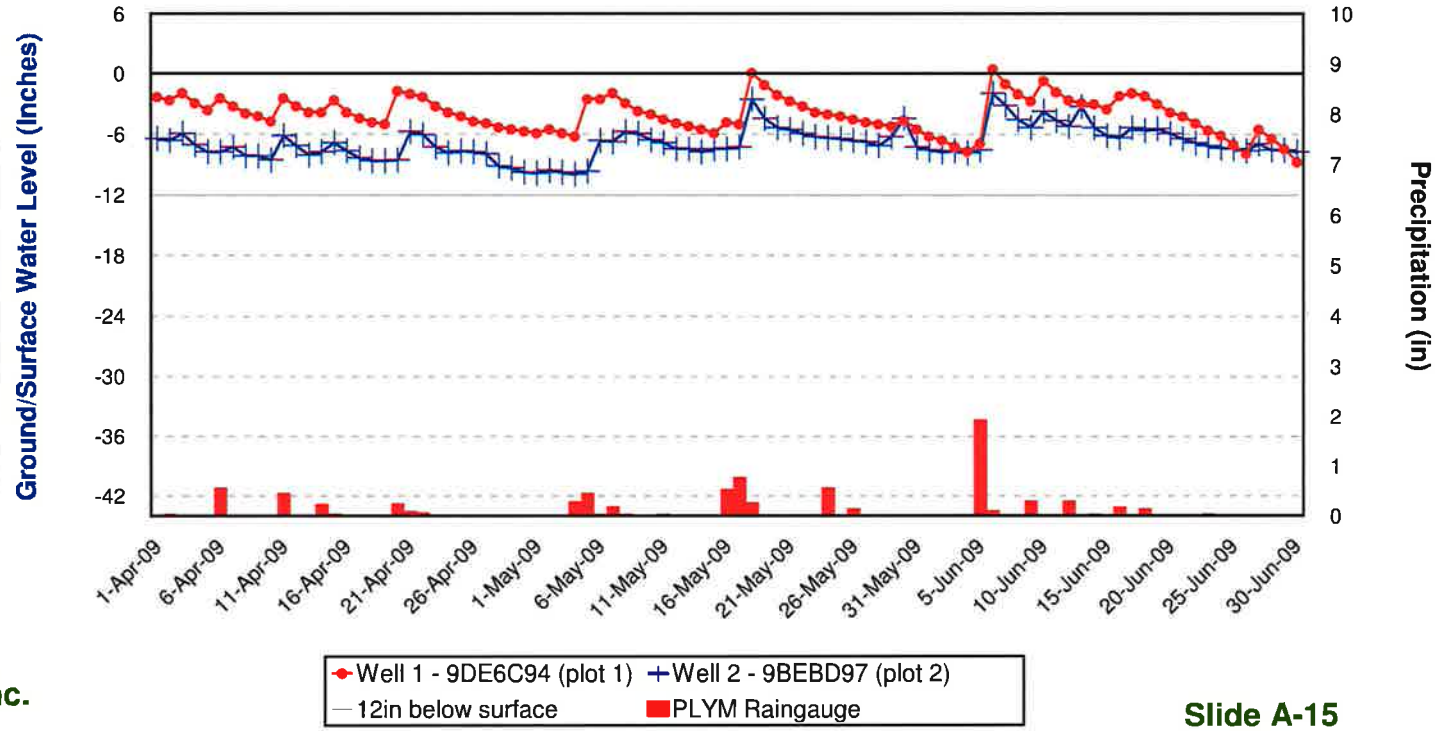
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 1 & 2
- Ecotone - WM 40
- April 1, 2009-
- June 30, 2009
- One reading per day
- at 7:00am



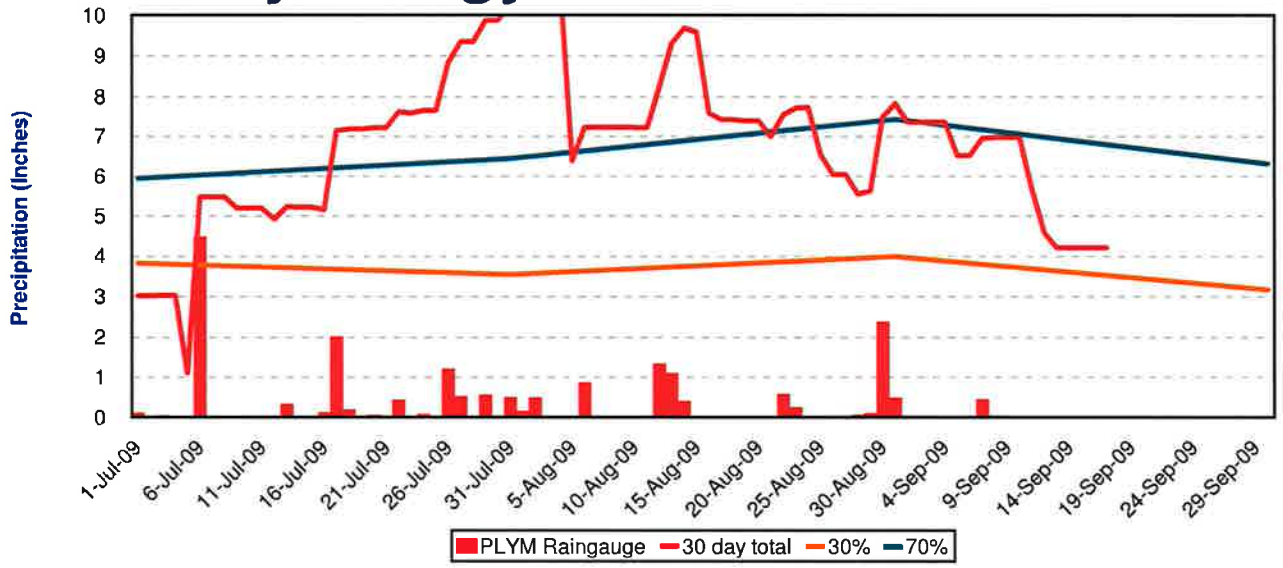
Land Management Group, Inc.
www.lmgroup.net

Hydrology Assessment

September, 2009

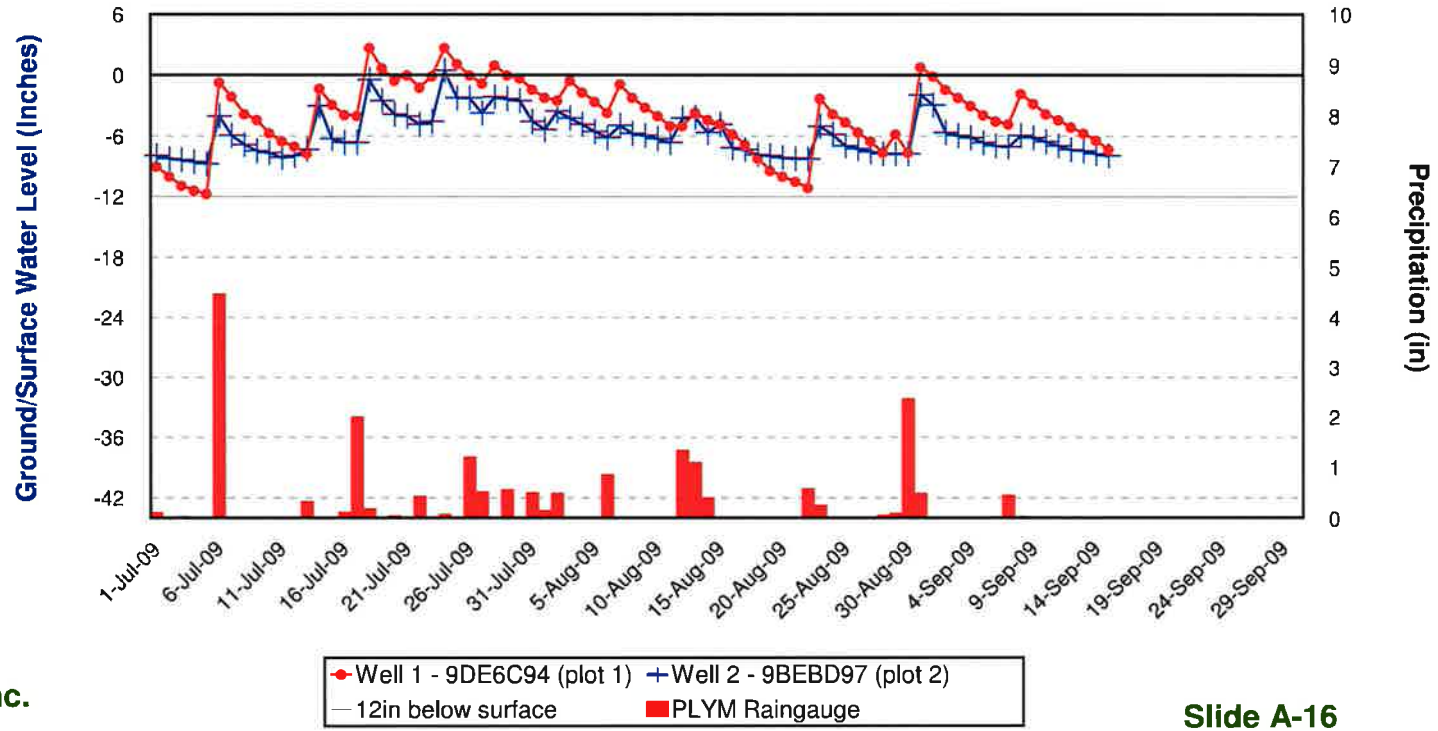
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 1 & 2
- Ecotone - WM 40
- July 1, 2009-
- September 30, 2009
- One reading per day
- at 7:00am



