Black Gum Creek

NOT AN INSTRUMENT PROJECT

Year 5 Monitoring Report
DMS Project Number 97063
DWR Number 2006-1819 USACE Action ID SAW-2015-01605
Lumber River Basin 03040203
Robeson County, North Carolina
February 2021

Prepared by:
NC Department of Environmental Quality
Division of Mitigation Service, 1652 Mail Service Center, Raleigh, NC 27699

Mitigation Services
ENVIRONMENTAL QUALITY

This report was written in conformance with the DOD and EPA 40 CFR Part 230 (Final Rule) and the

April 2003 US Army Corps of Engineers, Wilmington District Stream Mitigation Guidelines

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1.0 PROJECT SUMMARY

The Black Gum Creek Project (the site) is a wetland rehabilitation and preservation project constructed for the NC Division of Mitigation Services (DMS) to fulfill non-riparian wetland needs in the Lumber River Basin 03040203 Catalog Unit. The project is in northwest Robeson County, approximately 6 miles north of Maxton, off Modest Rd (Figure 1). This project includes rehabilitation of non-riparian wetlands and preservation of existing forested and ponded wetlands (Table 1).

The Project site is a former agricultural field, located on an inter-stream divide between the Lumber River and Black Gum Swamp, surrounded by forested areas and agricultural parcels. The site was altered since the mid-80s, which included ditching and clearing.

The site contains approximately 9.940 acres exhibiting wetland hydrology and soils (Wetland 1), but initially was lacking in hydrophytic vegetation, lending itself to a rehabilitation restoration approach using the definitions provided in 40 CFR Part 230 (Final Rule). Additionally, there are two jurisdictional wetland communities on the site, as confirmed by an approved jurisdictional determination (JD) by the US Army Corps of Engineers on January 6, 2016, leading to a preservation approach to provide wetland restoration equivalents (RE). These preservation areas include 23.042 acres of a successional wetland and forested hardwood flat in the Southern section of the project (Wetland 2) and 51.382 acres of forested hardwood flat/pocosin and open water/wetland habitat in the northern section of the project, for a total of 74.424 acres of preservation (Figure 2). These acreages have been updated from the Mitigation Plan to As-Built stage due to GIS geometry calculation.

Wetland restoration activities included planting the rehabilitation areas in March 2016 with 5,010 bare root species from the Hardwood Flat Forest Community (NCWAM, v. 4.1 2010) as well as other similar species found in the adjacent forested wetland community. There were six (6) different species selected to reflect the target vegetative community.

1.1 Goals and Objectives

The Lumber River Basin Restoration Priorities state that the goals for the Black Gum Creek 14-digit HUC are:

- Replacing buffer
- Repairing channelized streams
- Preservation of existing resources.

The following specific project goals, as stated in the Mitigation Plan, include:

- Restoring a hardwood flat vegetation community
- Expanding forested wetland complex

The success of these project goals will be addressed through the following objectives:

- Plant native tree/shrub species
- Preserve existing hardwood flat/pocosin wetlands

2.0 PERFORMANCE STANDARDS

2.1 Vegetation

An average density of 260 stems/acre must be surviving after five years of monitoring. Upon completion of planting in March 2016, eight (8) permanent vegetation plots were installed and initial plant stocking was performed to determine species composition and density (Appendix C, Table 6). Vegetation was monitored using the Carolina Vegetation Survey (CVS) protocols level 2 monitoring.

2.2 Hydrology

The site will present continuous saturated or inundated hydrologic conditions for at least 8% of the growing season during normal weather conditions. A "normal" year is based on NRCS climatological data for Robeson County, using the 30th to 70th percentile thresholds as the range of normal. The growing season for Robeson County, using the 50% chance of higher than 28 F method, is from March 22th through November 5th, 228 days (WETS Table, Robeson County). Hydrologic performance is determined through evaluation of automatic recording gauge data supplemented by documentation of wetland hydrology indicators as defined in the 1987 USACE Delineation Manual, daily data will be collected from automatic wells over the 5-year monitoring period.

Five (5) continuous monitoring groundwater gauges were installed to provide pre-restoration conditions, and data was downloaded to provide one more year of pre-restoration data for this as-built report. Data from the growing season is provided in Appendix D, along with all monitoring year summary tables.

3.0 MONITORING PLAN

Annual monitoring data was reported using the DMS monitoring template. The monitoring report provides a project data chronology to facilitate an understanding of project status and trends, population of DMS databases for analysis, research purposes, and assist in decision making regarding project close-out.

Required	Parameter	Quantity	Frequency	Notes
Yes	Groundwater Hydrology	Quantity and location of gauges will be determined in consultation with DMS	annual	Groundwater monitoring gauges with data recording devices will be installed on site; the data will be downloaded on a quarterly basis
Yes	Vegetation	Quantity and location of vegetation plots will be determined in consultation with DMS	Monitoring Years 1, 2,3,4,5	Vegetation will be monitored using the Carolina Vegetation Survey (CVS) protocols
	Exotic and nuisance vegetation		Semi-annual	Locations of exotic and nuisance vegetation will be mapped
	Project boundary		Semi-annual	Mapping of vegetation damage, boundary encroachments

The first scheduled vegetation monitoring was conducted during the first full growing season following project completion (2016) and continued for the next five years through 2020. The survivability of the vegetation plantings were evaluated using a 100m^2 vegetative sampling plots randomly placed in the planted areas.

Groundwater elevation was monitored to evaluate jurisdictional wetland hydrology. Wetland hydrology monitoring occurred with automatic recording of groundwater gauge data collected within the project area.

4.0 MAINTENANCE AND CONTINGENCY PLAN

DMS monitored the site and conducted a physical inspection of the site a minimum of once per year throughout the post-construction monitoring period until performance standards were met. These site inspections identified site components and features that may require routine maintenance. Routine maintenance should be expected most often in the first two years following site construction and may include the following:

Component/Feature	Maintenance through project close-out	Remedial Measures
Vegetation	Vegetation shall be maintained to ensure survival. Routine vegetation maintenance and repair activities may include supplemental planting. The site will also be evaluated to ensure diffuse flow is still occurring.	Any remedial activities performed will be documented in the annual monitoring reports.
Site Boundary	Site boundaries shall be identified in the field to ensure clear distinction between the mitigation site and adjacent properties. Boundaries may be identified by fence, marker, bollard, post, tree-blazing, or other means as allowed by site conditions and/or conservation easement. Boundary markers disturbed, damaged, or destroyed will be repaired and/or replaced on an as needed basis.	Any remedial activities performed will be documented in the annual monitoring reports.

5.0 YEAR 5 MONITORING

Year 5 annual monitoring was conducted on 8/6/2020 (vegetation plots) and 1/13/2021 (final gauge downloads). Year 5 monitoring activities included visual monitoring and stem counts of the project vegetation; downloading monitoring gauge data; verifying the presence, or lack of, invasive species; checking the integrity of the easement; and taking photographs at the established photo points.

There were 5 gauges on this site, and a 6th gauge was installed 4/30/2019 (nearby gauge 4) for additional hydrologic data. This gauge was destroyed by a bear in 2019 but reinstalled for 2020. Rainfall conditions near this site had low (below 30th percentile) antecedent rain through May. Rainfall during the middle of the growing season was exceptionally high, and then declined significantly again after July.

Despite low antecedent conditions, all gauges met the hydrologic success target of greater than 8% of the growing season besides gauge one, which malfunctioned (Appendix D). Gauges 2 and 3 are both located outside of the wetland rehabilitation areas. Gauge 2, which is just outside the rehabilitation asset line, indicated that the water table was continuously above 12" for 24.5% of the growing season and gauge 3, further away from any proposed wetland rehabilitation, had 19.7% continuous hydrology. This information may indicate that the site's hydrologic footprint is expanding more than anticipated for the project and this trend is apparent in the gauge data which has improved steadily throughout the project. Additional DMS monitoring staff observations have shown increased hydrology sitewide over the 7 years of monitoring, likely due to agricultural abandonment, clogged culvert, and overall site high water tables due to elevation and climate.

