COLONIAL FARMS WETLAND MITIGATION SITE
FINAL ANNUAL MONITORING REPORT – YEAR 0

Edgecombe County, NC
NCDEQ Contract No. 200207-01
NCDMS ID No. 100191
NCDWR Project No. 20210399v1
USACE Action ID: SAW-2021-00346
RFP No. 16-20200207

Tar-Pamlico River Basin
HUC 03020103
August 2022
Prepared For:
NC Department of Environmental Quality
Division of Mitigation Services
1652 Mail Service Center, Raleigh, NC 27699-1652

Mitigation Services
ENVIRONMENTAL QUALITY

August 15, 2022

Jeremiah Dow
NCDEQ
Division of Mitigation Services
217 West Jones Street
Raleigh, North Carolina 27699

Subject: MY0 Report DMS Comments / Colonial Farms Wetland Mitigation Site / Edgecombe County, NC / Tar-Pam 03020103/ SAW-2021-00345 / Contract No. 200207-01 / DMS Project ID No. 100191

Dear Jeremiah,

Eco Terra appreciates your time and thorough review of the project. We have addressed all comments received by DMS staff for the above-mentioned project. Our response comments are in **blue.**

1. During the site visit conducted on 8/2/22, dense Chinese privet was observed on the eastern side of the site. All invasives within the conservation easement must be treated/managed.
Chinese privet in the southwest corner of the Site will be treated. The discussion of the presence of invasive species within the conservation easement boundary has been included in the report.
2. Table 2 – In the measurement column, please list the veg plots as 10 fixed and 4 random.
The above requested edits have been made in the report.
3. Table 3 – The Section 404 and 401 supporting docs should be listed as the Approved PCN or Nationwide Permit/401 Water Quality Certification.
The above requested edits have been made in the report.
4. Section 2.1.3 – Placement of GW3 should be added as a construction deviation.
The discussion of GW3 location has been added to the report.
5. Section 3.0 – Please remove this section.
The above requested edits have been made in the report.
6. Please incorporate monitoring frequency into Table 2 and remove Section 4.0 and Table 5.
The above requested edits have been made in the report.

7. Section 5.4 – Please mention here that based on correspondence with the IRT and their concerns with late planting and delayed hydrologic monitoring that Monitoring Year 1 is planned for 2023.
The discussion of the timing of MY1 has been added to the report. Table 9 (Appendix C) has been edited to reflect the revised project timeline.

8. Appendix A: Table 6 requires any areas within the CE containing invasives to be represented. They should also appear as polygons on the CCPV.
The above requested edits have been made in the report and digital files.
Appendix A: Recommend additional overview photo of the site to show that herbaceous vegetation is now well established.
Additional photos showing near-current Site vegetation conditions have been added to Appendix A

9. Sheet EC1.00 – Please describe/clarify what the changes were for seeding species and/or application.
Temporary and permanent seeding species are shown in red on Sheet EC1.00 notes regarding seed application method have been added to sheet EC1.00.
10. Sheet EC2.01 – Please overlay redlines and surveyed features on proposed conditions from the approved mitigation plan. Any proposed vernal pools, sills, culverts, plugs, etc. should underlay the surveyed features and redlines. GW3 should be shown as red due to change in proposed location.
Proposed linework included in the approved construction drawings have been added to sheet EC2.01. The proposed location of GW3 and GW10 have been added to sheet EC2.01.
11. Sheet L1.00 – Same as comment above. Red line planting zones should overlay the proposed planting zones from the approved final mitigation plan?
Proposed planting zones included in the approved construction drawings have been added to sheet L1.00.

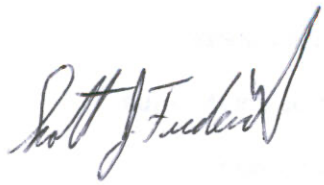
DIGITAL FILES
1. Please add unique ID to photo points and groundwater gauges.
The monitoring features tool output has been updated accordingly.
2. Please submit wetland spatial extent of wetland assets labeled the same as the wetland features in the report asset table (revised DMS comment per email dated 8/11/22).
The wetland features have been labeled in the report asset table accordingly.

3. If applicable, please provide spatial extent of invasive areas of concern.
The spatial extent of invasive areas is included in the monitoring features tool output.

4. Please submit the datafile used to generate the vegetation tables (Table 7) included in the report (the shiny application data file).
The CVS .mdb file is included in the Vegetation Folder under Supporting Files.

Please let us know if additional information or clarification is needed for the MYO Report.

Sincerely,



Scott J. Frederick
Chief Scientist
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COLONIAL FARMS WETLAND MITIGATION SITE
FINAL ANNUAL MONITORING REPORT – YEAR 0

Edgecombe County, NC

NCDEQ Contract No. 200207-01

NCDMS ID No. 100191

NCDWR Project No. 2021-0399v2

USACE Action ID: SAW-2021-00346

RFP No. 16-20200207

Tar-Pamlico River Basin

HUC 03020103

Prepared For:

NC Department of Environmental Quality

Division of Mitigation Services

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August 2022

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1.0 Project Overview

The Site is a 21.82-acre wetland mitigation project located in Edgecombe County, North Carolina. The Site is approximately 2.5 miles south of the City of Tarboro, on the east side of Colonial Road and is accessed via a dirt farm road. The Site is within the Tar-Pamlico 8-digit HUC 03020103, Town Creek watershed, and more specifically in the 14-digit HUC 03020103010020. The 21.82-acre Site includes 14.381 acres of wetland re-establishment (REE) and 0.623 acres of wetland rehabilitation (RH) to provide a total of 15.004 acres of riparian wetland credits for the Tar-Pamlico 03020103 subbasin.

1.1 Project Mitigation Quantities and Credits

Site restoration activities included filling on-Site agricultural ditches, planting of native woody wetland vegetation, and establishment of a conservation easement to protect the site in perpetuity. Table 1a and 1b give the as-built quantities and credits for the Site.

Table 1a – Project Mitigation Quantities and Credits

Project Segment	Original Mitigation Plan ft/ac	As-Built ft/ac	Original Mitigation Category	Original Restoration Level	Original Mitigation Ratio (X:1)	Credits
Wetland						
Colonial Farms_1	0.032	0.032	R	RH	1.000	0.032
Colonial Farms_2	0.389	0.389	R	RH	1.000	0.389
Colonial Farms_3	0.202	0.202	R	RH	1.000	0.202
Colonial Farms_4	14.381	14.381	R	REE	1.000	14.381
					Total:	**15.004**

Table 1b – Project Credit Summary

Restoration Level	Stream			Riparian Wetland	Non-Rip Wetland	Coastal Marsh
	Warm	Cool	Cold			
Restoration						
Re-establishment				14.381		
Rehabilitation				0.623		
Enhancement						
Enhancement I						
Enhancement II						
Creation						
Preservation						
Total:	**0.000**	**0.000**	**0.000**	**15.004**	**0.000**	**0.000**

1.2 Project Goals and Objectives

The site was also chosen relative to the proximity of adjacent forested habitats and corridor servicing the Tar River, filtering overland runoff leaving agricultural fields within the greater sub-watershed, as well as the ability to restore and protect a riparian system and support overarching goals for the Tar-Pamlico RBRP. Restoration of the Site will directly and indirectly address specific goals and stressors related to the goals identified in the RBRP. Table 2 lists the goals and objectives of the project.

Table 2 – Site Goals and Performance Standards

Goal	Objective	Expected Outcome	Function Supported	Performance Standard	Measurement	Assessment Frequency
Reduce Nutrients and Sediment in Agricultural Areas	Remove fertilizer and agricultural byproducts applied to wetland. Establish native woody wetland vegetation, securing soil in place, and reducing wind and runoff erosion.	Improve water quality through nutrient & sediment reduction.	Biological Physicochemical	N/A	Vegetation Plots[1] - 10 Fixed - 4 Random Visual assessment of the Site[3,4]	Annual (Years 1, 2, 3, 5, and 7)
Restore Wetland Hydrology	Fill drainage ditches to restore Site hydrology.	Increase hydrology and shallow water table during the early growing season (12%), reduce nutrients and sediment in agricultural areas, and increase wetland habitats. Increase flood storage in restored wetlands.	Hydrological Physicochemical Biological	Shallow groundwater within 12 inches of the soil surface for a minimum of 10% (24 consecutive growing season days, MY1-MY2) and 12% (28 consecutive growing season days, MY3-MY7).	13 Groundwater Gauges[2]	Tri-Annual

Table 2 (continued) – Site Goals and Performance Standards

Goal	Objective	Expected Outcome	Function Supported	Performance Standard	Measurement	Assessment Frequency
Improve Habitat and Connectivity	Establish native woody wetland vegetation. Promote connectivity to existing Tar River Corridor Natural Heritage Area.	Increase native wetland tree species diversity and habitats. Increase habitat connectivity from riparian forest wetland to UT to Tar River riparian corridor.	Biological	N/A	Visual assessment of the Site[3,4]	Semi-Annual
Restore Wetland Vegetation	Establish native woody wetland vegetation in proposed wetland re-establishment areas.	Increase native wetland tree species quantity and diversity. Increase nutrient cycling and sequestering sediment, and riparian wetland water storage, decreasing peak runoff volumes in stream and reducing flooding.	Hydrological Physicochemical Biological	Survival of 210 planted stems/ac (MY7). Interim survival of at least 320 planted stems/ac (MY3) and at least 260 stems/ac (MY5). Planted stems must average 7 ft in height (MY5) and 10 feet in height (MY7).	Vegetation Plots[1] - 10 Fixed - 4 Random	Annual (Years 1, 2, 3, 5, and 7)
Protect the Site in Perpetuity	Record permanent Conservation Easement to protect the Site in perpetuity.	Protect Site from future impacts and encroachment and direct impacts to wetlands. Support all wetland functions in perpetuity.	Hydrological Physicochemical Biological	Record Conservation Easement	Visual assessment for easement encroachment and Site integrity[5]	Semi-Annual

[1] 14 vegetation plots were located at the Site per comments received from the IRT during Final Mitigation Plan development.
[2] Groundwater gauges 1-3 were installed pre-construction to establish baseline conditions for the Site. Groundwater data will be presented in annual monitoring reports.
[3] The Site will be visually inspected twice a year minimum. All Site data will be included in the Annual Monitoring Report. If necessary, the Adaptive Management Plan will be implemented to address issues jeopardizing project success.
[4] Exotic and nuisance vegetation will be noted and documented as necessary in Annual Reports.
[5] Project encroachments will be noted and documented as necessary in Annual Reports.