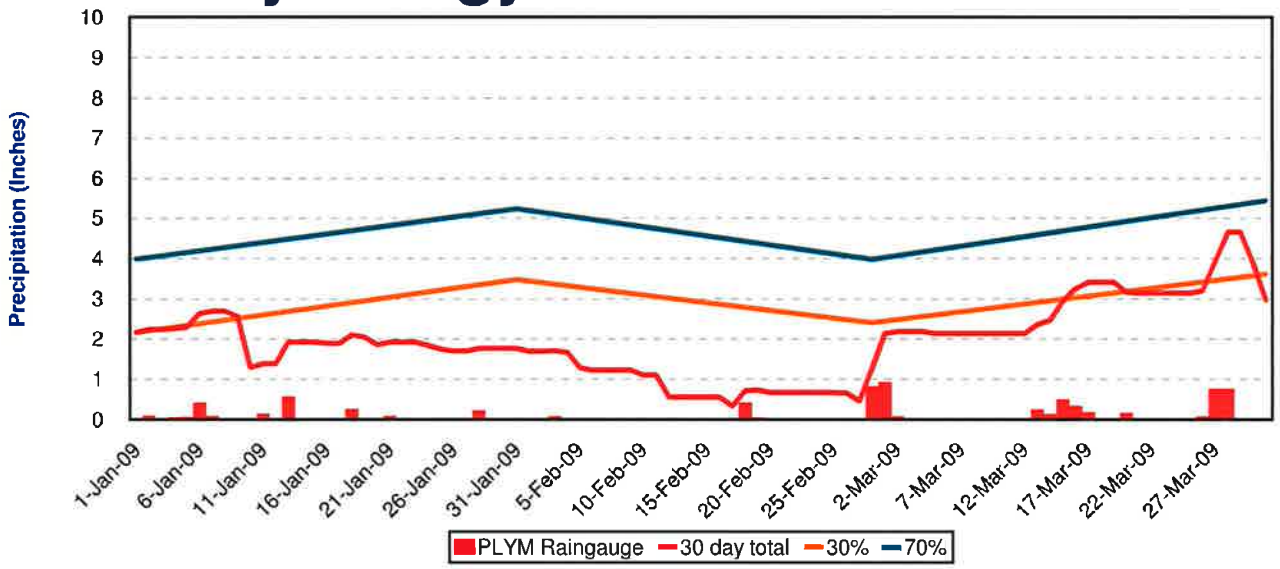
Land Management Group, Inc.
www.lmgroup.net

Hydrology Assessment

March, 2009

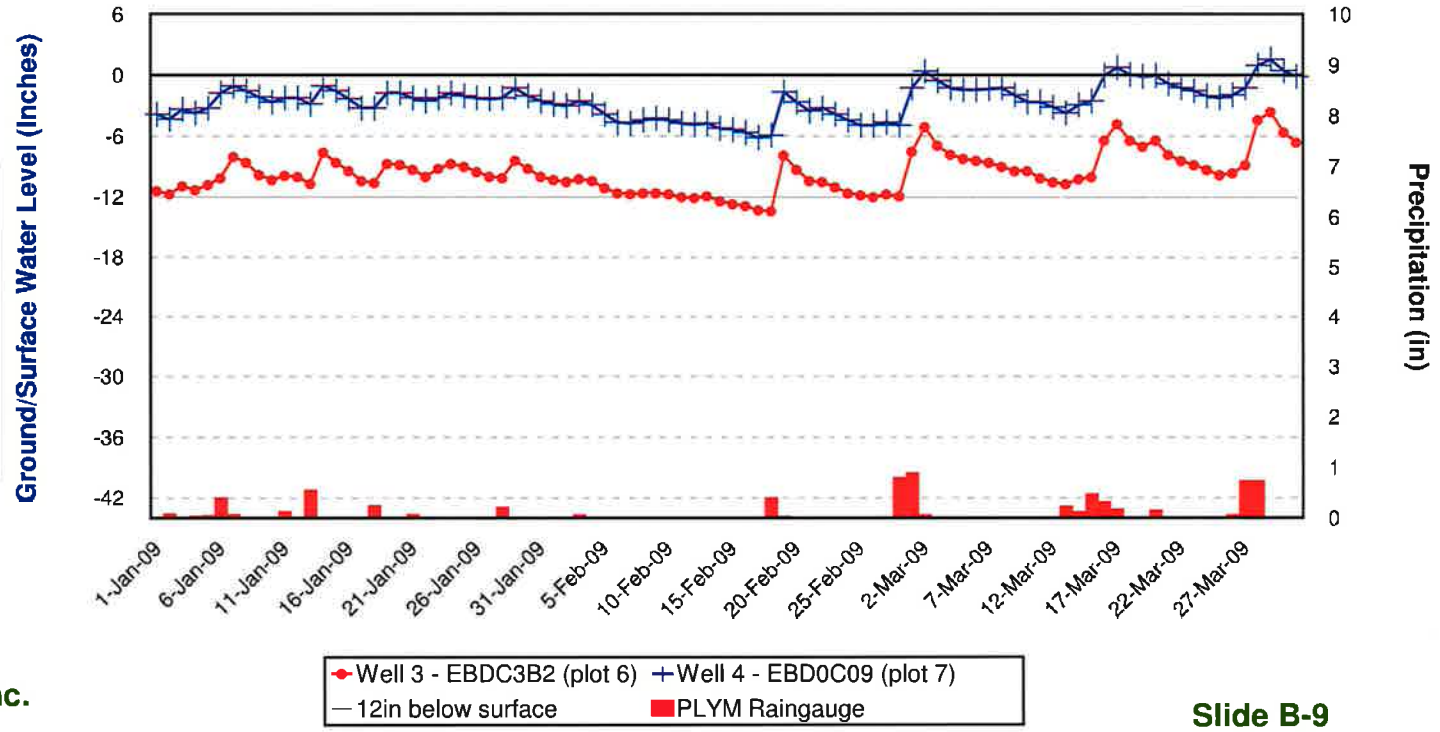
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 3 & 4
- Ecotone - WM 40
- January 1, 2009 -
- March 31, 2009
- One reading per day
- at 7:00am



Hydrology Assessment

June, 2009

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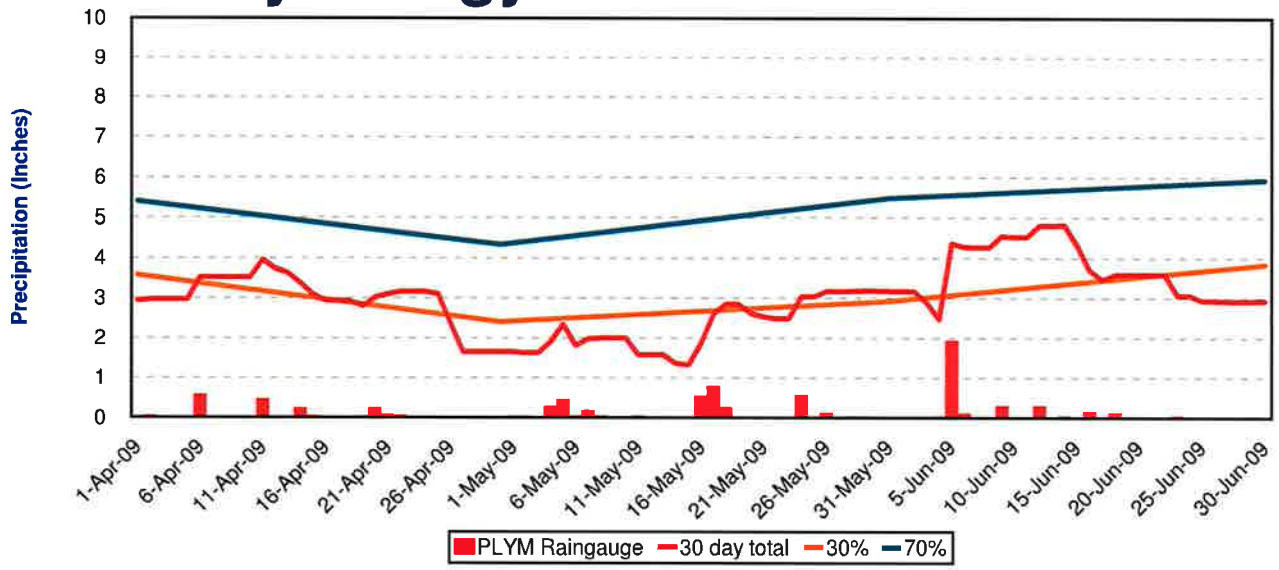

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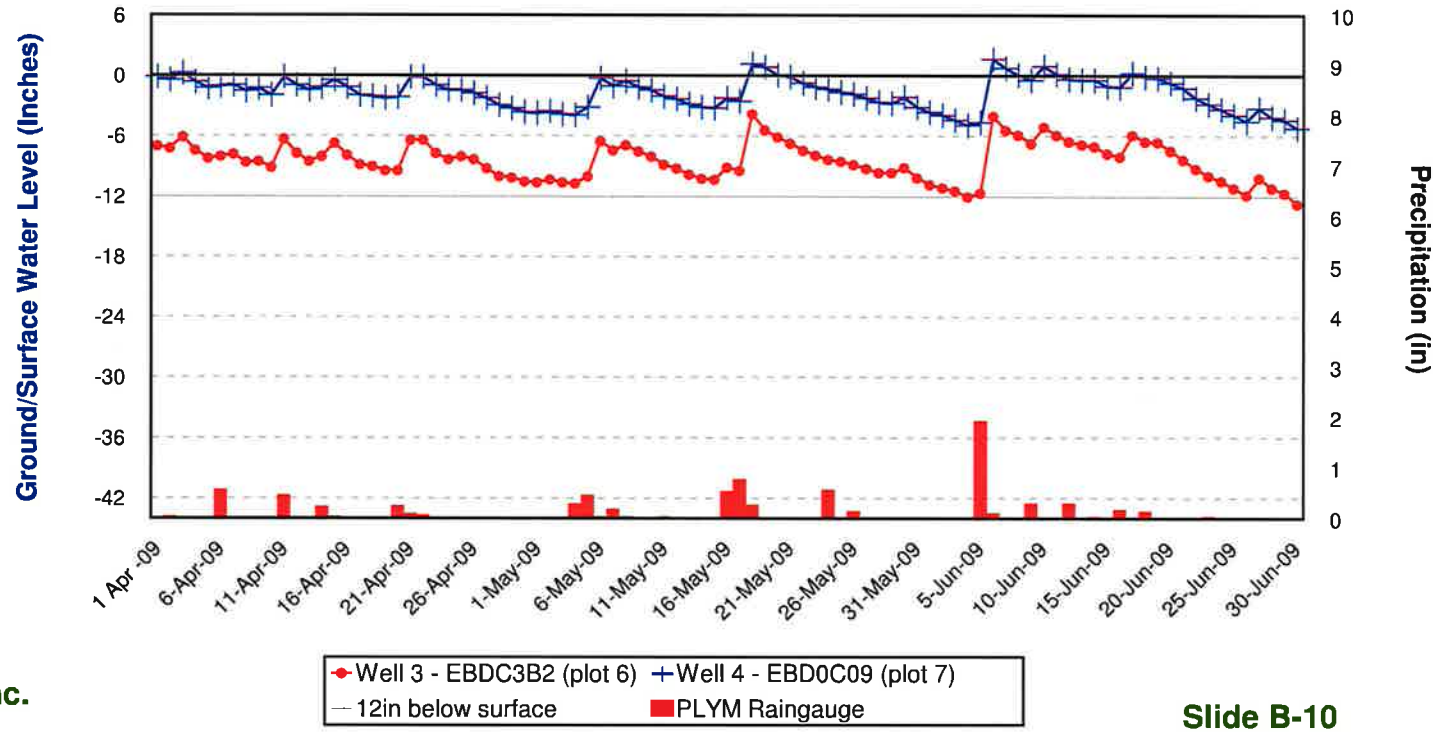