All the vegetation plots met the vegetative success criteria with a project-wide average of 430 stems per acre planted and 981 stems per acre including volunteers. Only one vegetation plot fell below the threshold for success in the planted stems category (VP8), due to the encroachment described below. Although there was no height requirement for success, 6 of the 8 plots were well over the threshold of 7' height, indicating high vigor rates. Plot 6 and plot 8 have a large in-plot height range (Appendix C).

There was trespass in the easement and along the credit line where someone bush hogged path that destroyed gauge 1 and mowed a shooting field outside the credit area to the east of gauge 2 in 2019. That path was planted with 100 silky dogwood 2/27/2020; and the impacted area was measured at 1,100 sf. There was additional encroachment noted near VP8 noted in 2020 which included a baiting plot mowed through vegetation plot 8; the area measured approximately 700 square feet. DMS Property staff and Stewardship have been meeting and working with

the absentee landowner over the last year to determine a solution to the trespasser issue. A gate was installed, and a certified letter went out from the AG office. DMS and Stewardship will continue work towards reconciling the trespass because it is a remote site with an absentee landowner.

APPENDIX A

BACKGROUND TABLES

Table 1: Project Mitigation Components
Black Gum Creek, DMS Project ID# 97063

Mitigation Components									
	Stream		Riparian Wetland		Non-riparian Wetland		Buffer	Nitrogen Nutrient	Phosphorous Nutrient Offset
Type	R	RE	R	RE	R	RE			
Acres					9.940	74.424			
Total Credits	-	-	-	-	6.627	7.442			

Project Components

Project Component	Stationing/ Location	Existing Footage/Acreage	Approach (PI, PII etc.)	Restoration -or- Restoration Equivalent	Restoration Acreage	Mitigation Ratio
Wetland 1	-	9.940	-	R	9.940	1.5
Wetland 2	-	23.042	-	RE	23.042	10
Wetland 3	-	51.382	-	RE	51.382	10

Component Summation

Restoration Level	Stream (linear feet)	Riparian Wetland (acres)		Non- (acres)	Buffer (square feet)	Upland (acres)
		Riverine	Non-Riverine			
Restoration (Rehabilitation)	-	-	-	9.940	-	-
Enhancement		-	-		-	-
Enhancement I	-					
Enhancement II	-					
Creation		-	-	-		
Preservation	-	-	-	74.424		-
High Quality Preservation	-	-	-	-		-

R=Restoration, RE= Restoration Equivalent

Table 2. Project Activity and Reporting History

Table 2. Project Activity and Reporting History
Black Gum Creek / DMS ID# 97063

Activity or Deliverable	Data collection Complete	Completion or Delivery
Institution Date	NA	Jul-05
404 permit date	NA	NA
Restoration Plan	NA	Jan-16
Site Planted	NA	Mar-16
Mitigation Plan / As-built Baseline	Apr-16	Apr-16
Year 1 Monitoring	Nov-16	Dec-16
Year 2 Monitoring	Dec-17	Dec-17
Year 3 Monitoring	Dec-18	Jan-19
Year 4 Monitoring	Dec-19	Jan-20
Year 5 Monitoring	Jan-21	Feb-21

Table 3. Project Contacts Table

Table 3. Project Contacts Table Black Gum Creek / DMS ID# 97063	
Project Management & Design Primary POC	NCDEQ Division of Mitigation Services Lindsay Crocker 910-594-3910
Survey Contractor Survey contractor POC	Landmark Surveying, Inc. PO Box 839, Graham, NC 27253-0839 Doug Yarbrough - 336-263-1294
Planting Contractor Planting contractor POC	Bruton Natural Systems, Inc. PO Box 1197, Fremont, NC 27830 Charlie Bruton - 919-242-6555
Monitoring Performers	NCDEQ Division of Mitigation Services 1652 Mail Service Center, Raleigh, NC 27699-1652
Monitoring POC	Lindsay Crocker 919-707-8944