1.3 Project Attributes

The Site is situated on a 309-acre parcel used for row crop production and is approximately 3000 feet west of the Tar River. Land uses in the vicinity of the Site largely consists of managed agricultural fields with interspersed shrub / scrub lands. A mature forest exists along most of the Site's southern boundary and serves as a forested habitat corridor connecting the Site to the Tar River. Site hydrology generally drains to the northeast and then to the Tar River (28-(80)) via a series of jurisdictional agricultural ditches. The Tar River is classified as Class C (C); nutrient sensitive waters (NSW). The River's 100-year floodplain borders the western boundary of the Site, and the entire Site is within the 500-year floodplain. Table 3 gives the project attributes.

Table 3: Project Attributes

Project Information				
Project Name	Colonial Farms Wetland Mitigation Site			
County	Edgecombe			
Project Area [Planted Area] (acres)	21.82 [20.74]			
Project Coordinates (latitude and longitude decimal degrees)	35.853767, -77.549397			
Project Watershed Summary Information				
Physiographic Province	Coastal Plain			
River Basin	Tar-Pamlico			
USGS Hydrologic Unit 8-digit; 14-digit	3020103; 03020103010020			
DWR Sub-basin	03-03-04			
Project Drainage Area (acres)	64.0			
Project Drainage Area Percentage of Impervious Area	0%			
Land Use Classification	Agriculture			
Wetland Summary Information				
Parameters	**Colonial Farms_1**	**Colonial Farms_2**	**Colonial Farms_3**	**Colonial Farms_4**
Pre-project (acres)	0.032	0.389	0.202	14.381
Post-project (acres)	0.032	0.389	0.202	14.381
Wetland Type (non-riparian, riparian)	Riparian	Riparian	Riparian	Riparian
Mapped Soil Series	Portsmouth	Portsmouth	Portsmouth	Portsmouth
Soil Hydric Status	Hydric (100%)	Hydric (100%)	Hydric (100%)	Hydric (100%)
Regulatory Considerations				
Parameters	**Applicable?**		**Resolved?**	**Supporting Docs?**
Water of the United States - Section 404	Yes		Yes	Nationwide Permit
Water of the United States - Section 401	Yes		Yes	401 Water Quality Certification
Endangered Species Act	Yes		Yes	Cat. Ex.
Historic Preservation Act	Yes		Yes	Cat. Ex.
Coastal Zone Management Act (CZMA or CAMA)	No		Yes	Cat. Ex.
Essential Fisheries Habitat	No		Yes	Cat. Ex.

2.0 As-Built Condition (Baseline)

The Site was constructed and planted in April 2022. The Site was generally constructed as specified in the approved Final Mitigation Plan. Site construction included filling a drainage ditch, construction of two ditch plugs, minor grading of the wetland restoration area, application of temporary and permanent seed mixes, and planting bare root seedlings. McAdams performed the as-built survey for the Site in May 2022. Sealed record drawings are included in Appendix D.

2.3.1 Site Grading

- Two 100-foot ditch plugs were constructed in the existing ditches at the Site. Proposed ditch plugs not constructed were deemed unnecessary based on field conditions at the time of construction.
- The northeast ditch plug's boulder sill had a 36-inch log placed on top for additional stabilization. Another 36-inch log was buried in the ditch plug to provide grade control.
- The location, size, and quantity of vernal pools graded at the Site varies slightly from the figures included in the approved Final Mitigation Plan and the construction drawings. Vernal pool locations were field adjusted during construction based on observed drainage patterns. Vernal pools total 0.63 acres on Site.
- An additional culvert was located midway along the constructed drainage ditch at the landowner's request.

2.3.2 Site Planting

- Planting zone locations were varied from the approved Final Mitigation Plan based on field conditions and observed drainage patterns following Site grading. Zone 1 was designated as higher landscape position wetland areas and planted with appropriate tree species. The wettest areas, including vernal pools, were planted with species tolerant of longer inundation times and designated as Zone 2. Zone 2 for the Site is an approximately 300-foot-wide swath along the previously existing central ditch and a smaller, approximately 90-foot-wide swath along a previously existing ditch in the southwest quadrant of the Site. Species, quantity, and percent composition of bare root stems planted onsite are presented in Table 4 and the record drawings (Appendix D).
- Four native tree / shrub species not included in the conceptual planting plan in the approved Final Mitigation Plan were planted at the Site (Table 4). These species were not known to be available during the mitigation plan development, but appropriate for the target vegetative community, and were incorporated into the Site planting plan due to lack of sufficient quantity of approved species at the time of planting. Not yet approved tree / shrub species planted at the Site constitute less than 10% of the total planted stems. Eco Terra requests approval from DMS and the IRT for variance from the approved conceptual planting plan in the approved Final Mitigation Plan. Species not included in the approved Final Mitigation Plan will not be counted within fixed or random vegetation plots to meet success criteria unless approved by the IRT.

- Temporary and permanent seed mixes applied to the Site are included in the record drawings.

Table 4: Site Planted Stems

Scientific Name	Common Name	Vegetative Strata	Planting Zone	Wetland Indicator Status	%	Quantity
Quercus michauxii	Swamp chestnut oak	Canopy	1	FACW	20%	3000
~~*Gordonia lasianthus*~~	~~Loblolly bay~~	~~Understory~~	~~2~~	~~FACW~~	--	--
Quercus lyrata	Overcup oak	Canopy	2	OBL	7%	1000
Betula nigra	River birch	Canopy	1	FACW	3%	500
Cephalanthus occidentalis	Buttonbush	Understory	2	OBL	5%	800
Fraxinus pennsylvanica	Green ash	Canopy	1	FACW	4%	600
Liriodendron tulipifera	Yellow poplar	Canopy	1	FACU	6%	900
Quercus shumardii	Shumard oak	Canopy	1	FAC	7%	1100
~~*Quercus pagoda*~~	~~Cherrybark oak~~	~~Canopy~~	~~1~~	~~FACW~~	--	--
~~*Carpinus caroliniana*~~	~~Ironwood~~	~~Understory~~	~~1~~	~~FACW~~	--	--
Quercus phellos	Willow oak	Canopy	2	FACW	7%	1000
~~*Quercus laurifolia*~~	~~Laurel oak~~	~~Canopy~~	~~1~~	~~FACW~~	--	--
Quercus nigra	Water oak	Canopy	1	FAC	7%	1000
~~*Nyssa biflora*~~	~~Swamp blackgum~~	~~Canopy~~	~~2~~	~~OBL~~	--	--
~~*Magnolia virginiana*~~	~~Sweetbay magnolia~~	~~Understory~~	~~2~~	~~FACW~~	--	--
Ulmus americana	American elm	Canopy	1	FAC	1%	200
~~*Persea palustris*~~	~~Swamp bay~~	~~Understory~~	~~2~~	~~FACW~~	--	--
Platanus occidentalis	Sycamore	Overstory	2	FACW	3%	500
Taxodium distichum	Bald-cypress	Overstory	2	OBL	10%	1500
Nyssa aquatica	Swamp tupelo	Overstory	2	FACW	8%	1200
***Carya ovata*[1,2]**	**Water hickory**	**Overstory**	**2**	**OBL**	**1%**	**200**
***Celtis laevigata*[1]**	**Sugarberry**	**Overstory**	**1**	**FACW**	**3%**	**500**
***Cornus amomum*[1]**	**Silky dogwood**	**Understory**	**2**	**FACW**	**<1%**	**50**
***Diospyros virginiana*[1,2]**	**Persimmon**	**Understory**	**1**	**FAC**	**5%**	**700**
				Total:	100%	14750

[1] Species not included in the conceptual planting plan in the approved Final Mitigation Plan dated February 2022.

[2] Species planted in the non-credit area.

Species listed in Table 4 with strike through marks were included in the conceptual planting plan in the Final Mitigation Plan but were not planted at the Site.

2.3.3 Site Monitoring Devices

- 14 vegetation plots were established at the Site (Figure 1). In the approved Final Mitigation Plan, 15 vegetation plots were proposed for post-construction monitoring - this number was an overlooked error in the report. Per comments received from the IRT during development of the Final Mitigation Plan, 14 vegetation plots were to be installed at the Site.
- Eleven fixed photo points were located along the perimeter of the Site post-construction, one more than proposed in the Final Mitigation Plan (Figure 1).
- Groundwater gauge 3 (GW3) was installed pre-construction to measure baseline conditions of the Site but was destroyed during Site grading. GW3 was re-installed post-construction in a location deemed more appropriate to measure Site groundwater conditions near the credit area boundary and relative to GW10.
- Groundwater gauge 10 (GW10) was installed approximately 60 feet north of the proposed location on the approved Final Mitigation Plan to avoid influence from the adjacent vernal pool, monitor the north boundary of the credit area closer to the north ditch, and relative to GW3. The intent of locating both GW3 and GW10 accordingly, was to sufficiently monitor the credit area between both gauges and to avoid any slight depressional/ponded areas that may overestimate groundwater hydrology.
- Groundwater gauge 13 (GW13) was added to the Site monitoring devices to allow better assessment of groundwater conditions near, and outside the credit area boundary where restoration work was completed during construction. This construction effort included ditch filling, site grading and spoil pile removal, as well as invasive species removal and tree planting similar to the wetland credit area. Although this area was not included as credit area per the approved Mitigation Plan, data will be collected during the monitoring period to help understand the boundary conditions of the project.

3.0 Monitoring Year 0 Data Assessment

Preliminary Site monitoring took place during and following construction and planting. Collected data were analyzed and are summarized in the following sections. Raw data for MY0 are presented in the appropriate appendices.