Hydrology Assessment

September, 2009

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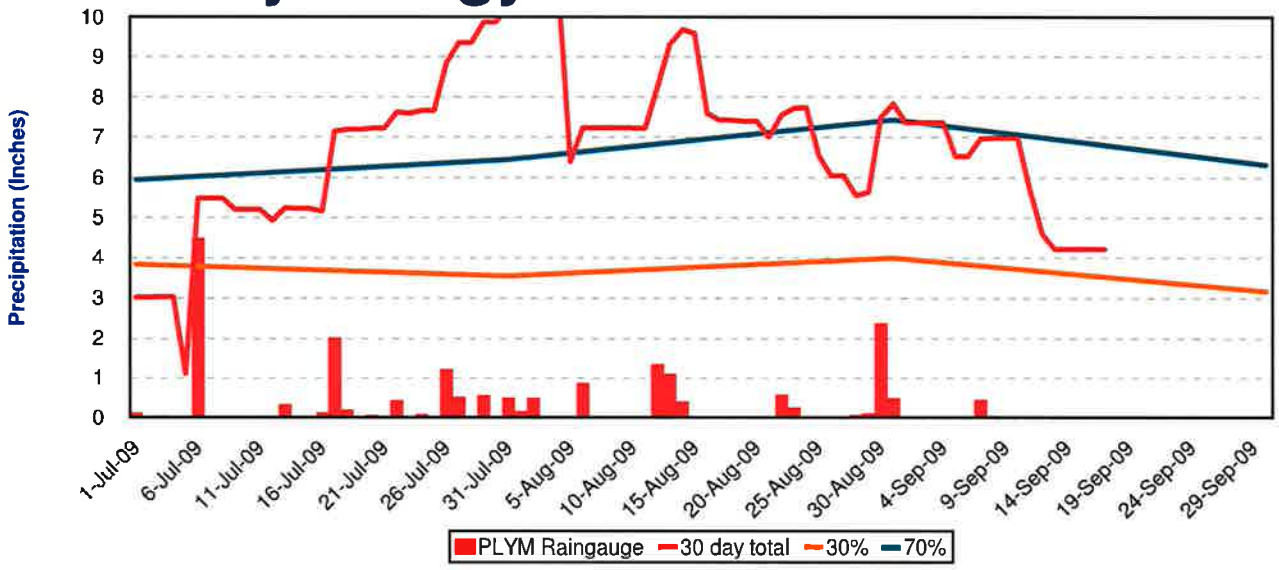

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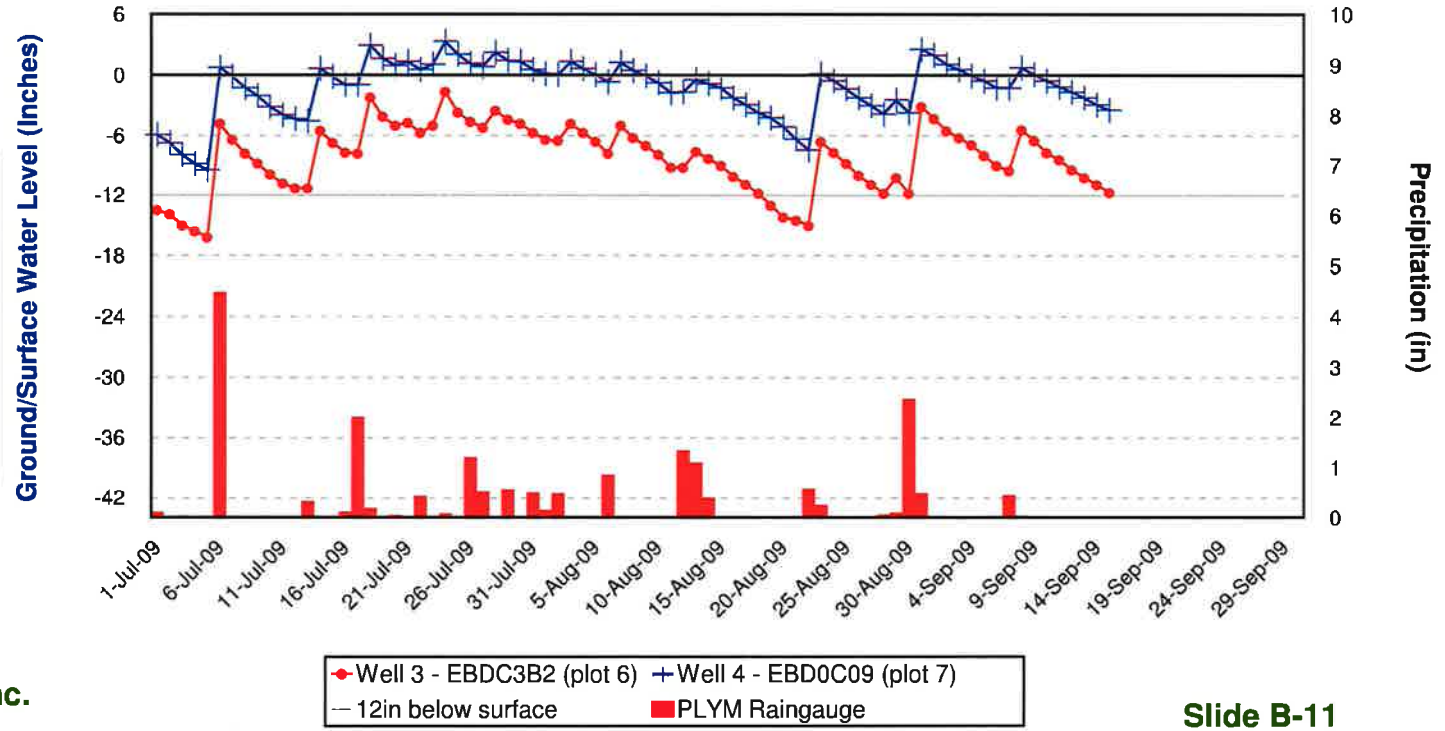

Hydrology Assessment

March, 2009

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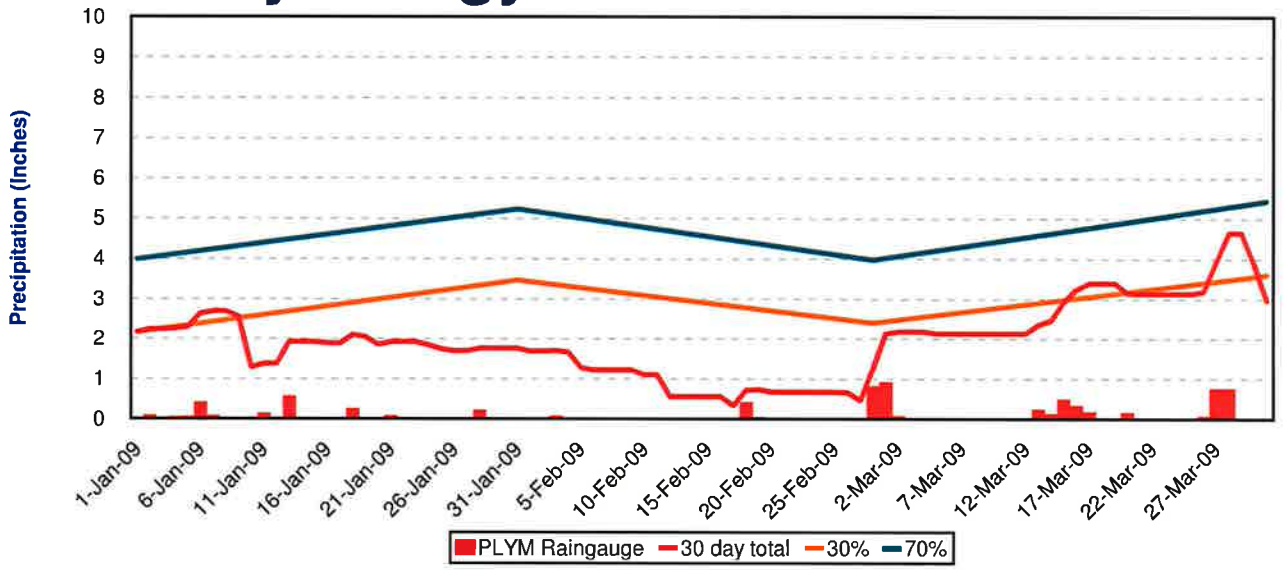

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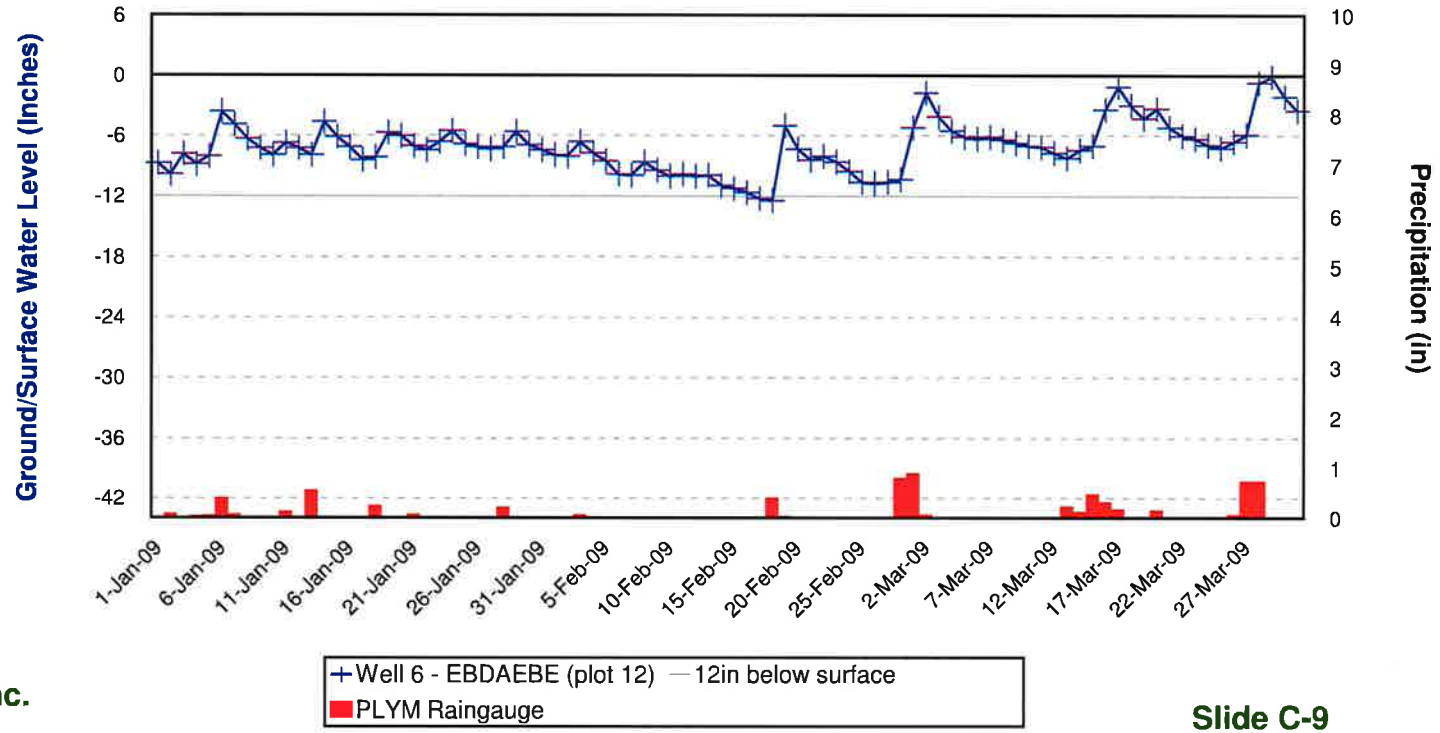