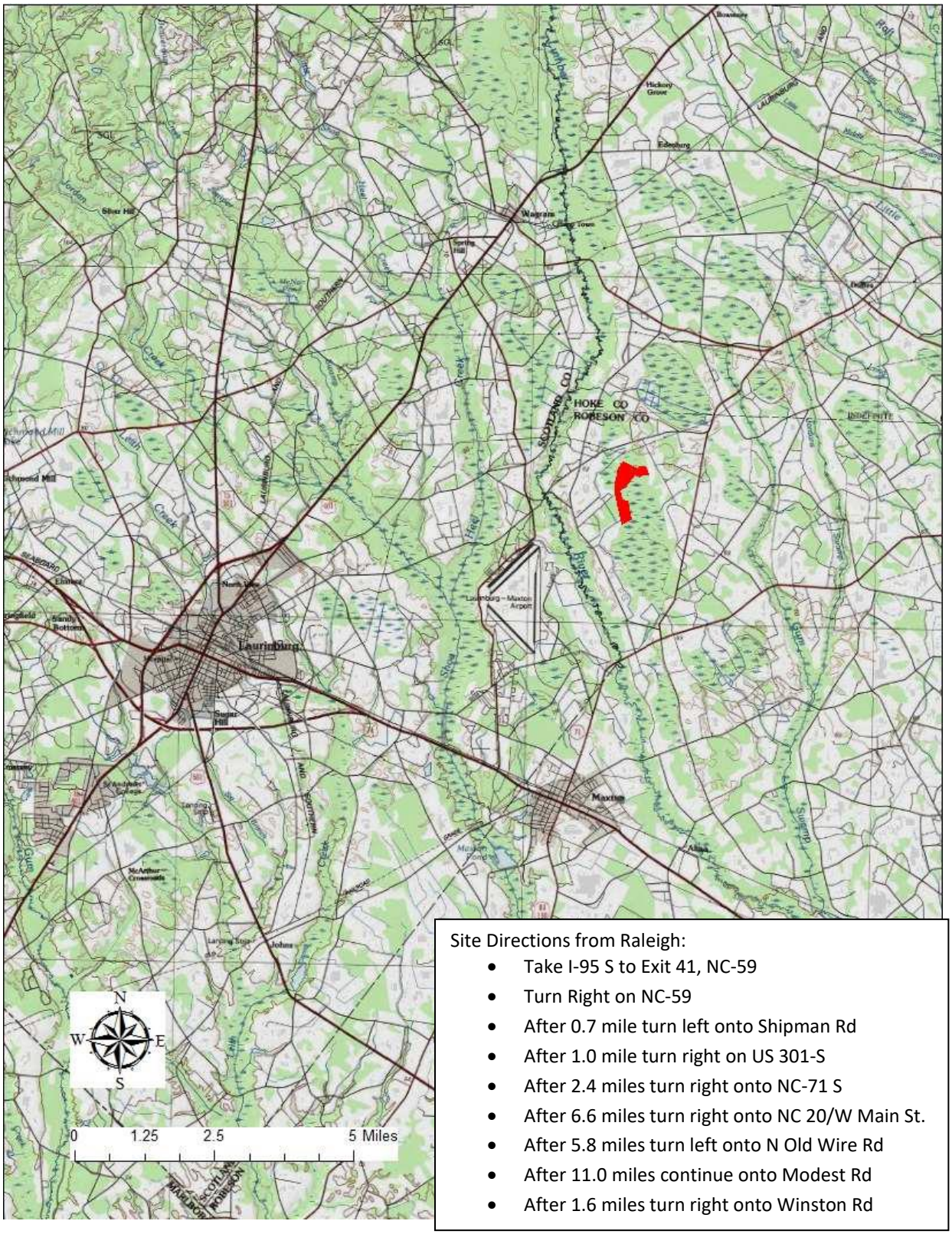
Table 4. Project Attributes Table

Project Information			
Project Name	Black Gum Creek		
County	Robeson		
Project Area (acres)	147.47		
Project Coordinates (lat. & long.)	79°19'44" W 34°49'12" N		
Project Watershed Summary Information			
Physiographic Province	Coastal Plain		
River Basin	Lumber		
USGS Hydrologic Unit 8-Digit	3040203	**USGS Hydrologic Unit 14-Digit**	3040203020010
DWR Sub-basin	03-07-51		
Project Drainage Area (ac)	N/A		
Project Drainage Area % Impervious	<1%		
CGIA Land Use Classification	50% Forested, 41% Agriculture		
Existing Wetland Summary Information			
Parameters	**1**	**2**	**3**
Size of Wetland (acres)	9.940	23.042	51.382
Wetland Type	Non-riparian	Non-riparian	Non-riparian
Mapped Soil Series	Rains & Plummer/ Osier	Plummer/Osier & Rutledge	Rutledge
Drainage Class	Poorly & Very Poorly Drained	Very Poorly Drained	Very Poorly Drained
Soil Hydric Status	Hydric	Hydric	Hydric
Source of Hydrology	Precipitation	Precipitation	Precipitation
Hydrologic Impairment	None	None	None
Existing Vegetation	Crops	Successional	Forested
Percent composition of exotic invasive vegetation	0%	0%	0%
Regulatory Considerations			
Regulation	**Applicable**	**Resolved**	**Supporting Documentation**
Waters of the U.S. Section 404	Yes	Yes	Jurisdictional Determination
Waters of the U.S. Section 401	Yes	Yes	Jurisdictional Determination
Endangered Species Act	N/A	N/A	N/A
Historic Preservation Act	N/A	N/A	N/A
Coastal Zone Management Act (CZMA)/ Coastal Area Management Act (CAMA)	N/A	N/A	N/A
FEMA Floodplain Compliance	N/A	N/A	N/A
Essential Fisheries Habitat	N/A	N/A	N/A

