

**Monitoring Report
Hofler Property
Monitoring Year 5**

DMS Project ID #: 95355

DMS Contract #: 004628

USACE AID# SAW-2012-01393

Gates County, North Carolina

Submitted November, 2019



NC Department of Environmental Quality
Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC 27699-1652

**Submitted by:
ALBEMARLE RESTORATIONS, LLC
P.O. Box 176
Fairfield, NC 27826
(252) 333-0249**

Mitigation Project Name Hofler Property
DMS ID 95355
River Basin Chowan
Cataloging Unit 03010203

County Gates
Date Project Instituted 6/15/2012
Date Prepared 6/13/2019

USACE Action ID 2012-01393
NCDWR Permit No N/A

Credit Release Milestone	Stream Credits						Wetland Credits							
	Scheduled Releases (Stream)	Warm	Cool	Cold	Anticipated Release Year (Stream)	Actual Release Date (Stream)	Scheduled Releases (Forested)	Riparian Riverine	Riparian Non-riverine	Non-riparian	Scheduled Releases (Coastal)	Coastal	Anticipated Release Year (Wetland)	Actual Release Date (Wetland)
Potential Credits (Mitigation Plan)										23.000				
Potential Credits (As-Built Survey)										23.000				
1 (Site Establishment)	N/A				N/A	N/A	N/A				N/A		N/A	N/A
2 (Year 0 / As-Built)	30%				N/A	N/A	30%			6.900	30%		2015	10/1/2015
3 (Year 1 Monitoring)	10%				N/A	N/A	10%			2.300	10%		2016	4/25/2016
4 (Year 2 Monitoring)	10%				N/A	N/A	0%			2.300	15%		2017	Not Released
4 (Year 2 Monitoring) - Resubmitted							10%			2.300			2017	8/10/2018
5 (Year 3 Monitoring)	10%				N/A	N/A	15%			3.450	20%		2018	8/10/2018
6 (Year 4 Monitoring)	5%				N/A	N/A	5%			1.150	10%		2019	4/26/2019
7 (Year 5 Monitoring)	10%				N/A	N/A	15%				15%		2020	
8 (Year 6 Monitoring)	5%				N/A	N/A	5%				N/A		2021	
9 (Year 7 Monitoring)	10%				N/A	N/A	10%				N/A		2022	
Stream Bankfull Standard	10%				N/A	N/A	N/A				N/A			
Total Credits Released to Date										16.100				

NOTES:

CONTINGENCIES:



Signature of Wilmington District Office Approving Credit Release

27 Sept 2019

Date

- 1 - For NCDMS, no credits are released during the first milestone
- 2 - For NCDMS projects, the second credit release milestone occurs automatically when the as-built report (baseline monitoring report) has been made available to the NCIRT by posting it to the NCDMS Portal, provided the following criteria have been met:
 - 1) Approval of the final Mitigation Plan
 - 2) Recordation of the preservation mechanism, as well as a title opinion acceptable to the USACE covering the property
 - 3) Completion of all physical and biological improvements to the mitigation site pursuant to the mitigation plan
 - 4) Receipt of necessary DA permit authorization or written DA approval for projects where DA permit issuance is not required
- 3 - A 10% reserve of credits is to be held back until the bankfull event performance standard has been met

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DEBITS (released credits only)

Ratios			1	1.5	2.5	5	1	3	2	5	1	3	2	5	1	3	2	5
			Stream Restoration	Stream Enhancement I	Stream Enhancement II	Stream Preservation	Riparian Restoration	Riparian Creation	Riparian Enhancement	Riparian Preservation	Nonriparian Restoration	Nonriparian Creation	Nonriparian Enhancement	Nonriparian Preservation	Coastal Marsh Restoration	Coastal Marsh Creation	Coastal Marsh Enhancement	Coastal Marsh Preservation
As-Built Amounts (feet and acres)											23.000							
As-Built Amounts (mitigation credits)											23.000							
Percentage Released											70%							
Released Amounts (feet / acres)											16.100							
Released Amounts (credits)											16.100							
NCDWR Permit	USACE Action ID	Project Name																
	2005-10482	SR 1339 Improvements - Division 1, Bertie County									0.090							
2012-0296	2006-10391	NCDOT TIP R-2507A, US 13 Improvements, Hertford & Gates Counties									5.680							
2011-1075	2002-11081	NCDOT TIP R-2583, US 158 Improvements, Hertford County									0.720							
2012-0296	2006-10391	NCDOT TIP R-2507A Add'l, US 13 Improvements, Hertford & Gates Counties									0.100							
2016-1221	2011-01243	NCDOT TIP R-5311A, US 11 / NC 11 Improvements, Hertford County									1.810							
2016-0409	2016-00268	Earley's Substation Expansion, Hertford County									0.800							
2016-1221	2011-01243	NCDOT TIP R-5311A, US 11 / NC 11 Improvements, Hertford County									5.750							
2016-1221	2011-01243	NCDOT TIP R-5311A, US 11 / NC 11 Improvements, Hertford County																
Remaining Amounts (feet / acres)											1.150							
Remaining Amounts (credits)											1.150							



Mitigation Services
ENVIRONMENTAL QUALITY

ROY COOPER
Governor

MICHAEL REGAN
Secretary

Ashby Brown
ALBEMARLE RESTORATIONS, LLC
P.O. Box 176
Fairfield, NC 27826

12/12/2019

Sent via e-mail (ashbybrown@woodswaterandwildlife.com)

RE: Hofler MY5
Contract #004628
Project # 95355

On November 25, 2019, the Division of Mitigation Services (DMS) received the Draft Monitoring Report for Hofler and a site visit occurred during the growing season (8/30/2019).

After reviewing the document, please provide make the following updates and respond if necessary. Please submit 1 hard copy of the final document and one electronic.

- Update table 6 to show MY5 (it is shown as MY4)
- Albemarle did a good job with the addition of the reference gauge in Merchants Mill data and ensuring that no gauges malfunctioned in MY5 per previous comments.
- Inclusion of Table 7 is prudent. However, with greater than 40% site area vegetation not meeting success, the IRT response for awarding credit is unlikely. DMS suggests that Albemarle reach out to the IRT directly about this project before credit release meeting to develop some sort of adaptive management plan so the dormant season planting window is not missed.
- Please provide raw precipitation data (excel file) and indicate sources.

To date, Albemarle was paid for 80% of the total contract value (equivalent to 17.6 acres), but the IRT has only released 70% of the credits to date (16.100 acres). DMS will withhold payment until the IRT weighs in on the plans for future credit release.

Thank you for your work.

Lindsay Crocker
DMS

Albemarle Restorations, LLC

*Wetland Restoration
Stream Restoration
Wildlife Habitat*

December 18, 2019

North Carolina Department of Mitigation Services
ATTN: Lindsay Crocker
1652 Mail Service Center
Raleigh, N.C. 27699-1652

RECEIVED
DIVISION OF
MITIGATION SERVICES

DEC 30 2019

RECEIVED

**RE: Submittal of Year 5 Monitoring Report
DENR Contract #004628
Hofler Wetland Restoration Project, Gates County, NC**

Dear Ms. Crocker:

Enclosed is the final version of the Year 5 Monitoring Report for the Hofler Wetland Project in Gates County. Included are one hard copy and a CD with all support files.

Your comments on the draft that required edits were to:

- 1) Edit table 6 to show MY5, not MY4. The table in the report has been corrected as has the Excel file in the Vegetation Data folder of the Support Files folder on the CD.
- 2) To include the raw rainfall data and to identify the source of the data. The rainfall chart in the report has been modified to show the source and the Excel file containing that chart with the raw data has been added to the Hydrologic Data in the Support Files folder on the CD.

I hope we can meet on site in February to discuss the other issues with the project.

Sincerely,

Ashby B. Brown
Principal,
Albemarle Restorations, LLC

P.O. BOX 176
FAIRFIELD, NC 27826
PHONE (252)333-0249
FAX (252)926-9983

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1.0: PROJECT SUMMARY

1.1: Project Objectives

The project objectives of the Hofler property per the approved mitigation plan are as follows:

- Enhance water quality by providing shading from forest cover, which will reduce thermal impacts associated with excess algae growth and decreased dissolved oxygen concentrations
- Slow runoff rates and provide storage and desynchronization of overland flow before it reaches Lassiter Swamp, located directly north of the project, by restoring the wetland complex
- Provide nutrient attenuation and uptake by restoring dense vegetation interspersed with shallow diffuse flows, thus improving downstream habitat
- Provide minimal earthwork and disturbance, as determined through preliminary site analyses, to the area to accomplish designed wetland topography
- Impact existing ecological communities as little as possible. No remnant wetland communities exist on site and no impacts to wetlands or riparian buffers will occur due to the restoration project.

1.2: Project Success Criteria

Wetland hydrology data must consistently document the appropriate hydroperiod has been restored for all areas proposed for wetland mitigation. The targeted hydroperiod for the Hofler Property is 6% or greater. Planted vegetation will be considered successful if at least 320 three year-old planted stems/acre are present after year three. At year five, density must be no less than 260 five year-old planted stems/acre. At year 7, density must be no less than 210 seven year-old planted stems/acre. Additionally, planted vegetation must average 10 feet in height in each plot at year 7. Per the recommendations of the NCIRT, the following understory species were incorporated in the planting schedule on the condition they be exempted from the minimum 10-foot height criterion and exempted from the calculation of average height as a measure of that success criterion: Button bush (*C. occidentalis*), Sweet bay (*M. virginiana*), Wax myrtle (*M. cerifera*), and Laurel oak (*Q. laurifolia*). These species will be included in the calculations for the survival criterion. All vegetative monitoring will follow CVS-EEP Protocol for Recording Vegetation-Version 4.0.

Additionally, the project will strive to establish a variety of hydrologic regimes ranging from shallow inundated areas to intermittently saturated conditions, restoring diffuse flow patterns through what will ultimately be a forested wetland. The successful establishment of these conditions, mimicking nearby reference wetlands will help determine the overall success of the project.

1.3: Project Setting

The Hofler property consists of +/- 345 acres, of which 27 acres have been designated for this project. The site consisted of a rectangular tract of land primarily being used for cotton and small grain production. The prior converted wetlands on the site had been extensively ditched and drained, lowering the local water table and diminishing aquatic habitat and water quality. The site drained from south to north to an unnamed tributary of Lassiter Swamp and Bennets Creek upstream of Merchants Mill Pond. The project site along with the surrounding areas has undergone expansive hydrologic alterations and excessive sediment and nutrient inputs from agricultural production resulting in overall water quality degradation. The vicinity map is included with the CCPV in Appendix B. Table 4 in Appendix A contains additional information regarding the project's location and attributes.