3.1 Vegetation Assessment

Vegetation assessment for MY0 was conducted in May 2022. Vegetation surveys in the 14 established plots resulted in calculated stem densities ranging from 323 – 809 stems per acre. The calculated average stem density for the Site is 641 stems per acre, well above the interim success criteria of 320 stems per acres in MY3. Several plots with lower-than-average stem densities are a result of not including not yet approved planted species in the mitigation performance standard calculations. Still, all 14 vegetation plots exceeded the MY3 interim success criteria. Short-term drought conditions delayed vigorous establishment of the temporary and permanent seed applied to the Site; however, more recent wet weather has increased the rate of ground cover establishment, density, and height. Vegetation plot photographs are included in Appendix A and vegetation plot data are included in Appendix B.

There is one area (0.40 ac) of dense invasive species (Chinese privet – *Ligustrum sinense*) located in the southwest corner of the conservation easement boundary. The area of concern is not located within the credit area. Invasive species in this area will be treated via chemical and mechanical means and results will be presented in the MY1 annual monitoring report. After treatment, this area will be monitored to ensure prevalence of invasive species is minimized to the extent practical.

The Site will continue to be monitored for overall vegetative health and invasive and aggressive pioneer species. Any future vegetation treatments will be conducted in accordance with the approved adaptive management plan and will be discussed in the annual monitor reports.

3.2 Wetland Assessment

Twelve groundwater wells were installed at the Site to collect groundwater data. Groundwater wells 1-3 were installed pre-construction to establish baseline conditions for the Site. Groundwater wells 4-13 were installed post-construction for long-term Site monitoring. Groundwater gauge data will be collected and presented in the MY1 annual monitoring report.

3.3 Visual Assessment

Visual assessment of the Site indicates that the Site is stable and planted vegetation is in good health with current weather patterns and baseflow hydrology supplied form the western escarpment. The constructed ditch plug at the northeast corner of the Site shows no sign of deterioration from overland runoff or scour beneath the perched culvert passing beneath the farm road. There are no signs of erosion or excessive deposition at the Site. The Site boundary has been well marked with signage and there is no evidence of encroachment. Photographs taken from the 11 established photo points are presented in Appendix A.

3.4 MY0 Assessment Summary

Overall, the Site is in good condition. Planted stems appear to be in good health and herbaceous ground cover is establishing across the Site. Average stem density for the Site was 641 stems per acres, well above the interim success criteria, with little mortality. Constructed ditch plugs are stable and there are no signs of active erosion at the Site. There have been no observed signs of encroachment within the Site.

The IRT has requested that the MY1 data and report for the Site be delayed until 2023, siting concerns with late planting and delayed hydrologic monitoring in 2022. As suggested by the IRT, MY0 annual monitoring report and the associated Site data were collected and submitted in this report.

4.0 Methodology

Vegetation monitoring followed the Carolina Vegetation Survey – EEP Level II Protocol (Lee et al., 2008). Visual assessment followed most recent guidance put forth by the USACE and NCIRT (USACE, 2016).

5.0 References

Eco Terra, LLC. 2022. Final Mitigation Plan – Colonial Farms Wetland Mitigation Site.

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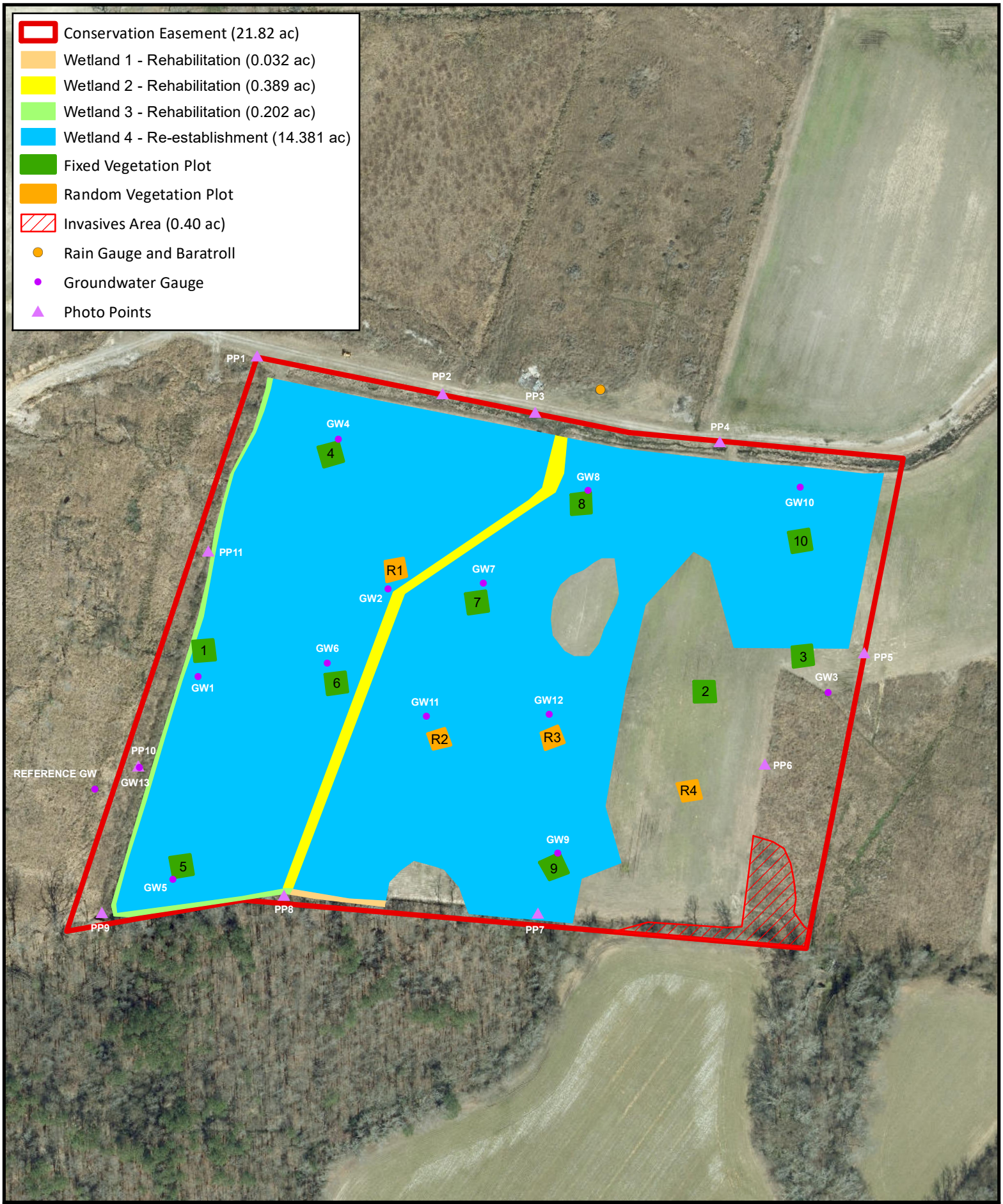


McADAMS

Prepared For: eco terra

COLONIAL WETLAND MITIGATION SITE

CURRENT CONDITIONS SITE MAP

Tar-Pamlico 03020103
Edgecombe County, North Carolina

N
0 100 200
Feet

FIGURE
1

APPENDIX A

Visual Assessment Data

Table 6: Visual Vegetation Assessment
Colonial Farms Wetland Mitigation Site
DMS ID No. 100191
Monitoring Year 0 – 2022

Planted Acreage = 20.74 ac

Vegetation Category	Definitions	Mapping Threshold	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material.	0.10 acres	0.00	0.0%
Low Stem Density Areas	Woody stem densities clearly below target levels based on current MY stem count criteria.	0.10 acres	0.00	0.0%
		Total	0.00	0.0%
Areas of Poor Growth Rates	Planted areas where average height is not meeting current MY Performance Standard.	0.10 acres	0.00	0.0%
		Cumulative Total	0.00	0.0%

Easement Acreage = 21.82 ac

Vegetation Category	Definitions	Mapping Threshold	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern 1. Chinese Privet - *Ligustrum sinense*	Invasives may occur outside of planted areas and within the easement and will therefore be calculated against the total easement acreage. Include species with the potential to directly outcompete native, young, woody stems in the short-term or community structure for existing communities. Species included in summation above should be identified in report summary.	0.10 acres	0.40	1.8%
Easement Encroachment Areas	Encroachment may be point, line, or polygon. Encroachment to be mapped consists of any violation of restrictions specified in the conservation easement. Common encroachments are mowing, cattle access, vehicular access. Encroachment has no threshold value as will need to be addressed regardless of impact area.	None	0 Encroachments Noted	

Vegetation Plot Photographs

COLONIAL FARMS WETLAND MITIGATION SITE – MY0 VEGETATION PLOT PHOTO LOG

Vegetation Plot 1 – taken 5/24/2022

Vegetation Plot 2 – taken 5/24/2022

Vegetation Plot 3 – taken 5/24/2022

Vegetation Plot 4 – taken 5/24/2022

Vegetation Plot 5 – taken 5/24/2022

Vegetation Plot 6 – taken 5/24/2022

Vegetation Plot 7 – taken 5/24/2022

Vegetation Plot 8 – taken 5/24/2022

Vegetation Plot 9 – taken 5/24/2022

Vegetation Plot 10 – taken 5/24/2022

Random Vegetation Plot 1 – taken 5/24/2022

Random Vegetation Plot 2 – taken 5/24/2022

Random Vegetation Plot 3 – taken 5/24/2022

Random Vegetation Plot 4 – taken 5/24/2022

Photo Point Photographs

COLONIAL FARMS WETLAND MITIGATION SITE – MY0 PHOTO POINT LOG

Photo Point 1 – taken 5/25/2022

Photo Point 2 – taken 5/25/2022

Photo Point 3 – taken 5/25/2022

Photo Point 4 – taken 5/25/2022

Photo Point 5 – taken 5/25/2022

Photo Point 6 – taken 5/25/2022

Photo Point 7 – taken 5/25/2022

Photo Point 8 – taken 5/25/2022

Photo Point 9 – taken 5/25/2022

Photo Point 10 – taken 5/25/2022

Photo Point 11 – taken 5/25/2022

Site Aerial (view NE) – taken 5/25/2022

Established Vegetation (view south from farm road) – taken 7/26/2022

Established Vegetation (view southwest from farm road) – taken 7/26/2022

Ditch Plug Photographs

COLONIAL FARMS WETLAND MITIGATION SITE – MY0 DITCH PLUG PHOTO LOG

Ditch Plug Constructed at NE corner of the Site (view SW) – taken 5/25/2022

Ditch Plug Constructed at NE corner of the Site (view NE) – taken 5/25/2022

Constructed Ditch / Culvert Photographs

COLONIAL FARMS WETLAND MITIGATION SITE – MY0 DRAINAGE DITCH PHOTO LOG

Constructed Drainage Ditch North of the Site (view east) – taken 5/25/2022

Constructed Drainage Ditch North of the Site (view west) – taken 5/25/2022

APPENDIX B

Vegetation Plot Data

Table 7: Vegetation Plot Data
Colonial Farms Wetland Mitigation Site
DMS ID No. 100191
Monitoring Year 0 – 2022