APPENDIX B

VISUAL ASSESSMENT DATA

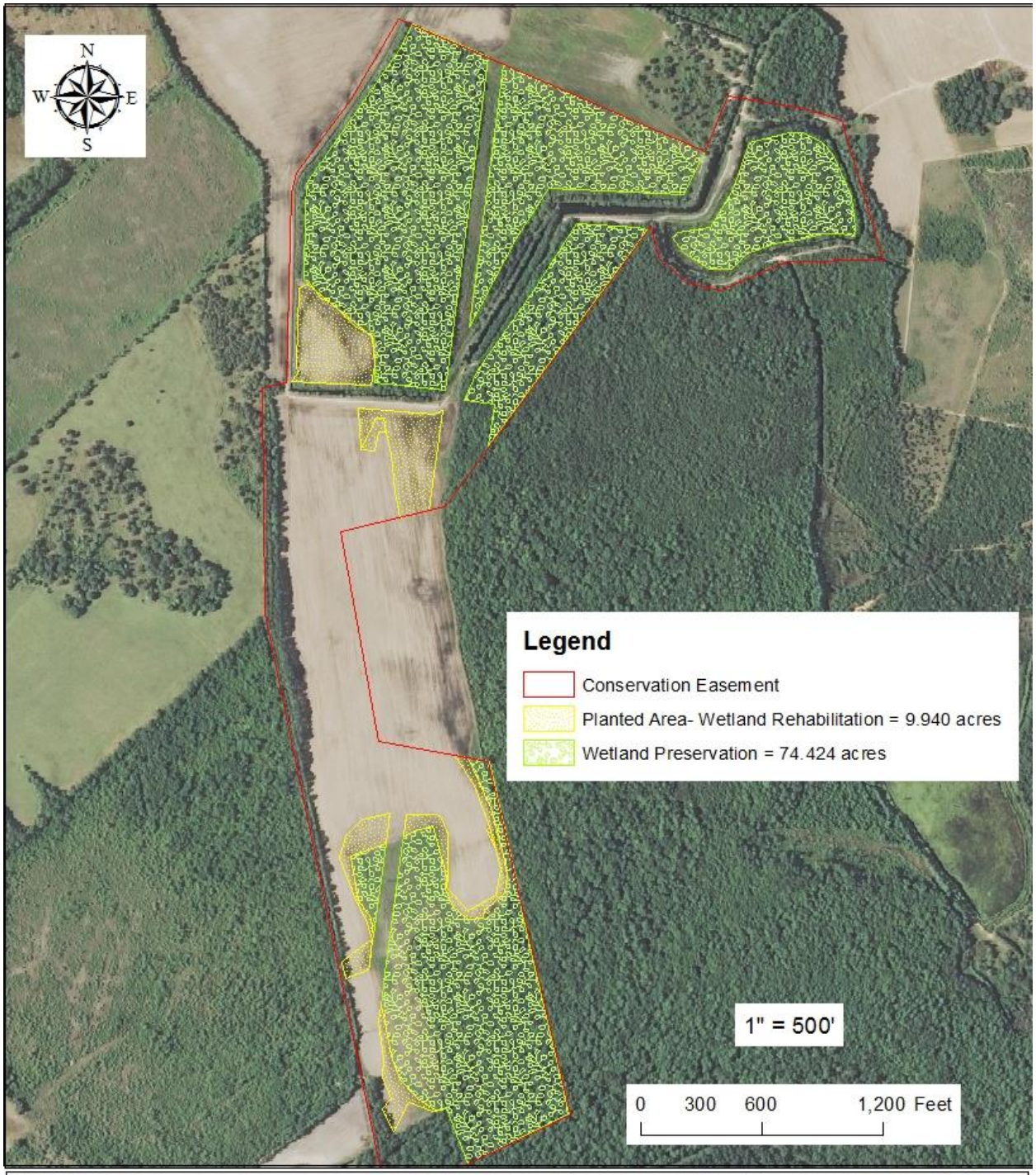
Figure 1. Vicinity Map

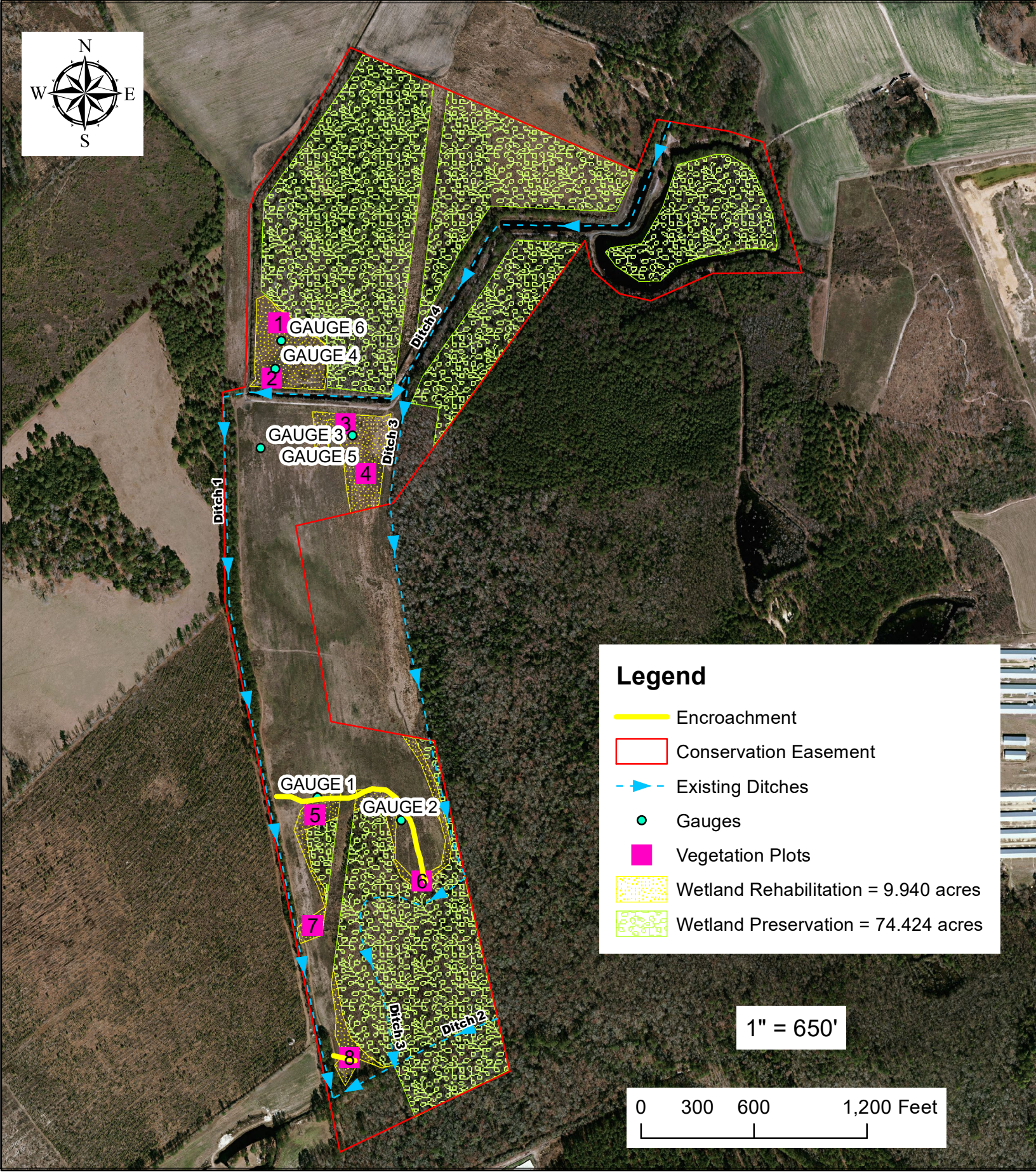


Site Directions from Raleigh:

- Take I-95 S to Exit 41, NC-59
- Turn Right on NC-59
- After 0.7 mile turn left onto Shipman Rd
- After 1.0 mile turn right on US 301-S
- After 2.4 miles turn right onto NC-71 S
- After 6.6 miles turn right onto NC 20/W Main St.
- After 5.8 miles turn left onto N Old Wire Rd
- After 11.0 miles continue onto Modest Rd
- After 1.6 miles turn right onto Winston Rd

Figure 2. Asset Map





Current Conditions Plan View

Black Gum Site 97063

Robeson County, NC

Note: Gauge 2 and 3 are not inside wetland asset areas, and are not counted toward success criteria
Imagry by NCOneMap 2/7/2020

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Photos 1-8 taken 7/24/2019 (all photo points are located on the SE corner of the corresponding vegetation plot)

Photo Point 1

Photo Point 2

Photo Point 3

Photo Point 4

Photo Point 5

Photo Point 6

Photo Point 7

Photo Point 8

Other photos:

Facing east towards planted area of rehabilitation (VP 3 and 4), line depicting difference of planted and unplanted areas.

Average height of site planted trees compared to averaged size 6’ tall man.

Excessively clogged culvert along entrance road

Standing water held by clogged culvert on road in August.

Standing water held by clogged culver on entrance road in January, depth 12”.

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Table 5. Vegetation Condition Assessment
Black Gum Creek, DMS Project ID# 97063
Planted Acreage: 9.9 acres

Table 5. Vegetation Condition Assessment Black Gum Creek, DMS Project ID# 97063 Planted Acreage 9.9						
Vegetation Category	**Definitions**	**Mapping Threshold**	**CCPV Depiction**	**Number of Polygons**	**Combined Acreage**	**% of Planted Acreage**
1. Bare Areas	Very limited cover of both woody and herbaceous material.	0.1 acres	Pattern and Color	0	0.00	0%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1 acres	Pattern and Color	0	0.00	0%
			Totals	0	0.00	0%
3. Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 acres	Pattern and Color	0	0.00	0%
			Cumulative Totals	0	0.00	0%
Easement Acreage 174 acres						
Vegetation Category	**Definitions**	**Mapping Threshold**	**CCPV Depiction**	**Number of Polygons**	**Combined Acreage**	**% of Easement Acreage**
4. Invasive Areas of Concern	Areas or points (if too small to render as polygons at map scale).	1000 SF	Pattern and Color	0	0.00	0%
5. Easement Encroachment Areas	Areas or points (if too small to render as polygons at map scale).	none	Pattern and Color	1	0.20	1%

APPENDIX C

VEGETATION PLOT DATA

Table 6. Vegetation Density

			Current Plot Data (MY5 2020)																						
			97063-01-0001			97063-01-0002			97063-01-0003			97063-01-0004			97063-01-0005			97063-01-0006			97063-01-0007			97063-01-0008		
Scientific Name	Common Name	Species Type	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
Acer rubrum	red maple	Tree			15	3	3	23	5	5	55	5	5	10	6	6	7	1	1	1	1	1	11	1	1	1
Betula nigra	river birch	Tree	1	1	1				2	2	2	1	1	1	4	4	4				4	4	4	1	1	2
Cornus amomum	silky dogwood	Shrub	2	2	2				1	1	1	1	1	1	3	3	3	2	2	2				2	2	2
Fraxinus pennsylvanica	green ash	Tree	6	6	6				1	1	1	2	2	2			1			2				1	1	2
Liquidambar styraciflua	sweetgum	Tree																								
Pinus taeda	loblolly pine	Tree															1						4			1
Platanus occidentalis	American sycamore	Tree				4	4	4				4	4	4	1	1	1	2	2	2	4	4	4			
Quercus michauxii	swamp chestnut oak	Tree	3	3	3	2	2	2	1	1	1	2	2	2	1	1	1	2	2	2	2	2	2	1	1	1
Salix nigra	black willow	Tree			1			2																		
Unknown		Shrub or Tree																								
		Stem count	12	12	28	9	9	31	10	10	60	15	15	20	15	15	18	7	7	9	11	11	25	6	6	9
		size (ares)	1			1			1			1			1			1			1			1		
		size (ACRES)	0			0			0			0			0			0			0			0		
		Species count	4	4	6	3	3	4	5	5	5	6	6	6	5	5	7	4	4	5	4	4	5	5	5	6
		Stems per ACRE	486	486	1133	364	364	1255	405	405	2428	607	607	809	607	607	728	283	283	364	445	445	1012	243	243	364

Table 7. Vegetation Height

			Current Plot Data (MY5 2020)																						
			97063-01-0001		97063-01-0002		97063-01-0003		97063-01-0004		97063-01-0005		97063-01-0006		97063-01-0007		97063-01-0008								
Scientific Name	Common Name	Species Type	Planted #	Height (ft)	Planted #	Height (ft)	Planted #	Height (ft)	Planted #	Height (ft)	Planted #	Height (ft)	Planted #	Height (ft)	Planted #	Height (ft)	Planted #	Height (ft)							
Acer rubrum	red maple	Tree			3	19	5	29	5	57	6	42	1	4	1	7	1	6							
Betula nigra	river birch	Tree	1	15			2	42	1	20	4	68			4	62	1	1							
Cornus amomum	silky dogwood	Shrub	2	15			1	7	1	12	3	20	2	3			2	7							
Fraxinus pennsylvanica	green ash	Tree	6	62			1	7	2	20							1	5							
Liquidambar styraciflua	sweetgum	Tree																							
Pinus taeda	loblolly pine	Tree																							
Platanus occidentalis	American sycamore	Tree			4	55			4	64	1	11	2	11	4	67									
Quercus michauxii	swamp chestnut oak	Tree	3	11	1	7	1	10	2	20	1	11	2	7	2	18	1	4							
Salix nigra	black willow	Tree																							
Sum			12	103	8	81	10	95	15	193	15	152	7	25	11	154	6	23							
Average Height of Plot			**8.6**		**10.1**		**9.5**		**12.9**		**10.1**		**3.6**		**14.0**		**3.8**								

*Height is sum of species in each plot.