1.4: Mitigation Components

The mitigation components are 23 acres of non-riparian wetland restoration with a credit ratio of 1:1 (Restoration:WMU), please refer to Table 1 for more information.

1.5: Project Timeline

Construction commenced on August 12th, 2014 with the installation of recommended erosion control practices and was completed on Oct. 14th, 2014. Planting was officially concluded on May 6th, 2015 (Table 2). Refer to Table 2 in Appendix A for the Project History and Reporting Timeline.

1.6: Design Approach

A natural design approach focused on mimicking nearby wetlands, including non-riparian hardwood flats and swamp forests both in hydrologic regime and vegetative diversity. Grading was specifically formulated to provide storage for overland flow while creating densely vegetated plots interspersed with shallow diffuse flows. All of these features contribute to nutrient and sediment attenuation, improving downstream habitat and promoting diversity of ecological communities. The reference area for this project is a nearby mature hardwood flat with the same soils and topography and similar hydrologic function. The reference area is within Merchant's Millpond State Park.

1.7: Project Performance

Hydrology was successful over the entire project site. The hydrology charts are included in Appendix E.

Rainfall for the period of January through November 17, 2019, totaled 46.21 inches which was above normal and outside the 30 – 70 percent range.

In this, year five of monitoring, tree survival was found to be lower than in year 3. Ten of the eighteen permanent plots showed survival number of planted stems that did not meet the year 5 success criteria. The overall average survival for the site was 274 planted stems per acre. The oaks in particular, appear to still be struggling against the very heavy herbaceous vegetation. They appear to be continuing a cycle of resprout, dieback and resprout. The cypress appear to be doing very well. Their shade tolerant nature has helped them overcome the dense vegetation. It must be noted that although many stems were not found during the recount, most of them were noted as missing, not dead. They are very difficult to locate in the dense weeds and a few were found this year that were noted as missing last year.

Also of note are the number of natural stems that have become established on the site. An informal count of them was done while locating the planted stems. They average 312 per acre across the site, but that number is likely higher. Refer to Table 7 in Appendix C for the counts.

The farm ditches that were installed on the east, west and south side of the projects to aid in drainage of the crop land appear to not be causing any issues with hydrology. These ditches are shown on the CCPV on page 11.

Vicinity Map



1.8: Methods and References

Monitoring methodology did not differ from the approved Mitigation Plan. Vegetation assessment was done according to the level 2 protocol specified by the Carolina Vegetation Survey. Hydrology monitoring wells were installed per ERDC TN-WRAP-00-02 “Installing Monitoring Wells/Piezometers in Wetlands” dated 2000. Groundwater levels were recorded using the U20-001-01 water level data loggers manufactured by Onset Computer. The loggers were installed in the wells per the manufacturer’s instructions.

Appendix A: Background Tables

Table 1. Project Components and Mitigation Credits

Table 2. Project Activity and Reporting History

Table 3. Project Contacts

Table 4. Project Information and Attributes

Table 1. Project Components and Mitigation Credits								
Hofler Project #95355, Contract #004628								
Mitigation Credit Summations								
	Stream	Riparian Wetland	Non-riparian Wetland	Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset		
Overall Credit			23					
Project Components								
Project Component or- Reach	Stationing	Existing Footage or Acreage	Restoration Footage or Acreage	Restoration Level	Restoration or Rest. Equiv.	Mitigation Ratio	Mitigation Credits	Notes
Wetland 1		23	23		Restoration	1:1	23	
Length and Area Summations								
Restoration Level	Stream (Linear Feet)	Riparian Wetland (acres)		Non-riparian Wetland (acres)	Buffer (square feet)	Upland (acres)		
		Riverine	Non-Riverine					
Restoration			23					
Enhancement								
Enhancement I								
Enhancement II								
Creation								
Preservation								
High Quality Preservation								
BMP Elements								
Element	Location	Purpose/Function			Notes			

Table 2. Project Activity and Reporting History Hofler Property Wetland Mitigation Project #95355		
Activity, Deliverable or Milestone	Data Collection Complete	Actual Completion or Delivery
Project Institution	N/A	May-12
Mitigation Plan	May 2014	July 2014
Permits Issued	May 2014	July 2014
Final Design Construction Plans	May 2014	July 2014
Construction	N/A	October 2014
Temporary S & E mix applied to entire project area	N/A	N/A
Permanent seed mix applied to entire project area	N/A	October 2014
Containerized and BR Planting over entire project area	N/A	May 2015
Baseline Monitoring Document (Year 0 Monitoring-baseline)	May 2015	Sept. 2015
Year 1 monitoring	November 2015	November 2015
Year 2 monitoring	November 2016	November 2016
Year 3 monitoring	November 2017	November 2017
Year 4 monitoring	November 2018	November 2018
Year 5 monitoring	November 2019	November 2019

Table 3. Project Contacts Hofler Property Wetland Mitigation Project #95355	
Designer Primary Project design POC	Ecotone, Inc. Scott McGill (410) 420-2600 2120 High Point Rd, Forest Hill, MD 21050
Construction Contractor Construction contractor POC	Jennings Land Development Rodney Jennings (252) 202-6954 156 Trotman Rd. Camden, NC 2791
Planting Contractor Planting contractor POC	Carolina Silvics, Inc. Mary-Margaret McKinney (252-482-8491) 908 Indian Trail Road Edenton, NC 27932
Seeding Contractor Seed planting contractor POC	Woods, Water and Wildlife, Inc. Ed Temple (252) 333-0249 P. O. Box 176, Fairfield, NC 27826
Seed mix sources	Earnst Conservation Seeds, LLP, Meadville, PA
Nursery stock suppliers	Carolina Silvics (from various sources)
Monitoring Performers Wetland and Vegetation POC	Woods, Water and Wildlife, Inc. Ashby Brown (757) 651-3162 P. O. Box 176, Fairfield, NC 27826

Table 4. Project Information and Attributes			
Project name		HOFLER PROPERTY	
County		GATES	
Project Area (ac)		27.0 AC	
Project Coordinates (Lat and Long)		+36° 25' 48.44", -76° 39' 10.91"	
4.1 Project Watershed Summary Information			
Physiographic province		INNER COASTAL PLAIN	
River basin		CHOWAN RIVER BASIN	
USGS Hydrologic Unit 8-digit	03010203	USGS Hydrologic Unit 14-digit	03010203040040
DWQ Sub-basin		BENNETTS CREEK LOCAL WATERSHED	
Project Drainage Area (acres)		103.8	
Project Drainage Area Percentage of Impervious Area		5%	
CGIA Land Use Classification		2.01.01.07 Annual Row Crop Rotation	
4.2 Wetland Summary Information			
Parameters	Wetland 1	Wetland 2	Wetland 3
Size of Wetland (acres)	23.0		
Wetland Type (non-riparian, riparian riverine or riparian non-riverine)	Non-riparian		
Mapped Soil Series	BnA & PnA		
Drainage Class	Poorly drained & very poorly drained		
Soil Hydric Status	Hydric		
Source of Hydrology	Surface and Ground		
Hydrologic Impairment	44.8' to 155.2'		
Native Vegetation Community			
Percent Composition of Exotic Invasive Vegetation	N/A		
4.3 Regulatory Considerations			
Regulation	Applicable?	Resolved?	Supporting Documents
Waters of the United States – Section 404	N	N/A	Appendix F
Waters of the United States – Section 401	N	N/A	Appendix F
Endangered Species Act	N	Y	
Historic Preservation Act	N	Y	
Coastal Zone Management Act (CZMA)/ Coastal Area Management Act (CAMA)	N	Y	
FEMA Floodplain Compliance	N	Y	
Essential Fisheries Habitat	N	Y	

Appendix B:

Current Condition Plan View

Table 5. Vegetation Condition Assessment Table

Site Photos

Table 5
Planted Acreage¹

Vegetation Condition Assessment
23

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	None	0	0.00	0.0%
2. Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 4, or 5 stem count criteria.	0.1 acres	None	10	9.89	43.0%
Total				10	9.89	43.0%
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	None	0	23.00	100.0%
Cumulative Total				10	23.00	100.0%

Easement Acreage²

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Vegetation Category	Definitions	Mapping Threshold	CCPV Depiction	Number of Polygons	Combined Acreage	% of Easement Acreage
4. Invasive Areas of Concern ⁴	Areas or points (if too small to render as polygons at map scale).	1000 SF	None	0	0.00	0.0%
5. Easement Encroachment Areas ³	Areas or points (if too small to render as polygons at map scale).	none	None	0	0.00	0.0%



Photo 1. General site vegetation. The cypress have mostly exceeded the average height of the herbaceous layer. Generally the same as in 2017 and 2018.



Photo 2. A very large cypress on plot 18.



Photo 3. One corner marker on plot 18.
Vegetation here is extremely dense and tall.



Photo 4. A very healthy 3-foot tall pine seedling
near plot 13



Photo 5. Some of the other species seeding in. Cottonwood and willow.



Photo 6. Typical red maple. This one is about 3 feet tall.



Photo 7. The willow is heavy in spots and doing very well.



Photo 8. Sycamore tends to be found around the edges of the project.

Appendix C

Vegetation Plot Data

Table 6.