Land Management Group, Inc.
www.lmgroup.net

Hydrology Assessment

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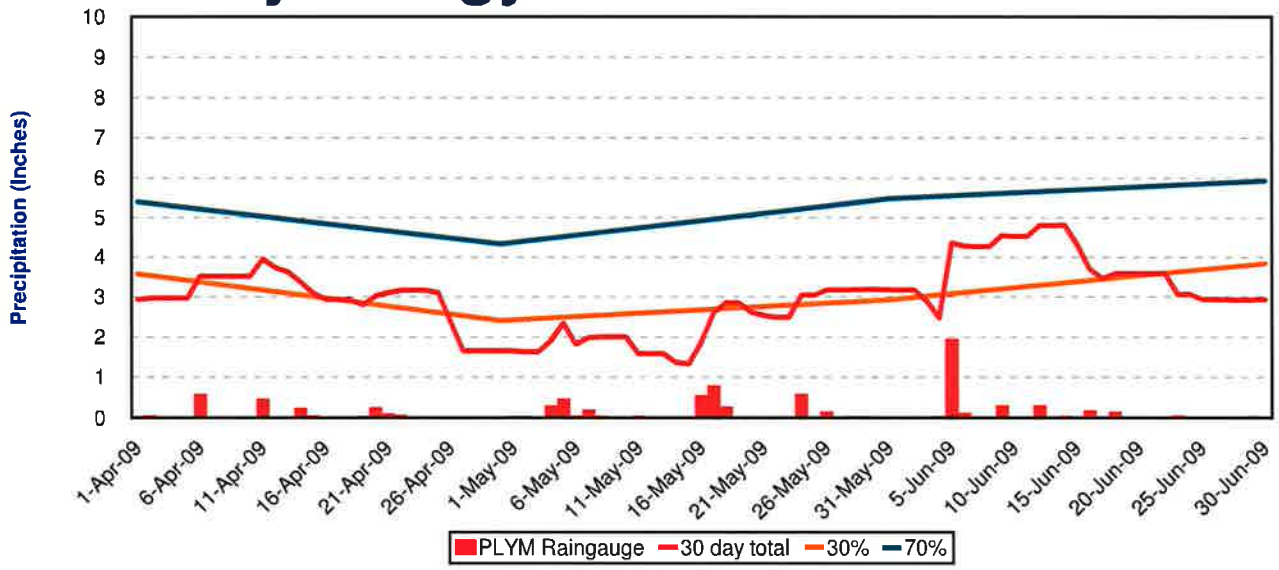

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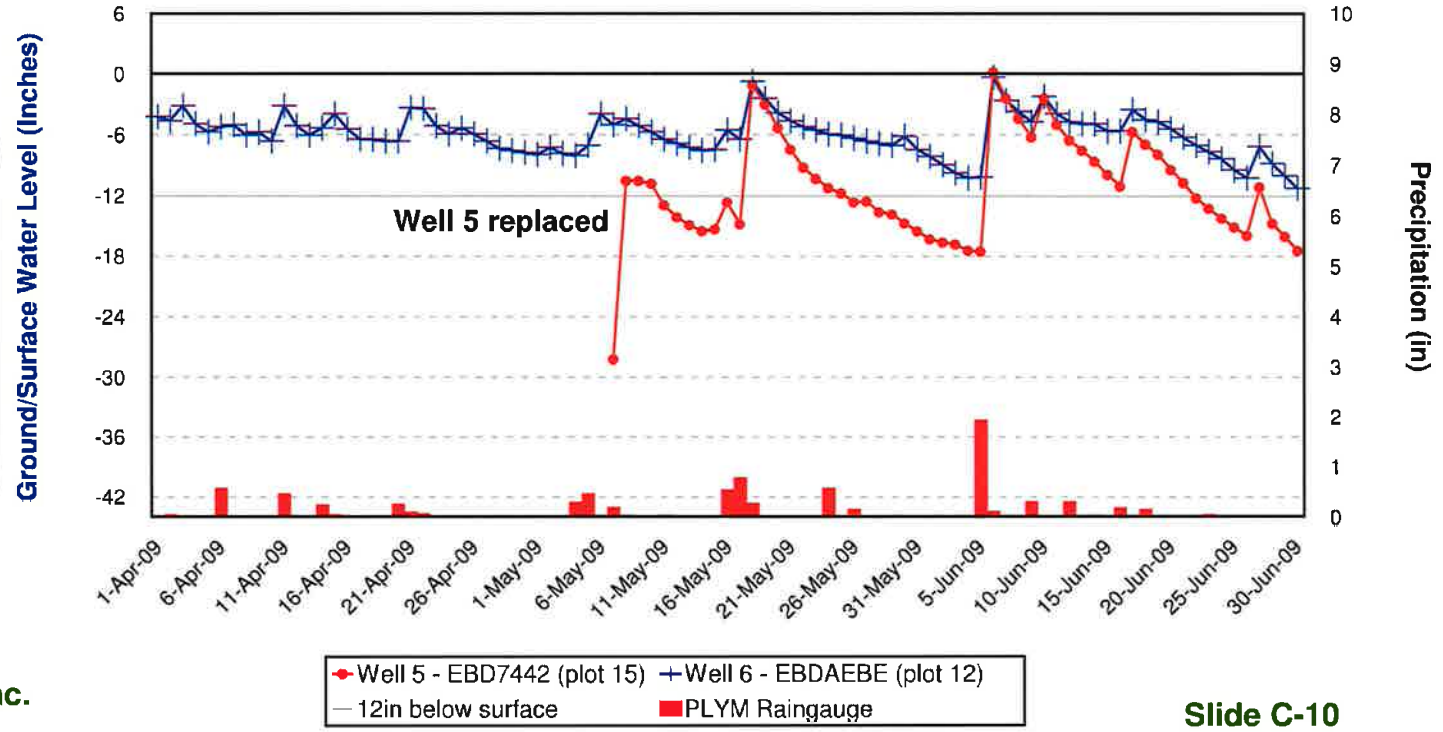

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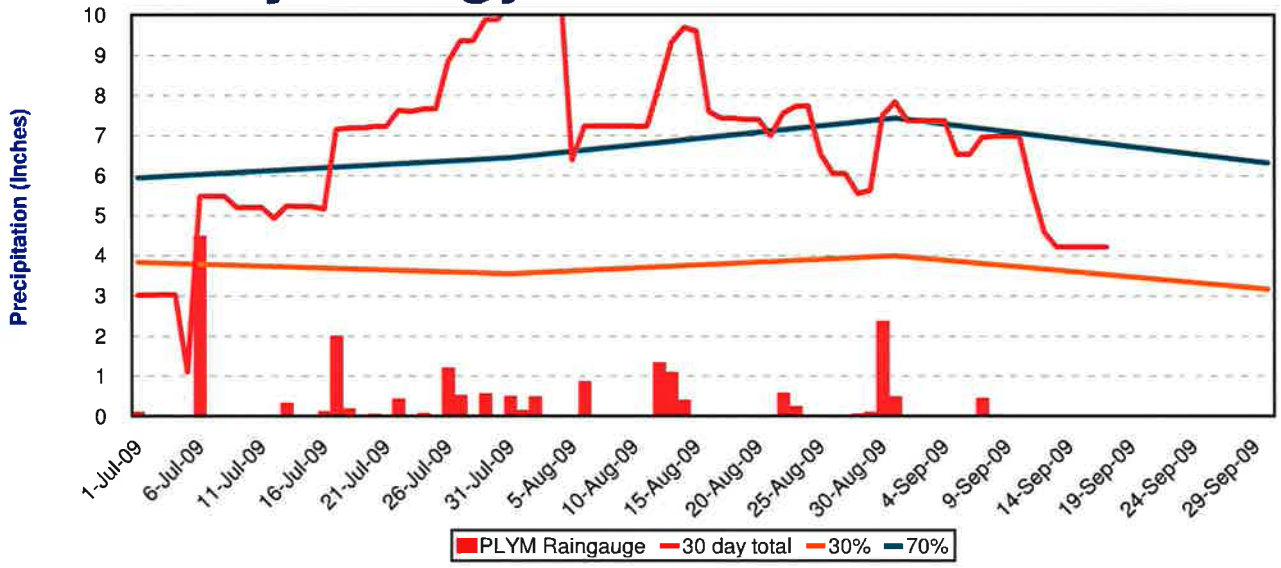