Table 8. Vegetation Plot Summary MY5

Plot #	Stream/ Wetland Stems	Volunteers	Total	Success Criteria Met?
1	486	647	1133	Y
2	364	891	1255	Y
3	405	2023	2428	Y
4	607	121	728	Y
5	283	41	324	Y
6	283	81	364	Y
7	445	406	851	Y
8	243	81	324	Y
Project Avg	390	536	926	Y

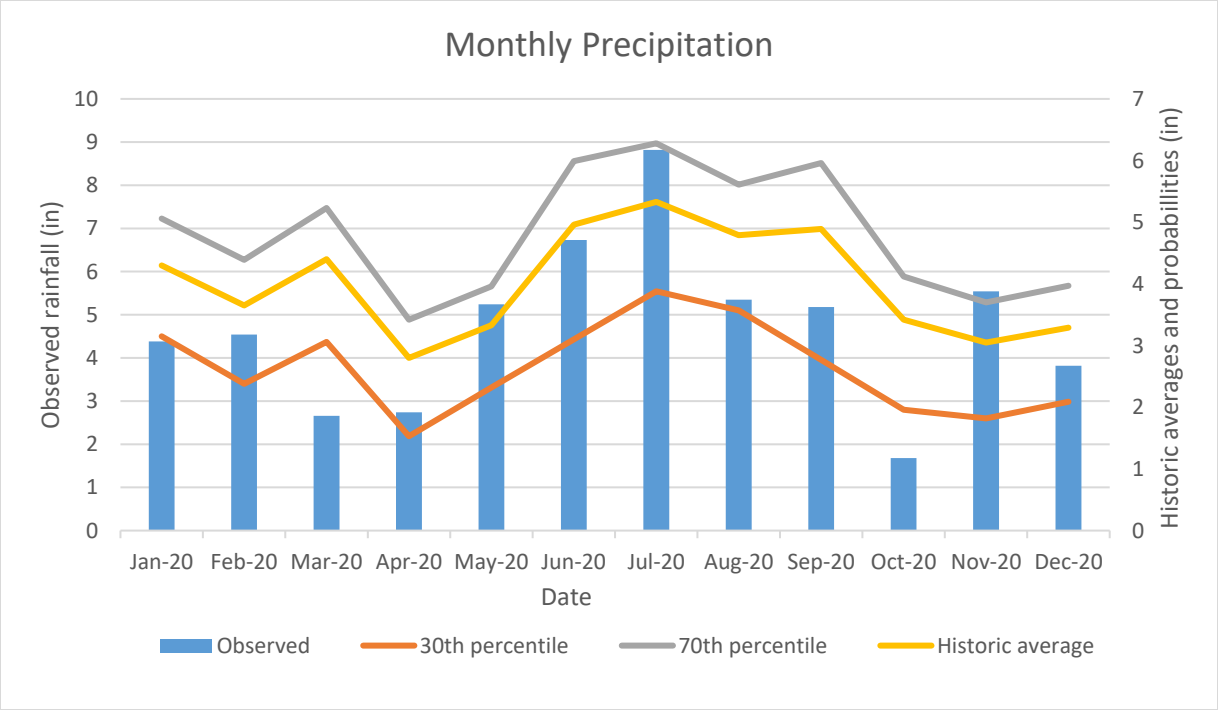
Table 9. Vegetation Annual Means

Annual Means																				
			MY5 (2020)			MY4 (2019)			MY3 (2018)			MY2 (2017)			MY1 (2016)			MY0 (2016)		
Scientific Name	**Common Name**	**Species Type**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer rubrum	red maple	Tree	22	22	123	26	26	45	26	26	27	27	27	27	34	34	34	34	34	34
Betula nigra	river birch	Tree	13	13	14	13	13	13	13	13	14	13	13	13	17	17	17	18	18	18
Cornus amomum	silky dogwood	Shrub	11	11	11	12	12	12	13	13	13	13	13	13	16	16	16	18	18	18
Fraxinus pennsylvanica	green ash	Tree	10	10	14	12	12	26	13	13	20	11	11	11	22	22	22	22	22	22
Liquidambar styraciflua	sweetgum	Tree						1												
Pinus taeda	loblolly pine	Tree			6			2												
Platanus occidentalis	American sycamore	Tree	15	15	15	15	15	15	15	15	16	16	16	16	21	21	21	22	22	22
Quercus michauxii	swamp chestnut oak	Tree	14	14	14	14	14	14	15	15	16	15	15	15	13	13	13	13	13	13
Salix nigra	black willow	Tree			3															
Unknown		Shrub or Tree													2	2	2	2	2	2
		Stem count	85	85	200	92	92	128	95	95	106	95	95	95	125	125	125	129	129	129
		size (ares)	8			8			8			8			8			8		
		size (ACRES)	0.20			0.20			0.20			0.20			0.20			0.20		
		Species count	6	6	8	6	6	8	6	6	6	6	6	6	7	7	7	7	7	7
		Stems per ACRE	430	430	1012	465	465	647	481	481	536	481	481	481	632	632	632	653	653	653