Project Code 95355. Project Name: Hofler

			Current Plot Data (MY5 2019)																	
Scientific Name	Common Name	Species Type	95355-ab-0001			95355-ab-0002			95355-ab-0003			95355-ab-0004			95355-ab-0005			95355-ab-0006		
			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																		
Celtis occidentalis	common hackberry	Tree																		
Cephalanthus occidentalis	common buttonbush	Shrub										4	4	4	1	1	1	1	1	1
Magnolia virginiana	sweetbay	Tree							1	1	1	1	1	1	3	3	3	2	2	2
Myrica	sweetgale	Shrub										2	2	2						
Quercus bicolor	swamp white oak	Tree	1	1	1	2	2	2	1	1	1							3	3	3
Quercus laurifolia	laurel oak	Tree																		
Quercus michauxii	swamp chestnut oak	Tree	1	1	1	2	2	2	5	5	5	1	1	1	3	3	3	2	2	2
Quercus nigra	water oak	Tree	1	1	1	1	1	1				1	1	1	1	1	1	1	1	1
Quercus phellos	willow oak	Tree	1	1	1	1	1	1							1	1	1			
Taxodium distichum	bald cypress	Tree	1	1	1				1	1	1				1	1	1	3	3	3
Stem count			5	5	5	6	6	6	8	8	8	9	9	9	10	10	10	12	12	12
size (ares)			1			1			1			1			1			1		
size (ACRES)			0.02			0.02			0.02			0.02			0.02			0.02		
Species count			5	5	5	4	4	4	4	4	4	5	5	5	6	6	6	6	6	6
Stems per ACRE			202.3	202.3	202.3	242.8	242.8	242.8	323.7	323.7	323.7	364.2	364.2	364.2	404.7	404.7	404.7	485.6	485.6	485.6

Table 6, continued.

Project Code 95355. Project Name: Hofler

			Current Plot Data (MY5 2019)																	
Scientific Name	Common Name	Species Type	95355-ab-0007			95355-ab-0008			95355-ab-0009			95355-ab-0010			95355-ab-0011			95355-ab-0012		
			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																		
Celtis occidentalis	common hackberry	Tree																		
Cephalanthus occidentalis	common buttonbush	Shrub																1	1	1
Magnolia virginiana	sweetbay	Tree																		
Myrica	sweetgale	Shrub	2	2	2	1	1	1	1	1	1									
Quercus bicolor	swamp white oak	Tree	2	2	2				1	1	1									
Quercus laurifolia	laurel oak	Tree																		
Quercus michauxii	swamp chestnut oak	Tree	2	2	2				2	2	2	4	4	4	3	3	3			
Quercus nigra	water oak	Tree				1	1	1										1	1	1
Quercus phellos	willow oak	Tree	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Taxodium distichum	bald cypress	Tree	1	1	1	2	2	2	3	3	3	3	3	3				1	1	1
Stem count			8	8	8	5	5	5	8	8	8	8	8	8	4	4	4	4	4	4
size (ares)			1			1			1			1			1			1		
size (ACRES)			0.02			0.02			0.02			0.02			0.02			0.02		
Species count			5	5	5	4	4	4	5	5	5	3	3	3	2	2	2	4	4	4
Stems per ACRE			323.7	323.7	323.7	202.3	202.3	202.3	323.7	323.7	323.7	323.7	323.7	323.7	161.9	161.9	161.9	161.9	161.9	161.9

Table 6, continued.

Project Code 95355. Project Name: Hofler

Scientific Name	Common Name	Species Type	Current Plot Data (MY5 2019)																	
			95355-ab-0013			95355-ab-0014			95355-ab-0015			95355-ab-0016			95355-ab-0017			95355-ab-0018		
			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																		
Celtis occidentalis	common hackberry	Tree																		
Cephalanthus occidentalis	common buttonbush	Shrub										1	1	1						
Magnolia virginiana	sweetbay	Tree																		
Myrica	sweetgale	Shrub																		
Quercus bicolor	swamp white oak	Tree	1	1	1	2	2	2										1	1	1
Quercus laurifolia	laurel oak	Tree																		
Quercus michauxii	swamp chestnut oak	Tree	1	1	1	2	2	2	3	3	3	2	2	2	2	2	2	2	2	2
Quercus nigra	water oak	Tree										1	1	1	1	1	1	1	1	1
Quercus phellos	willow oak	Tree							1	1	1				2	2	2	1	1	1
Taxodium distichum	bald cypress	Tree	3	3	3	2	2	2	2	2	2	1	1	1	2	2	2	2	2	2
Stem count			5	5	5	6	6	6	6	6	6	5	5	5	7	7	7	6	6	6
size (ares)			1			1			1			1			1			1		
size (ACRES)			0.02			0.02			0.02			0.02			0.02			0.02		
Species count			3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4
Stems per ACRE			202.3	202.3	202.3	242.8	242.8	242.8	242.8	242.8	242.8	202.3	202.3	202.3	283.3	283.3	283.3	242.8	242.8	242.8

Table 6, continued.

Project Code 95355. Project Name: Hofler

Scientific Name	Common Name	Species Type	Annual Means														
			MY5 (2019)			MY3 (2017)			MY2 (2016)			MY1 (2015)			MY0 (2015)		
			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						7									
Celtis occidentalis	common hackberry	Tree													1	1	1
Cephalanthus occidentalis	common buttonbush	Shrub	8	8	8	7	7	7	9	9	9	9	9	9	8	8	8
Magnolia virginiana	sweetbay	Tree	7	7	7	8	8	8	6	6	6	8	8	8	9	9	9
Myrica	sweetgale	Shrub	6	6	6	10	10	10	9	9	9	15	15	15	15	15	15
Quercus bicolor	swamp white oak	Tree	14	14	14	19	19	19	20	20	20	25	25	25	36	36	36
Quercus laurifolia	laurel oak	Tree				1	1	1	1	1	1	5	5	5	7	7	7
Quercus michauxii	swamp chestnut oak	Tree	37	37	37	67	67	67	35	35	35	49	49	49	55	55	55
Quercus nigra	water oak	Tree	9	9	9	12	12	12	13	13	13	23	23	23	34	34	34
Quercus phellos	willow oak	Tree	13	13	13	19	19	19	18	18	18	26	26	26	30	30	30
Taxodium distichum	bald cypress	Tree	28	28	28	29	29	29	31	31	31	31	31	31	35	35	35
Stem count			122	122	122	172	172	179	142	142	142	191	191	191	230	230	230
size (ares)			18			18			18			18			18		
size (ACRES)			0.44			0.44			0.44			0.44			0.44		
Species count			8	8	8	9	9	10	9	9	9	9	9	9	10	10	10
Stems per ACRE			274.3	274.3	274.3	386.7	386.7	402.4	319.3	319.3	319.3	429.4	429.4	429.4	517.1	517.1	517.1

During the tree remeasurement in 2019, areas of very heavy natural regeneration were seen. On each permanent plot, a tally was made of those natural stems that were noted while locating the planted stems. Some plots had very heavy stocking of naturals and all plots had some.

Note that no willow or red maple was planted on the project site. Other species noted were sweetgum, sycamore and cottonwood. A great deal of the red maple stems were at or above the height of the herbaceous vegetation as was most of the willow.

Table 7, Summary of natural stems.

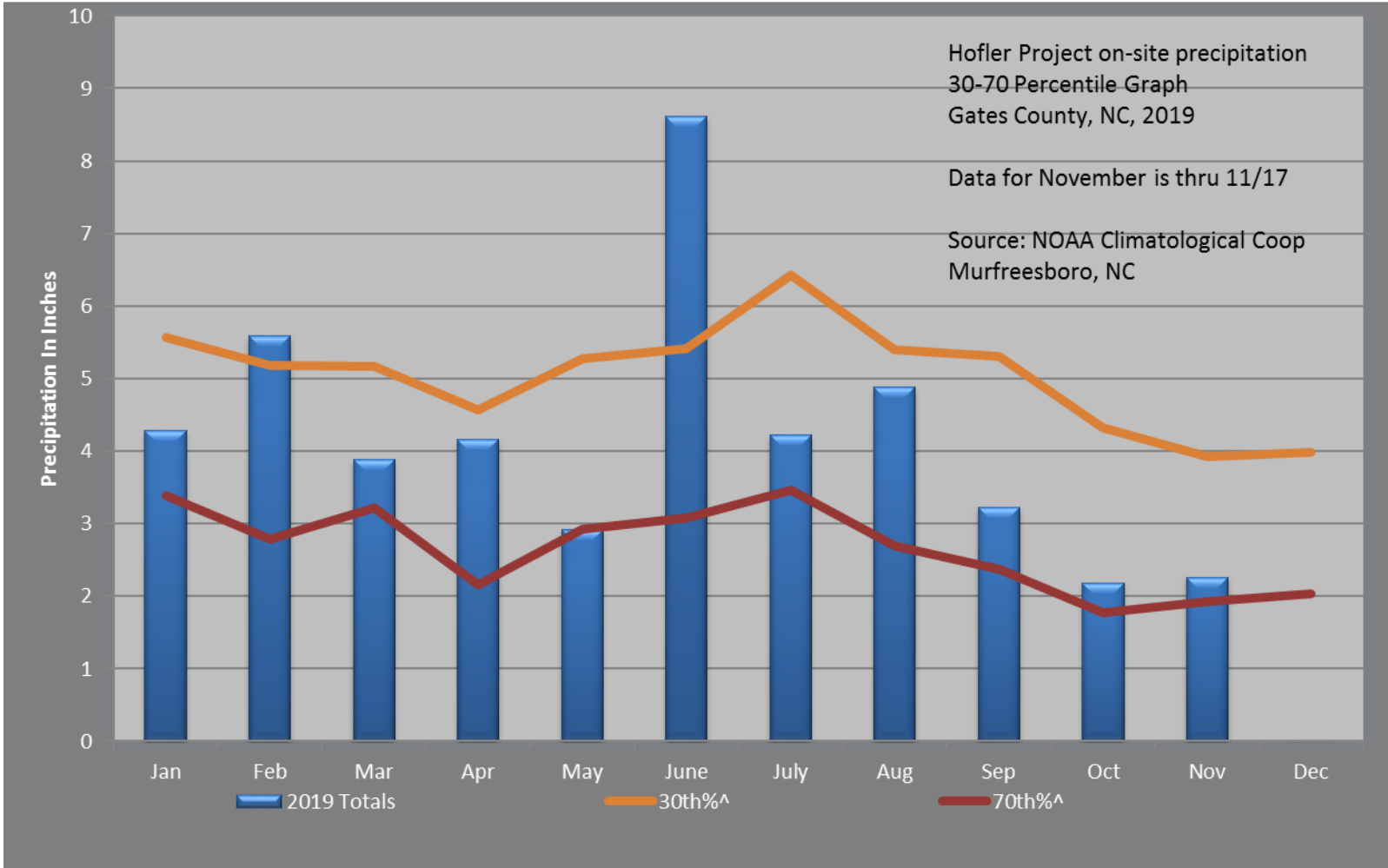
Summary of Natural Stems Noted During Planted Tree Remeasuring in 2019																			
Permanent Plot	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Average Stems/Ac
Red Maple	8	5	6	6	9	3	2	3	5	4	5	4	13	4	10	2	4	3	211
Willow			1						7	1	8	3	3	17	1		1		92
Pine and other				1	1	1							1						9
Total Natural Stems per Acre																			312