	Scientific Name	Common Name	Tree / Shrub	Indicator Status	Veg Plot 1 F		Veg Plot 2 F		Veg Plot 3 F		Veg Plot 4 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	River Birch, Red Birch	Tree	FACW			1	1	1	1		
	Cephalanthus occidentalis	Buttonbush	Shrub Tree	OBL	3	3	1	1				
	Fraxinus pennsylvanica	Green Ash	Tree	FACW								
	Liriodendron tulipifera	Yellow Poplar	Tree	FACU	2	2						
	Nyssa aquatica	Water Tupelo	Tree	FACW	5	5			1	1	5	5
	Quercus lyrata	Overcup Oak	Tree	OBL	1	1			1	1	4	4
	Quercus michauxii	Swamp Chestnut Oak	Tree	FACW	2	2	4	4	5	5	1	1
	Quercus phellos	Willow Oak	Tree	FACW								
	Quercus shumardii	Shumard Oak	Shrub Tree	FAC			2	2				
	Taxodium distichum	Bald-cypress	Tree	OBL	4	4			6	6	8	8
Sum				Performance Standard	17	17	8	8	14	14	18	18
Post Mitigation Plan Species	**Celtis laevigata**	**Sugarberry**	**Shrub Tree**	**FACW**			**11**	**11**				
Sum				Proposed Standard	17	17	19	19	14	14	18	18
Mitigation Plan Performance Standard				Current Year Stem Count		17		8		14		18
				Stems/Acre		688		323		566		728
				Species Count		6		4		5		4
				Dominant Species Composition (%)		29%		50%		43%		44%
				Average Plot Height (ft)		1.8		1.5		1.6		1.7
				% Invasives		0%		0%		0%		0%
Post Mitigation Plan Performance Standard				Current Year Stem Count		17		19		14		18
				Stems/Acre		688		769		566		728
				Species Count		6		5		5		4
				Dominant Species Composition (%)		29%		58%		43%		44%
				Average Plot Height (ft)		1.8		1.3		1.6		1.7
				% Invasives		0%		0%		0%		0%

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded) , species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Table 7: Vegetation Plot Data
Colonial Farms Wetland Mitigation Site
DMS ID No. 100191
Monitoring Year 0 – 2022

	Scientific Name	Common Name	Tree / Shrub	Indicator Status	Veg Plot 5 F		Veg Plot 6 F		Veg Plot 7 F		Veg Plot 8 F	
					Planted	Total	Planted	Total	Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	River Birch, Red Birch	Tree	FACW								
	Cephalanthus occidentalis	Buttonbush	Shrub Tree	OBL			2	2	1	1	4	4
	Fraxinus pennsylvanica	Green Ash	Tree	FACW			2	2	4	4		
	Liriodendron tulipifera	Yellow Poplar	Tree	FACU					3	3		
	Nyssa aquatica	Water Tupelo	Tree	FACW	1	1	7	7			8	8
	Quercus lyrata	Overcup Oak	Tree	OBL			1	1	4	4	1	1
	Quercus michauxii	Swamp Chestnut Oak	Tree	FACW	7	7			4	4	3	3
	Quercus phellos	Willow Oak	Tree	FACW	8	8						
	Quercus shumardii	Shumard Oak	Shrub Tree	FAC	3	3			1	1		
	Taxodium distichum	Bald-cypress	Tree	OBL			7	7	2	2	2	2
Sum				Performance Standard	19	19	19	19	19	19	18	18
Post Mitigation Plan Species	**Celtis laevigata**	**Sugarberry**	**Shrub Tree**	**FACW**								
Sum				Proposed Standard	19	19	19	19	19	19	18	18
Mitigation Plan Performance Standard				Current Year Stem Count		19		19		19		18
				Stems/Acre		769		769		769		728
				Species Count		4		5		7		5
				Dominant Species Composition (%)		42%		37%		21%		44%
				Average Plot Height (ft)		1.5		1.6		1.6		1.7
				% Invasives		0%		0%		0%		0%
Post Mitigation Plan Performance Standard				Current Year Stem Count		19		19		19		18
				Stems/Acre		769		769		769		728
				Species Count		4		5		7		5
				Dominant Species Composition (%)		42%		37%		21%		44%
				Average Plot Height (ft)		1.5		1.6		1.6		1.7
				% Invasives		0%		0%		0%		0%

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded) , species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Table 7: Vegetation Plot Data
Colonial Farms Wetland Mitigation Site
DMS ID No. 100191
Monitoring Year 0 – 2022

	Scientific Name	Common Name	Tree / Shrub	Indicator Status	Veg Plot 9 F		Veg Plot 10 F	
					Planted	Total	Planted	Total
Species Included in Approved Mitigation Plan	Betula nigra	River Birch, Red Birch	Tree	FACW				
	Cephalanthus occidentalis	Buttonbush	Shrub Tree	OBL	11	11		
	Fraxinus pennsylvanica	Green Ash	Tree	FACW				
	Liriodendron tulipifera	Yellow Poplar	Tree	FACU				
	Nyssa aquatica	Water Tupelo	Tree	FACW	1	1		
	Quercus lyrata	Overcup Oak	Tree	OBL				
	Quercus michauxii	Swamp Chestnut Oak	Tree	FACW	2	2	3	3
	Quercus phellos	Willow Oak	Tree	FACW				
	Quercus shumardii	Shumard Oak	Shrub Tree	FAC	3	3	10	10
	Taxodium distichum	Bald-cypress	Tree	OBL	3	3		
Sum				Performance Standard	20	20	13	13
Post Mitigation Plan Species	**Celtis laevigata**	**Sugarberry**	**Shrub Tree**	**FACW**			**4**	**4**
Sum				Proposed Standard	20	20	17	17
Mitigation Plan Performance Standard				Current Year Stem Count		20		13
				Stems/Acre		809		526
				Species Count		5		2
				Dominant Species Composition (%)		55%		77%
				Average Plot Height (ft)		1.3		1.6
				% Invasives		0%		0%
Post Mitigation Plan Performance Standard				Current Year Stem Count		20		17
				Stems/Acre		809		688
				Species Count		5		3
				Dominant Species Composition (%)		55%		59%
				Average Plot Height (ft)		1.3		1.5
				% Invasives		0%		0%

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded) , species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Table 7: Vegetation Plot Data
Colonial Farms Wetland Mitigation Site
DMS ID No. 100191
Monitoring Year 0 – 2022

	Scientific Name	Common Name	Tree / Shrub	Indicator Status	Veg Plot R1	Veg Plot R2	Veg Plot R3	Veg Plot R4
					Total	Total	Total	Total
Species Included in Approved Mitigation Plan	Betula nigra	River Birch, Red Birch	Tree	FACW			2	1
	Cephalanthus occidentalis	Buttonbush	Shrub Tree	OBL		2	5	
	Fraxinus pennsylvanica	Green Ash	Tree	FACW	4			
	Liriodendron tulipifera	Yellow Poplar	Tree	FACU				
	Nyssa aquatica	Water Tupelo	Tree	FACW	1		1	2
	Quercus lyrata	Overcup Oak	Tree	OBL	2	1	1	
	Quercus michauxii	Swamp Chestnut Oak	Tree	FACW	7	1	4	9
	Quercus phellos	Willow Oak	Tree	FACW		3		
	Quercus shumardii	Shumard Oak	Shrub Tree	FAC	3	6		
	Taxodium distichum	Bald-cypress	Tree	OBL				
Sum				Performance Standard	17	13	13	12
Post Mitigation Plan Species	**Celtis laevigata**	**Sugarberry**	**Shrub Tree**	**FACW**		**2**		
Sum				Proposed Standard	17	15	13	12
Mitigation Plan Performance Standard				Current Year Stem Count	17	13	13	12
				Stems/Acre	688	607	526	485
				Species Count	5	5	5	3
				Dominant Species Composition (%)	41%	46%	38%	75%
				Average Plot Height (ft)	1.8	1.5	1.4	1.6
				% Invasives	0%	0%	0%	0%
Post Mitigation Plan Performance Standard				Current Year Stem Count	17	15	13	12
				Stems/Acre	688	607	526	485
				Species Count	5	6	5	3
				Dominant Species Composition (%)	41%	40%	38%	75%
				Average Plot Height (ft)	1.8	1.5	1.4	1.6
				% Invasives	0%	0%	0%	0%

1). Bolded species are proposed for the current monitoring year, italicized species are not approved, and a regular font indicates that the species has been approved.
2). The "Species Included in Approved Mitigation Plan" section contains only those species that were included in the original approved mitigation plan. The "Post Mitigation Plan Species" section includes species that are being proposed through a mitigation plan addendum for the current monitoring year (bolded) , species that have been approved in prior monitoring years through a mitigation plan addendum (regular font), and species that are not approved (italicized).
3). The "Mitigation Plan Performance Standard" section is derived only from stems included in the original mitigation plan, whereas the "Post Mitigation Plan Performance Standard" includes data from mitigation plan approved, post mitigation plan approved, and proposed stems.