APPENDIX D

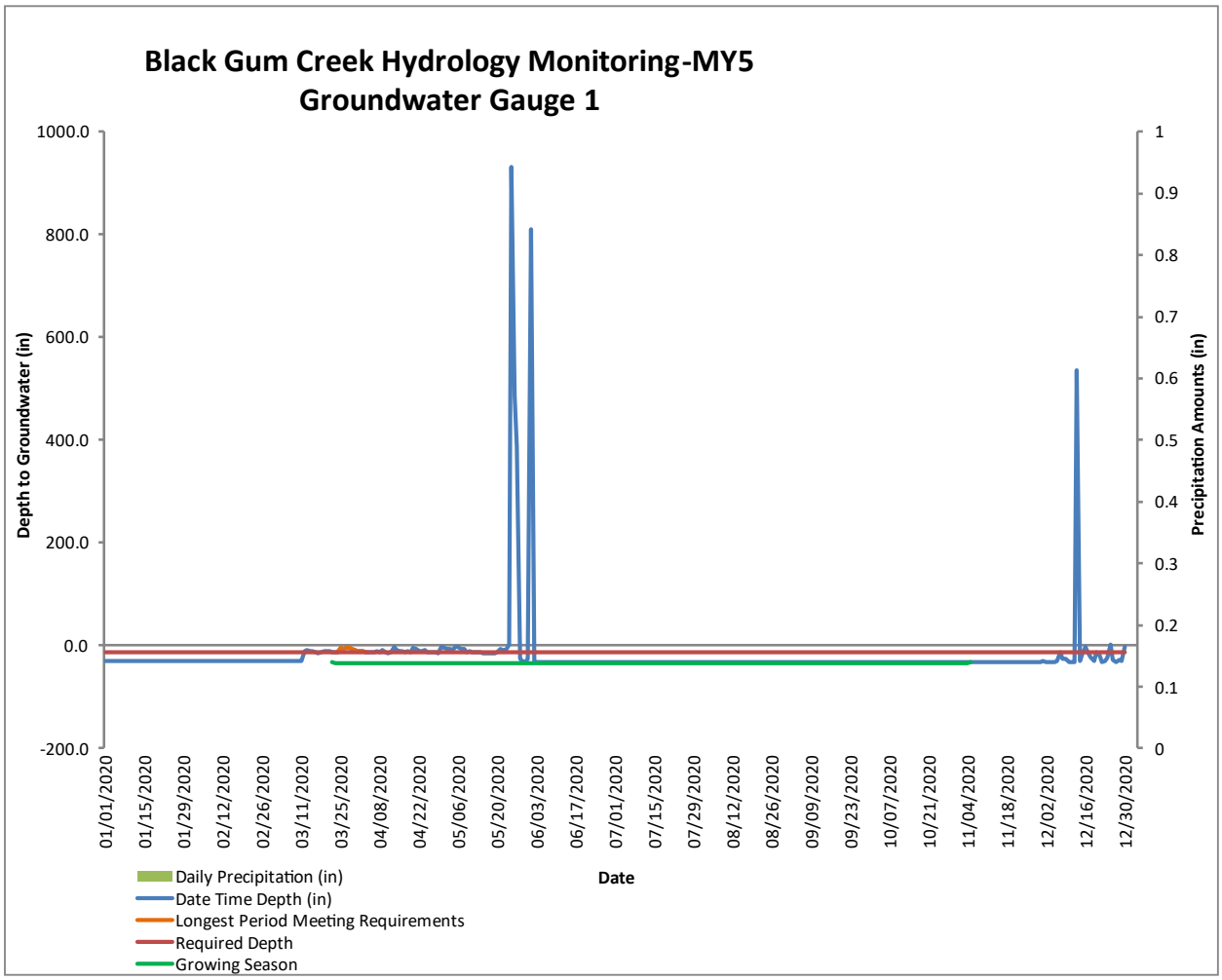
HYDROLOGIC DATA

Figure 4. Monthly Rainfall Data
Black Gum Creek, DMS Project ID# 97063



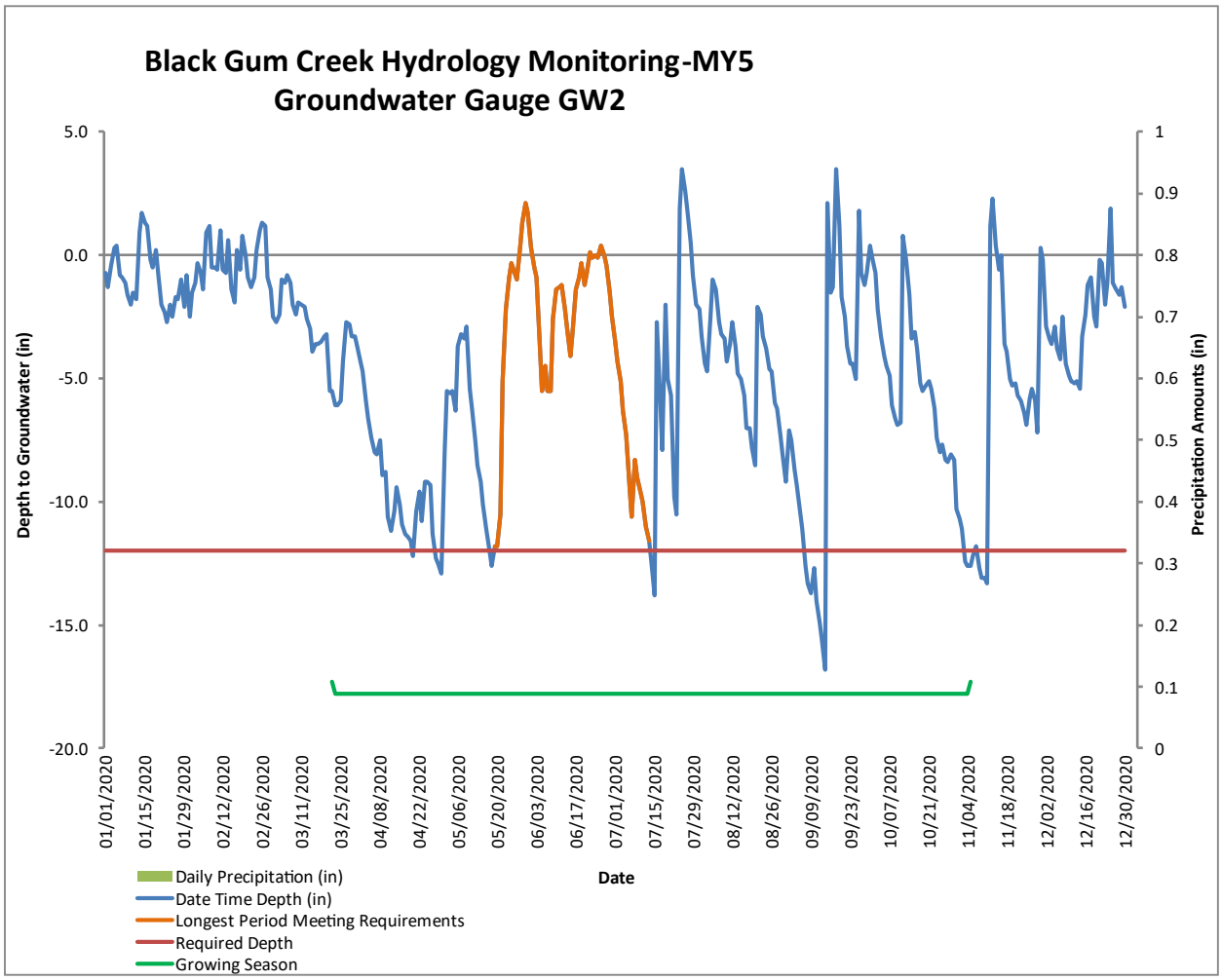
MY3-MY5 observed and historic rainfall data collected from the USDA-NRCS Agricultural Applied Climate Information System, Laurinburg-Maxton Airport monitoring station in Scotland County. Data acquired for MY2 (2017) from USDA-NRCS Agricultural Applied Climate Information System (Red Springs 1 SE monitoring station) in Robeson County was not used for proceeding years due to missing data and/or data errors.

Figure 5a. Monitoring Gauge #1-MALFUNCTION



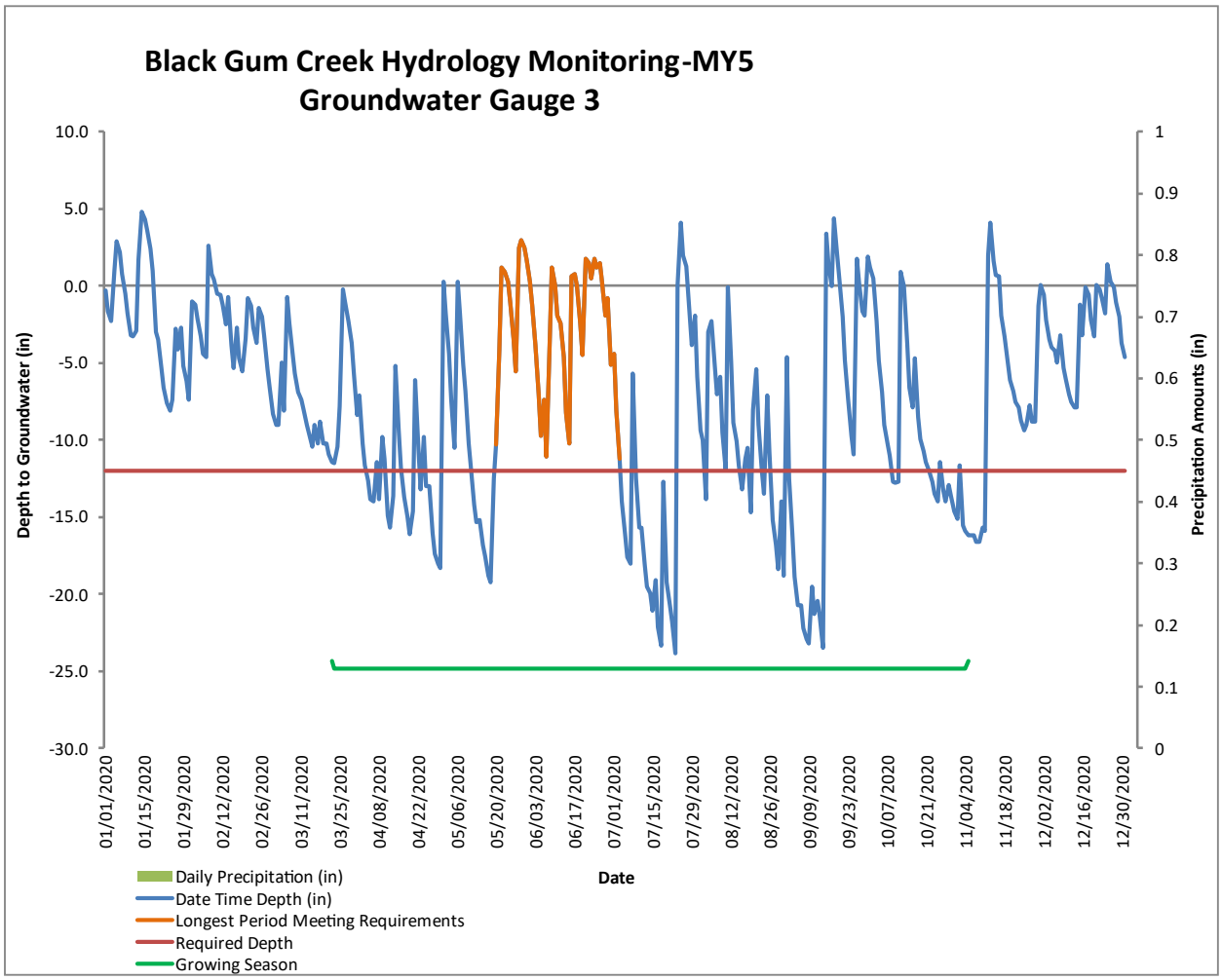
Growing Season Days: 228 (Mar 22 – Nov 5)
Target Hydroperiod Percent: 8%
Required Number of Days Meeting Requirements: 18
Longest Period Meeting Requirements: 11
Hydroperiod Percent: 4.8%

Figure 5b. Monitoring Gauge #2



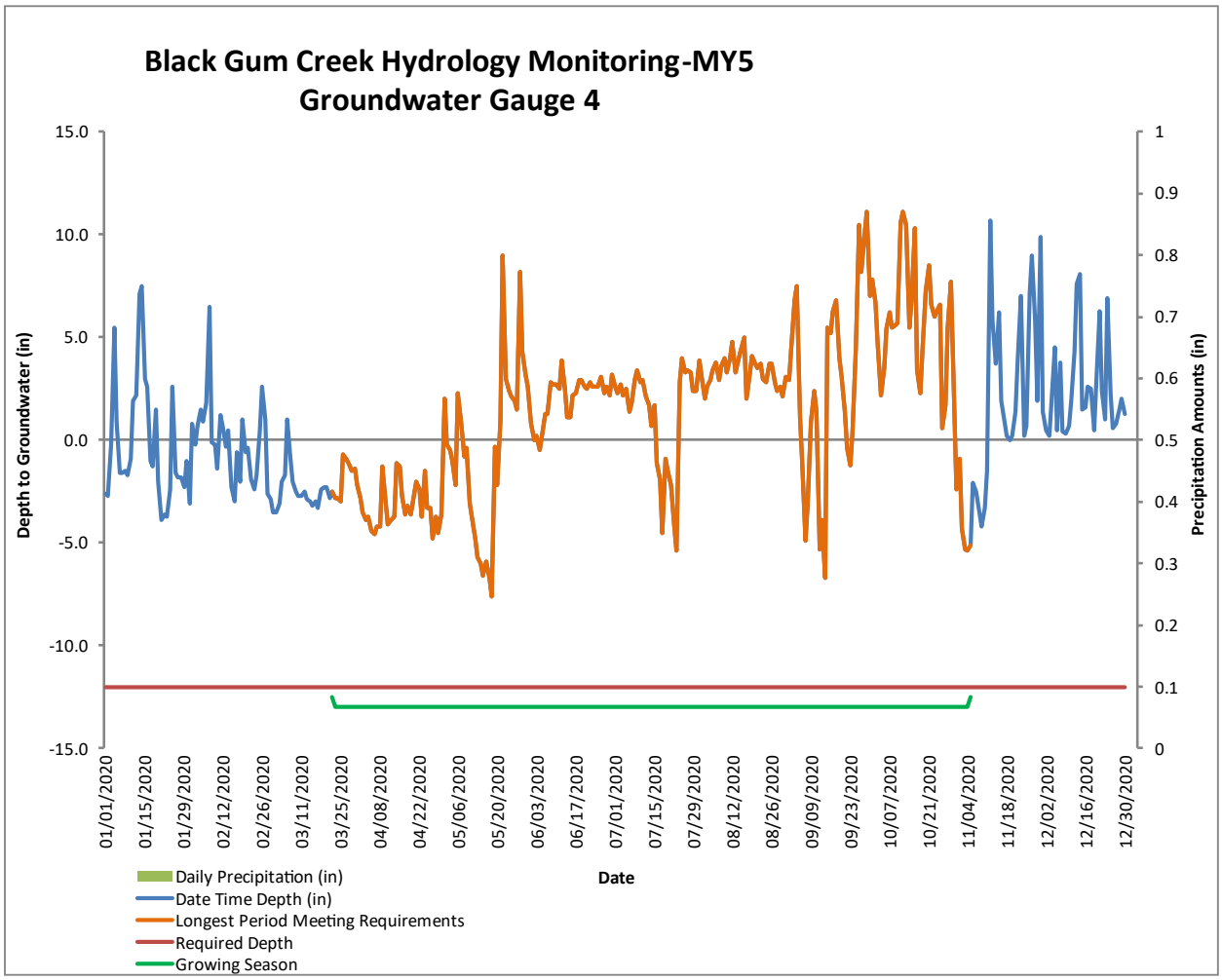
Growing Season Days: 228 (Mar 22 – Nov 5)
Target Hydroperiod Percent: 8%
Required Number of Days Meeting Requirements: 18
Longest Period Meeting Requirements: 56
Hydroperiod Percent: 24.5%

Figure 5c. Monitoring Gauge #3



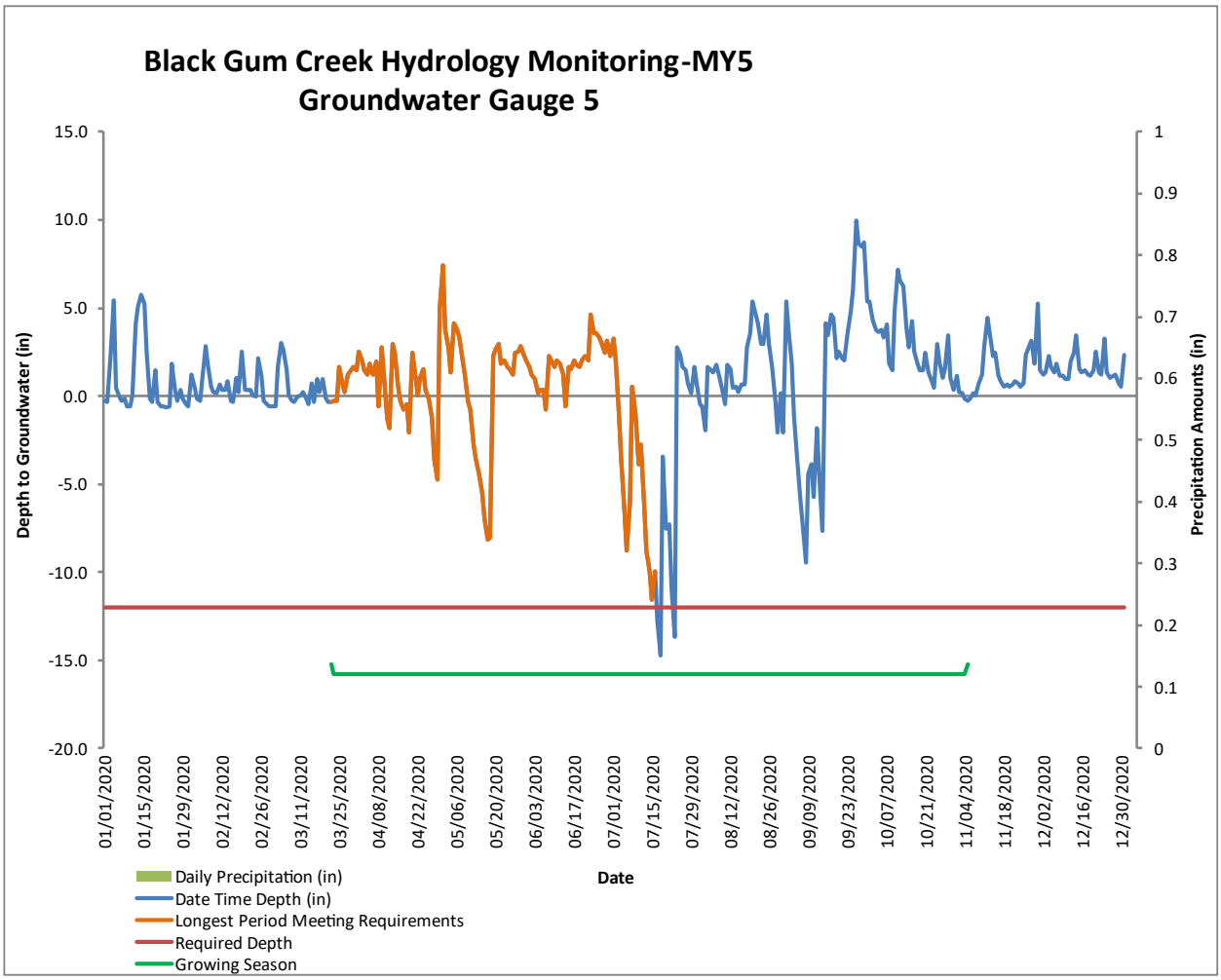
Growing Season Days: 228 (Mar 22 – Nov 5)
Target Hydroperiod Percent: 8%
Required Number of Days Meeting Requirements: 18
Longest Period Meeting Requirements: 45
Hydroperiod Percent: 19.7%