Appendix E

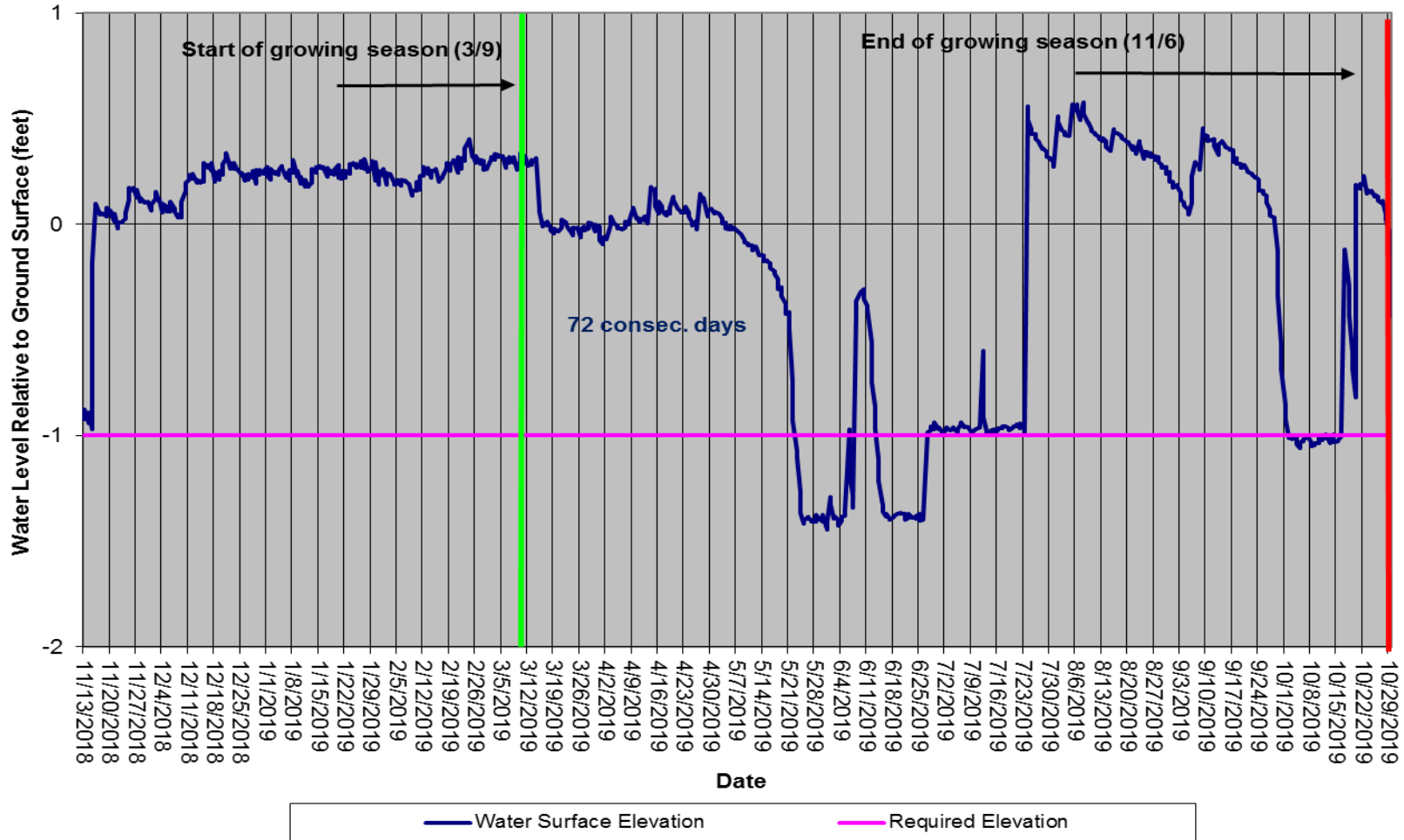
Precipitation Records

Hydrographs

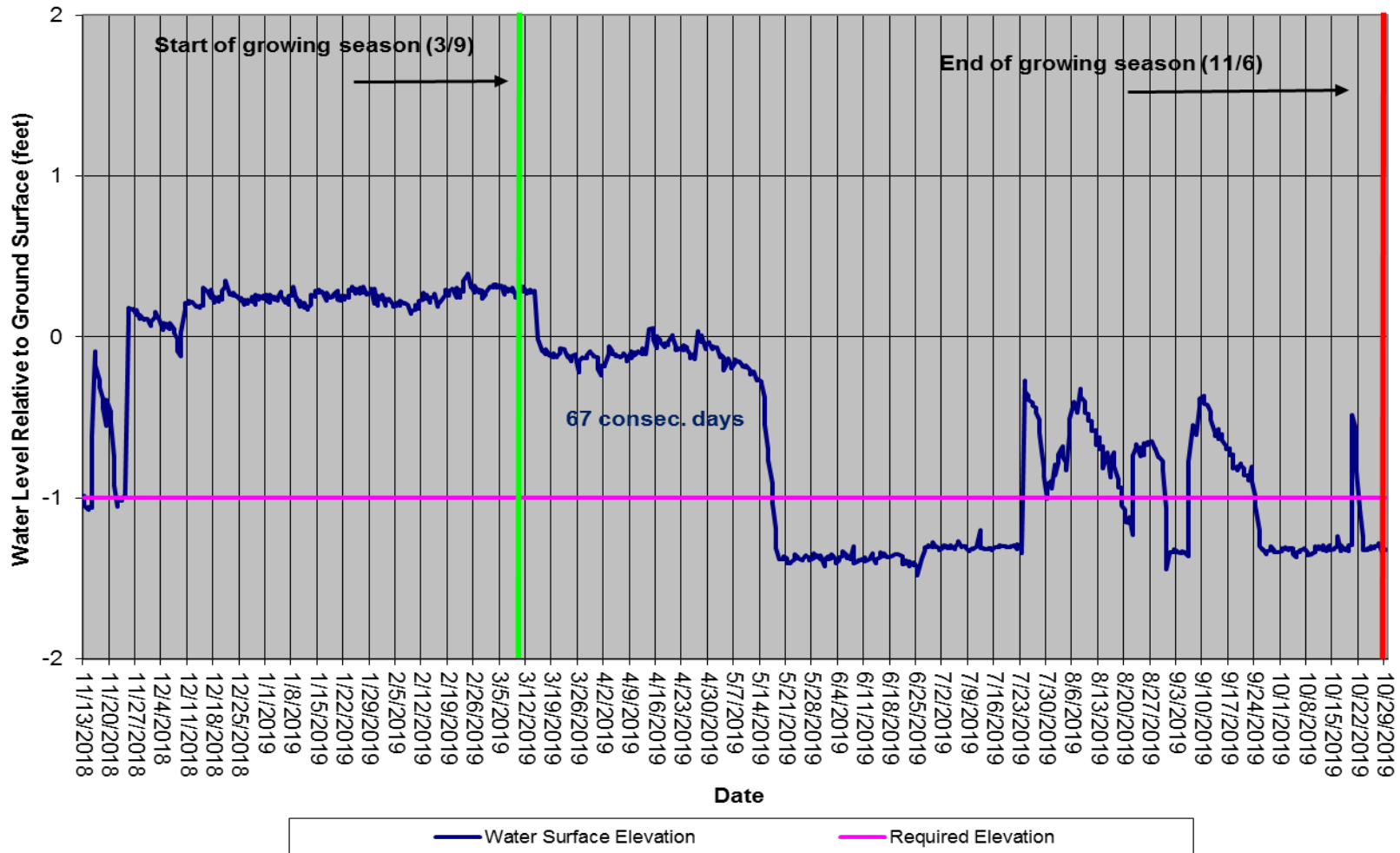
Table 8. Hydroperiod Summary Table



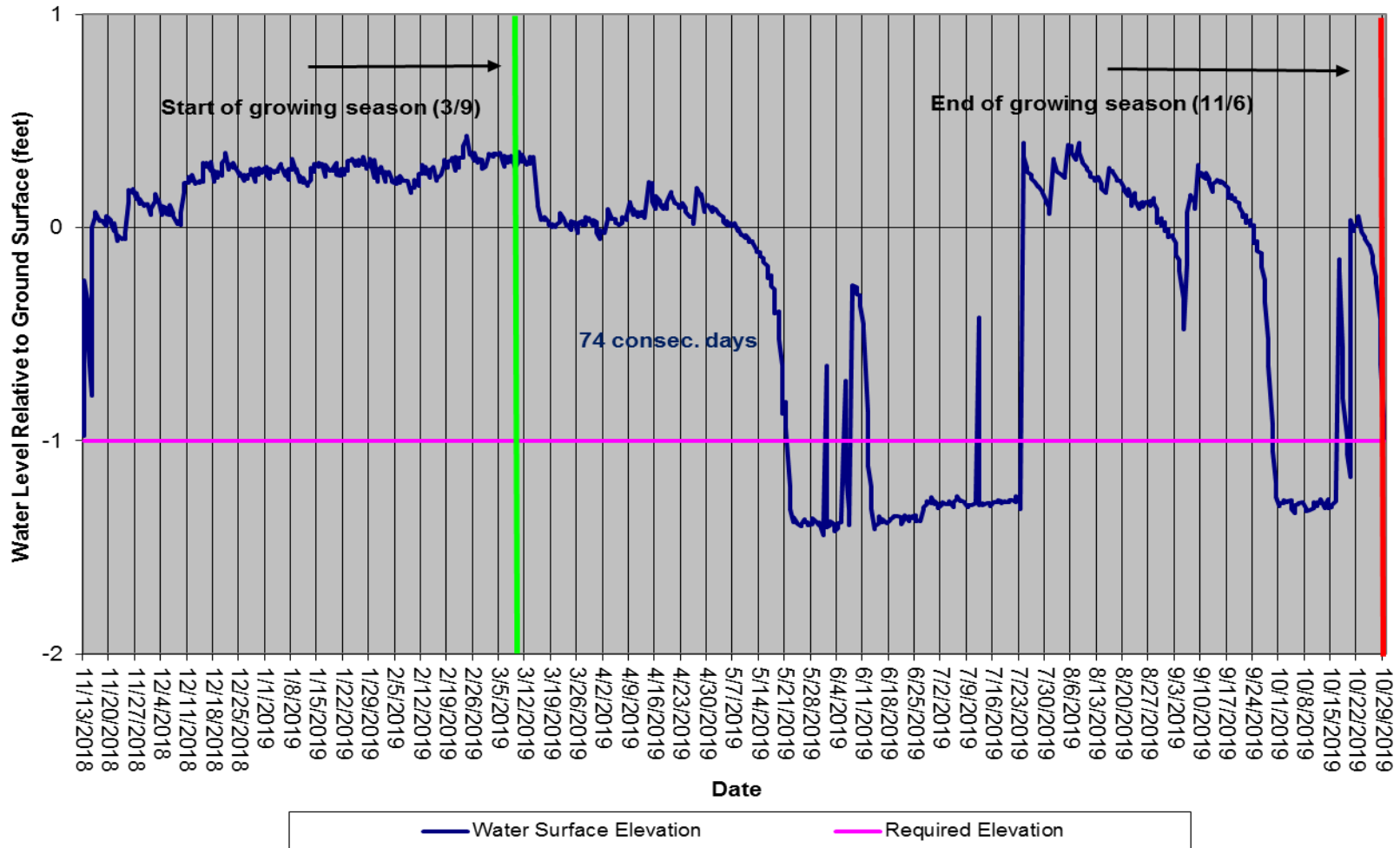
Hofler Monitoring Gauge #1 (9669819)