Table 8: Vegetation Performance Standards Summary

Colonial Farms Wetland Mitigation Site

DMS ID No. 100191

Monitoring Year 0 – 2022

	Veg Plot 1 F				Veg Plot 2 F				Veg Plot 3 F			
	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	688	1.8	6	0	323	1.5	4	0	566	1.6	5	0
	Veg Plot 4 F				Veg Plot 5 F				Veg Plot 6 F			
	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	728	1.7	4	0	769	1.5	4	0	769	1.6	5	0
	Veg Plot 7 F				Veg Plot 8 F				Veg Plot 9 F			
	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	769	1.6	7	0	728	1.7	5	0	809	1.3	5	0
	Veg Plot 10 F				Veg Plot R1				Veg Plot R1			
	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	526	1.6	2	0	688	1.8	5	0	607	1.5	5	0
	Veg Plot R3				Veg Plot R4							
	Stems/Acre	Avg Ht (ft)	# Species	% Invasive	Stems/Acre	Avg Ht (ft)	# Species	% Invasive				
Monitoring Year 7												
Monitoring Year 5												
Monitoring Year 3												
Monitoring Year 2												
Monitoring Year 1												
Monitoring Year 0	526	1.4	5	0	485	1.6	3	0				

*Each monitoring year represents a different plot for the random vegetation plot "groups". Random plots are denoted with an R, and fixed plots with an F.

APPENDIX C

Project Timeline and Contacts Info

Table 9: Project Activity and Reporting History
Colonial Farms Wetland Mitigation Site
DMS ID No. 100191
Monitoring Year 0 – 2022

Activity or Report	Data Collection Complete	Completion or Scheduled Delivery
Project Instituted	N/A	February 11, 2021
Mitigation Plan Approved	N/A	February 24, 2022
Construction (Grading) Completed	N/A	May 6, 2022
As-Built Survey Completed	May 2022	May 2022
Planting Completed	N/A	April 28, 2022
Baseline Monitoring Document (Year 0) - Vegetation Survey	May 2022	August 2022
Year 1 Monitoring - Vegetation Survey	2023	November 2023
Year 2 Monitoring - Vegetation Survey	2024	November 2024
Year 3 Monitoring - Vegetation Survey	2025	November 2025
Year 4 Monitoring - Vegetation Survey	2026	November 2026
Year 5 Monitoring - Vegetation Survey	2027	November 2027
Year 6 Monitoring - Vegetation Survey	2028	November 2028
Year 7 Monitoring - Vegetation Survey	2029	November 2029

Table 10: Project Contacts
Maple Swamp Wetland Mitigation Site
DMS ID No. 100190
Monitoring Year 0 – 2022

Designer Eco Terra - Scott Frederick	Eco Terra, LLC 117 Centrewest Ct Cary, NC 27513 984.354.3800
Engineer McAdams - Rebecca Stubbs, PE	McAdams 2905 Meridian Parkway Durham, NC 27713 919.361.5000
Construction Contractor WVM, Inc	WVM, Inc 3018 Church St. Ext Winterville, NC 28590 252.439.8588
Monitoring Eco Terra - Scott Frederick	Eco Terra, LLC 117 Centrewest Ct Cary, NC 27513 984.354.3800

APPENDIX D

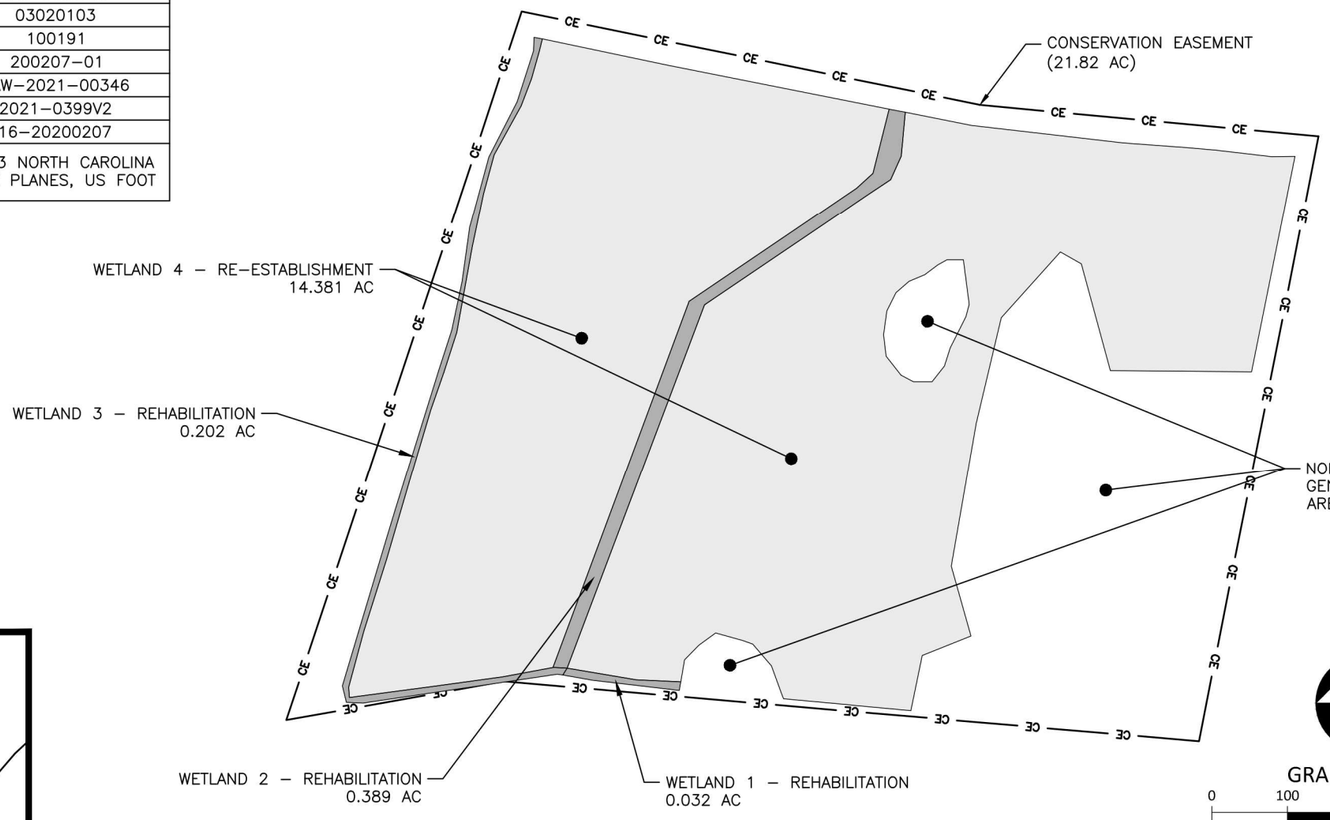
Record Drawings

COLONIAL MITIGATION SITE
TAR-PAMLICO 03020103 RIVER BASIN

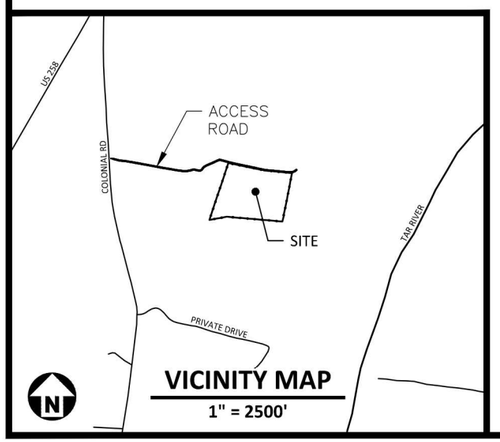
AS-BUILT RECORD DRAWINGS
DWR Project No. 20210399

EDGECOMBE COUNTY, NORTH CAROLINA
DATE: AUGUST 11, 2022

SITE DATA TABLE	
RIVER BASIN	TAR–PAMLICO
8–DIGIT HUC	03020103
DMS PROJECT ID NO.	100191
FULL DELIVERY CONTRACT NO.	200207–01
USACE ACTION ID NO.	SAW–2021–00346
DWR PROJECT NO.	2021–0399V2
RFP NO.	16–20200207
COORDINATE SYSTEM	NAD83 NORTH CAROLINA STATE PLANES, US FOOT



SHEET INDEX



VICINITY MAP
1" = 2500'

GRAPHIC SCALE
0 100 200 400
1 inch = 200 ft.