Figure 5d. Monitoring Gauge #4



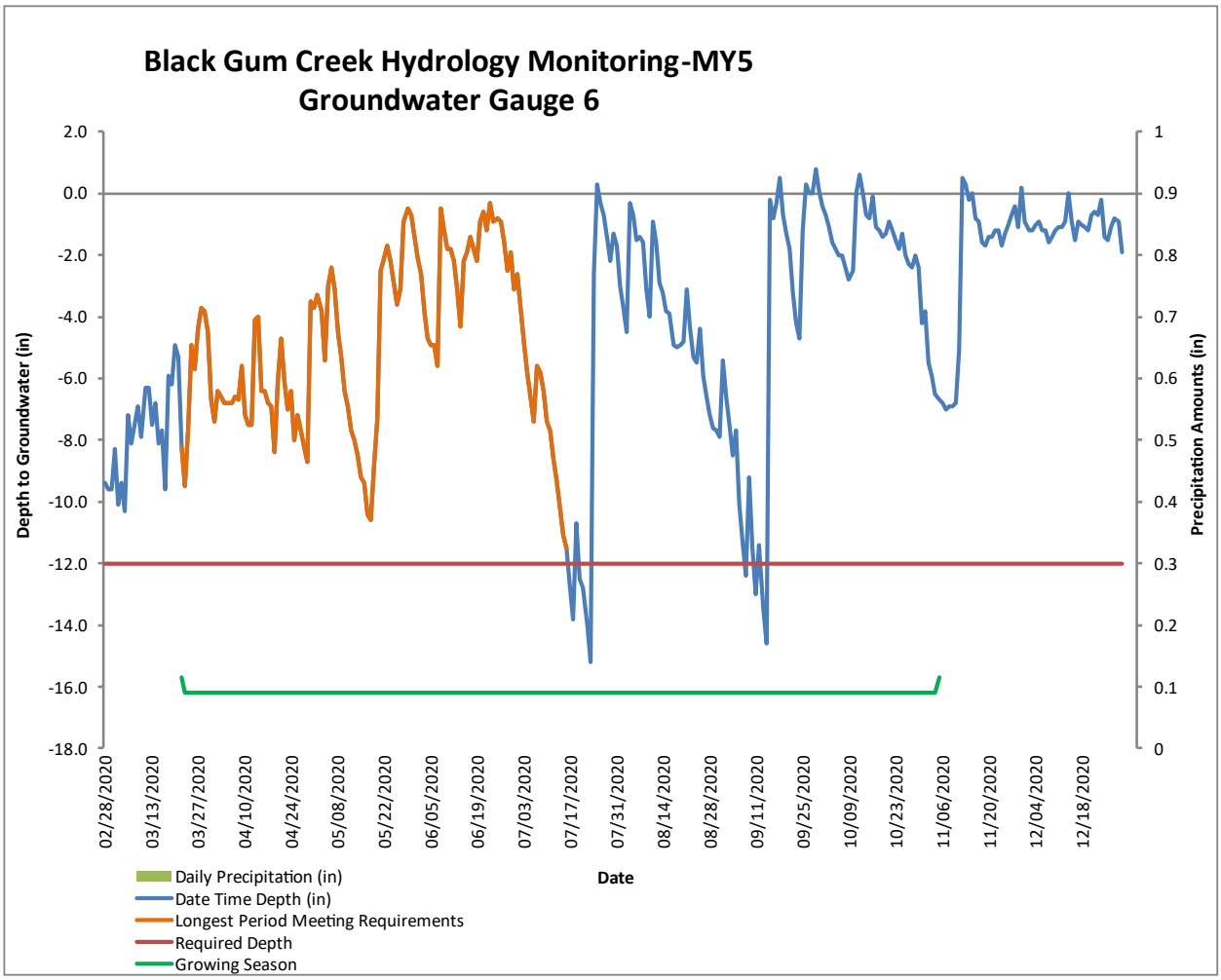
Growing Season Days: 228 (Mar 22 – Nov 5)
Target Hydroperiod Percent: 8%
Required Number of Days Meeting Requirements: 18
Longest Period Meeting Requirements: 229
Hydroperiod Percent: 100%

Figure 5e. Monitoring Gauge #5



Growing Season Days: 228 (Mar 22 – Nov 5)
Target Hydroperiod Percent: 8%
Required Number of Days Meeting Requirements: 18
Longest Period Meeting Requirements:117
Hydroperiod Percent: 51.1%

Figure 5f. Monitoring Gauge #6



Growing Season Days: 228 (Mar 22-Nov 5)
Target Hydroperiod Percent: 8%
Required Number of Days Meeting Requirements: 18
Longest Period Meeting Requirements:117
Hydroperiod Percent: 51.1%

Table 10. Wetland Hydrology Criteria Attainment

	Success Criteria Achieved/Max Consecutive Days During Growing Season (Number of days/ Percentage)						
Gauge	Year 0 (2014)	Year 0 (2015)	Year 1 (2016)	Year 2 (2017)	Year 3 (2018)	Year 4 (2019)	Year 5 (2020)
1	Yes/ 46 21.0%	Not available***	Yes/26 11.4%	Yes/24 10.5%	Yes/52 22.8%	Yes/37 16.2%	Malfunction 4.8%
2**	N/A / 10 4.4%	Not available***	N/A / 11 4.8%	N/A / 22 9.6%	N/A / 52 22.7%	N/A / 38 16.6%	N/A / 38 24.5%
3**	N/A / 12 5.3%	N/A / 41 18.0%	N/A / 7 3.1%	N/A / 5 2.2%	N/A / 15 6.6%	N/A / 37 16.2%	N/A / 45 19.7%
4	Yes / 52 22.8%	Yes/46 20.2%	Yes/39 17.0%	No/2 0.9%	No/10 4.4%	Yes/62 27.1%	Yes/229 100%
5	Yes / 23 10.1%	Yes/63 27.6%	Yes/67 29.3%	Yes/24 10.5%	Yes/44 19.3%	Yes/57 24.9%	Yes/117 51.1%
6	NA	NA	NA	NA	NA	Yes/25 10.9%	Yes/117 51.1%

* Growing Season is 228 days. Eight (8) percent of the growing season is equal to 18 days or more of consecutive readings above 12 inches.

** Gauge 2 and 3 are located outside of asset areas.

*** Gauges 1 and 2 were destroyed by a bear and data could not be retrieved in 2015.

**** Gauge 1 and 6 destroyed in 2019 and data could not be retrieved for the entire duration of the monitoring year. Data for gauges 1 & 6 in the above table are indicative of hydrology through July 23, 2019.