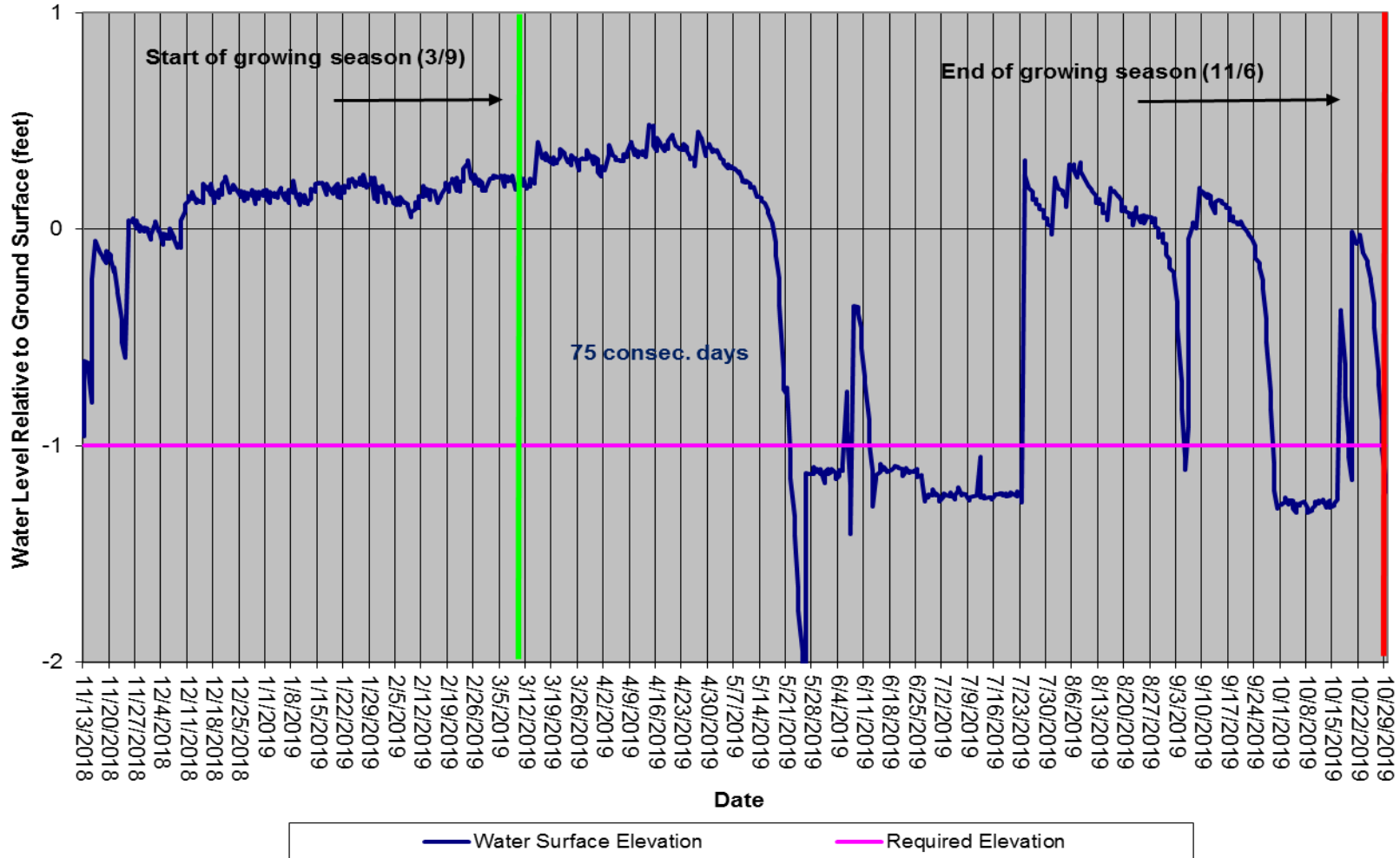
Hofler Monitoring Gauge #2 (9669784)



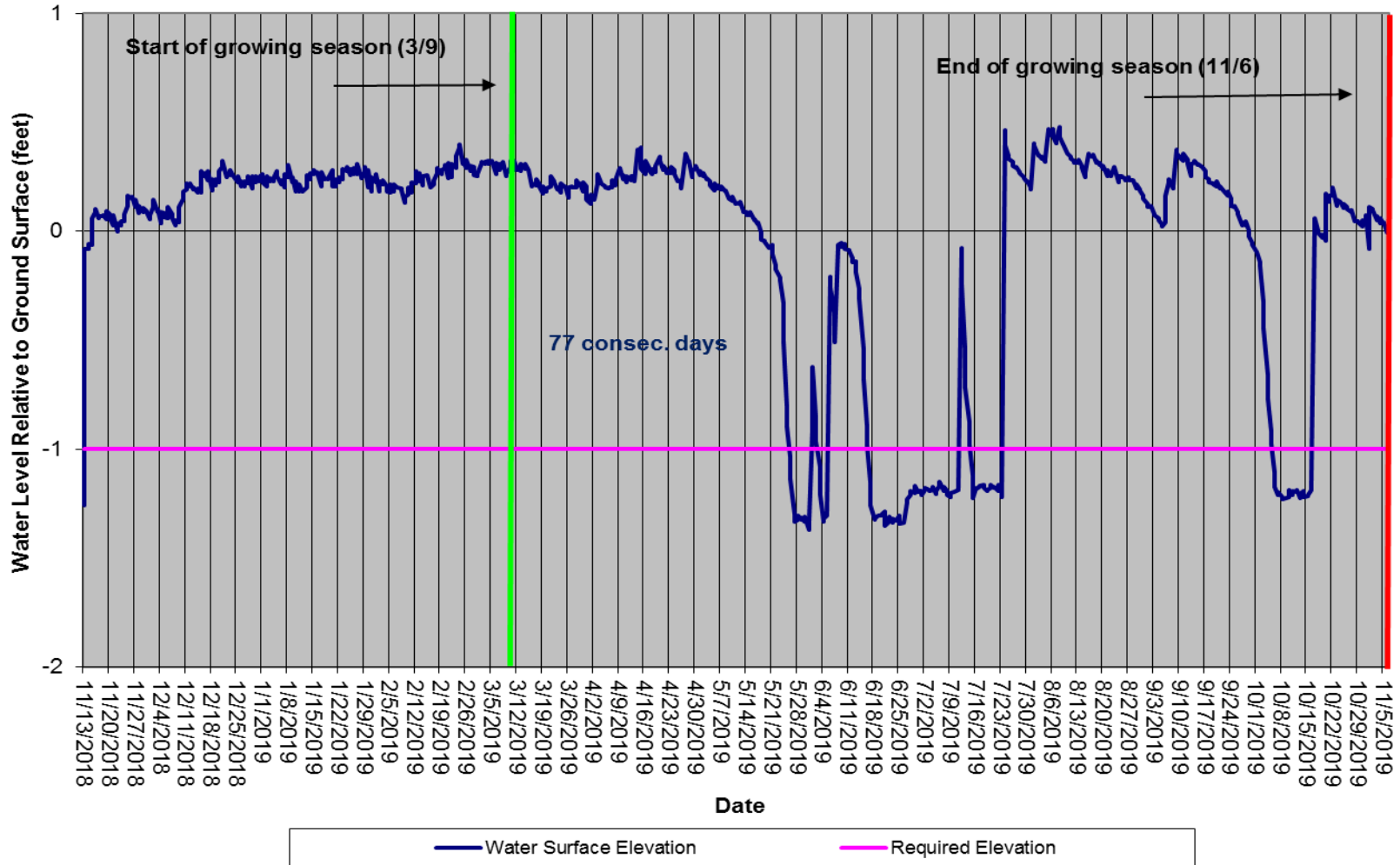
Hofler Monitoring Gauge #3 (1272305)