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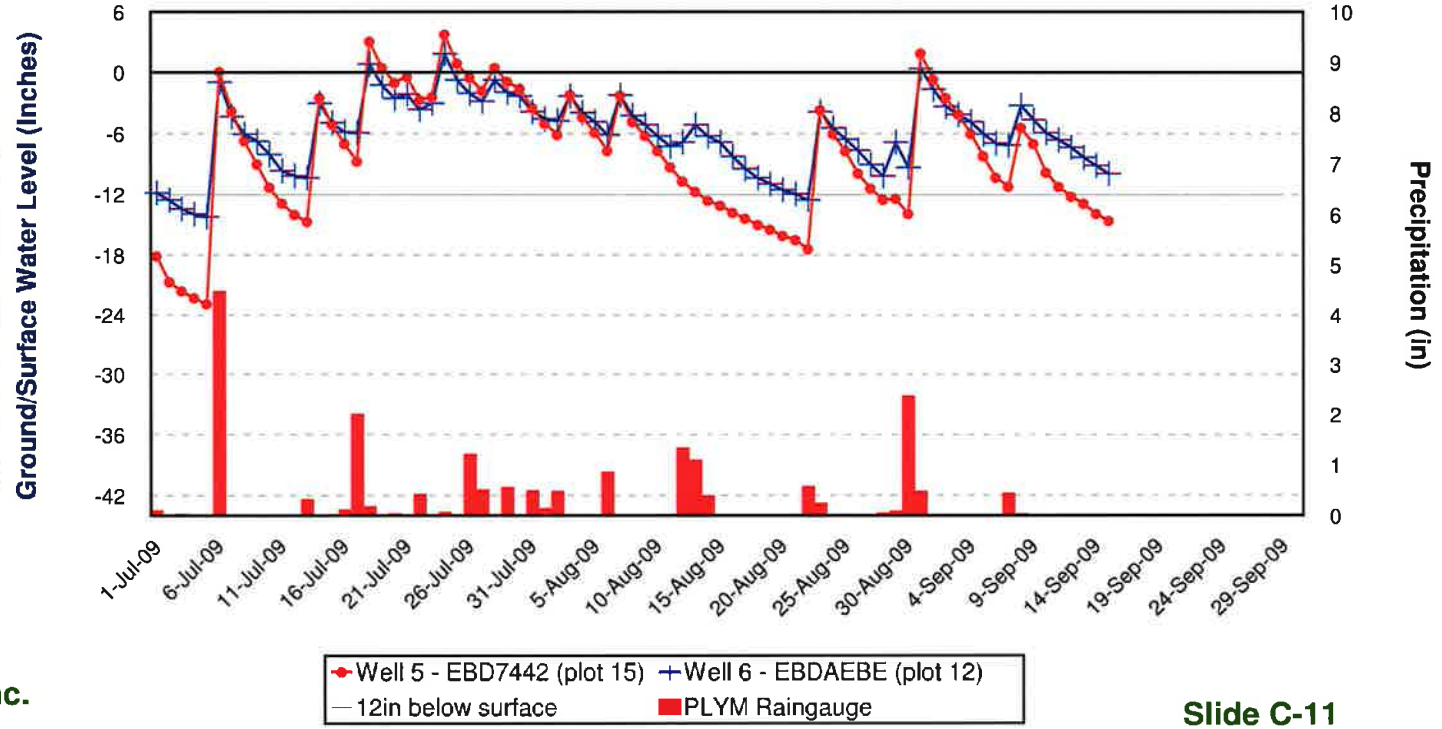

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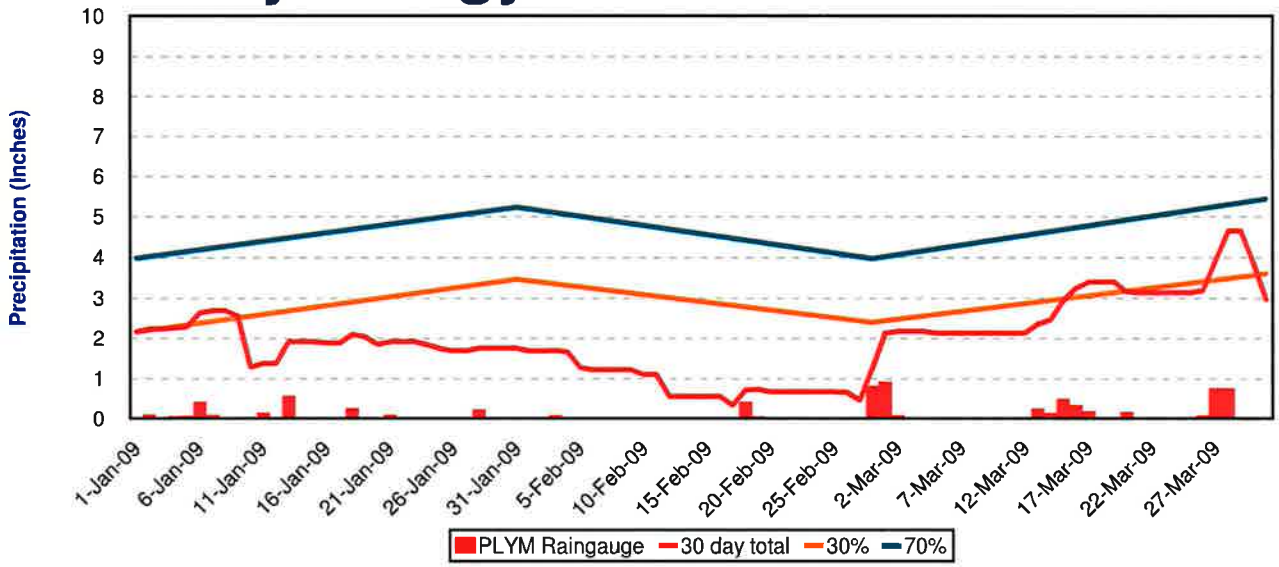

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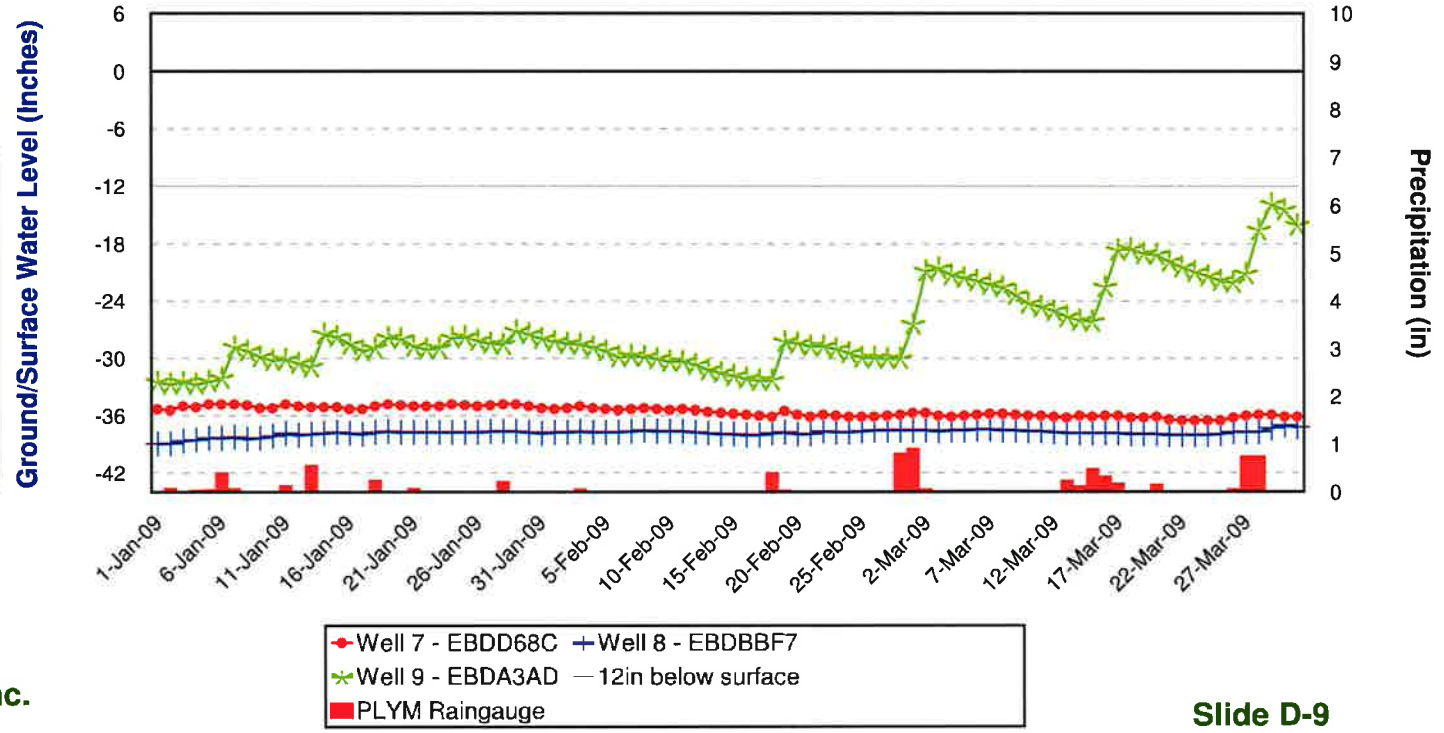

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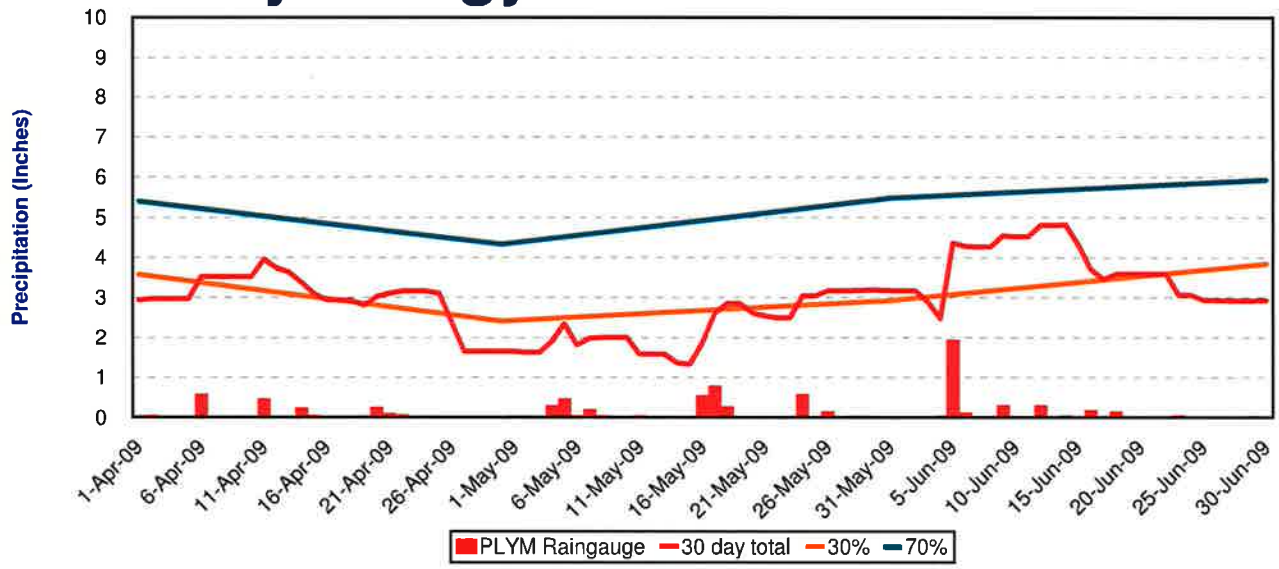

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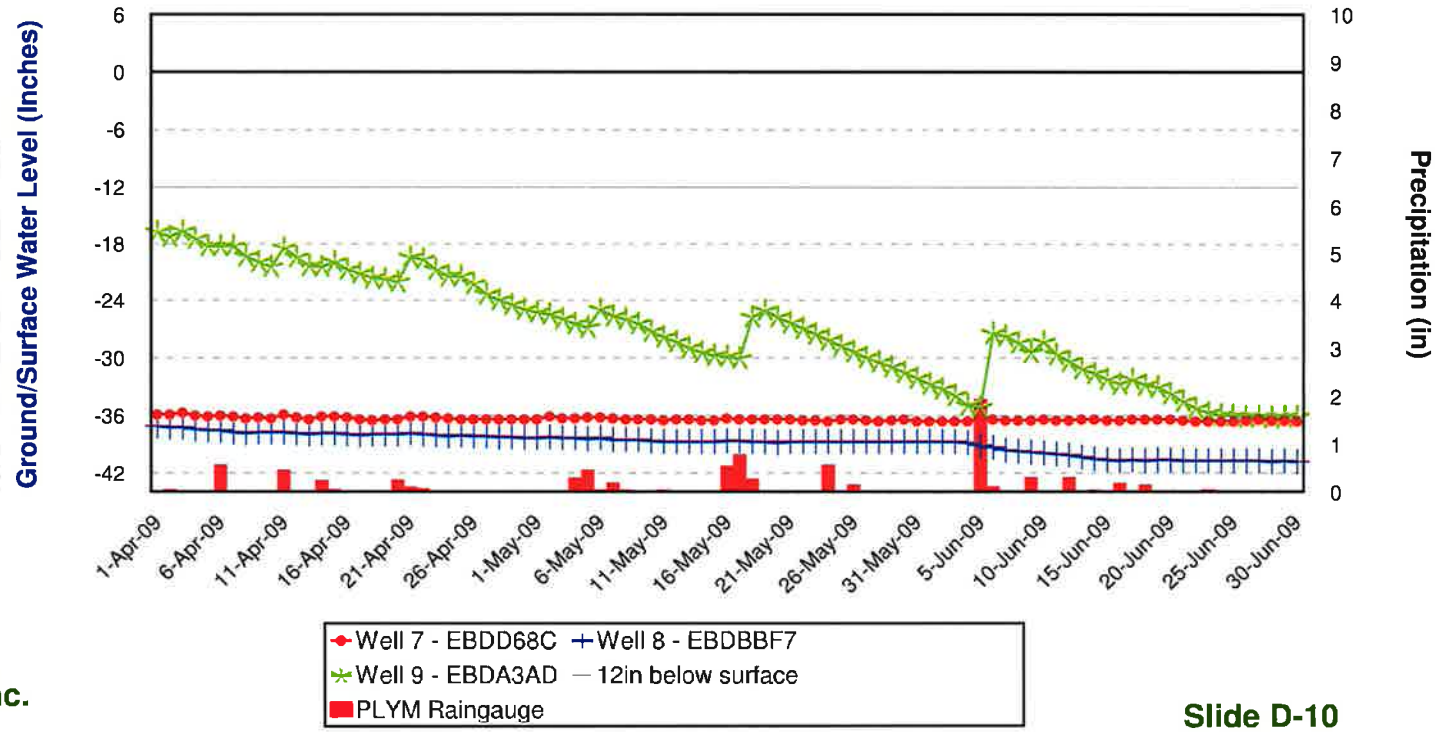

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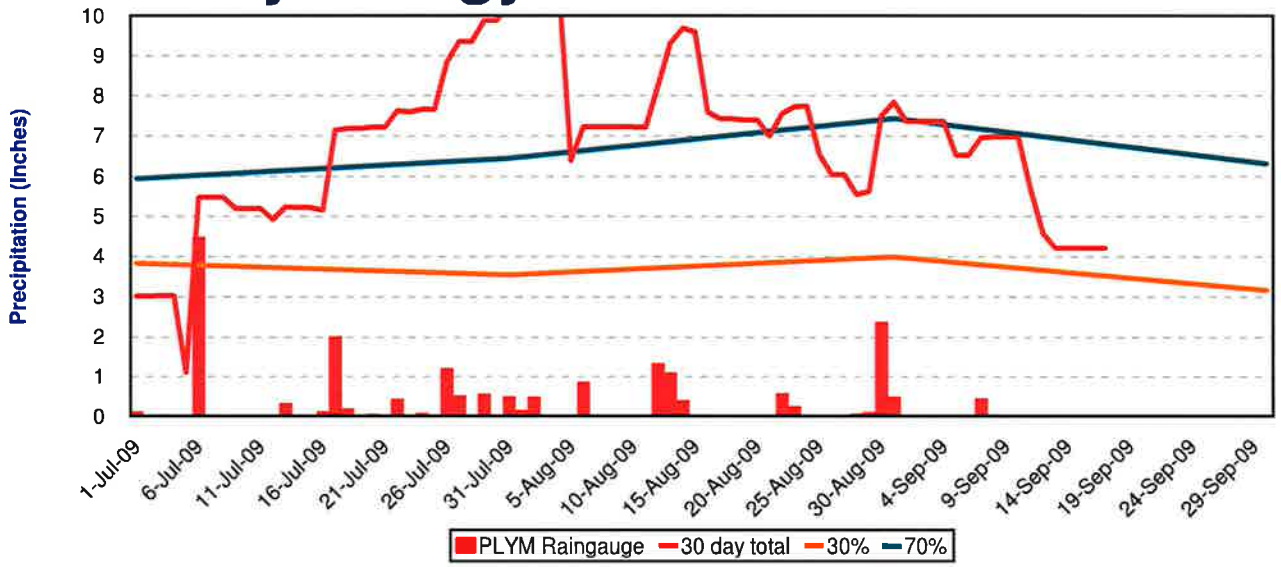

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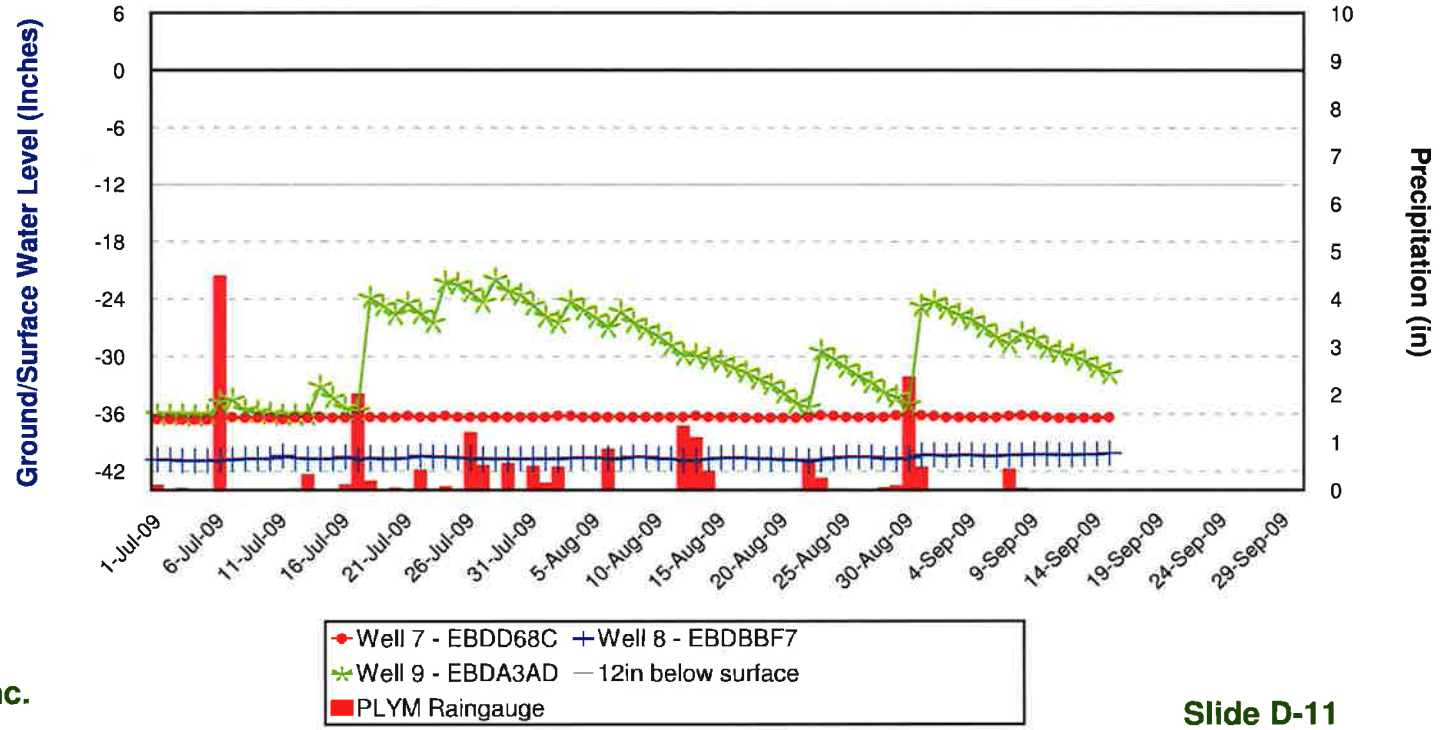

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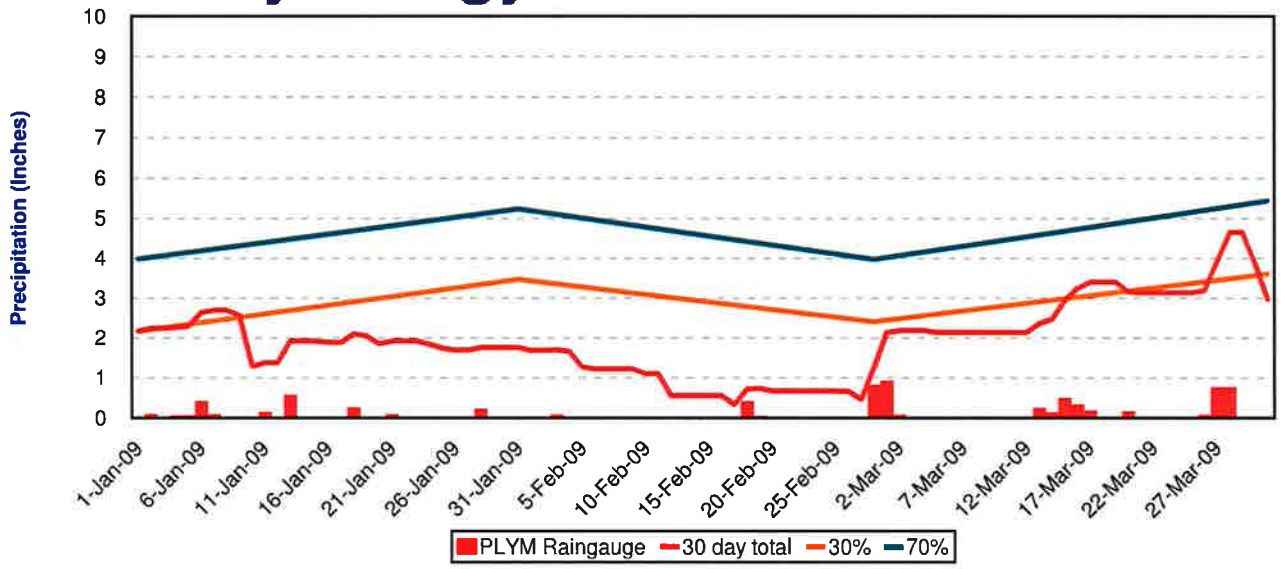

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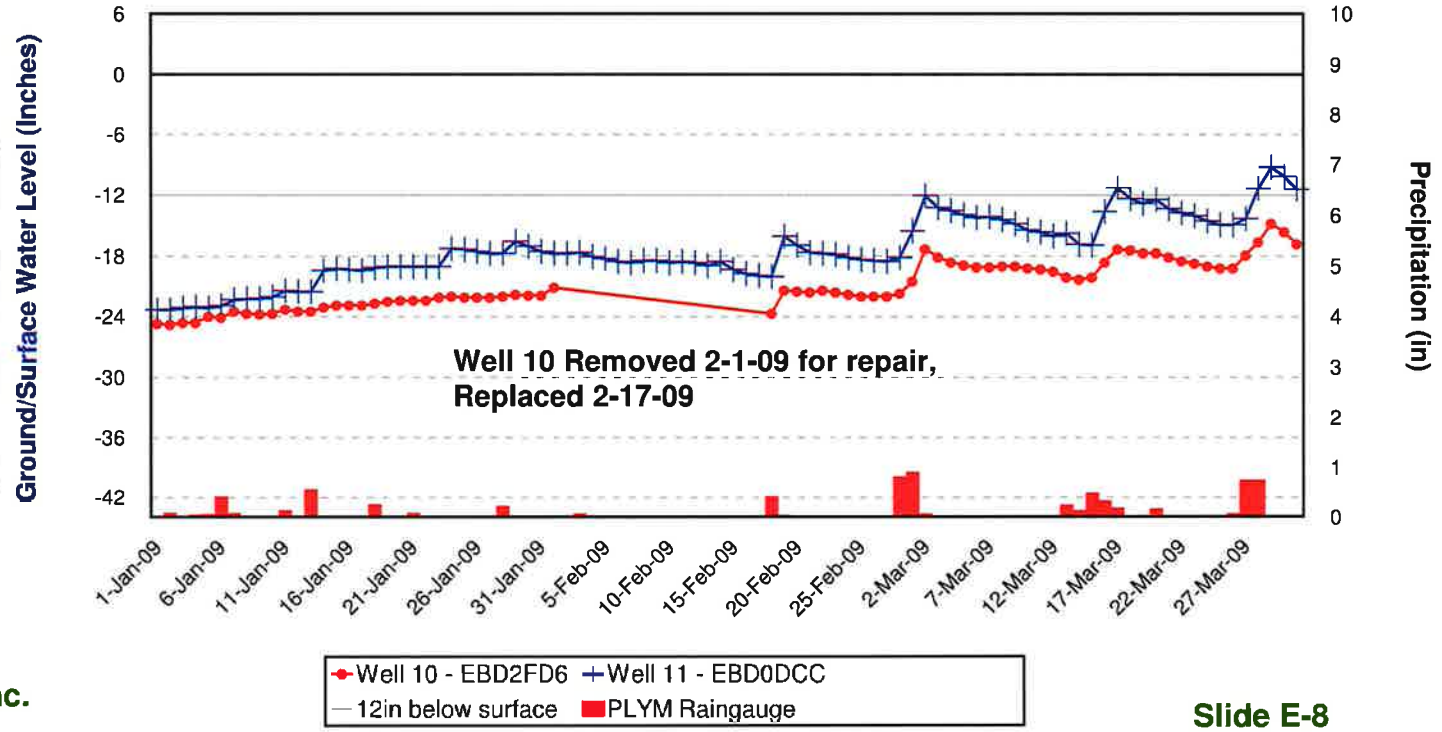

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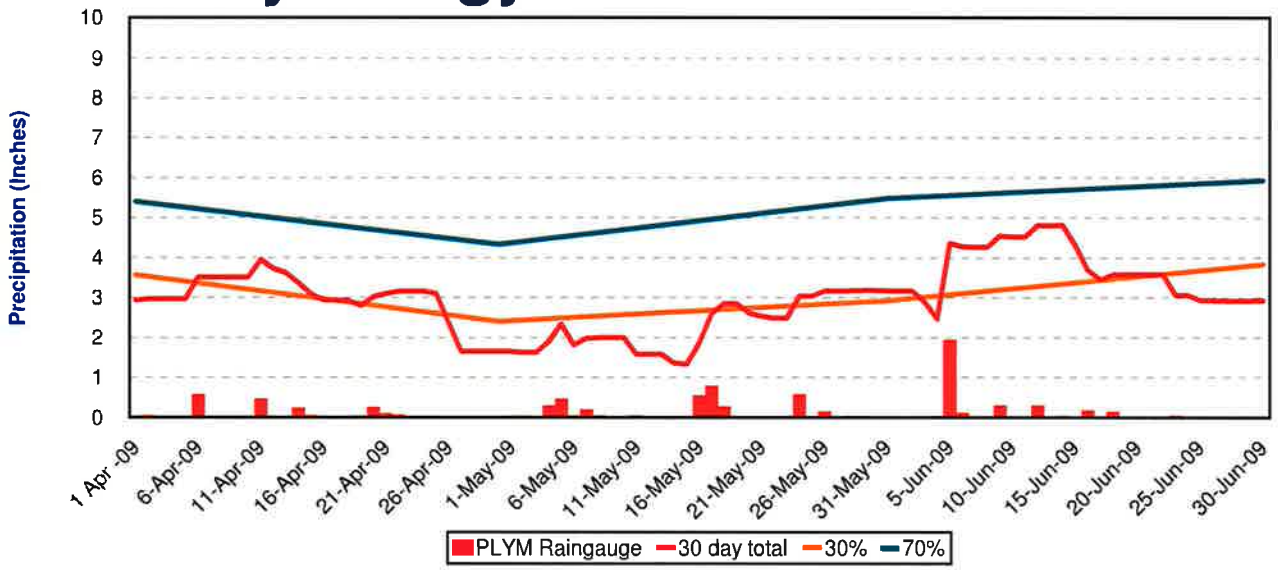

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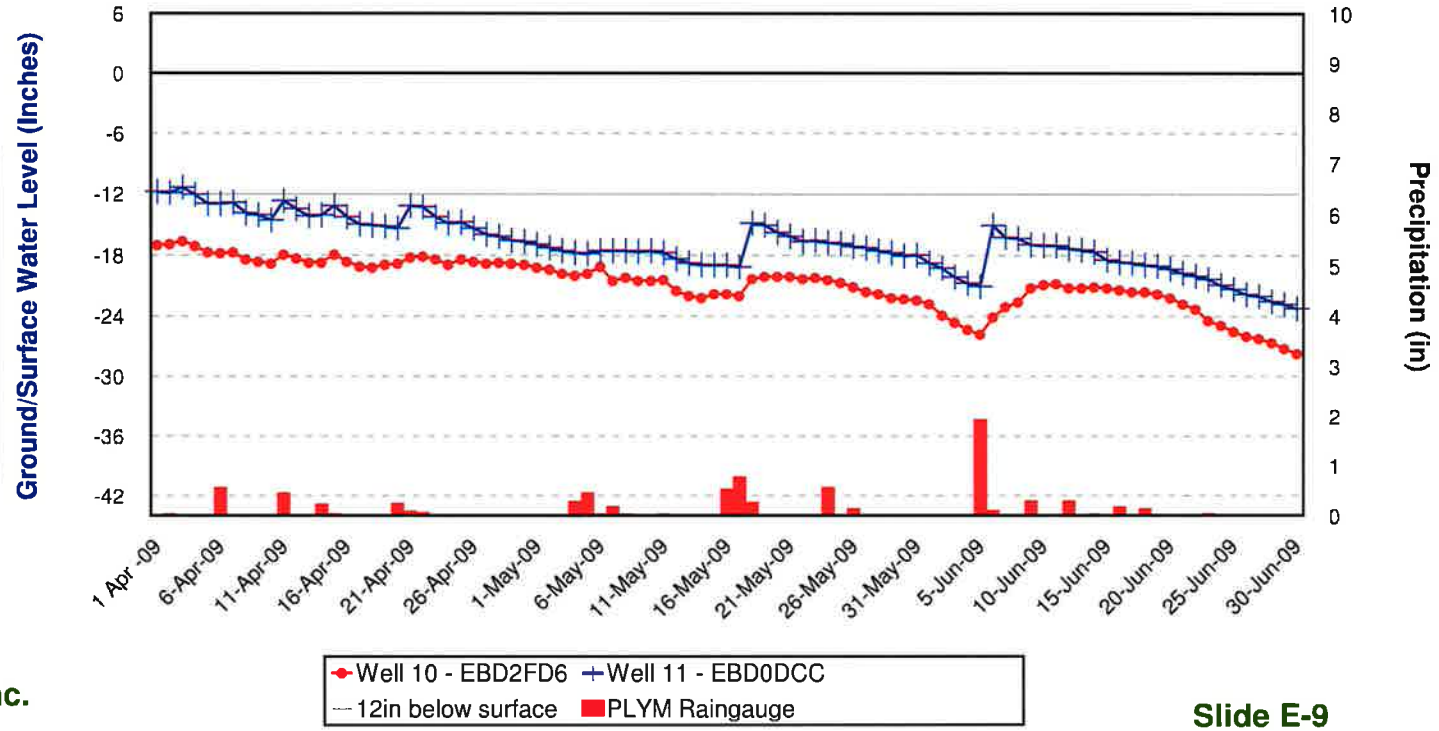

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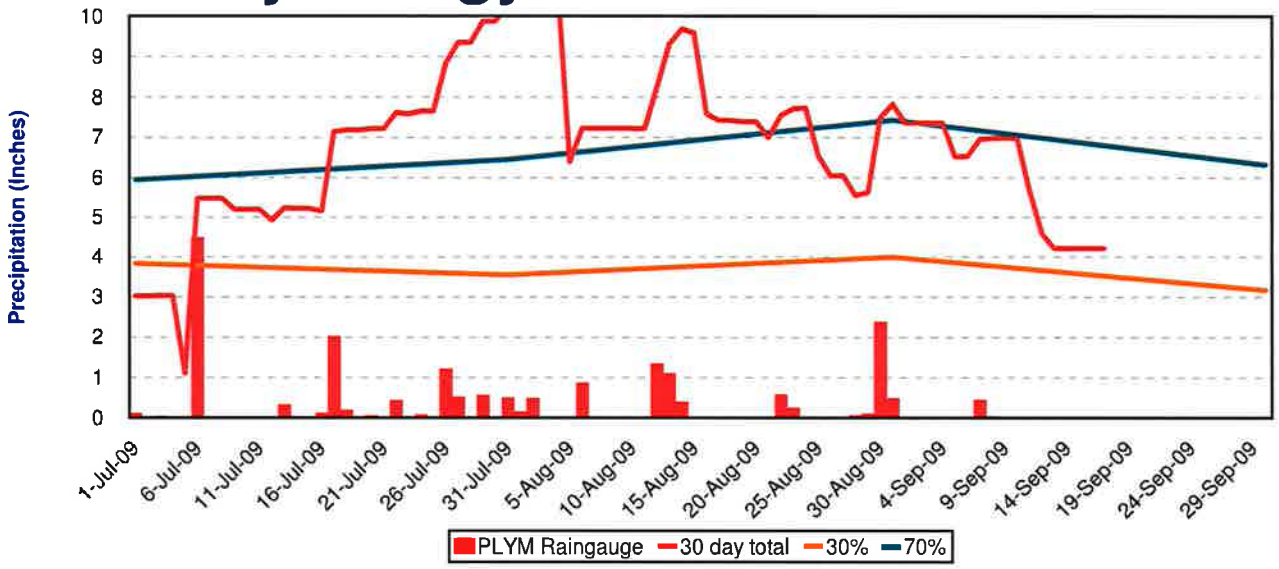

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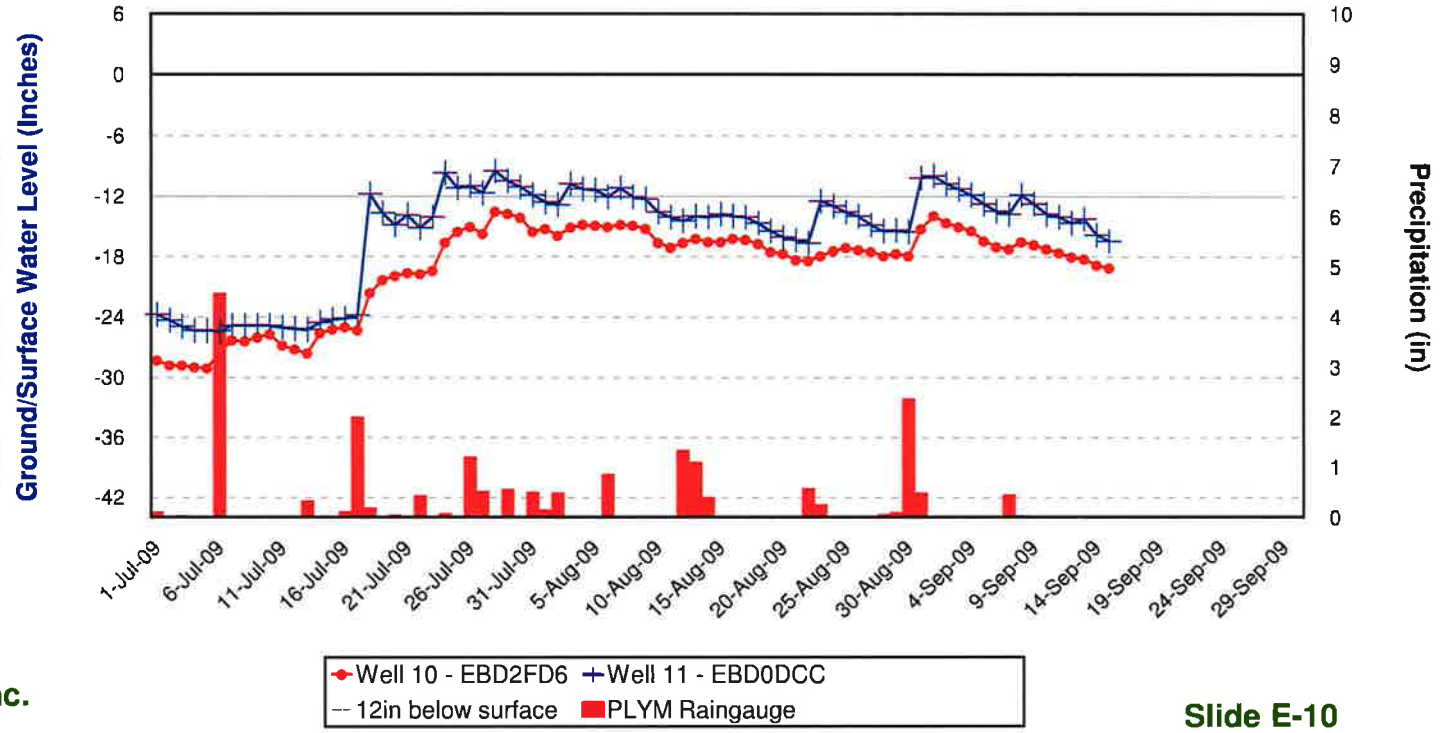
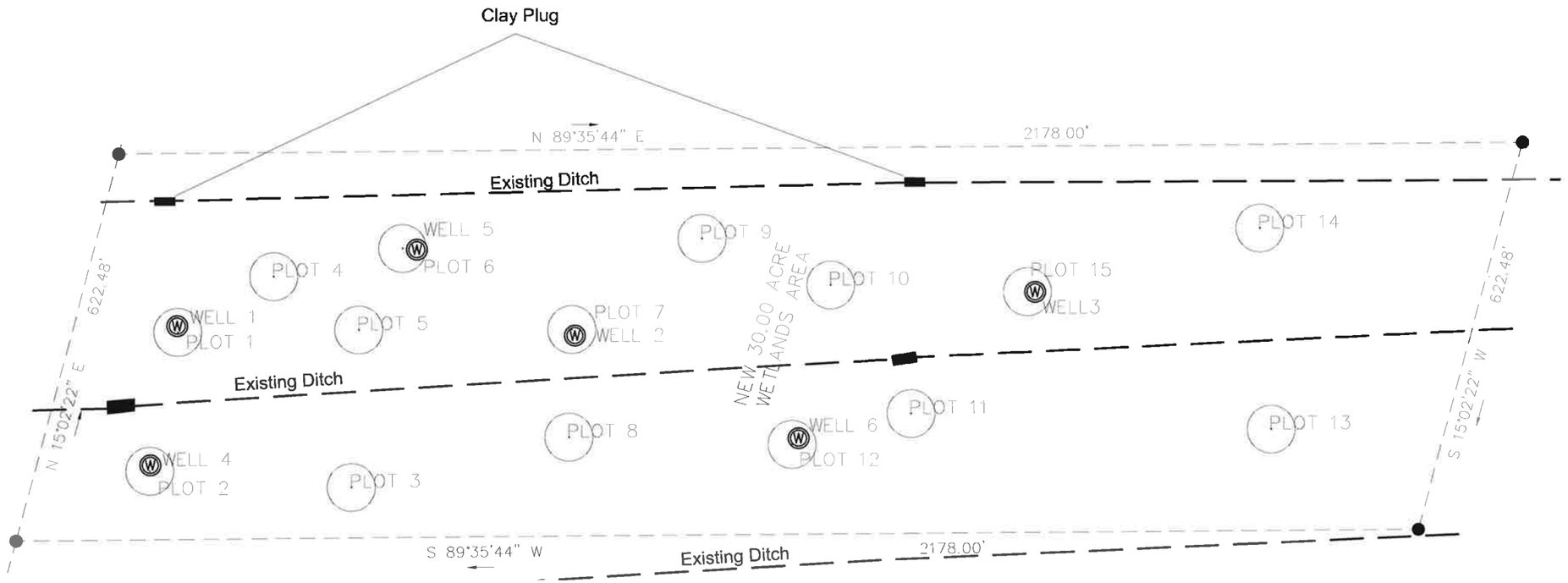
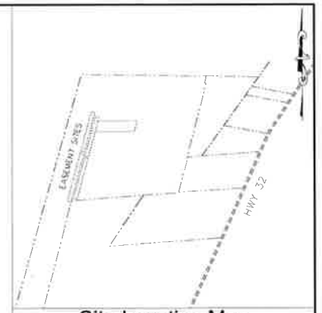
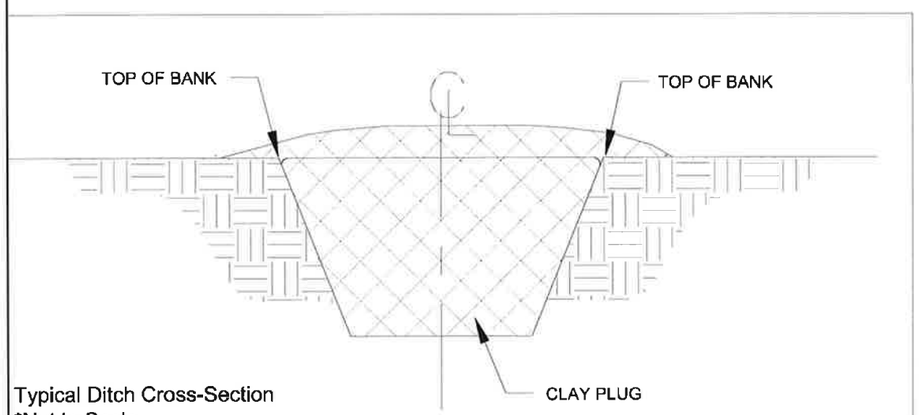


APPENDIX D.
Conservation Easement Plat - September 2006
(includes Plot and Well locations)





Site Location Map
NTS



Typical Ditch Cross-Section
*Not to Scale

0 50 100 200 400

THIS MAP IS BASED ON ORIGIANL DRAWINGS AND/OR SURVEY INFORMATION FROM:

THE EAST GROUP
Engineering Architecture Surveying Technology

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LMG
LAND MANAGEMENT GROUP INC.
Environmental Consultants
Post Office Box 2522
Wilmington, North Carolina 28402
Telephone: 910-452-0001

Project: Simpson Wetland Restoration		Date: 4/17/07	Revision Date:
Applicant:		Scale: 1"=200'	Job Number: 40-05-624
Title:		Drawn By: GSF	Sheet Number: Appendix D.

L:\WETLANDS\2005 WETLANDS FILES\40-05-624 --- Simpson Tract, Wetland Restoration 30 ac. Cal Miller\ACAD\East Group Final-Consv Eas.dwg