RECORD DRAWINGS ONLY
NORTH CAROLINA
PROFESSIONAL
Rebecca Stubbs, PE
049073
ENGINEER
REBECCA STUBBS
Rebecca Stubbs
Apr 16 2022 11:37 AM

The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187

www.mcadamsco.com

ECO TERRA PARTNERS, LLC
1328 DEKALB AVE. NE
ATLANTA, GA 30307
CONTACT: NORTON WEBSTER
PHONE: 919.548.0949

LEGEND AND SYMBOLS

CE CE — PROPOSED CONSERVATION EASEMENT

— PROPERTY LINE

250 — EXISTING MAJOR CONTOUR

— EXISTING MINOR CONTOUR

— EXISTING DITCH CENTERLINE

— EXISTING TREE LINE APPROX

FEMA 100–YR FLOODPLAIN

FEMA 500–YR FLOODPLAIN

AS-BUILT LEGEND AND SYMBIOLS

250 — MAJOR CONTOUR

— MINOR CONTOUR

— SITE CREDIT AREA

VEGETATION MONITORING PLOT

GROUNDWATER MONITORING WELL

PHOTO POINT

RAIN GAUGE / BARATROLL

WETLAND RE–ESTABLISHMENT AREA

WETLAND REHABILITATION AREA

RECORD DRAWINGS ONLY
NORTH CAROLINA PROFESSIONAL SEAL 049073 ENGINEER REBECCA STUBBS
Rebecca Stubbs, PE
Rebecca Stubbs
Aug 11 2022 11:24 AM
RECORD DRAWINGS ONLY

MCADAMS

The John R. McAdams Company, Inc.
2905 Meridian Parkway
Durham, NC 27713

phone 919. 361. 5000
fax 919. 361. 2269
license number: C-0293, C-187

www.mcadamsco.com

COLONIAL MITIGATION SITE

AS-BUILT RECORD DRAWINGS

EDGECOMBE COUNTY, NORTH CAROLINA

ecoterra

PLAN INFORMATION

PROJECT NO.	ECT2101.01
FILENAME	ECT2101.01-AB-XC
CHECKED BY	RAS
DRAWN BY	RHW
SCALE	
DATE	08.11.2022

LEGEND AND SYMBOLS

C1.00

Table 6.24d Permanent Seeding Recommendations -- Coastal Plain Region

Common Name	Scientific Name	Cultivars	Type*	Percentage of Mix	Optimal Planting Dates	Soil Drainage Adaptation	Shade Tolerance	Height
Switchgrass	Panicum virgatum	**Blackwell --** well drained **Shelter --** well drained **Kanlow --** poorly drained **Carthage --** well drained	Warm Season	10-15%	Dec. 1 - Apr. 1	Cultivar Dependent	Poor	6
Switchgrass	Panicum virgatum	**Alamo --** poorly-drained	Warm Season	10-15%	Dec. 1 - May 1	Cultivar Dependent	Poor	6
Indiangrass*	Sorghastrum nutans*	**Rumsey, Osage, Cheyenne**	Warm Season	10-30%	Dec. 1 - Apr. 1	Well-drained to Droughty	Poor	6
Indiangrass*	Sorghastrum nutans*	**Lometa**	Warm Season	10-30%	Dec. 1 - May 1	Well-drained to Droughty	Poor	6
Big Bluestem	Andropogon gerardii	**Earl**	Warm Season	10-30%	Dec. 1 - Apr. 1	Well-drained to Droughty	Poor	6
Little Bluestem	Schizachyrium scoparium	**Cimarron**	Warm Season	10-30%	Dec. 1 - Apr. 1	Well-drained to Droughty	Poor	4
Sweet Woodreed	Cinna arundinacea		Warm Season	1-10%	Dec. 1 - Apr. 1	Poorly-drained to Well-drained	Moderate	5
Rice Cutgrass	Leersia oryzoides		Warm Season	5-25%	Dec. 1 - Apr. 1	Poorly-drained	Poor	5
Redtop Panicgrass	Panicum rigidulum		Warm Season	10-20%	Dec. 1 - Apr. 1	Well-drained	Poor	3.5
Beaked Panicgrass	Panicum anceps		Warm Season	10-20%	Dec. 1 - Apr. 1	Poorly--drained	Moderate	3.5
Eastern Gammagrass	Tripsacum datyoides		Warm Season	5-10%	Dec. 1 - Apr. 1	Well-drained to Poorly-drained	Poor	4.5
Purple top	Tridens flavus		Warm Season	5-10%	Dec. 1 - Apr. 1	Well-drained to Droughty	Poor	2.5
Indian Woodoats	Chasmanthium latifolium		Cold Season	1-10%	Feb. 15 - Mar. 20, Sep. 1 - Nov. 1	Well-drained to Droughty	Moderate	4
Virginia Wildrye	Elymus virginicus		Cold Season	5-25%	Feb. 15 - Mar. 20, Sep. 1 - Nov. 1	Well-drained to Droughty	Moderate	3
Rough Bentgrass	Agrostis scabra		Cold Season	10-20%	Feb. 15 - Mar. 20, Sep. 1 - Nov. 1	Poorly-drained	Poor	2.5
Soft Rush	Juncus effusus		Wetland	1-10%	Dec. 1 - Apr. 15	Poorly-drained	Poor	4
Shallow Sedge	Carex lurida		Wetland	1-10%	Dec. 1 - Apr. 15	Poorly-drained	Poor	3
Fox Sedge	Carex vulpinoidea		Wetland	1-10%	Dec. 1 - Apr. 15	Poorly-drained	Poor	3
Leathery Rush	Juncus coriaceus		Wetland	2-5%	Dec. 1 - Apr. 15	Poorly-drained	Poor	2

* Only Lometa in eastern coastal plain (Plant Hardiness Zone 8).
* Pick at least four species, including one from each type.

Rev. 5/13

6.24.7

PERMANENT SEEDING SCHEDULE:

PLANT MATERIAL SELECTION

1. REFER TO TABLE 6.24D (LEFT) FOR APPROPRIATE SELECTIONS OF NATIVE PERMANENT SEEDS.
2. PERMANENT SEED INCLUSION IN THE MIXTURE SHOULD TOTAL 15 LBS OF PURE LIVE SEED (PLS) PER ACRE DRILLED OR 15-20 LBS pls/AC BROADCAST APPLIED.
3. AT LEAST 4 SPECIES SHOULD BE SELECTED FOR THE MIXTURE INCLUDING ONE SPECIES FROM EACH TYPE (WARM SEASON, COLD SEASON, WETLAND). SELECTION OF MORE THAN 4 SPECIES IS RECOMMENDED FOR INCREASING CHANCES OF SUCCESSFUL VEGETATION ESTABLISHMENT.
4. IF OTHER SPECIES SUCH AS WILDFLOWERS ARE ADDED TO THE MIX, THEY SHOULD NOT BE COUNTED IN THE MINIMUM SEEDING RATE FOR GRASSES.

SEEDBED PREPARATION

1. DISTURBED SOILS WITHIN RIPARIAN AREAS MUST BE AMENDED TO PROVIDE AN OPTIMUM ENVIRONMENT FOR SEED GERMINATION AND SEEDLING GROWTH.
2. THE pH OF THE SOIL MUST BE SUCH THAT IT IS NOT TOXIC AND NUTRIENTS ARE AVAILABLE.
3. SOIL ANALYSIS SHOULD BE PERFORMED TO DETERMINE NUTRIENT AND LIME NEEDS OF EACH SITE.
4. APPROPRIATE pH LEVELS ARE BETWEEN 5.5 AND 7.0.
5. RIPARIAN BUFFERS REGULATED FOR NUTRIENT MANAGEMENT MAY BE LIMITED TO A SINGLE APPLICATION OF FERTILIZER.
6. SUITABLE MECHANICAL MEANS SUCH AS DISKING, RAKING, OR HARROWING MUST BE EMPLOYED TO LOOSEN COMPACTED SOIL PRIOR TO SEEDING.

PLANTING

1. APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DROP-TYPE SPREADER, DRILL, OR HYDROSEEDER ON A FIRM, FRIABLE SEEDBED.
2. IN FINE SOILS, SEEDS SHOULD BE DRILLED 0.25 - 0.5 INCHES. IN COARSE SANDY SOILS, SEEDS SHOULD BE PLANTED NO DEEPER THAN 0.75 INCHES.

MULCH

1. MULCH ALL PLANTINGS IMMEDIATELY AFTER SEEDING.
2. IF PLANTING ON STREAM BANKS STEEPER THAN 10% OR AREAS SUBJECT TO FLOODING, A BIODEGRADABLE ROLLED EROSION CONTROL PRODUCT IS RECOMMENDED TO HOLD SEED AND SOIL IN PLACE.

MAINTENANCE

1. THE RECOMMENDED PERMANENT GRASS SPECIES MAY REQUIRE TWO YEARS FOR ESTABLISHMENT, DEPENDING ON SITE CONDITIONS.
2. INSPECT SEEDED AREAS FOR FAILURE AND MAKE NECESSARY REPAIRS, SOIL AMENDMENTS, AND RE-SEEDINGS.
3. IF WEEDY EXOTIC SPECIES HAVE TAKEN OVER THE AREAS AFTER THE FIRST GROWING SEASON, THE INVASIVE SPECIES MUST BE ERADICATED TO ALLOW NATIVE SPECIES TO GROW.
4. MONITOR THE SITE UNTIL LONG-TERM STABILITY HAS BEEN ESTABLISHED.

TEMPORARY SEEDING SCHEDULE:

TEMPORARY SEEDING SHALL BE APPLIED AS NEEDED DURING CONSTRUCTION TO STABILIZE BARE OR DISTURBED AREAS OF SOIL AND AT THE COMPLETION OR ALL GRADING AND EARTHWORK ACTIVITIES WITHIN A PARTICULAR AREA OF THE SITE. PERMANENT SEED MAY BE DISTRIBUTED WITH TEMPORARY SEED UPON THE FINAL APPLICATION OF TEMPORARY SEED.

SEEDING DATE	SEEDING MIXTURE	APPLICATION RATE
AUG 15 - APRIL 15	RYE (GRAIN)	50~~30~~ LBS/AC
~~AUG 15 - APRIL 15~~	~~WHEAT~~	~~30 LBS/AC~~
~~APRIL 15 - AUG 15~~	~~GERMAN MILLET~~	~~10 LBS/AC~~
~~APRIL 15 - AUG 15~~	~~BROWNTOP MILLET~~	~~10 LBS/AC~~

SEEDING METHODS

1. EVENLY APPLY SEED USING A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER. THIS MUST BE DONE WITHIN 48 HOURS OF LAND DISTURBING ACTIVITIES.
2. MULCH WITH CLEAN WHEAT STRAW.
3. AFTER SEEDING, APPLY MULCH TO AREAS UNDER HARSH CONDITIONS SUCH AS AREAS THAT HAVE BEEN GRADED, OR THOSE WHICH WILL RECEIVE CONCENTRATED FLOWS. AREAS CONSIDERED TO BE UNDER HARSH CONDITIONS WILL BE CONSIDERED THE AREAS GRADED FOR THE WETLAND VALLEY.
4. RESEED AND MULCH AREAS WHERE SEEDLING EMERGENCE IS LESS THAN 80% COVERAGE, OR WHERE EROSION OCCURS, AS SOON AS POSSIBLE. DO NOT MOW. PROTECT FROM TRAFFIC AS MUCH AS POSSIBLE.

NOTES

1. TEMPORARY ANNUAL SEED SELECTION SHOULD BE BASED ON SEASON OF PROJECT INSTALLATION.
2. A SINGLE SPECIES FOR TEMPORARY COVER IS ACCEPTABLE
3. IN SOME CASES WHERE SEASONS OVERLAP, A MIXTURE OF TWO OR MORE SPECIES MAY BE NECESSARY. HOWEVER, APPLICATION RATES SHOULD NOT EXCEED THE TOTAL RECOMMENDED RATE PER ACRE.
4. TEMPORARY SEED SHOULD BE MIXED AND APPLIED SIMULTANEOUSLY WITH THE PERMANENT SEED MIX IF OPTIMAL PLANTING DATES ALLOW.

AS-BUILT SEEDING SPECIES

PERMANENT SEED MIX

Common Name	Scientific Name
Indiangrass	*Sorgastrum nutans*
German foxtail millet	*Setaria italica*
Switchgrass	*Panicum virgatum*
Big bluestem	*Andropogan gerardi*

Applied to the entire Site at a rate of 10-15 lbs/acre

WETLAND SEED MIX

Common Name	Scientific Name
Fox Sedge	*Carex vulpinoidea*
Shallow Sedge	*Carex lurida*
Soft Rush	*Juncus effusus*

Applied to the entire Site at a rate of 10-15 lbs/acre

Seed mixes were chosen based on availabilty at the time of construction.
Seed mixes were broadcast applied to the Site.

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COLONIAL MITIGATION SITE

AS-BUILT RECORD DRAWINGS
EDGECOMBE COUNTY, NORTH CAROLINA

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PLAN INFORMATION

PROJECT NO.	ECT2101.01
FILENAME	ECT2101.01-AB-EC
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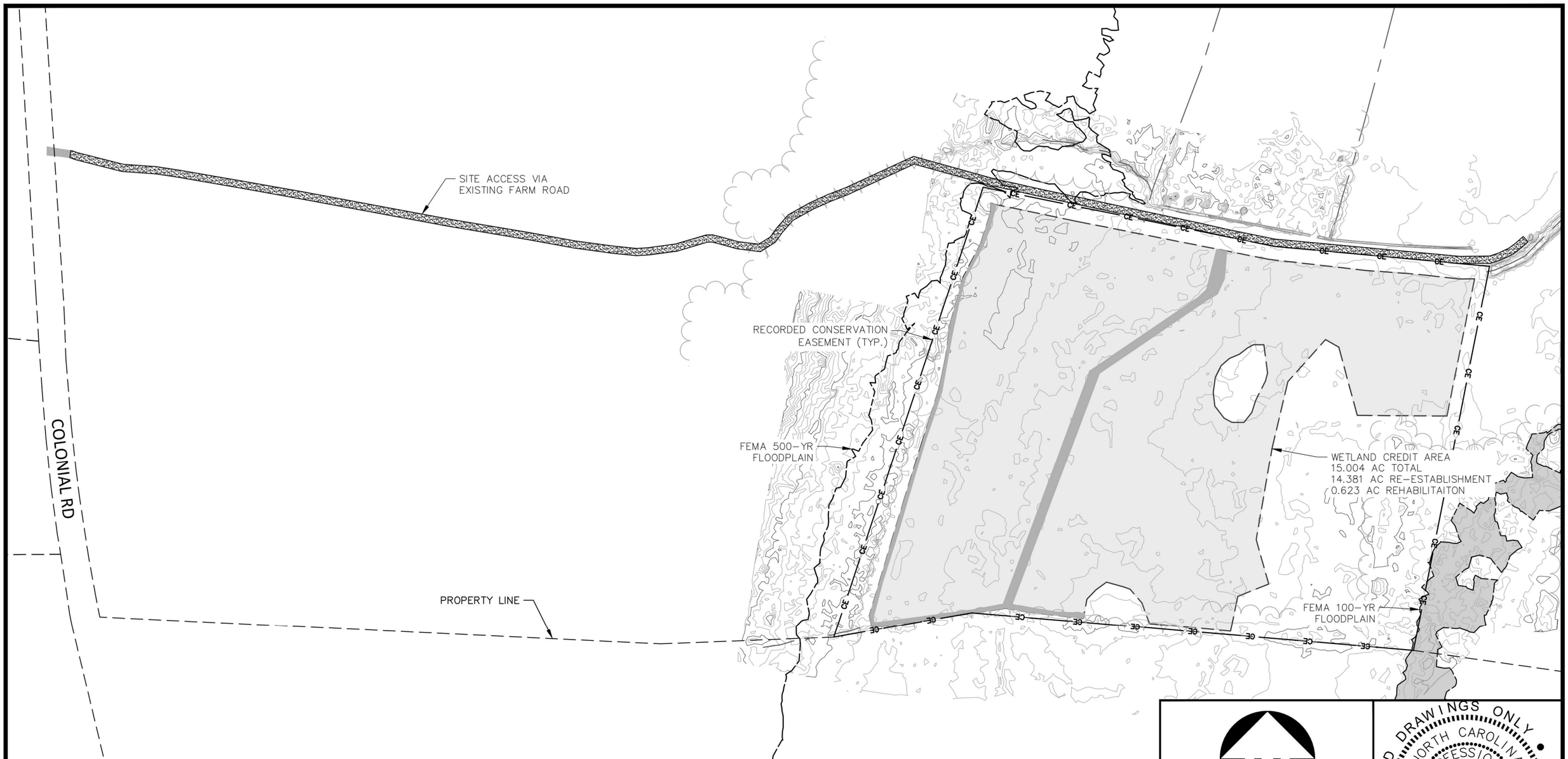
SCALE	
DATE	08.11.2022

AS-BUILT SEEDING

EC1.00



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SCALE	1" = 200'
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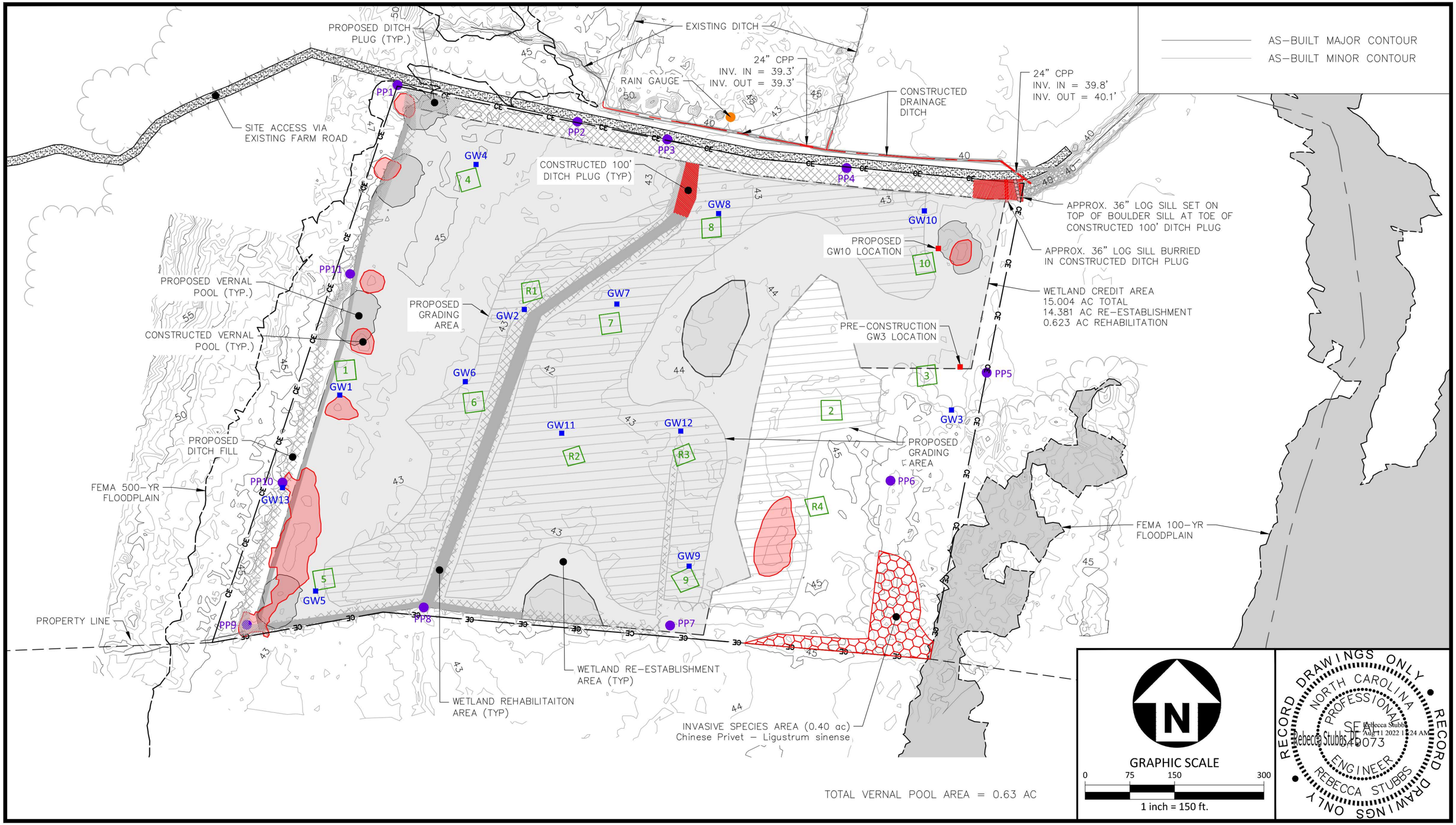
AS-BUILT
SITE ACCESS

EC2.00



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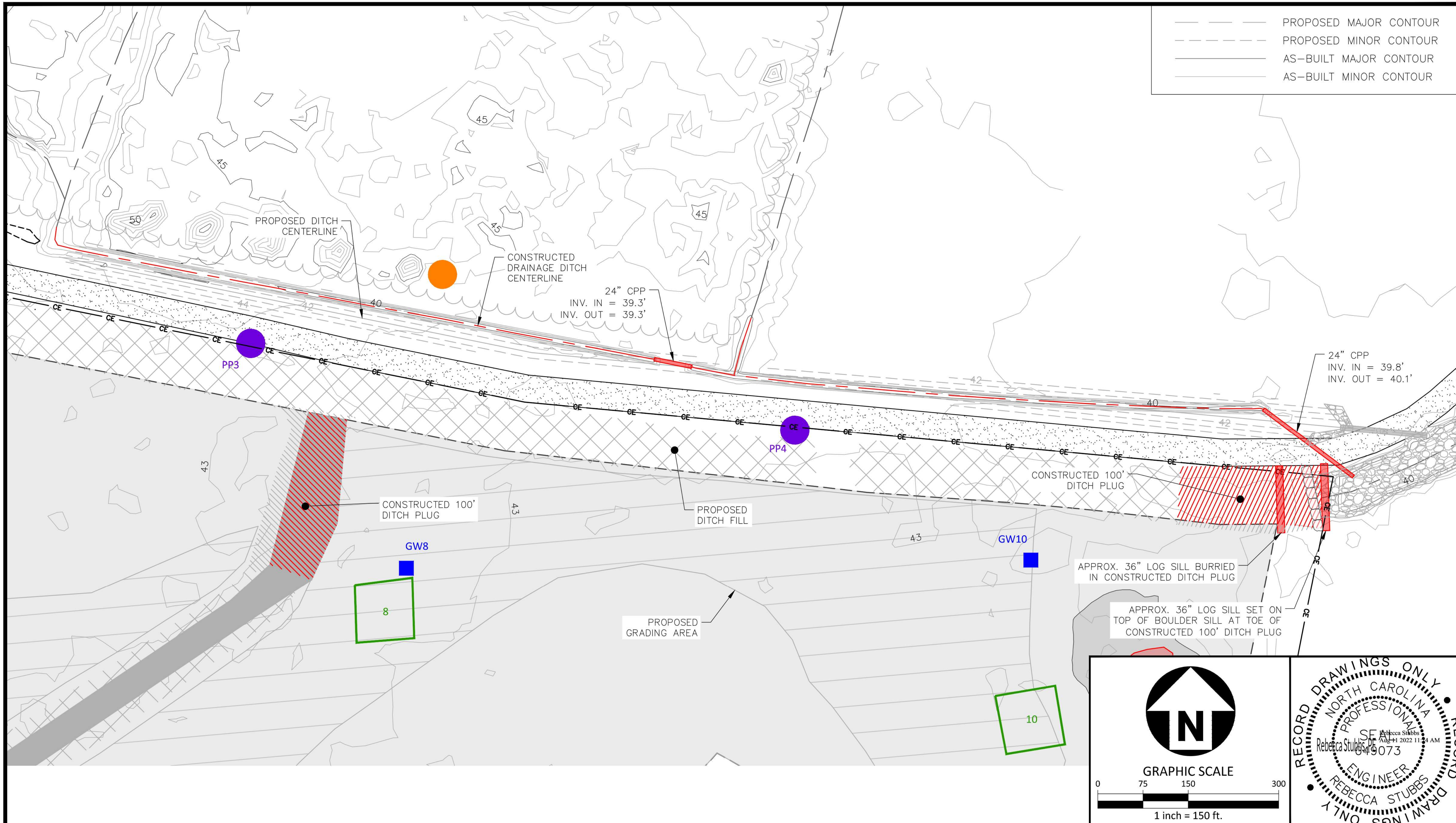
AS-BUILT MONITORING COMPONENTS

EC2.01


PROPOSED MAJOR CONTOUR
PROPOSED MINOR CONTOUR
AS-BUILT MAJOR CONTOUR
AS-BUILT MINOR CONTOUR
PROPOSED DITCH CENTERLINE
CONSTRUCTED DRAINAGE DITCH CENTERLINE
24" CPP INV. IN = 39.3' INV. OUT = 39.3'
24" CPP INV. IN = 39.8' INV. OUT = 40.1'
PP3
PP4
CONSTRUCTED 100' DITCH PLUG
PROPOSED DITCH FILL
CONSTRUCTED 100' DITCH PLUG
GW8
GW10
8
10
PROPOSED GRADING AREA
APPROX. 36" LOG SILL BURRIED IN CONSTRUCTED DITCH PLUG
APPROX. 36" LOG SILL SET ON TOP OF BOULDER SILL AT TOE OF CONSTRUCTED 100' DITCH PLUG
GRAPHIC SCALE
0 75 150 300
1 inch = 150 ft.
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AS-BUILT DRAINAGE DITCH

EC2.02

PLANTING ZONE 1 – WETLAND RESTORATION AREA

PLANTING ZONE 1 – NON–WETLAND AREAS

PLANTING ZONE 2 – VERNAL POOLS

SEE TABLE 1, SHEET L1.01 FOR SPECIES TO BE PLANTED IN EACH ZONE.

AS–BUILT PLANTING ZONE 1 (14.52 AC)

AS–BUILT PLANTING ZONE 2 (6.22 AC)

RECORDED CONSERVATION EASEMENT (TYP.)

FEMA 500–YR FLOODPLAIN

WETLAND CREDIT AREA

NON–CREDIT AREA

FEMA 100–YR FLOODPLAIN

INVASIVE SPECIES AREA (0.40 ac)
Chinese Privet – Ligustrum sinense

PP1 PP2 PP3 PP4 PP5 PP6 PP7 PP8 PP9 PP10 PP11

GW1 GW2 GW3 GW4 GW5 GW6 GW7 GW8 GW9 GW10 GW11 GW12

R1 R2 R3 R4

GRAPHIC SCALE
0 75 150 300
1 inch = 150 ft.

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DATE	08.11.2022

AS-BUILT PLANTING

L1.00

PLANTING NOTES:

1. OBTAIN APPROPRIATE BARE-ROOT SEEDLINGS (18-24") AS AVAILABLE FROM VENDOR AND MIX ACCORDING TO EACH ZONE SPECIFIED IN TABLE 1 (RIGHT).
2. MAINTAIN SEEDLING INTEGRITY WITH ON-SITE OR OFF-SITE COOLING AS NECESSARY.
3. PLANT ACCORDING TO OPTIMAL WEATHER AND SOIL MOISTURE. PLANTING SHOULD NOT BE DONE DURING FREEZING (<32F) OR HIGH WIND (>10 MPH) CONDITIONS. MECHANICAL PLANTING SHOULD NOT OCCUR WITHIN 24 HOURS OF ANTECEDENT RAINFALL OR IF SITE CONDITIONS WILL RESULT IN RUTTING AND COMPACTION FROM PLANTING EQUIPMENT. SATURATED AREAS SHOULD BE HAND-PLANTED.
4. PLANTING SHALL OCCUR WITH A MECHANICAL PLANTER OR MANUALLY WITH TREE SPADES.
5. HERBICIDING WILL BE COMPLETED BY AN NC LICENSED APPLICATOR ACCORDING TO SITE CONDITIONS. AQUATIC-SAFE HERBICIDES WILL BE USED IF NECESSARY IN THE VICINITY OF SURFACE WATERS AND DITCHES.

TABLE 1: BARE-ROOT PLANTING

Scientific Name	Common Name	Vegetative Strata	Zone	Wetland Indicator Status	%	
Quercus michauxii	Swamp chestnut oak	Canopy	1	FACW	~~10~~ 20	3000
~~*Gordonia lasianthus*~~	~~Loblolly bay~~	~~Understory~~	~~2~~	~~FACW~~	~~<5~~	
Quercus lyrata	Overcup oak	Canopy	2	OBL	~~10~~ 7	1000
Betula nigra	River birch	Canopy	1	FACW	~~10~~ 3	500
Cephalanthus occidentalis	Buttonbush	Understory	2	OBL	~~<5~~ 5	800
Fraxinus pennsylvanica	Green ash	Canopy	1	FACW	~~<5~~ 4	600
Liriodendron tulipifera	Yellow poplar	Canopy	1	FACU	~~<5~~ 6	900
Quercus shumardii	Shumard oak	Canopy	1	FAC	~~10~~ 7	1100
~~*Quercus pagoda*~~	~~Cherrybark oak~~	~~Canopy~~	~~1~~	~~FACW~~	~~10~~	
~~*Carpinus caroliniana*~~	~~Ironwood~~	~~Understory~~	~~1~~	~~FACW~~	~~<5~~	
Quercus phellos	Willow oak	Canopy	2	FACW	~~10~~ 7	1000
~~*Quercus laurifolia*~~	~~Laurel oak~~	~~Canopy~~	~~1~~	~~FACW~~	~~10~~	
Quercus nigra	Water oak	Canopy	1	FAC	~~10~~ 7	1000
~~*Nyssa biflora*~~	~~Swamp blackgum~~	~~Canopy~~	~~2~~	~~OBL~~	~~10~~	
~~*Magnolia virginiana*~~	~~Sweetbay magnolia~~	~~Understory~~	~~2~~	~~FACW~~	~~<5~~	
Ulmus americana	American elm	Canopy	1	FAC	~~<5~~ 1	200
~~*Persea palustris*~~	~~Swamp bay~~	~~Understory~~	~~2~~	~~FACW~~	~~<5~~	
Platanus occidentalis	Sycamore	Overstory	2	FACW	~~<5~~ 3	500
Taxodium distichum	Bald Cypress	Overstory	2	OBL	~~<5~~ 10	1500
Nyssa aquatica	Water tupelo	Overstory	2	FACW	~~<5~~ 8	1200
Carya ovata *	Water hickory	Overstory	2	OBL	1	200
Celtis laevigata *	Sugarberry	Overstory	1 (Non-Credit Area)	FACW	3	500
Cornus amomum *	Silky dogwood	Understory	2	FACW	<1	50
Diospyros virginiana *	Persimmon	Understory	1 (Non-Credit Area)	FAC	5	700
					TOTAL:	14750

* Species not included in the approved Final Mitigation Plan dated February 2022.

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AS-BUILT
PLANTING SPECIES

L1.01