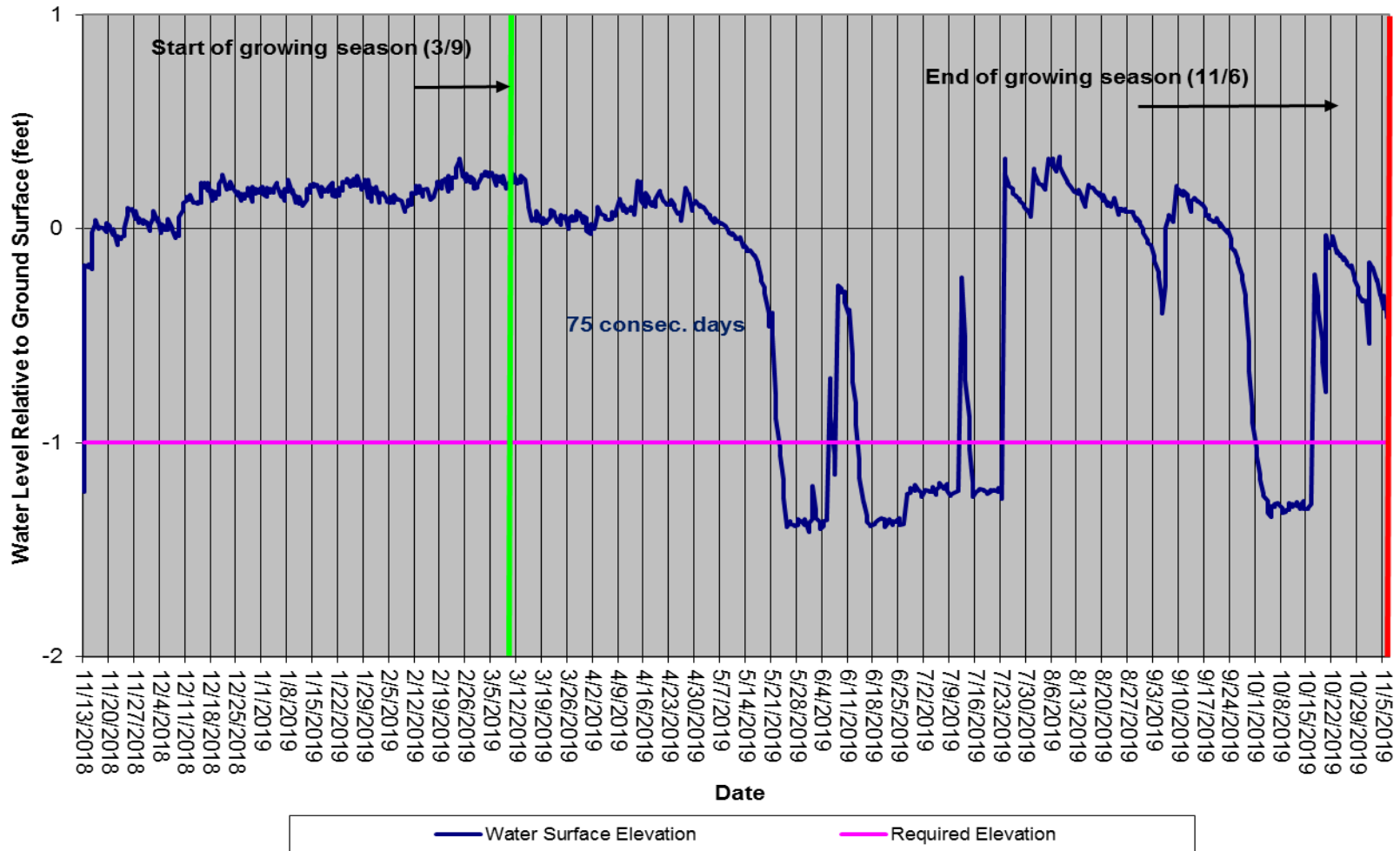
Hofler Monitoring Gauge #4 (1303319)



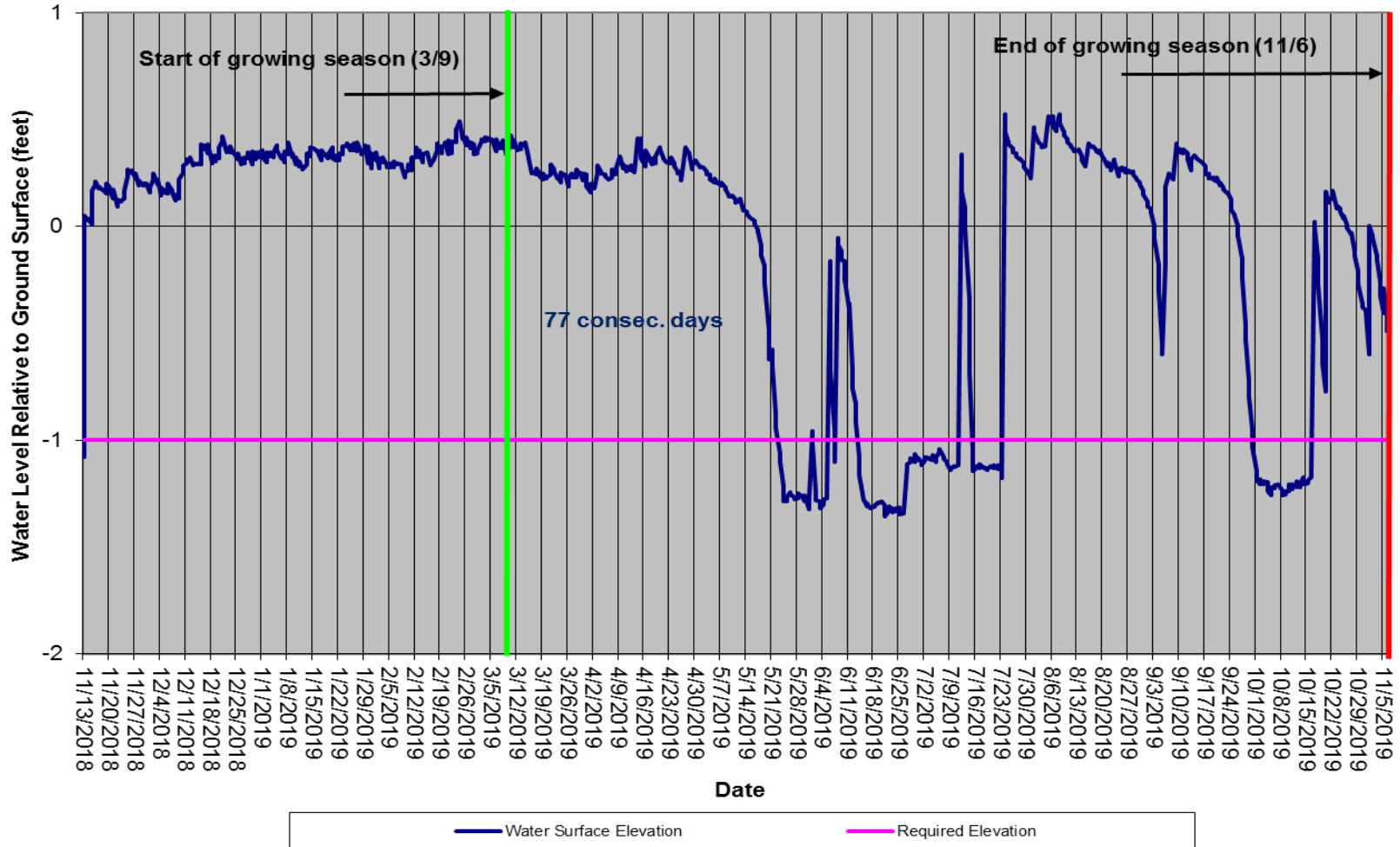
Hofler Monitoring Gauge #5 (10610204)



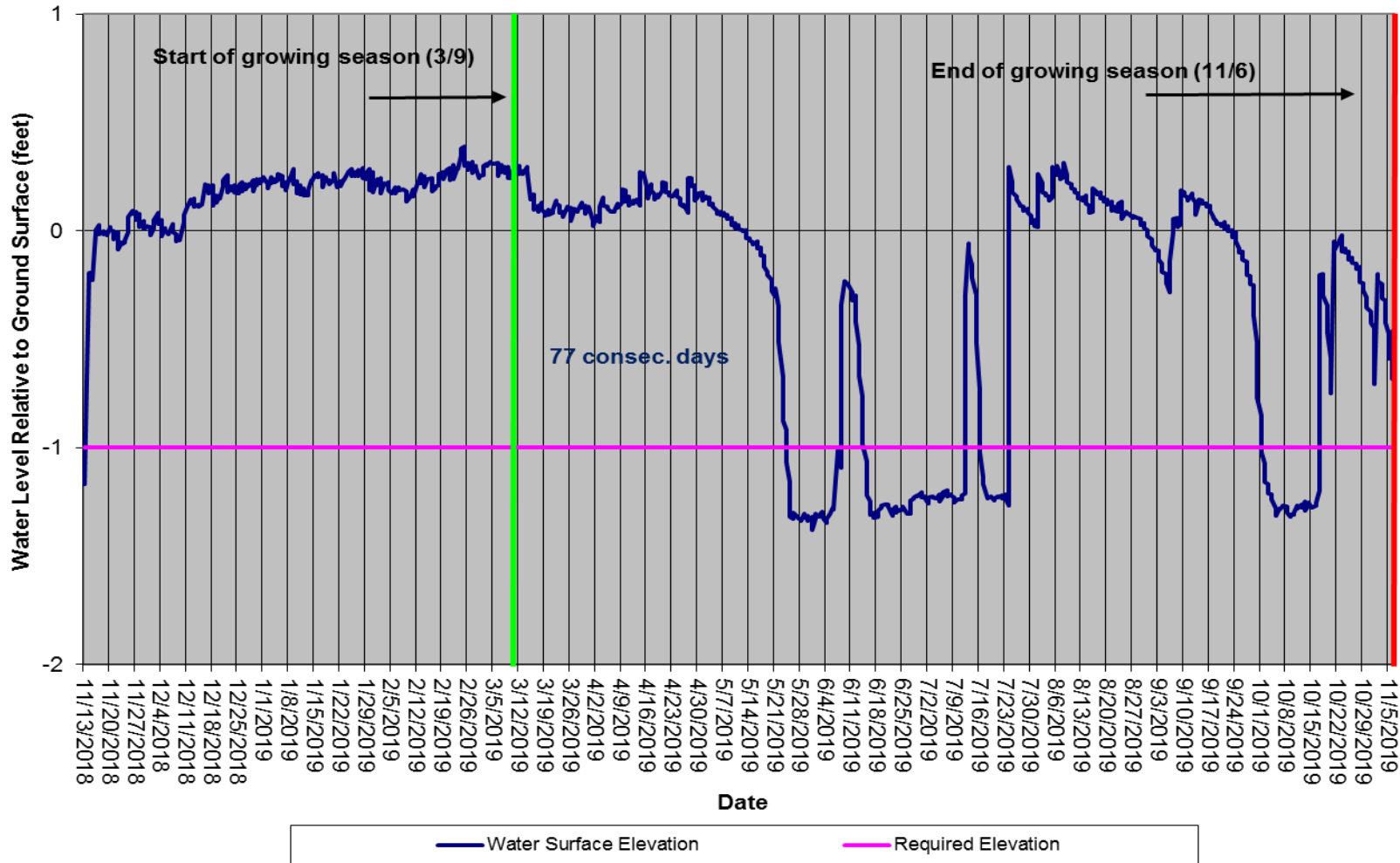
Hofler Monitoring Gauge #6 (2250033)



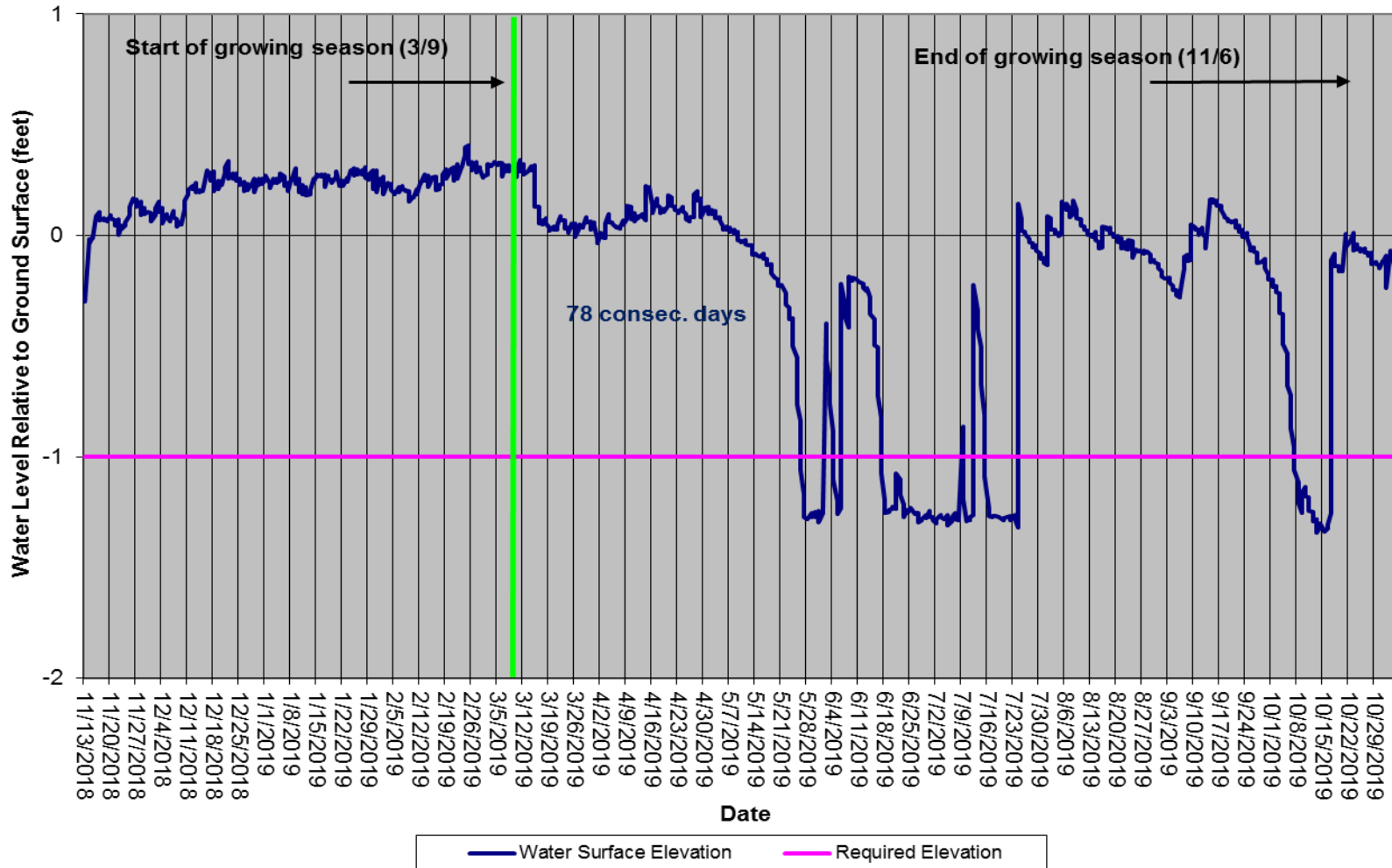
Hofler Monitoring Gauge #7 (1126651)



Hofler Monitoring Gauge #8 (1126652)



Hofler Monitoring Gauge #9 (2238368)



Hofler Monitoring Reference Gauge (2239789)

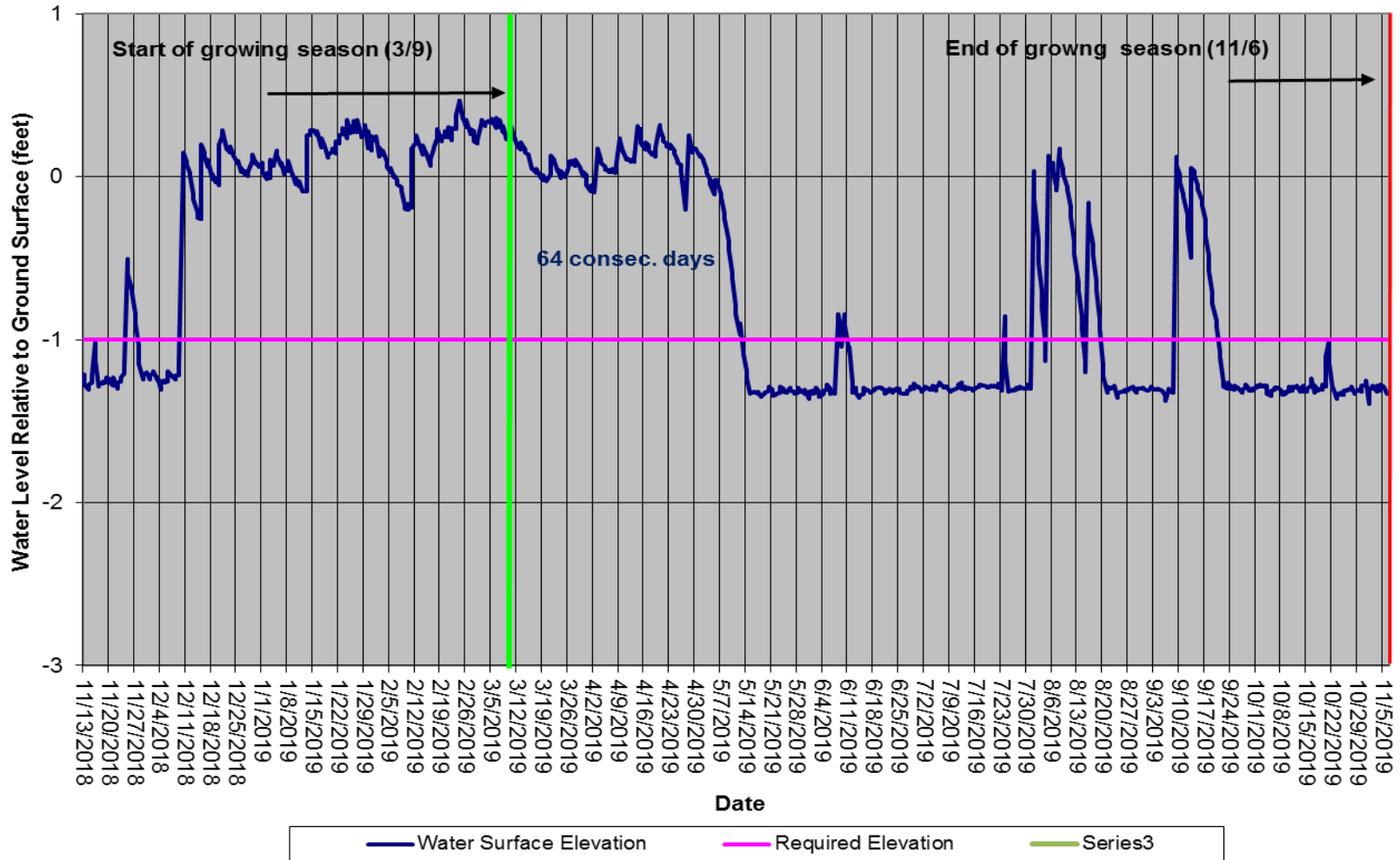


Table 8. Hydroperiod Summaries by Year

Monitoring Gauge Number	Max Consecutive Hydroperiod: Saturation within 12 Inches of Soil Surface: Percent of growing season and Dates																						Mean Days
	WEIS Table: Murfreesboro, NC Growing Season 3/9 - 11/6 (243 days)																						
	2015	Dates	% G.S.	2016	Dates	% G.S.	2017	Dates	% G.S.	2018	Dates	% G.S.	2019	Dates	% G.S.	2020	Dates	% G.S.	2021	Dates	% G.S.		
9669819 (1)	14.0	4/11-5/14	5.8	97	3/9-6/13	39.9	103	3/14-6/26	42.4	101	3/9-6/17	41.6	75	3/9-5/23	30.9							78.0	
9669784 (2)	9.1	4/15-5/6	3.7	53	9/3-10/25	21.8	59	4/23-6/20	24.3	67	3/9-5/14	27.6	69	3/9-5/17	28.4							51.4	
1272305 (3)	12.8	6/25-7/25	5.2	64	9/1-11/3	26.3	103	3/14-6/24	42.4	99	3/9-6/15	40.7	74	3/9-5/22	30.5							70.6	
1303319 (4)	12.8	6/25-7/25	5.2	65	8/30-11/2	26.7	102	3/13-6/22	42.0	99	3/9-6/15	40.7	75	3/9-5/23	30.9							70.8	
10610204 (5)	24.7	6/4-8/2	10.2	99	3/9-6/15	40.7	120	3/9-7/6	49.4	127	3/9-7/11	52.3	77	3/9-5/25	31.7							89.5	
2250033 (6)	14.0	6/25-7/28	5.8	97	3/9-6/13	39.9	103	3/14-6/24	42.4	101	3/9-6/17	41.6	75	3/9-5/23	30.9							78.0	
1126651 (7)	23.5	6/2-7/28	9.7	98	3/9-6/14	40.3	110	3/9-6/26	45.3	100	3/9-6/16	41.2	77	3/9-5/25	31.7							81.7	
1126652 (8)	14.0	6/25-7/28	5.8	98	3/9-6/14	40.3	109	3/9-6/25	44.9	101	3/9-6/17	41.6	77	3/9-5/25	31.7							79.8	
2238368 (9)	11.5	4/15-5/12	4.7	98	3/9-6/14	40.3	113	3/9-6/29	46.5	182	3/9-9/6	74.9	78	3/9-5/26	32.1							96.5	
2239789 (Ref)	Reference site deemed unsuitable, data removed per DMS						29	3/9-4/6	12.0	32	4/4-5/5	13.2	64	3/9-5/12	26.3							41.7	
Precip Total	30.02			63.84			54.68			34.04			46.21										
Within 30%/70% Range?	Y			N			N			Y			Y										
	Meets or exceeds success criteria																						
	N/A Not available - Gage pulled or yet to be installed by this phase																						
	M Malfunction, Data Overwritten or Unretrievable																						

Appendix F

Year 4 Comments and Responses
USACE Permit Needs Determination



Mitigation Services
ENVIRONMENTAL QUALITY

ROY COOPER
Governor

MICHAEL REGAN
Secretary

Ashby Brown
ALBEMARLE RESTORATIONS, LLC
P.O. Box 176
Fairfield, NC 27826

12/12/2018

Sent via e-mail (ashbybrown@woodswaterandwildlife.com)

RE: Hofler MY4
Contract #004628
Project # 95355

On November 25, 2019, the Division of Mitigation Services (DMS) received the Draft Monitoring Report for Hofler and a site visit occurred during the growing season (8/30/2019).

After reviewing the document, please provide make the following updates and respond if necessary. Please submit 1 hard copy of the final document and one electronic.

- Update table 6 to show MY5 (it is shown as MY4)
- Albemarle did a good job with the addition of the reference gauge in Merchants Mill data and ensuring that no gauges malfunctioned in MY5 per previous comments.
- Inclusion of Table 7 is prudent. However, with greater than 40% site area vegetation not meeting success, the IRT response for awarding credit is unlikely. DMS suggests that Albemarle reach out to the IRT directly about this project before credit release meeting to develop some sort of adaptive management plan so the dormant season planting window is not missed.
- Please provide raw precipitation data (excel file) and indicate sources.

To date, Albemarle was paid for 80% of the total contract value (equivalent to 17.6 acres), but the IRT has only released 70% of the credits to date (16.100 acres). DMS will withhold payment until the IRT weighs in on the plans for future credit release.

Thank you for your work.

A handwritten signature in black ink that reads 'Lindsay Crocker'.

Lindsay Crocker
DMS



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

July 21, 2014

Regulatory Division

Re: NCIRT Review and USACE Approval of the Hofler Property Wetland Mitigation Site Plan; SAW-2012-01393; NCEEP Project # 95355

Mr. Tim Baumgartner
North Carolina Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, NC 27699-1652

Dear Mr. Baumgartner:

The purpose of this letter is to provide the North Carolina Ecosystem Enhancement Program (NCEEP) with all comments generated by the North Carolina Interagency Review Team (NCIRT) during the 30-day comment period for the the Hofler Property Wetland Mitigation Site Plan, which was reposted and closed on April 5, 2014. These comments are attached for your review.

This mitigation plan was originally posted in January, 2014. Comments posted identified numerous concerns with the projects (see attached memo). Because of these comments, the plan was revised in March 2014, and reposted on March 6, 2014 for a second review. The deadline for comments was April 5, 2014. An initial review of the comments revealed that many of the comments from the first round of comments had not been addressed in the March mitigation plan revision.

Prior to making a determination as to whether to approve this project, a third copy of the mitigation plan, dated May 2014, was received on May 29, 2014. This plan has subsequently been reviewed in light of the comments provided by NCIRT members during the review. Most of the comments have been addressed in the recent version of the plan, including concerns regarding well placement, vegetation plots, appropriate hydroperiod, and the proposed species list for planting. Based on these modifications, we have determined that major concerns identified with the Draft Mitigation Plan have been addressed, and the mitigation plan is considered approved with this correspondence.

Nevertheless, we believe it is important to note that the location and method of construction at the proposed site are not preferred, and effort should be made to avoid this type of project in the future. As a general rule, we do not believe that building berms around a restored wetland is an appropriate way to reestablish hydrology on a site. To begin with, this is not true restoration as you are establishing an entirely new hydrology regime on the site. Water flow into and out of the wetland is severely restricted by the berms, and the outflow elevation for the entire site is controlled by "ditch plugs/check dams" (see discussion on page 23 of the mitigation plan dated May 2014). In addition, there is the potential that

berms may be breached in the future through natural or anthropogenic means, which could affect the hydrology of the entire site. Lastly, constructing a wetland site in the middle of an agricultural field is not ideal as it drastically limits the connection between the site and forested wetlands adjacent to or downstream from the project. In this case, water flowing from the site must travel through more than ¼ mile of ditch before it reaches the forested headwaters of Lassiter Swamp, limiting the benefit of the project and the ability of the site to fully achieve the stated goals of the mitigation plan.

The Final Mitigation Plan is to be submitted with the Preconstruction Notification (PCN) Application for Nationwide permit approval of the project along with a copy of this letter. All changes made to the Final Mitigation Plan should be summarized in an errata sheet included at the beginning of the document. As it was determined that the project does not contain jurisdictional waters of the U.S., construction for the project does not require a Department of the Army permit; however, you must still provide a copy of the Final Mitigation Plan, along with a copy of this letter, to the appropriate USACE field office at least 30 days in advance of beginning construction of the project. Please note that this approval does not preclude the inclusion of permit conditions in the permit authorization for the project. Additionally, this letter provides initial approval for the Mitigation Plan, but this does not guarantee that the project will generate the requested amount of mitigation credit. As you are aware, unforeseen issues may arise during construction or monitoring of the project that may require maintenance or reconstruction that may lead to reduced credit.

Thank you for your prompt attention to this matter, and if you have any questions regarding this letter, the mitigation plan review process, or the requirements of the Mitigation Rule, please call me at 919-846-2564.

Sincerely,



Todd Tugwell
Special Projects Manager

TUGWELL.TODD.JASON.1048429293
2014.07.21 14:23:23 -04'00'

Enclosures

Electronic Copies Furnished:

NCIRT Distribution List
NCEEP/Heather Smith
NCEEP/Lin Xu

Ed Temple

From: Smith, Heather [heather.c.smith@ncdenr.gov]
Sent: Monday, July 21, 2014 3:24 PM
To: edtemple@vol.com
Subject: FW: NCEEP Draft Mitigation Plan Approval Letter with Comment Memo / Hofler Property Wetland Mitigation Project / Gates County / SAW-2012-01393 (UNCLASSIFIED)

Categories: Red Category

Ed,

Here is the clarification email.

Sincerely,

Heather Smith
Eastern Project Manager
Ecosystem Enhancement Program
919-707-8496
heather.c.smith@ncdenr.gov

Physical Address:
217 West Jones St., 3rd Floor, Suite 3000A, Raleigh, N.C. 27603

Mailing address:
1652 Mail Service Center, Raleigh, N.C. 27699-1652.

Parking and visitor access information is available on the EEP website.

Email correspondence to and from this address may be subject to the North Carolina Public Records Law and may be disclosed to third parties.

-----Original Message-----

From: Tugwell, Todd SAW [<mailto:Todd.Tugwell@usace.army.mil>]
Sent: Monday, July 21, 2014 3:17 PM
To: Baumgartner, Tim
Cc: Smith, Heather
Subject: RE: NCEEP Draft Mitigation Plan Approval Letter with Comment Memo / Hofler Property Wetland Mitigation Project / Gates County / SAW-2012-01393 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

No, that was an oversight. No need for a PCN.

Todd

-----Original Message-----

From: Baumgartner, Tim [<mailto:tim.baumgartner@ncdenr.gov>]
Sent: Monday, July 21, 2014 3:02 PM
To: Tugwell, Todd SAW
Cc: Smith, Heather
Subject: [EXTERNAL] RE: NCEEP Draft Mitigation Plan Approval Letter with Comment Memo / Hofler Property Wetland Mitigation Project / Gates County / SAW-2012-01393 (UNCLASSIFIED)

Todd,

Thanks for the letter. We are a little confused. The last paragraph of the letter says to submit a PCN. There is no PCN needed for the project because the site is not currently jurisdictional. Do they submit a PCN anyway or was this an oversight?

Thanks
Tim

=====

Tim Baumgartner, CPESC
Deputy Director of Operations
Ecosystem Enhancement Program
Department of Environment and Natural Resources

Office - 919-707-8543

Cell - 919-218-2557

From: Tugwell, Todd SAW [<mailto:Todd.Tugwell@usace.army.mil>]
Sent: Monday, July 21, 2014 2:43 PM
To: Baumgartner, Tim
Cc: Xu, Lin; Smith, Heather; Fritz Rohde (Fritz.Rohde@noaa.gov); Chapman, Amy; Baker, Virginia; Beter, Dale E SAW; Biddlecome, William J SAW; bowers.todd@epa.gov; Crumbley, Tyler SAW; Karoly, Cyndi; Cox, David R.; Hall, Dolores; Emily.Jernigan@fws.gov; Alsmeyer, Eric C SAW; Kulz, Eric; Gibby, Jean B SAW; Greer, Emily C SAW; Jones, Scott SAW; Higgins, Karen; Kathryn.Matthews@fws.gov; Marella Buncick (Marella.Buncick@fws.gov); McLendon, Scott C SAW; Gledhill-earley, Renee; Sollod, Steve; Wilson, Travis W.; Wheeler, Tracey L SAW; Wicker, Henry M JR SAW
Subject: NCEEP Draft Mitigation Plan Approval Letter with Comment Memo / Hofler Property Wetland Mitigation Project / Gates County / SAW-2012-01393 (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Mr. Baumgartner,

Attached is the approval letter for the Draft Mitigation Plan for the Hofler Mitigation Project, along with all the comments that were generated during the IRT's review of the project on the Mitigation Plan Review Portal. Please note that this letter approves the Draft Mitigation Plan. The site was determined to have no waters of the U.S., so a permit is not required for construction; however, a copy of the final mitigation plan should be provided at least 30 days prior to construction on site. Also, please ensure that the Final Mitigation Plan is posted to NCEEP's documents portal so that all members of the IRT have access to the Final plan.

Please let me know if you have any questions about the process or the attached letter.

Todd Tugwell

Special Projects Manager

Regulatory Division

Wilmington District

U.S. Army Corps of Engineers

11405 Falls of Neuse Road

Wake Forest, NC 27587

(919) 846-2564

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE