



**Final Buffer Mitigation Plan
Thunder Swamp Mitigation Project**

January 2022

DMS Project #: 100181 | Contract #: 0402-04 | RFP: 16-20200402 | DWR #: 2021-0306 V3

Neuse River Basin | HUC 03020201 | Wayne County, North Carolina

Prepared For:

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

Prepared By:

Resource Environmental Solutions, LLC
For Environmental Banc & Exchange, LLC (EBX)
3600 Glenwood Avenue, Suite 100
Raleigh, NC 27612
919-209-1052

This mitigation plan has been written in conformance with the requirements of the following:

- *The Consolidated Buffer Mitigation Rule, 15A NCAC 02B .0295, effective November 1, 2015*
- *Nutrient Offset Credit Trading Rule, 15A NCAC 02B .0703, effective April 1, 2020*

These documents govern NCDMS operations and procedures for the delivery of compensatory mitigation.


Summary of Comments on ThunderSwamp Mit Plan Reduced_DWRredits.pdf


Page: 5

 Number: 1 Author: kymerritt Subject: Sticky Note Date: 1/7/2022 11:56:49 AM
change DWR # to 2021-0306v3

Number: 1 Author: kymerritt Subject: Sticky Note Date: 1/7/2022 11:59:13 AM


Existing photos provided in the plan pre-date the viability letter issued by DWR. Need more current condition photos (drone footage is acceptable as long as photos include Timestamp of date)

 Number: 1 Author: kymerritt Subject: Sticky Note Date: 1/7/2022 12:00:30 PM
specify in this table that the Credit Service Area is 03020201. It is a little misleading that the 14 digit is used here.

 Number: 2 Author: kymerritt Subject: Sticky Note Date: 1/7/2022 12:08:55 PM
this section will need to be modified based on comments regarding measurements off DJH4.

 Number: 1 Author: kymerritt Subject: Sticky Note Date: 1/7/2022 12:10:59 PM

Add language that speaks to landuse conditions that may have changed since the viability letter was issued (crop changes, fallow land, mowing, etc). If no changes have occurred, speak to that. Provide time-stamped photos that support this and are more current than those that are currently included since they predate the site viability letter.


 Number: 1 Author: kymerritt Subject: Sticky Note Date: 1/7/2022 12:12:52 PM
Commit to mixing stems at initial planting effort to ensure species are planted as diverse as possible.

Number: 1 Author: kymerritt Subject: Sticky Note Date: 1/7/2022 12:19:22 PM


the measurements should be taken perpendicular and landward from the top of bank since thats the policy for measure except under special circumstances where there may be utilities or other site constraints.


Modify the width measurements adjacent to DJ7 to be perpendicular and landward. Therefore, this will result in an increase in ft2 adjacent to DJ7 and a decrease in ft2 adjacent to DJ2.

Adjust Mit Plan text, Figures and Tables (including Project Credit Table) to reflect this change throughout.

 Number: 1 Author: kymerritt Subject: Sticky Note Date: 1/7/2022 12:20:18 PM
address measurement issue noted in Comments provided on Figure 5 off DJ7

 Number: 2 Author: kymerritt Subject: Sticky Note Date: 1/7/2022 12:20:50 PM
Change to "Riparian Restoration" for Nutrient Offset for both of these widths

 Number: 1 Author: kymerritt Subject: Sticky Note Date: 1/7/2022 12:22:10 PM
move at least 1 plot to be more representative of areas closer to the TOB.

 Number: 2 Author: kymerritt Subject: Sticky Note Date: 1/7/2022 12:23:03 PM
address measurement issue noted in Comments provided on Figure 5 off DJ7



To: NCDWR - Katie Merritt
From: Matt DeAngelo, RES
Katie Webber, RES
Subject: Thunder Swamp Comment Response Memo
Date: 1/14/2022
CC: Lin Xu

In addition to addressing the following DWR comments, RES made several other revisions to the Thunder Swamp Final Buffer Mitigation Plan. These include:

- Revising **Section 2.2.4 FEMA/Hydrologic Trespass**. Language was revised to address the conclusion that neither FEMA nor county floodplain permitting will be required for proposed work.
- Adding **Section 2.5.5 Buffer Authorization**. This section covers details related to seeking a Buffer Authorization from DWR.
- Expanding **Section 3.2.3 Other Activities** by adding more detailed, refined language regarding the anticipated construction activities associated with the project to improve bank stability and erosional areas. These include plugging and planting Ditch A, benching, grading, tree removal, matting, and live staking banks, and installing check dams and live stakes to erosional rills.
 - **Figure 5** was also updated to call out construction work.
 - **Appendix G** was added to include a construction detail sheet with typical details associated with the proposed construction activities

COVER

1. Change DWR # to 2021-0306v3
This has been revised.

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2. Existing photos provided in the plan pre-date the viability letter issued by DWR. Need more current condition photos (drone footage is acceptable as long as photos include Timestamp of date)
Several more recent photos (dated November 18, 2021) have been added.

SECTION 1: INTRODUCTION

3. Specify in this table that the Credit Service Area is 03020201. It is a little misleading that the 14 digit is used here.
This has been addressed.
4. This section will need to be modified based on comments regarding measurements off DJH4.
RES assumes a typo and that this refers to "DJ7". This has been revised accordingly.
5. Add language that speaks to landuse conditions that may have changed since the viability letter was issued (crop changes, fallow land, mowing, etc). If no changes have occurred, speak to that. Provide time-stamped photos that support this and are more current than those that are currently included since they predate the site viability letter. *Land use has not changed. Language has been added as well as some more recent photos.*

SECTION 3: RIPARIAN RESTORATION, ENHANCEMENT, AND PRESERVATION IMPLEMENTATION PLAN

6. Commit to mixing stems at initial planting effort to ensure species are planted as diverse as possible.



RES will make it a point to ensure proper mixing. Applicable language has been added.

FIGURE 5: BUFFER MITIGATION CONCEPTUAL

7. The measurements should be taken perpendicular and landward from the top of bank since that's the policy for measure except under special circumstances where there may be utilities or other site constraints. Modify the width measurements adjacent to DJ7 to be perpendicular and landward. Therefore, this will result in an increase in ft² adjacent to DJ7 and a decrease in ft² adjacent to DJ2. Adjust Mit Plan text, Figures and Tables (including Project Credit Table) to reflect this change throughout. *This has been updated accordingly. Note, that the relative mitigation areas and credits have changed accordingly and are updated throughout the final mitigation plan, including the plan document, figures, and Appendix A credit table.*

FIGURE 8: NUTRIENT OFFSET CONCEPTUAL

8. Address measurement issue noted in Comments provided on Figure 5 off DJ7. *This has been revised accordingly.*
9. Change to "Riparian Restoration" for Nutrient Offset for both of these widths. *This has been revised.*

FIGURE 9: RIPARIAN ZONES

10. Widths are represented correctly adjacent to DJ7 in this figure. *Noted.*

FIGURE 10: MONITORING PLAN

11. Move at least 1 plot to be more representative of areas closer to the TOB. *One proposed plot has been moved closer to the TOB.*
12. Address measurement issue noted in Comments provided on Figure 5 off DJ7. *This has been incorporated.*

TABLE 1: THUNDER SWAMP, DMS# 100181, PROJECT CREDITS

13. Once measurements are corrected update the table accordingly. *The credit table, along with the rest of the mitigation plan, have been updated to reflect the applicable changes*

Please find enclosed the final Buffer Mitigation Plan submission with changes as noted above. Do not hesitate to reach out with any question or comments. Katie can be reached by email at kwebber@res.us or by phone at 410-279-5741.

Thank you,

Matthew DeAngelo
Ecologist

Katie Webber, LPSS
Project Manager

ROY COOPER
Governor

JOHN NICHOLSON
Interim Secretary

TIM BAUMGARTNER
Director



NORTH CAROLINA
Environmental Quality

August 24, 2021

Katie Webber
Resource Environmental Solutions, LLC
3600 Glenwood Ave., Suite 100
Raleigh, NC 27612

Subject: Task 3 Draft Mitigation Plan Comments – Thunder Swamp Mitigation Project (DMS #100185)
Neuse River 03020201; Wayne County, NC
Contract No. 0402-04

Dear Ms. Webber:

On August 3, 2021, DMS received the Draft Mitigation Plan for the Thunder Swamp Buffer Mitigation Project from Resource Environmental Solutions, LLC (RES). DMS has completed our review of the Draft Mitigation Plan and has the following comments:

1. On page 3 of Section 1.2 – Near the end of paragraph, suggesting to change from “pollution from active crop production” to “nutrient loadings from active crop production”.
2. On page 3 of Table 1 – The table 1 and the text above the table indicated that the project would provide up to 420,321.414 buffer mitigation credit. Please be mindful that the project is contracted to provide 414,119.706 buffer mitigation credit.
3. On page 11 of Section 2.2.2 – In the middle of the top paragraph of the page, suggesting to change from “A self-certification letter was sent to USFWS (on April 1st, 2021). No response was provided by USFWS which is typical ...” to “A self-certification letter was sent to USFWS (on April 1st, 2021). No response was received from USFWS.”.
4. On page 11 of Section 2.2.4 – Please make sure to include the copy of a floodplain development permit from Wayne County in the final mitigation plan.
5. As required by contract and in Section 4.7 of RFP 16-007703, RES must submit the required Performance Bond as part of the final mitigation plan. This must be approved prior to invoice submittal.
6. This is a reminder that Task 2 has not been completed and will not be complete until the Conservation Easement is recorded for this project and all required deliverables have been submitted to the DMS Project Manager and State Property Office.

Please make the requested revisions and provide one (1) pdf copy of the revised mitigation plan, the required digital data and a response to comments letter for DMS review. Once DMS verifies all revisions



North Carolina Department of Environmental Quality | Division of Mitigation Services
217 West Jones Street | 1652 Mail Service Center | Raleigh, North Carolina 27699-1652
919.707.8976

have been made and the required digital files have been submitted, RES will be instructed when to submit the final copies of the Task 3 deliverable. If you have any questions, please contact me at any time. I can be reached at (919) 219-8476 or email me at lin.xu@ncdenr.gov.

Sincerely,

Lin Xu

Lin Xu
Project Manager
NCDEQ Division of Mitigation Services

Attachment

cc: file



North Carolina Department of Environmental Quality
217 West Jones Street | 1601 Mail Service Center | Raleigh, North Carolina 27699-1601
919.707.8600

MEMORANDUM



3600 Glenwood Avenue, Suite 100 Raleigh, North Carolina 27612 919.770.5573 tel. 919.829.9913 fax

TO: NCDEQ Division of Mitigation Services

FROM: Katie Webber – RES

DATE: October 1, 2021

RE: Response to Draft Mitigation Plan Comments – Thunder Swamp Mitigation Project (DMS #100185) Neuse River 03020201; Wayne County, NC; Contract No. 0402-04

Lin Xu - NCDMS:

1. On page 3 of Section 1.2 – Near the end of paragraph, suggesting to change from “pollution from active crop production” to “nutrient loadings from active crop production”.
“Pollution from active crop production” has been changed to “nutrient loadings from active crop production”.
2. On page 3 of Table 1 – The table 1 and the text above the table indicated that the project would provide up to 420,321.414 buffer mitigation credit. Please be mindful that the project is contracted to provide 414,119.706 buffer mitigation credit.
Thank you. RES is aware of the contracted buffer mitigation credits. As proposed, the project will generate surplus credits.
3. On page 11 of Section 2.2.2 – In the middle of the top paragraph of the page, suggesting to change from “A self-certification letter was sent to USFWS (on April 1st, 2021). No response was provided by USFWS which is typical ...” to “A self-certification letter was sent to USFWS (on April 1st, 2021). No response was received from USFWS.”.
“A self-certification letter was sent to USFWS (on April 1st, 2021). No response was provided by USFWS which is typical ...” has been changed to “A self-certification letter was sent to USFWS (on April 1st, 2021). No response was received from USFWS.”
4. On page 11 of Section 2.2.4 – Please make sure to include the copy of a floodplain development permit from Wayne County in the final mitigation plan.
RES will provide a copy of the floodplain development permit from Wayne County in the final mitigation plan.

5. As required by contract and in Section 4.7 of RFP 16-007703, RES must submit the required Performance Bond as part of the final mitigation plan. This must be approved prior to invoice submittal.

RES will submit the Performance Bond as part of the final mitigation plan.

6. This is a reminder that Task 2 has not been completed and will not be complete until the Conservation Easement is recorded for this project and all required deliverables have been submitted to the DMS Project Manager and State Property Office.

Thank you. RES will complete the required steps to finish Task 2.



**Final Buffer Mitigation Plan
Thunder Swamp Mitigation Project**

January 2022

DMS Project #: 100181 | Contract #: 0402-04 | RFP: 16-20200402 | DWR #: 2021-0306 V3

Neuse River Basin | HUC 03020201 | Wayne County, North Carolina

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1 MITIGATION PROJECT SUMMARY

Environmental Banc & Exchange, LLC (EBX), a wholly-owned subsidiary of Resource Environmental Solutions (RES), is pleased to provide the Thunder Swamp Mitigation Project (Project), a full-delivery buffer mitigation project for the Division of Mitigation Services (DMS) (DMS Project #100181). This buffer project is designed to provide riparian buffer mitigation credits for unavoidable impacts due to development within the Neuse River Basin, United States Geological Survey (USGS) 8-digit Cataloguing Unit 03020201 (Neuse 01), excluding Falls Lake Watershed (**Figure 1**). This Buffer Mitigation Plan is in accordance with the Consolidated Buffer Mitigation Rule 15A NCAC 02B .0295 and Nutrient Offset Credit Trading Rule 15A NCAC 02B .0703.

1.1 Project Overview

The Thunder Swamp Project consists of a contiguous conservation easement that will total approximately 13.34 acres and includes three unnamed stream tributaries to Thunder Swamp. Thunder Swamp is a USGS-named stream that eventually drains to the Neuse River. Current land use within the Project is crop production and riparian forest (**Figure 2a**). Much of the Project area has been used extensively for agricultural purposes for at least 70 years (**Figure 3**), and currently, the Project reaches and adjacent areas are in either crop production or forest. Water quality stressors currently affecting the Project include heavily manipulated/relocated and maintained stream channels, nutrient loadings from active crop production, and lack of forested riparian buffers. Current buffer conditions demonstrate significant degradation with the loss of stabilizing vegetation because of ongoing crop production.

The goal of the Project is to restore and preserve ecological function to the existing streams and their associated riparian buffer areas by establishing appropriate plant communities while minimizing temporal and land disturbing impacts. Buffer and surrounding riparian area improvements will filter runoff from agricultural fields, thereby reducing nutrient and sediment loads to Project channels and provide water quality benefit to the overall watershed.

The Project easement can be accessed by NC Highway 55 (**Figure 4**). The Thunder Swamp Project is composed of three intermittent stream channels: DJ1, DJ2, and DJ3 and one ephemeral stream channel, DJ7 (**Figure 2a**). All streams have been straightened and are incised. Furthermore, the fifty-foot riparian buffers of two stream reaches (DJ1 and DJ3) were determined to be subject to the Neuse buffer protection rules ("Subject"), whereas the other two stream reaches (DJ2 and DJ7) are not subject to the Neuse buffer protection rules ("Non-subject"). Stream determinations were verified by the DWR site visit on March 24th, 2021. Correspondence regarding this determination is in **Appendix B**.

Buffer and riparian area mitigation efforts along the Project streams will be accomplished through the planting, establishment, and protection of a hardwood forest community. The result will be a riparian area that functions to mitigate nutrient and sediment inputs from the surrounding uplands. The buffer mitigation plan proposed is being submitted for review under the Consolidated Buffer Mitigation Rule 15A NCAC 02B .0295 and Nutrient Offset Credit Trading Rule 15A NCAC 02B .0703. In addition to traditional riparian restoration, the Project will also incorporate the alternative buffer mitigation options: Restoration and Enhancement on Non-Subject Streams, as outlined in 15A NCAC 02B .0295 (o)(3); Restoration of Buffers on Ephemeral Streams, as outlined in 15A NCAC 02B .0295 (o)(7); Preservation of Buffers on Subject

Streams, as outlined in 15A NCAC 02B .0295 (o)(5); and Preservation of Buffers on Non-subject Streams, as outlined in 15A NCAC 02B .0295 (o)(4). DWR staff performed an onsite stream determination on March 24th, 2021 and a buffer viability assessment for buffer mitigation on May 27th, 2021. These correspondences are provided in **Appendix B**. The Project will provide significant functional uplift to the watershed and will assist DMS with achieving its mitigation goals in the Neuse 01 watershed, excluding the Falls Lake Watershed. The Project presents the opportunity to provide up to 420,320.284 ft² (9.65 acres) of riparian buffer mitigation credits. These will be derived from restoration and preservation of the riparian buffer and surrounding riparian areas. Project attributes are summarized in **Table 1**.

Table 1. Project Attributes

Parameter	Attribute
Project Name	Thunder Swamp
Service Area Hydrologic Unit Code	03020201 (Excluding Falls Lake Watershed)
River Basin	Neuse River (excluding the Falls Lake Watershed)
Geographic Location (Lat, Long)	35.205212, -78.095683
Site Protection Instrument (DB, PG)	3373, 242-246 Wayne (Jackson)
Total Credits (BMU)	420,320.284
Types of Credits	Riparian Buffer (with flexibility to convert to Nutrient Offset if needed)
Mitigation Plan Date	August 2021
Initial Planting Date	March 2022
Baseline Report Date	April 2022
MY1 Report Date	December 2022
MY2 Report Date	December 2023
MY3 Report Date	December 2024
MY4 Report Date	December 2025
MY5 Report Date	December 2026

The riparian buffer mitigation credits will be produced by establishing a native forested and herbaceous riparian plant community and protecting buffers in perpetuity with a conservation easement. For all intermittent/perennial stream channels, buffers will have a minimum width of 50 feet and a maximum of up to 200 feet from the edge of the channels. These will be derived from 362,948 ft² (8.33 acres) from the top of bank to 100 feet of Restoration; 67,746 ft² (1.56 acres) of 101 to 200 feet of Restoration; 4,932 ft² (0.11 acres) from 101 to 200 feet of Preservation on Subject streams; 66,114 ft² (1.52 acres) from the top of bank to 100 feet of Preservation on Non-subject streams; and 18,876 ft² (0.43 acres) from 101 to 200 feet of Preservation on Non-subject streams. For ephemeral stream channels, buffers will have a minimum width of 50 feet and maximum of 200 feet from the edge of the channel. These will be derived from 20,363 ft² (0.47 acres) from the top of bank to 100 feet of Restoration; 286 ft² (<0.01 acres) from 101-200 feet of Restoration; and 97 ft² (<0.01 acres) from top of bank to 100 feet of Preservation on Non-subject streams). The new plant community will be established in conjunction with the treatment of any existing exotic or

undesirable plant species. **Figure 5** shows the Conceptual Design Plan for Buffer and Credit Determination Map, and **Section 2.1** provides details of the mitigation determination on the Thunder Swamp Project.

This Project will also be codeveloped with a buffer mitigation and nutrient offset bank that will extend riparian buffer areas associated with this Project’s streams as well as incorporate additional stream features on the property. Therefore, the realized riparian buffer mitigation areas for each stream feature will be larger.

1.1.1 Parcel Ownership

The land required for the construction, management, and stewardship of this Project includes the parcel listed in **Table 2**. EBX will obtain the property, in fee simple, and will then record a conservation easement for the Project area within the property. The easement deed and survey plat will be submitted to DMS and the State Property Office (SPO) for approval and will be held by the State of North Carolina. The easement deed will follow the DMS Full Delivery Conservation Easement Template dated May 5th, 2017, and is included in **Appendix C**. The recorded easement will allow EBX to proceed with the Project development and protect the mitigation assets in perpetuity. A finalized copy of the land protection instrument will be included in **Appendix C**.

Table 2. Parcel and Landowner Information

Landowner	Pin or Tax Parcel ID	Agreement Type	County
Danny Gray Jackson and wife, Margaret Jernigan Jackson (<i>current</i>)	2563908684	Fee Simple	Johnston

1.2 Project Location

The Thunder Swamp Project is within the Neuse River Basin within the 8-digit HUC 03020201, 14-digit HUC 030202011170030 and DWR Sub-basin Number 03-04-12.

The Project is located in Wayne County in Mount Olive, NC, just west of downtown Mount Olive off of NC Highway 55 (**Figure 1**). To access the Project from Raleigh, take I-40 East to US-70 East. Then take exit for NC-50/NC-55 toward Newton Grove and turn left onto NC-50 South/NC-55 East. Continue and take the third exit at the traffic circle. Continue for approximately 16 miles and take a right into the driveway adjacent to the Project, at address 680 NC-55, Mt. Olive, NC 28365. The upper reaches of the Project will be in the fields to the right. The coordinates are 35.205212° and -78.095683°.

1.3 Existing Conditions

1.3.1 Surface Water Classification

The Project tributaries drain to the floodplain of Thunder Swamp. Thunder Swamp has been assigned class C and Nutrient Sensitive Waters (NSW). Class C waters are protected for uses such as secondary recreation, fishing, wildlife, fish consumption, aquatic life including propagation, survival and maintenance of biological integrity, and agriculture. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized,

or incidental manner. NSW designation is intended for waters needing additional nutrient management due to being subject to excessive growth of microscopic or macroscopic vegetation (NCDWQ 2011).

1.3.2 Physiography and Soils

The Project is located within the Rolling Coastal Plain Level IV ecoregion within the Southeastern Plains Level III ecoregion and is characterized by greater relief, elevation, and stream gradients compared to the Mid-Atlantic Coastal Plain to the east. This ecoregion contains both dissected irregular and smooth plains, and low to moderate gradient sandy-bottomed streams that branch from broad interstream divides with steep to moderately gentle side slopes (**Figure 6**). The ecoregion also contains better drained soils and a slightly cooler and shorter growing season than the Mid-Atlantic Coastal Plain; however, it is still a productive agricultural region with typical crops of corn, soybeans, tobacco, cotton, sweet potatoes, peanuts, and wheat.

The Natural Resources Conservation Service (NRCS) County Soil Mapping depicts five soil series across the Project (**Figure 7**). Thunder Swamp is associated with a Bibb sandy loam series. Rains sandy loam is mapped adjacent to the Bibb sandy loam and to the north, at the heads of DJ1 and DJ3, and it is bisected by Lynchburg sandy loam, Craven sandy loam, and Wagram loamy sand. The specific soil map units are as follows: Bibb soil, frequently flooded, Craven sandy loam 6 to 12 percent slopes eroded (Gritney), Lynchburg sandy loam 0 to 2 percent slopes, Rains sandy loam 0 to 2 percent slopes, and Wagram loamy sand 0 to 6 percent slopes (**Table 3**).

All soils on-site are formed in loamy or loamy and sandy marine deposits. Rains sandy loam and Bibb sandy loam are considered hydric by the NRCS, while Lynchburg sandy loam and Wagram sandy loam have minor hydric inclusions. The soil characteristics of these map units are summarized in **Table 3**.

Table 3. Project Mapped Soil Series

Map Unit Symbol	Map Unit Name	Percent Hydric	Drainage Class	Hydrologic Soil Group	Landscape Setting
Bb	Bibb sandy loam	90%	Poorly drained	A/D	Floodplains
CrC2	Craven sandy loam, 6 to 10 percent slopes, eroded (Gritney)	0%	Moderately well drained	D	Ridges
Ly	Lynchburg sandy loam, 0 to 2 percent slopes	8%	Somewhat poorly drained	B/D	Marine terraces
Ra	Rains sandy loam, 0 to 2 percent slopes	90%	Poorly drained	A/D	Flats on marine terraces
WaB	Wagram loamy sand, 0 to 6 percent slopes	5%	Well drained	A	Ridges

1.3.3 Wetlands

The Thunder Swamp floodplain contains wetland forest and swamp; however, the jurisdictional boundaries are not confirmed since this Project will not require a Jurisdictional Determination. The US Fish and Wildlife

Service (USFWS) National Wetland Inventory Map (NWI) has mapped this wetland and classified it as palustrine forested broad-leaved deciduous, seasonally flooded (PFO1C) (**Figure 2b**).

1.3.4 Landscape Communities

A. Existing Vegetation Communities

Current land use around the Project is primarily composed of row crops and forest. The row crop fields directly abut most of the banks of Project streams, and the current crop in production is sweet potatoes. However, small, disturbed areas of trees that are reminiscent of mixed-mesic hardwood forest (Coastal Plain subtype) exist along some of the stream banks. The tree species that do exist in these areas include sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), water oak (*Quercus nigra*), willow oak (*Quercus phellos*), tulip poplar (*Liriodendron tulipifera*), and sassafras (*Sassafras albidum*). Invasive species were noted in these areas and include mostly Chinese privet (*Ligustrum sinense*), some Chinaberry (*Melia azedarach*), and limited kudzu (*Pueraria montana*).

As for the forested Thunder Swamp floodplain, where the Project streams channels terminate, the natural community has likely been disturbed by cyclical beaver activity, as the community does not appear to be a climax forest, and it is not evident through aerial imagery that the area has been cleared or logged in at least many decades. With that said, the community type resembles a disturbed Coastal Plain small stream swamp and includes trees and saplings such as red maple, water oak, willow oak, black willow (*Salix nigra*), and silky dogwood (*Cornus amomum*), while the shrub stratum was dominated by Chinese privet with some buttonbush (*Cephalanthus occidentalis*) present. The herbaceous layer includes Pennsylvania smartweed (*Polygonum pennsylvanicum*), Nepalese browntop (*Microstegium vimineum*), tearthumb (*Polygonum sagittatum*), false nettle (*Boehmeria cylindrica*), and swamp rosemallow (*Hibiscus grandiflorus*). As noted in this species list, invasive species include Chinese privet and Nepalese browntop, with Chinese privet being dense in localized areas.

B. Riparian Vegetation

In general, the Project reaches do not function to their full potential. Current conditions demonstrate significant habitat and water quality degradation with a loss of stabilizing vegetation as a result of impacts from ongoing crop production. Throughout the Project there are scattered invasive plant species that will be treated to the extent practicable.

DJ1 runs through crop field and then dissipates upslope from the forested Thunder Swamp floodplain. Throughout the crop fields, the reach lacks a riparian buffer, barring a few mature trees along the bank at the upstream extent. Some understory native and invasive species are also present in this area around the base of the trees. Generally, the stream banks of DJ1 contain tall, herbaceous vegetation and little to no woody vegetation. The current crop in production is sweet potatoes. At the base of DJ1 where the reach dissipates, there is a small area of black willow (*Salix nigra*) trees.

DJ3 is a very short reach and has almost no riparian buffer barring a few mature trees along the banks near its confluence with DJ1.

DJ2, like DJ1, runs through crop field and then enters the Thunder Swamp floodplain. The left bank of DJ2 abuts crop fields and the riparian buffer condition is absent and mostly devoid of trees; however, there is

a small stand of trees off the right bank that contains mature hardwoods and some Chinese privet. Generally, stream banks contain weedy, herbaceous vegetation and little to no woody vegetation, and the current crop within the fields is sweet potatoes. As the reach enters the Thunder Swamp floodplain, the riparian area becomes sufficiently buffered through mature forest, although Chinese privet is prevalent.

DJ7 is the ephemeral reach above DJ2 and is surrounded by crop fields on all sides. There is no riparian buffer on DJ7.

The current land use and riparian vegetation conditions at the time of writing this final buffer mitigation have remained unchanged since the site viability assessment conducted by DWR on May 27th, 2021.

1.3.5 Existing Conditions Photos



*Looking at DJ1 from crop field
May 27, 2021*



*Looking Upstream along DJ1
May 27, 2021*



*Looking Downstream along DJ1
May 27, 2021*



*Looking Downstream along DJ2
May 27, 2021*



*Looking across Right Bank of DJ2
May 27, 2021*



*Looking Downstream along DJ3
May 27, 2021*



*Looking Downstream along DJ2 in forested area
May 27, 2021*



*Looking Downstream along DJ7
May 27, 2021*



*Looking Across DJ1 at DJ2/DJ7 in distance
November 18, 2021*



*Looking Downstream along DJ1
November 18, 2021*



*Looking Upstream along DJ3
November 18, 2021*



*Riparian area between DJ1 (left) and DJ2 (right)
November, 2021*

2 REGULATORY CONSIDERATIONS

2.1 Determination of Credits

This Project has the potential to generate up to 420,320.284 ft² (9.65 acres) riparian buffer mitigation credits within a 13.34-acre conservation easement as depicted in **Figure 5**. These will be derived from buffer restoration and buffer preservation. The riparian buffer mitigation credits generated will service the Neuse 01 watershed, excluding the Falls Lake Watershed. The total potential buffer mitigation credits that the Thunder Swamp Mitigation Project will generate are summarized in **Table 4**.

Table 4. Thunder Swamp Project (DMS Project #100181) Riparian Buffer Mitigation Summary

Total Riparian Buffer Mitigation Credits		
Mitigation Totals	Square Feet	Credits
Restoration	451,064	405,669.512
Preservation	90,019	14,650.772
Total Riparian Buffer	541,083	420,320.284

The detailed Project credit breakdown utilizing the DWR “Project Credit Table Template (Updated October 2020),” including buffer credits that are convertible to nutrient offset credit, is provided in **Appendix A**. Where viable, buffer mitigation credits can be converted to nutrient offset credit in accordance with the Nutrient Offset Credit Trading Rule, 15A NCAC 02B .0703. **Figure 8** depicts buffer restoration areas that are convertible to nutrient offset credit. The total area that is convertible to nutrient offset amounts to 405,669.512 ft² which would deliver 23,537.122 pounds of Nitrogen offset. Furthermore, **Figure 9** depicts riparian zones of 50, 100, and 200 feet from stream top of banks to demonstrate width requirements for crediting.

2.2 Other regulatory considerations

2.2.1 Environmental Screening and Documentation

Because DMS mitigation projects are considered to be a category of activities that do not individually or cumulatively have an impact on the human environment, they do not require preparation of an environmental assessment or environmental impact statement. To ensure that a project meets the “Categorical Exclusion” criteria, the Federal Highways Administration (FHWA) and NCDMS have developed a categorical exclusion (CE) checklist that is included as part of each mitigation project’s Environmental Screening process. The CE Approval Form for the Thunder Swamp Project is included in **Appendix D** and was approved by DMS and FHWA in June 2021.

2.2.2 Threatened and Endangered Species

Plants and animals with a federal classification of endangered or threatened are protected under provisions of Sections 7 and 9 of the Endangered Species Act of 1973, as amended. According to the United States Fish and Wildlife Service’s (USFWS) Information for Planning and Consultation (IPAC) database review tool (accessed March 1st, 2021) and the self-certification process conducted by RES and submitted to the

USFWS on April 1st, 2021, the list of threatened or endangered species includes the Red-cockaded woodpecker (*Picoides borealis*). Two additional species on the list submitted to USFWS are proposed for listing, the Neuse River Waterdog (*Necturus lewisi*) and the Carolina Madtom (*Noturus Furius*). The Thunder Swamp Project does not contain any suitable habitat for the Red-cockaded woodpecker, the Neuse River Waterdog, nor the Carolina Madtom. A self-certification letter was sent to USFWS (on April 1st, 2021). No response was received by USFWS which is typical as the certification letter (provided) is their official response unless they do not concur with the determination. This consultation was conducted as part of the CE process and supporting documentation and correspondence can be found in **Appendix D**.

The Fish and Wildlife Coordination Act requires consultation with state fish and wildlife agencies when “waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted...or otherwise controlled or modified. The North Carolina Wildlife Resources Commission (NCWRC) was consulted during the CE process and the NCWRC did not comment on any state or federally listed species; however, they did recommend the use of biodegradable and wildlife-friendly sediment and erosion control devices and to treat invasive species as part of the Project. Documentation is included in **Appendix D**.

2.2.3 Cultural Resources

A review of North Carolina State Historic Preservation Office (SHPO) GIS Web Service (accessed March 1st, 2021) database did not reveal any registered occurrences within the Project area. RES consulted with the SHPO during the CE process and the SHPO had “conducted a review of the project and are aware of no historic resources which would be affected by the project.” Cultural Resources screening met the Categorical Exclusion Criteria for FHWA and DMS projects and documentation is included in **Appendix D**.

2.2.4 Federal Emergency Management Agency (FEMA)/ Hydrologic Trespass

The southern portion of the Project, consisting of the downstream portion Project stream DJ2 that enters the Thunder Swamp floodplain, is in FEMA Zone AE (**Figure 2b**). “Ditch A” that connects to reach DJ2 and runs along the wood line is also contained within Zone AE, and is proposed to be plugged and planted as part of the riparian restoration efforts. FEMA implications were considered with respect to this plan, and RES determined that neither FEMA nor county floodplain permits are required for the proposed activity because the project extents are limited to the floodplain fringe and do not impact the effective regulatory floodway.

2.2.5 Buffer Authorization

This project will involve earthwork within protected buffer, although the work will not impact streams or wetlands, as all earthwork will occur above the Ordinary High Water Mark. The construction activities will include channel bank benching and grading, tree removal, and installation of check dams (on erosional rills) to prevent further degradation of the riparian buffer. Therefore, RES will obtain a Buffer Authorization from DWR before commencing construction activities. More details about this work are discussed in **Section 3.2.3, Figure 5, and Appendix G**.

3 RIPARIAN RESTORATION AND PRESERVATION IMPLEMENTATION PLAN

Riparian restoration and preservation areas adjacent to streams are shown in **Figure 5** and were approved by the DWR in the letter dated May 27th, 2021 (**Appendix B**).

3.1 Site Preparation

Preparation at the Project will involve spraying crops and exotic invasive species, applying soil amendments, seeding native plants, and planting trees. Soil amendments will be provided across the entire planted area based on the results of soil fertility tests. The soils fertility tests will be based on soil samples collected within proposed riparian restoration areas across the site. A seed mix will be chosen to maximize successful herbaceous growth in all riparian areas while also incorporating valuable pollinator species. All riparian planting areas will be seeded using a no-till drill prior to tree planting. Temporary and permanent riparian seeding, bare root plantings, and live stakes shall be planted according to the planting plan (**Section 3.3**).

The limits of the riparian restoration areas will be surveyed post-planting and seeding, and the information will be provided in the As-Built report and plat.

3.2 Methods

Riparian buffer mitigation activities will include restoration and preservation along streams. All restoration and preservation areas were determined by the mitigation determination performed during the viability assessment by DWR (**Appendix B**).

3.2.1 Riparian Restoration Activities

For intermittent and ephemeral stream channels, the Project will provide riparian buffer and surrounding area restoration in accordance with the Consolidated Buffer Mitigation Rule 15A NCAC 02B .0295 (n) and 15A NCAC 02B .0295 (o)(3) and (7), respectively. Restoration activities will include the planting of bare root plantings as described in **Section 3.3**. These restoration activities will begin from the tops of the proposed stream banks and extend a minimum of 50 feet from the stream outward to a maximum of 200 feet perpendicular to the stream channel. Restoration will occur where cropland is currently present. Specifically, reaches DJ1, DJ2, DJ3, and DJ7 will include riparian buffer restoration (**Figure 5**). Additionally, Ditch A will be backfilled and/or graded to the existing ground elevation and planted.

3.2.2 Riparian Preservation Activities

Preservation will take place in limited forested areas within the Project where existing tree growth was determined adequate, and in accordance with the alternative mitigation option of Consolidated Buffer Mitigation Rules 15A NCAC 02B .0295 (o)(4) and (5) and the DWR buffer viability assessment (**Appendix B**). Specifically, portions of reaches DJ1 and DJ2 contain forested areas that will be preserved (**Figure 5**). In addition, preservation activities will include treating exotic invasive species, specifically Chinese privet. Furthermore, preservation will entail the permanent protection of the riparian area from cutting, clearing, filling, grading, and similar activities that would affect the functioning of the buffer through a conservation

easement that will have clearly visible easement markers and signs (see **Section 3.4** for further description of the easement boundaries).

3.2.3 Other Activities

Other activities involved with the buffer mitigation component of the Project include ditch plugging and bank stabilization efforts, including benching, grading, matting, tree removal, and live staking where bank stability is compromised and where erosional rills, sink holes, and gullies have been identified throughout the Project area (**Figure 5**).

One agricultural ditch (Ditch A) will be plugged in order to eliminate concentrated flow from entering Reach DJ2 and ensuring diffuse flow within the riparian area. Upon plugging, the ditch footprint will be planted in accordance with the planting plan specified in **Section 3.3** and will also be planted heavily with live stakes.

Several of the stream channels have unstable banks where erosion is active or at-risk. Therefore, to ensure integrity of the riparian area, identified area will be stabilized by benching and/or grading banks to a stable dimension followed by matting, seeding, and planting. One such area will also require the removal of two large sweetgum trees, as they are at risk of falling and collapsing the stream bank. Live stakes will be planted on stream banks where stability is compromised, such as existing areas of erosion.

There are also two identified erosional rills that are promoting concentrated flow within the riparian area. These identified areas will be stabilized by installing hay bale and/or coir log check dams followed by live stake planting and will ensure diffuse flow within the riparian area.

Also, some stream reaches contain dense thickets of greenbriers and grape vines along their banks that have the potential to become a nuisance; therefore, some of these areas may be thinned and/or removed mechanically if there is a threat to planted vegetation.

As mentioned earlier, this Project will be codeveloped with a buffer mitigation and nutrient offset bank that will extend riparian buffer areas associated with this Project's streams as well as incorporate additional stream features on the property. Therefore, riparian planting and site preparation activities will extend beyond the limits of this Project's boundaries.

All proposed construction activities have been called out on **Figure 5** and a Construction Detail Sheet has been developed and included in **Appendix G**.

3.3 Planting Plan

All riparian restoration areas will be planted from top of bank back at least 50 feet from streams with bare root tree seedlings on a nine by six-foot spacing to achieve an initial density of approximately 800 trees per acre. In addition, these areas will be seeded with an herbaceous seed mix to provide rapid herbaceous cover and promote immediate buffer effectiveness as well as habitat for pollinators and other wildlife. The seed blend will contain both temporary and permanent seed and will include taproot species. The seed will be sown utilizing a no-till drill. Planting will occur in all areas proposed for riparian buffer restoration and will meet the performance standards outlined in the Rule 15A NCAC 02B .0295. This includes treating

invasive species and planting at least four species of native hardwood bare root trees. Mixed-Mesic Hardwood Forest (Coastal Plain subtype) (Schafale 2012) will be the target community type and will be used for all areas within the Project. This community composition is highly diverse and is suitable given the Project’s soil and landscape characteristics and will provide water quality and ecological benefits. The initial planting of bare root trees will occur before Spring 2022. The list of bare root tree species to be planted and their percentage of total species composition can be found in **Table 5**. The suite of bare root stems will be thoroughly mixed prior to planting to ensure maximum diversity throughout the planted areas. Wherever possible, mature vegetation will be preserved and incorporated into the buffer. Some areas adjacent to the forested areas may require maintenance due to the rapid regeneration of some species, such as red maple (*Acer rubrum*) and sweetgum (*Liquidambar styraciflua*). Additionally, the live stake plantings mentioned above in **Section 3.2.4** will consist of black willow (*Salix nigra*) and silky dogwood (*Cornus amomum*).

Table 5. Tree Planting List

Bare Root Planting Tree Species					
Species	Common Name	Spacing (ft)	Unit Type	Canopy or Sub-canopy	% of Total Species Composition
<i>Platanus occidentalis</i>	American sycamore	9X6	Bare Root	Canopy	10
<i>Betula nigra</i>	River birch	9X6	Bare Root	Canopy	10
<i>Quercus phellos</i>	Willow oak	9X6	Bare Root	Canopy	10
<i>Quercus michauxii</i>	Swamp chestnut oak	9X6	Bare Root	Canopy	10
<i>Quercus nigra</i>	Water oak	9X6	Bare Root	Canopy	10
<i>Quercus rubra</i>	Northern red oak	9X6	Bare Root	Canopy	10
<i>Quercus shumardii</i>	Shumard’s oak	9X6	Bare Root	Canopy	10
<i>Quercus lyrata</i>	Overcup oak	9X6	Bare Root	Canopy	10
<i>Diospyros virginiana</i>	Persimmon	9X6	Bare Root	Sub-canopy	10
<i>Fraxinus pennsylvanica</i>	Green ash	9X6	Bare Root	Canopy	5
<i>Cephalanthus occidentalis</i>	Buttonbush	9X6	Bare Root	Sub-canopy	5

3.4 Easement Boundaries

Easement boundaries will be identified in the field to ensure clear distinction between the Project and adjacent properties. Boundaries may be identified by marker, bollard, post, tree-blazing, or other means as allowed by Project conditions and/or conservation easement. Boundaries will be marked with signs identifying the property as a mitigation project and will include the name of the long-term steward and a contact number. Boundary markers disturbed, damaged, or destroyed will be repaired and/or replaced on an as needed basis. The easement boundary will be checked annually as part of monitoring activities and the conditions as well as any maintenance performed will be reported in the annual monitoring reports to DWR.

Again, this Project will be codeveloped with a buffer mitigation and nutrient offset bank that will extend riparian buffer areas associated with this Project's streams as well as incorporate additional stream features on the property. Therefore, there will be bank conservation easement boundaries extending beyond the boundaries of this Project and will also be marked appropriately.

4 MONITORING PLAN

4.1 Monitoring Protocol and Success Criteria

Annual vegetation monitoring and visual assessments will be conducted. Riparian vegetation monitoring where riparian buffer mitigation credits are being generated will be based on the “Carolina Vegetation Survey-Ecosystem Enhancement Program Protocol for Recording Vegetation: Level 1-2 Plot Sampling Only Version 4.2”. Annual vegetation monitoring will occur each year for a minimum of five years and will be conducted during the fall season with the first year occurring at least six months from initial planting. Monitoring plots will be installed a minimum of 100 meters squared in size and will cover at least two percent of the planted mitigation area. The planted area is 10.58 acres, and there will be nine vegetation plots measuring riparian buffer mitigation success. These plots will be randomly placed throughout the planted riparian restoration area and will be representative of the riparian community (**Figure 10**). The following data will be recorded for all trees in the plots: species, height, planting date (or volunteer), and grid location. All stems in plots will be flagged with flagging tape.

The measures of vegetative success for the Project will be the survival of at least four native hardwood tree species, where no one species is greater than 50 percent of stems, at a density of at least 260 stems per acre at the end of Year 5. Native volunteer species may be included to meet the performance standards upon approval by DWR. Invasive and noxious species will be monitored and treated so that none become dominant or alter the desired community structure of the site.

Photos will be taken from all photo points each monitoring year and provided in the annual reports. Visual inspections and photos will be taken to ensure that applicable areas are being maintained and compliant.

A visual assessment of the conservation easement will also be performed each year to confirm:

- Easement markers are in good condition throughout the site;
- no encroachment has occurred;
- no invasive species occur in areas where invasive species were treated,
- diffuse flow is being maintained in the conservation easement areas; and
- there has not been any cutting, clearing, filling, grading, or similar activities that would negatively affect the functioning of the buffer.

A summary of project monitoring and maintenance activities can be found in **Table 6**.

Table 6. Summary of Project Monitoring and Maintenance Activities

Component/ Feature	Monitoring	Maintenance through project close-out
Vegetation	Annual vegetation monitoring	Vegetation shall be maintained to ensure the health and vigor of the targeted plant community. Routine vegetation maintenance and repair activities may include supplemental planting, pruning, mulching, and fertilizing. Exotic invasive plant species shall be treated by mechanical and/or chemical methods. Any vegetation requiring herbicide application will be performed in accordance with NC Department of Agriculture (NCDA) rules and regulations. Vegetation maintenance activities will be documented and reported in annual monitoring reports. Vegetation maintenance will continue through the monitoring period.
Invasive and Nuisance Vegetation	Visual Assessment	Invasive and noxious species will be monitored and treated so that none become dominant or alter the desired community structure of the Project. Locations of invasive and nuisance vegetation will be mapped. Also, see Appendix E for more details.
Project Boundary	Visual Assessment	Project boundaries shall be identified in the field to ensure clear distinction between the mitigation project and adjacent properties. Boundaries will be marked with signs identifying the property as a mitigation project and will include the name of the long-term steward and a contact number. Boundaries may be identified by fence, marker, bollard, post, tree-blazing, or other means as allowed by Project conditions and/or conservation easement. Boundary markers disturbed, damaged, or destroyed will be repaired and/or replaced on an as-needed basis. Easement monitoring and staking/ signage maintenance will continue in perpetuity as a stewardship activity.

4.2 Adaptive Management Plan and Project Maintenance

Adaptive measures will be developed, or appropriate remedial actions taken if in the event that the project, or a specific component of the project, fails to achieve the defined success criteria. DMS must approve all adaptive management plans prior to submittal to DWR.

Remedial actions will be designed to achieve the success criteria specified in this Mitigation Plan, and will include identification of the causes of failure, remedial design approach, work schedule, and monitoring criteria that will consider physical and climatic conditions.

Initial plant maintenance may include a one-time mowing, prior to initial planting to remove undesirable species. If mowing is deemed necessary by RES during the monitoring period, RES must first receive approval by DMS and then by DWR prior to any mowing activities to ensure that no buffer violations will be committed. Failure to receive approval to mow within the Neuse River buffer, as defined in 15A NCAC 02B .0714 by DWR, could result in Neuse River buffer violations and violations of the conservation easement. If necessary, RES will develop a species-specific control plan.

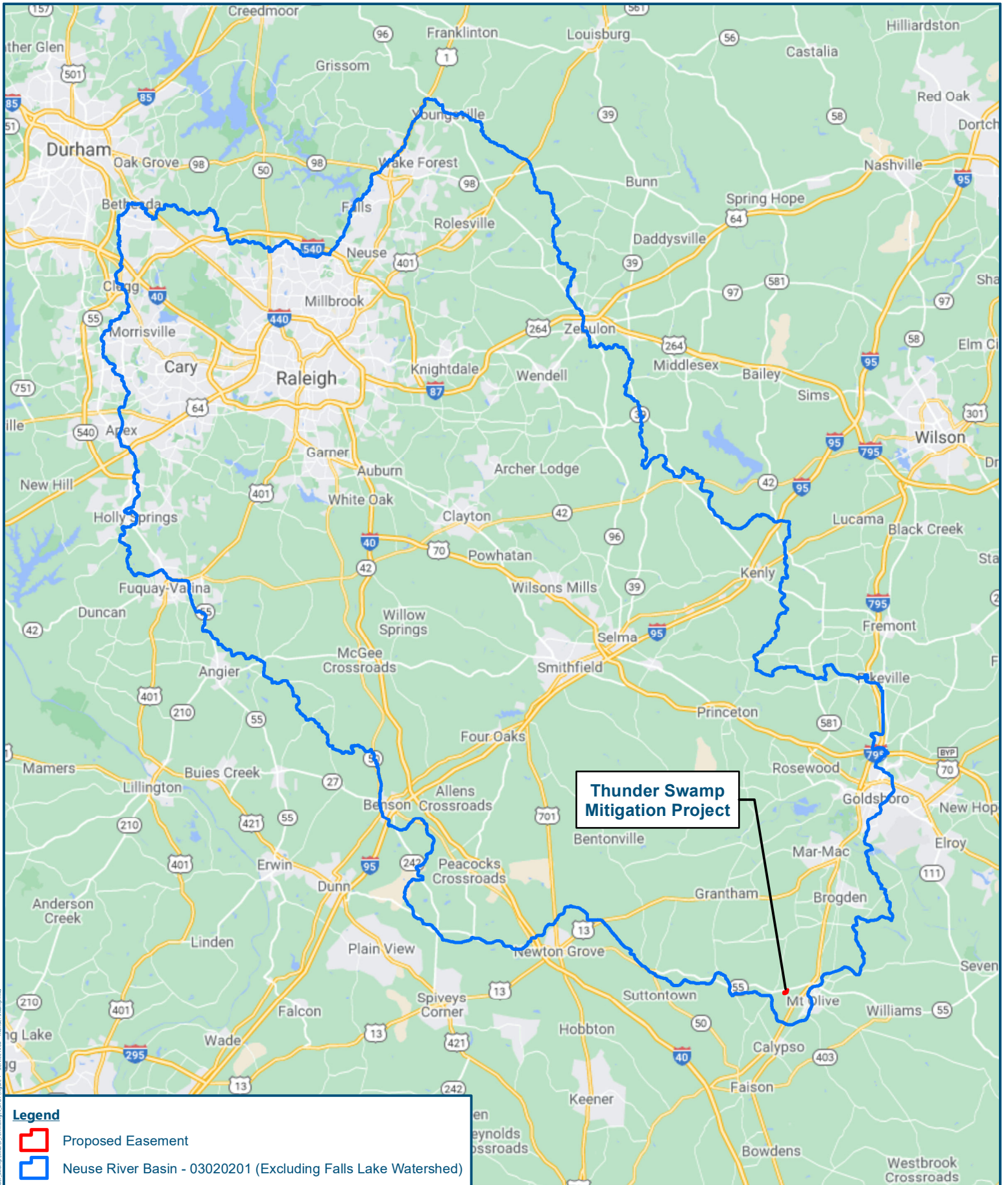
5 STEWARDSHIP

The Project will be transferred to the NCDEQ Stewardship Program. NCDEQ Stewardship Program shall serve as the conservation easement holder and entity responsible for long term stewardship of the Project. This party shall serve as conservation easement holder and long-term steward for the property and will conduct periodic inspection of the Project to ensure that restrictions required in the conservation easement are upheld. The NCDEQ Stewardship Program is developing an endowment system within the non-reverting, interest-bearing Conservation Lands Conservation Fund Account. The use of funds from the Endowment Account will be governed by North Carolina General Statute GS 113A-232(d)(3). Interest gained by the endowment fund may be used for the purpose of stewardship, monitoring, stewardship administration, and land transaction costs, if applicable.

The Stewardship Program will periodically install signage to identify boundary markings as needed. Any livestock or associated fencing or permanent crossings will be the responsibility of the owner of the underlying fee to maintain.

6 REFERENCES

- Endangered Species Act of 1973. Public Law 93-205, 87 Stat. 884. 16 USC 1531-1543,
- FEMA (Federal Emergency Management Agency). 2021. FEMA Flood Map Service Center. North Carolina Panel 3720256300K; 3720257300K; 3720257200K; 3720257200K, effective 6/20/2018.
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- Lee, T.L, Peet, R.K., Roberts, S.D., and Wentworth, T.R. 2006. CVS-EEP Protocol for Recording Vegetation, Version 4.2. <http://cvs.bio.unc.edu/protocol/cvs-EEP-protocol-v4.2-lev1-2.pdf>.
- National Historic Preservation Act of 1966 (as amended Section 106). 16 USC 470. 36 CFR 800, 23 CFR 771, 36 CFR 60, 36 CFR 63.
- NCDWQ (North Carolina Division of Water Quality). 2011. A Guide to Surface Freshwater Classifications in North Carolina. Raleigh. http://portal.ncdenr.org/c/document_library/get_file?p_l_id=1169848&folderId=2209568&name=DLFE-35732.pdf; accessed January 2018.
- NCDWQ. (North Carolina Division of Water Quality). 2010. Methodology for *Identification of Intermittent and Perennial Streams and Their Origins*. Version 4.11. Raleigh.
- NC Environmental Management Commission. 2014. Rule 15A NCAC 02B.0295 – Mitigation Program Requirements for the Protection and Maintenance of Riparian Buffers.
- NC Environmental Management Commission. 2020. Rule 15A NCAC 02B.0714 – Neuse River Basin: Nutrient Sensitive Waters Management Strategy: Protection and Maintenance of Existing Riparian Buffers.
- NCNHP (North Carolina Natural Heritage Program). 2021. Natural Heritage Element Occurrences. March 2021.
- Schafale, M.P. 2012. Classification of the Natural Communities of North Carolina, Fourth Approximation. North Carolina Natural Heritage Program, Division of Parks and Recreation, NCDENR, Raleigh, NC.
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- USDA-NRCS. 2014. Web Soil Survey GIS Data. <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.html>. Accessed July 2021.
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Legend

- Proposed Easement
- Neuse River Basin - 03020201 (Excluding Falls Lake Watershed)

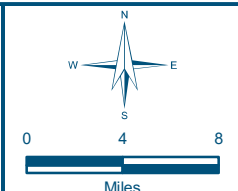
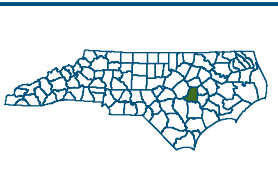
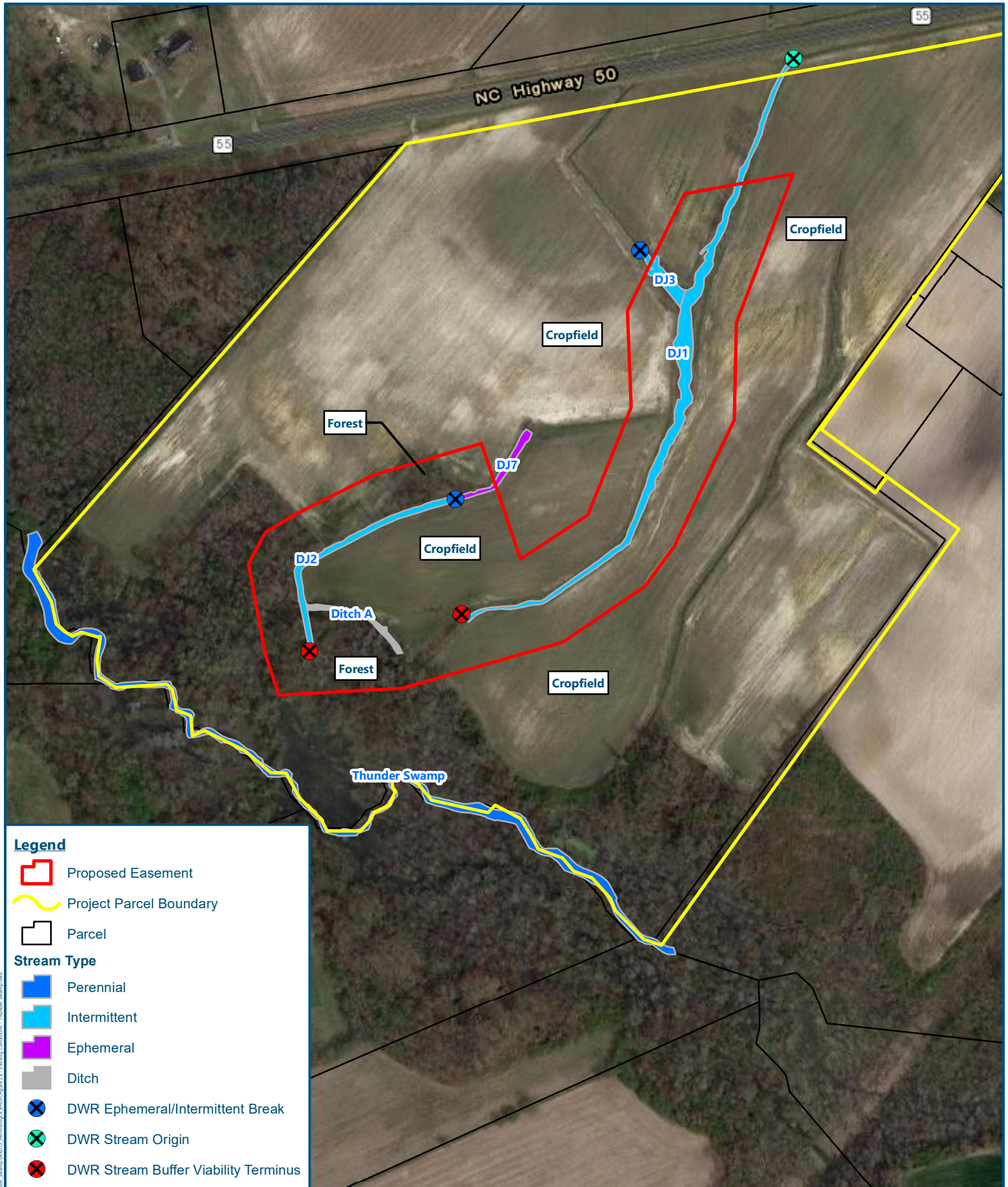


Figure 1
Nutrient Offset & Buffer Mitigation Service Area
Thunder Swamp
Mitigation Project
 Wayne County, North Carolina

Date: 8/2/2021
 Drawn by: MDD
 Checked by: KAW
 1 inch = 8 miles



Document Path: P:\Biology\Projects\021746_Thunder_Swamp\MDD\3_Annexing\4_BDP\Figure 1 - Service Area - Thunder Swamp.mxd



Legend

- Proposed Easement
- Project Parcel Boundary
- Parcel

Stream Type

- Perennial
- Intermittent
- Ephemeral
- Ditch

- DWR Ephemeral/Intermittent Break
- DWR Stream Origin
- DWR Stream Buffer Viability Terminus

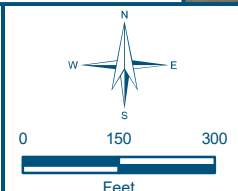
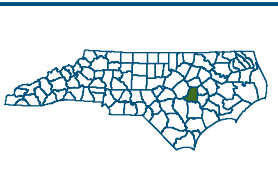


Figure 2a - Existing Conditions

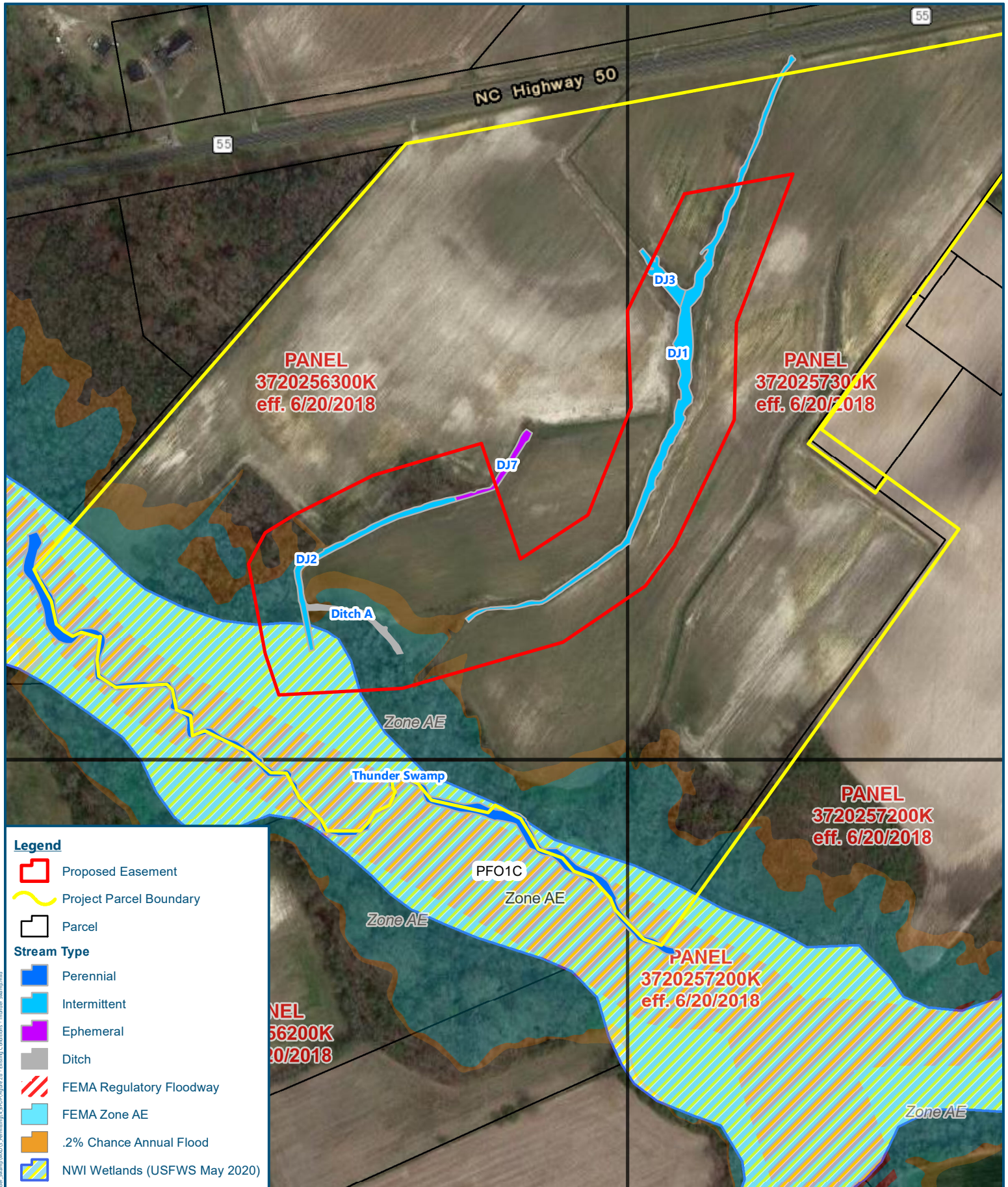
Thunder Swamp Mitigation Project

Wayne County, North Carolina

Date: 8/2/2021
Drawn by: MDD
Checked by: KAW
1 inch = 300 feet



Document Path: R:\Bioscience\Projects\100746_Thunder_Swamp\MDD\3_AerialMap\4_BDP\Figure 2a - Existing Conditions - Thunder_Swamp.mxd



Legend

- Proposed Easement
- Project Parcel Boundary
- Parcel

Stream Type

- Perennial
- Intermittent
- Ephemeral
- Ditch

- FEMA Regulatory Floodway
- FEMA Zone AE
- .2% Chance Annual Flood
- NWI Wetlands (USFWS May 2020)

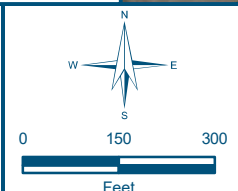
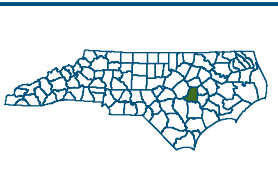


Figure 2b - Existing Conditions

Thunder Swamp Mitigation Project

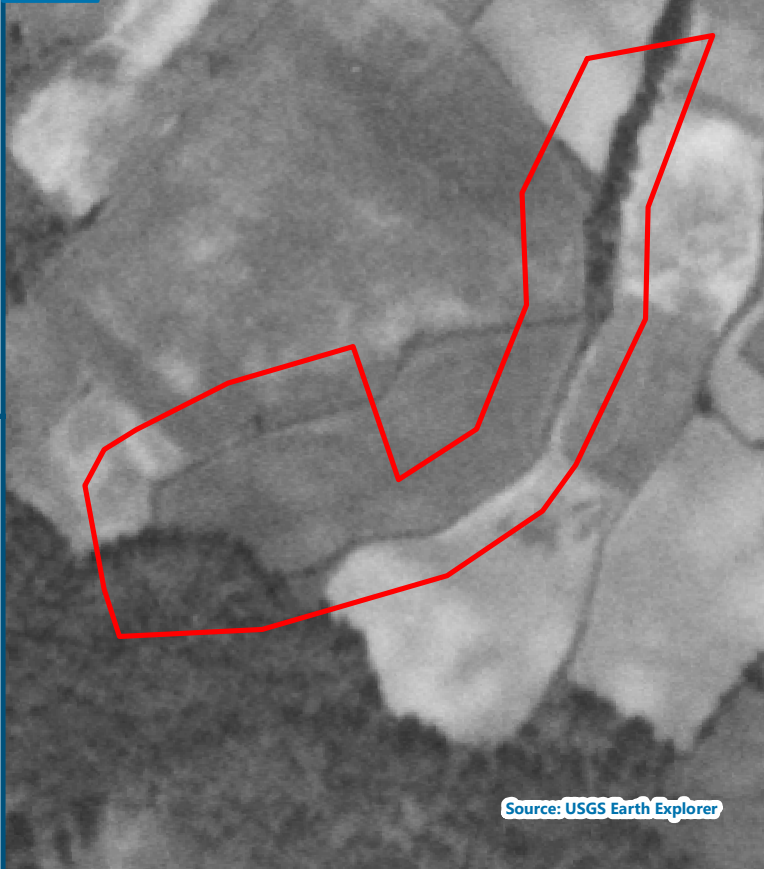
Wayne County, North Carolina

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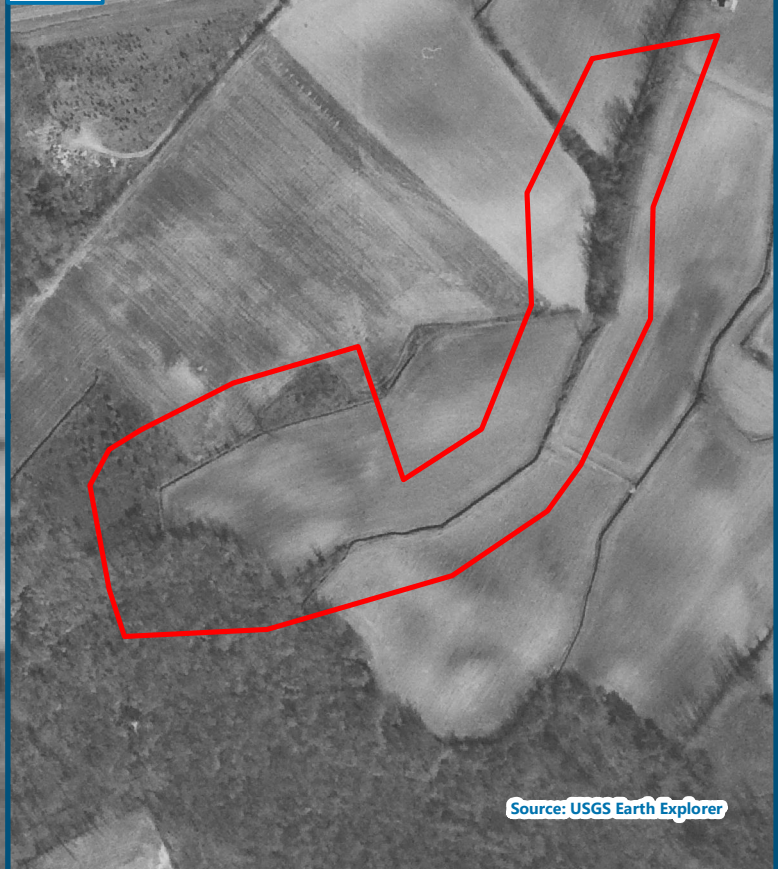


Document Path: R:\Biology\Projects\102746_Thunder_Swamp\MXD\3_AerialMap\4_RDP\Figure 2b - Existing Conditions - Thunder_Swamp.mxd

1950



1975



1993



2000



Legend

 Proposed Easement

Source: NCOneMap

Source: NCOneMap

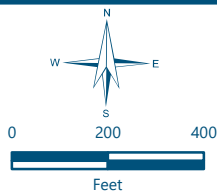


Figure 3 - Historic Imagery

Thunder Swamp Mitigation Project

Wayne County, North Carolina

Date: 8/2/2021

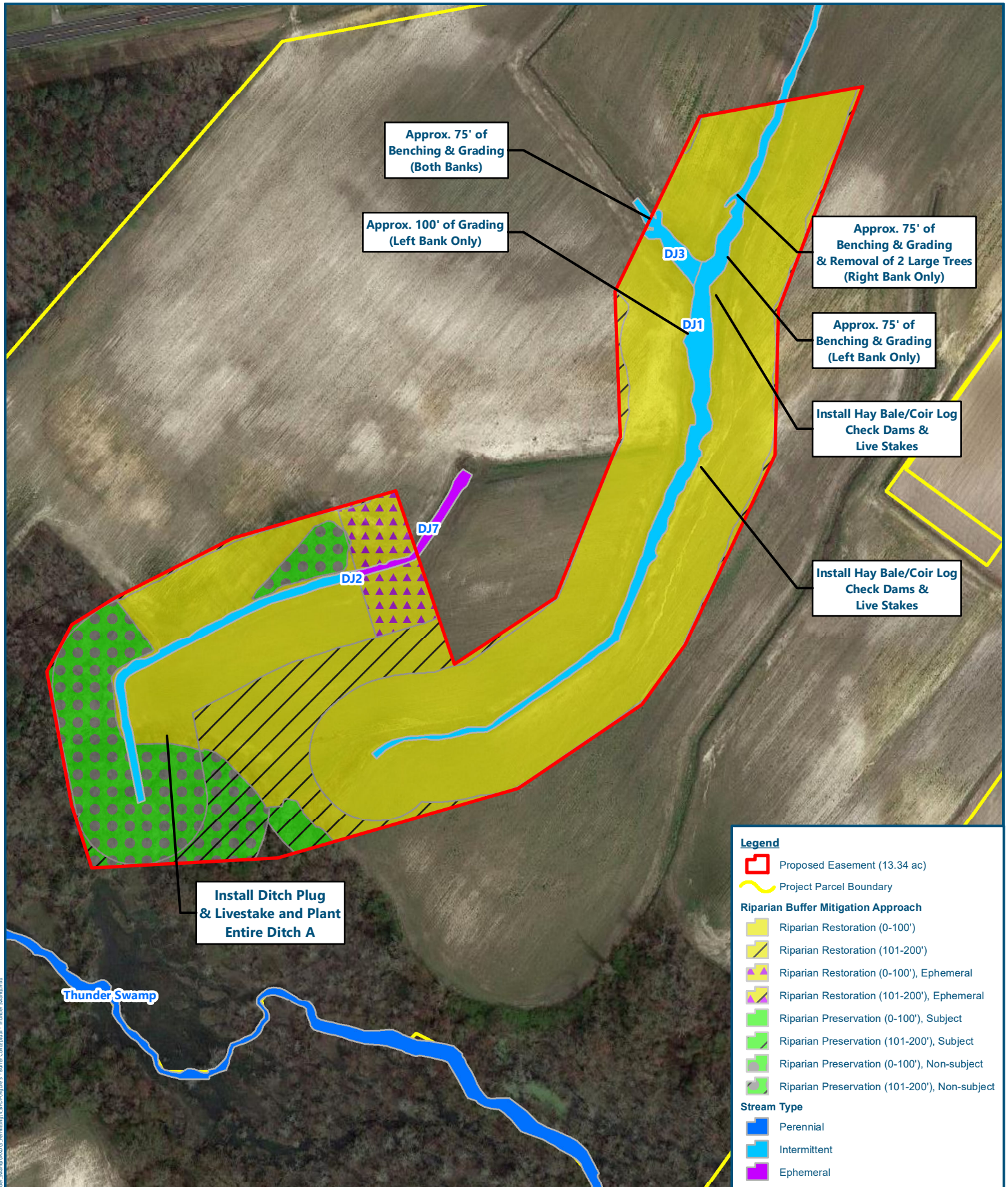
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1 inch = 400 feet



Restoring a resilient earth for a modern world



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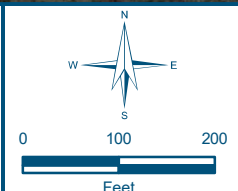
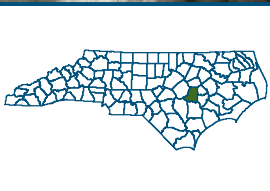


Figure 5 - Buffer Mitigation Conceptual

Thunder Swamp Mitigation Project

Wayne County, North Carolina

Date: 1/11/2022

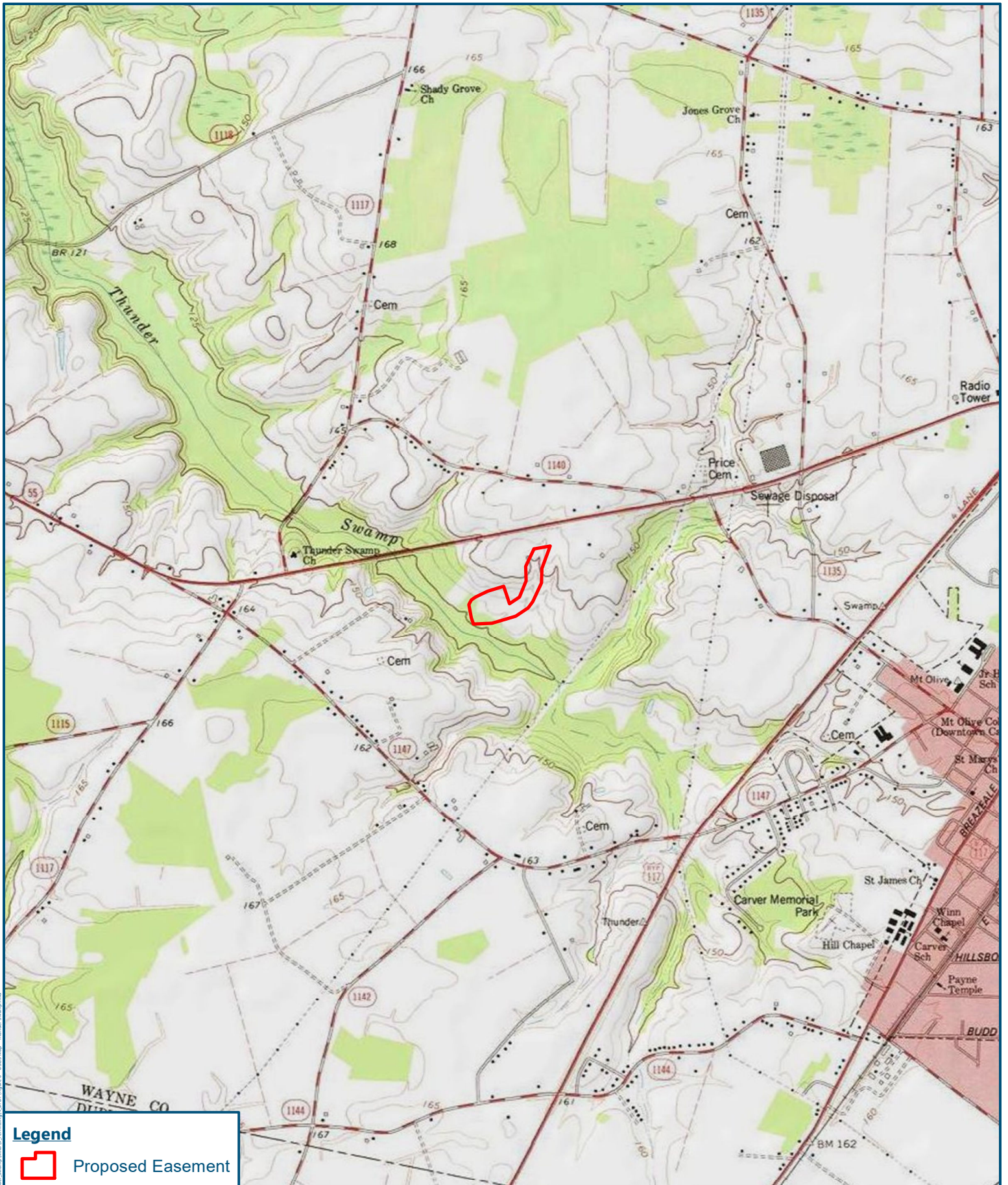
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1 inch = 200 feet

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Restoring a resilient earth for a modern world



Legend
 Proposed Easement

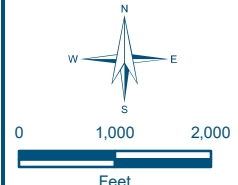
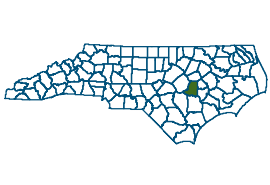


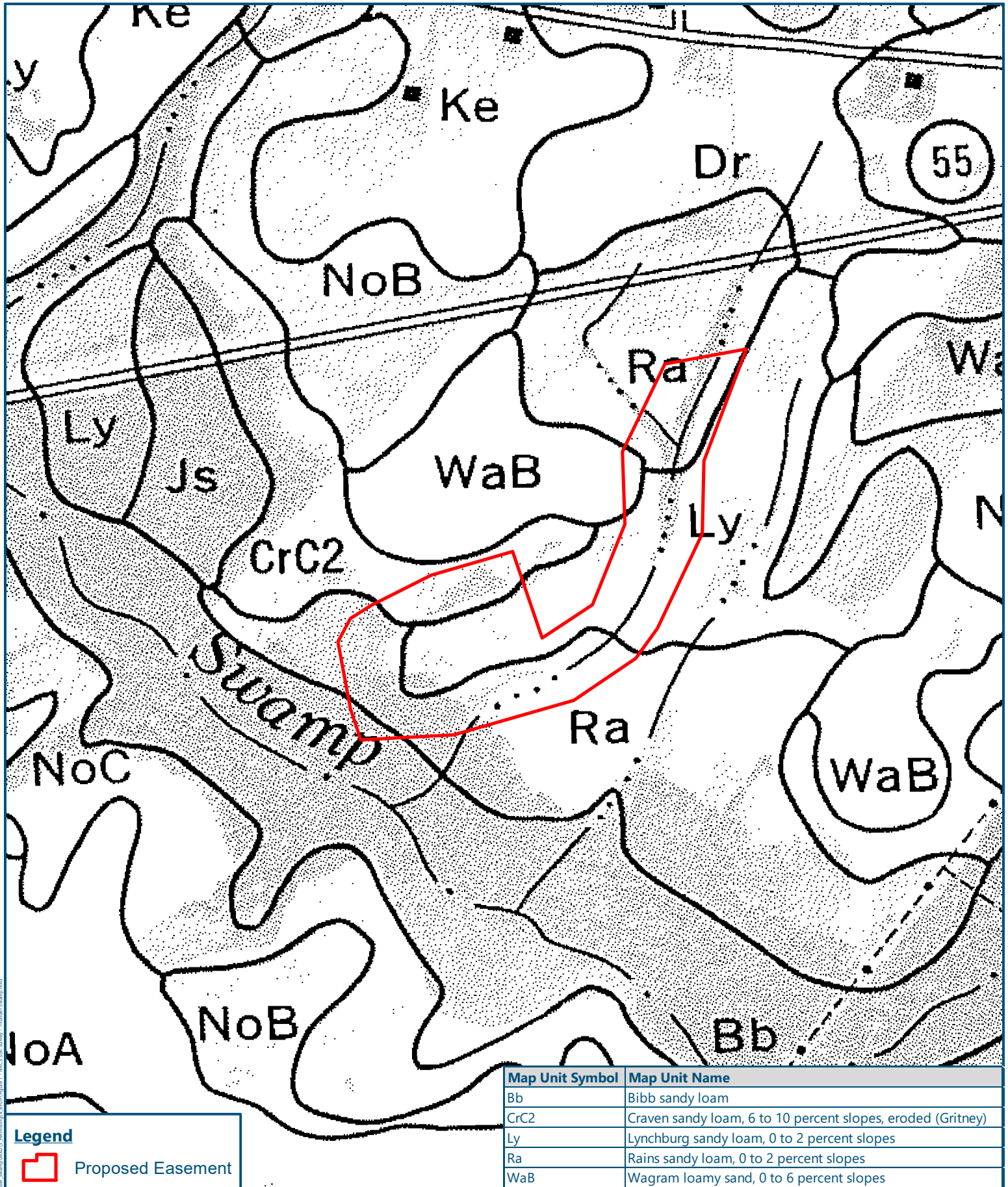
Figure 6 - USGS Quadrangle
 Mount Olive (1977)
Thunder Swamp
Mitigation Project

Wayne County, North Carolina

Date: 8/2/2021
Drawn by: MDD
Checked by: KAW
1 inch = 2,000 feet



Document Path: P:\Boggs\Kingship\Projects\102746_Thunder_Swamp\MXD\3_AnnexMap4_BDP\Figure 6 - USGS Map - Thunder_Swamp.mxd



Legend

 Proposed Easement

Map Unit Symbol	Map Unit Name
Bb	Bibb sandy loam
CrC2	Craven sandy loam, 6 to 10 percent slopes, eroded (Gritney)
Ly	Lynchburg sandy loam, 0 to 2 percent slopes
Ra	Rains sandy loam, 0 to 2 percent slopes
WaB	Wagram loamy sand, 0 to 6 percent slopes

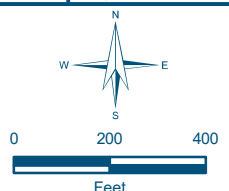
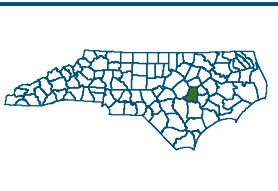


Figure 7 - NRCS Soil Survey (1974)

Thunder Swamp Mitigation Project

Wayne County, North Carolina

Date: 8/2/2021

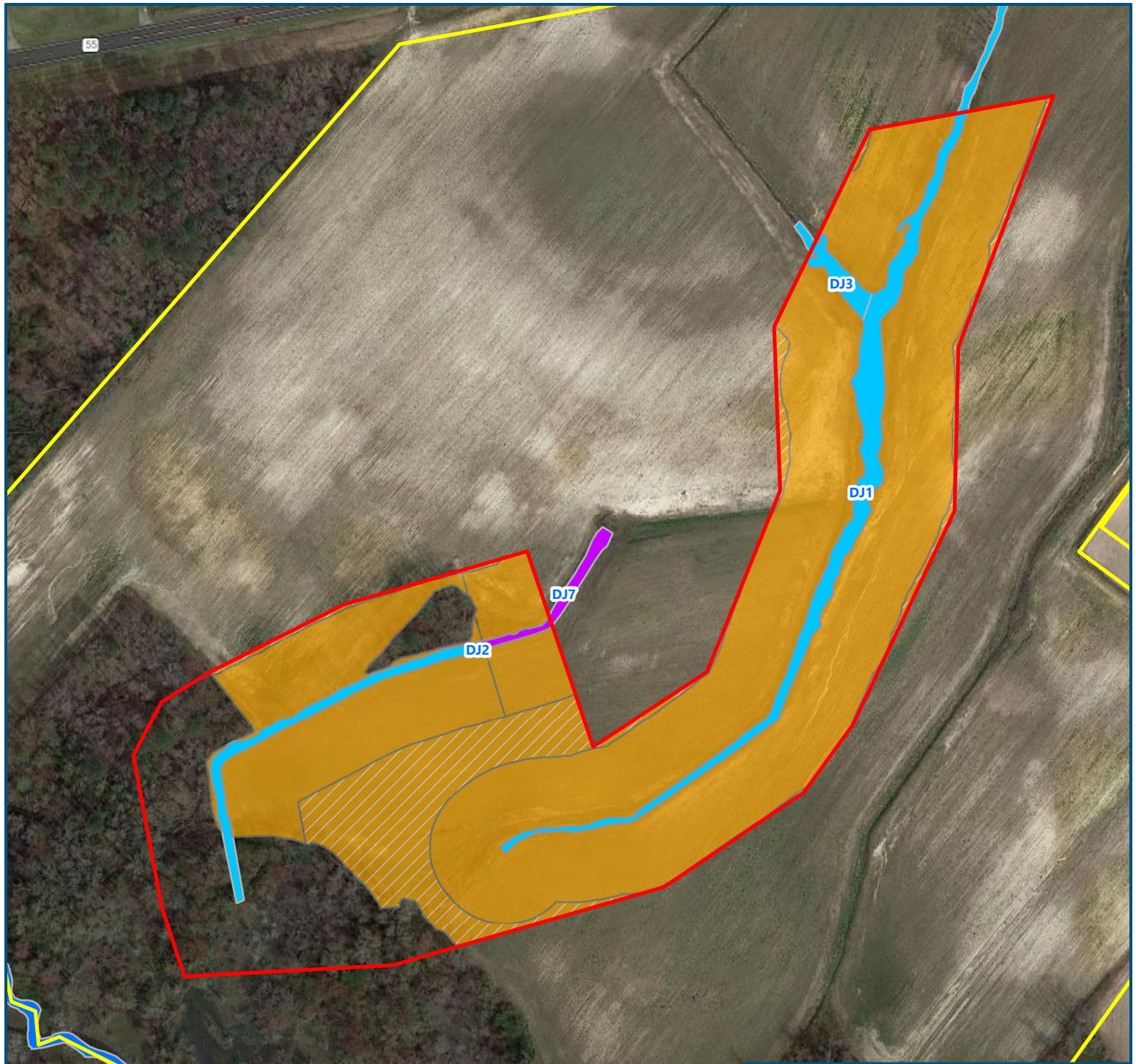
Drawn by: MDD

Checked by: KAW

1 inch = 400 feet



Document Path: P:\Projects\Swamp\Projects\102746_Thunder_Swamp\MXD\3_AerialMap\03_AerialMap_04_810719.gxd - NRCS\S&L\Servers\Thunder_Swamp.mxd



This figure only represents areas that are viable to be converted from Riparian Buffer Credits to Nutrient Offset Credits

Legend

- Proposed Easement (13.34 ac)
- Project Parcel Boundary
- Riparian Restoration for Nutrient Offset (0-100')
- Riparian Restoration for Nutrient Offset (101-200')

Stream Type

- Perennial
- Intermittent
- Ephemeral

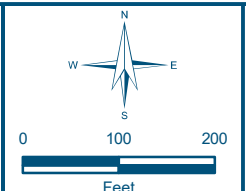
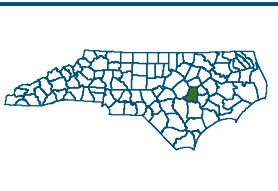


Figure 8 - Nutrient Offset Conceptual

Thunder Swamp Mitigation Project

Wayne County, North Carolina

Date: 1/11/2022

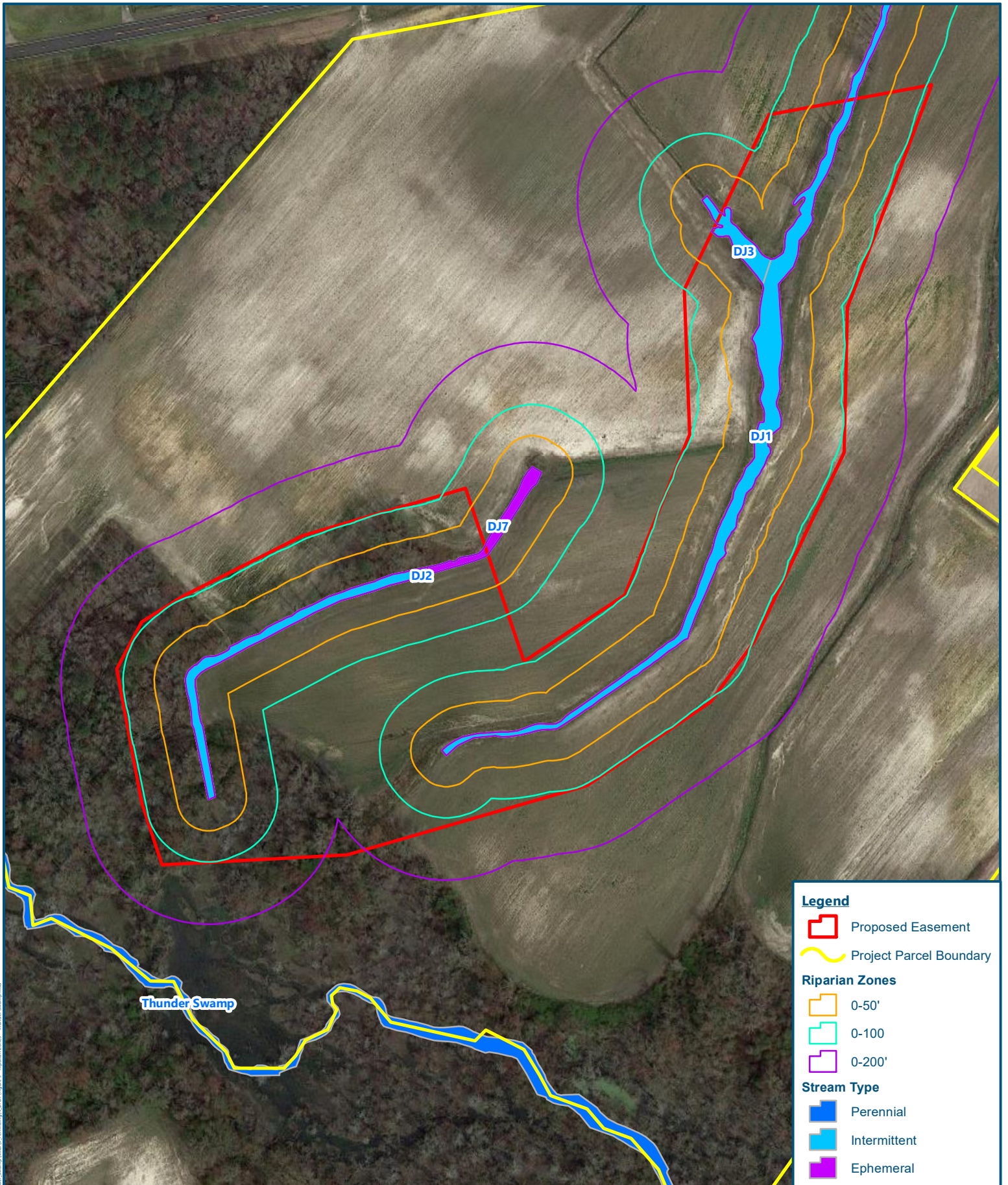
Drawn by: MDD

Checked by: KAW



1 inch = 200 feet






Document Path: R:\Bioscience\Projects\102746_Thunder_Swamp\MDD\3_AerialMap\4_RIP\Figure 8 - Nutrient Offset Conceptual - Thunder_Swamp.mxd






Legend

-  Proposed Easement
-  Project Parcel Boundary

Riparian Zones

-  0-50'
-  0-100'
-  0-200'

Stream Type

-  Perennial
-  Intermittent
-  Ephemeral

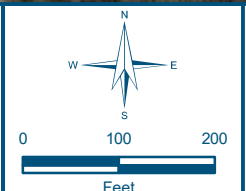
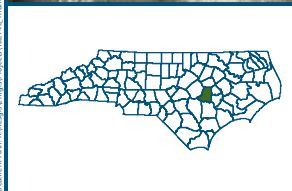


Figure 9 - Riparian Zones

Thunder Swamp Mitigation Project

Wayne County, North Carolina

Date: 8/2/2021

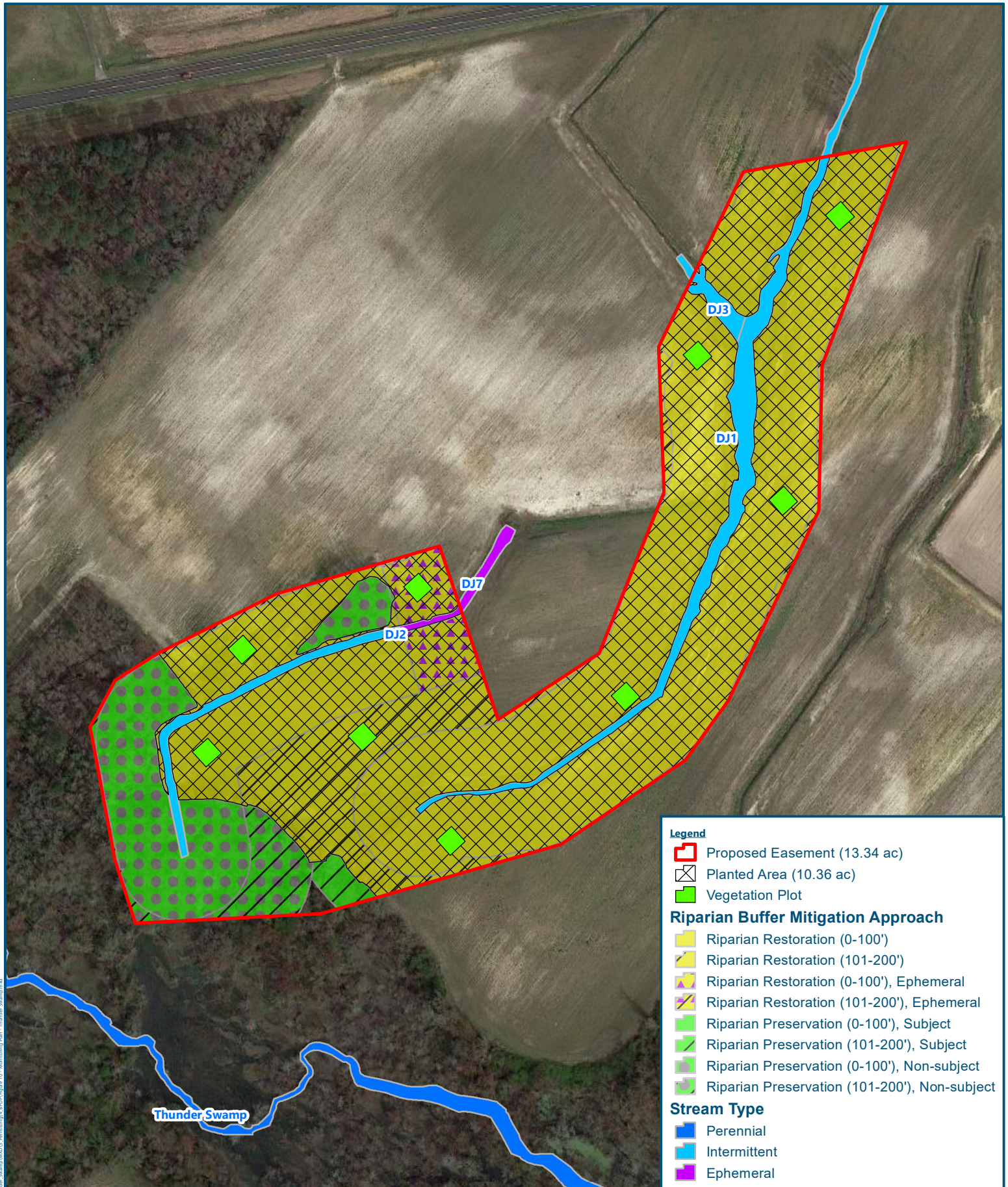
Drawn by: MDD

Checked by: KAW

1 inch = 200 feet



Document Path: R:\Bioscience\Projects\100746_Thunder_Swamp\MDD\3_AerialMap\4_RIPZ\Figure 9 - Riparian Zones - Thunder_Swamp.mxd



Legend

- Proposed Easement (13.34 ac)
- Planted Area (10.36 ac)
- Vegetation Plot

Riparian Buffer Mitigation Approach

- Riparian Restoration (0-100')
- Riparian Restoration (101-200')
- Riparian Restoration (0-100'), Ephemeral
- Riparian Restoration (101-200'), Ephemeral
- Riparian Preservation (0-100'), Subject
- Riparian Preservation (101-200'), Subject
- Riparian Preservation (0-100'), Non-subject
- Riparian Preservation (101-200'), Non-subject

Stream Type

- Perennial
- Intermittent
- Ephemeral

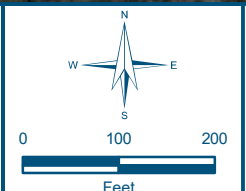
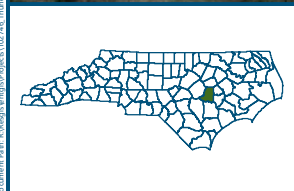


Figure 10 - Monitoring Plan

Thunder Swamp Mitigation Project

Wayne County, North Carolina

Date: 1/11/2022

Drawn by: MDD

Checked by: KAW

1 inch = 200 feet



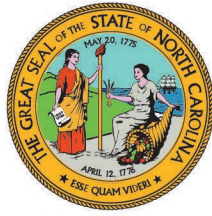
Document Path: R:\Bioscience\Projects\102146_Thunder_Swamp\MDD\3_AerialMap\4_BDP\Figure 10_Monitoring Plan_Thunder_Swamp.mxd

Appendix A

Project Buffer Mitigation Credits

Appendix B

Buffer Viability & Stream Determination



NORTH CAROLINA
Environmental Quality

July 13, 2021

ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

S. DANIEL SMITH
Director

Katie Webber
Environmental Banc & Exchange, LLC
(via electronic mail: kwebber@res.us)

Re: Site Viability for Buffer Mitigation & Nutrient Offset – Thunder Swamp Site
Mount Olive, NC (near 35.206059, -78.095569)
Neuse 03020201
Wayne County

Dear Ms. Webber,

On May 13, 2021, Katie Merritt, with the Division of Water Resources (DWR), received a request from you on behalf of Environmental Banc & Exchange, LLC (EBX), a RES company, for a site visit near the above-referenced site in the Neuse River Basin within the 8-digit Hydrologic Unit Code 03020201. The site visit was to determine the potential for riparian buffer mitigation and nutrient offset within a proposed conservation easement boundary, which is more accurately depicted in the attached map labeled “Figure 3b- Existing Conditions” (Figure 3b) prepared by EBX. The proposed easement boundary in Figure 3b, includes all riparian areas intended to be proposed as part of a mitigation site. On May 27, 2021, Ms. Merritt performed a site assessment of the subject site. Staff with EBX were also present.

Ms. Merritt’s evaluation of the features onsite and their associated mitigation determination for the riparian areas are provided in the table below. This evaluation was made from Top of Bank (TOB) and landward 200’ from each feature for buffer mitigation pursuant to 15A NCAC 02B .0295 (effective November 1, 2015) and for nutrient offset credits pursuant to 15A NCAC 02B .0703.



<u>Feature</u>	<u>Classification onsite</u>	<u>¹Subject to Buffer Rule</u>	<u>Riparian Land uses adjacent to Feature (0-200')</u>	<u>Buffer Credit Viable</u>	<u>³Nutrient Offset Viable</u>	<u>^{4,5}Mitigation Type Determination w/in riparian areas</u>
DJ5 (see map for location)	Stream	Yes	Mostly non-forested agricultural fields with some forested areas downstream.	² Yes	Yes (non-forested fields only)	Non-forested fields - Restoration Site per 15A NCAC 02B .0295 (n) Forested Areas – Preservation Site per 15A NCAC 02B .0295 (o)(5)
DJ4	Ephemeral	No	Non-forested agricultural fields	⁶ Yes	Yes	Restoration Site per 15A NCAC 02B .0295 (o)(7)
DJ1 (see map for location)	Stream	Yes	Non-forested agricultural fields. Areas with washed out banks were observed.	Yes	Yes	Restoration Site per 15A NCAC 02B .0295 (n) <i>Minor bank stabilization efforts and grading needed where bank stability is compromised and where erosional rills, sink holes and gullies are observed.</i>
DJ3	Stream	Yes	Non-forested agricultural fields. Areas with washed out banks were observed.	Yes	Yes	Restoration Site per 15A NCAC 02B .0295 (n) <i>Minor bank stabilization efforts and grading needed where bank stability is compromised and where erosional rills, sink holes and gullies are observed.</i>
DJ6	Ephemeral	No	Non-forested agricultural fields	⁶ Yes	Yes	Restoration Site per 15A NCAC 02B .0295 (o)(7)
DJ2 (see map for location)	Stream	No	Combination of non-forested fields and mature forest	² Yes	Yes (non-forested fields only)	Non-forested fields - Restoration Site per 15A NCAC 02B .0295 (n) Forested Areas – Preservation Site per 15A NCAC 02B .0295 (o)(4)
DJ7	Ephemeral	No	Non-forested agricultural fields	⁶ Yes	Yes	Restoration Site per 15A NCAC 02B .0295 (o)(7)
Ditch A	Ditch	No	Combination of non-forested fields and mature forest	No	No	<i>will be filled, graded and planted as part of the mitigation project</i>

<u>Feature</u>	<u>Classification onsite</u>	<u>¹Subject to Buffer Rule</u>	<u>Riparian Land uses adjacent to Feature (0-200')</u>	<u>Buffer Credit Viable</u>	<u>³Nutrient Offset Viable</u>	<u>^{4,5}Mitigation Type Determination w/in riparian areas</u>
Thunder Swamp	Stream	Yes	Combination of forested, partially forested and non-forested areas. Not in agriculture. Most of riparian areas are located within an active floodplain with inundated soils. See Figure 3b for riparian area assessment	² Yes (see note)	No	Non-forested areas - Restoration Site per 15A NCAC 02B .0295 (n) Forested Areas – Preservation Site per 15A NCAC 02B .0295 (o)(5) Partially Forested areas - Enhancement Site per 15A NCAC 02B .0295 (n) <u>Note:</u> Most of the riparian areas along Thunder Swamp are inundated and within an active floodplain making it highly difficult to establish woody vegetation (trees). It is likely that vegetation planted along this reach will be at high risk of low performance.

¹Subjectivity calls for the features were determined by DWR in correspondence dated April 30, 2021 (DWR# 2021-0020) using the 1:24,000 scale quadrangle topographic map prepared by USGS and the most recent printed version of the soil survey map prepared by the NRCS .

²The area of preservation credit within a buffer mitigation site shall comprise of no more than 25 percent (25%) of the total area of buffer mitigation per 15A NCAC 0295 (o)(5) and 15A NCAC 0295 (o)(4). Site cannot be a Preservation Only site to comply with this rule.

³NC Division of Water Resources - *Methodology and Calculations for determining Nutrient Reductions associated with Riparian Buffer Establishment*

⁴Determinations made for this Site are determined based on the proposal provided in maps and figures submitted with the request.

⁵All features proposed for buffer mitigation or nutrient offset, must have a planted conservation easement established that includes the tops of channel banks when being measured perpendicular and landward from the banks, even if no credit is viable within that riparian area.

⁶The area of the mitigation site on ephemeral channels shall comprise no more than 25 percent (25%) of the total area of buffer mitigation per 15A NCAC 02B .0295 (o)(7).

Determinations provided in the table above were made using a proposed easement boundary showing proposed mitigation areas shown in Figure 3b. The map representing the proposal for the site is attached to this letter and initialed by Ms. Merritt on July 13, 2021. Substantial changes to the proposed easement boundary as well as any site constraints identified in the table above, could affect the Site's potential to generate buffer mitigation and nutrient offset credits.

This letter does not constitute an approval of this Site to generate buffer and nutrient offset credits. Pursuant to 15A NCAC 02B .0295, a mitigation proposal and a mitigation plan shall be submitted to DWR for written approval **prior** to conducting any mitigation activities in riparian areas and/or surface waters for buffer mitigation credit. Pursuant to 15A NCAC 02B .0703, a proposal regarding a proposed nutrient load-reducing measure for nutrient offset credit shall be submitted to DWR for approval prior to any mitigation activities in riparian areas and/or surface waters.

All vegetative plantings, performance criteria and other mitigation requirements for riparian restoration, enhancement and preservation must follow the requirements in 15A NCAC 02B .0295 to be eligible for buffer and/or nutrient offset mitigation credits. For any areas depicted as not being viable for nutrient offset credit above, one could propose a different measure, along with supporting

calculations and sufficient detail to support estimates of load reduction, for review by the DWR to determine viability for nutrient offset in accordance with 15A NCAC 02B .0703.

This viability assessment will expire on July 13, 2023 or upon approval of a mitigation plan by the DWR, whichever comes first. This letter should be provided in any nutrient offset, buffer, stream or wetland mitigation plan for this Site.

Please contact Katie Merritt at (919) 707-3637 if you have any questions regarding this correspondence.

Sincerely,

DocuSigned by:

Paul Wojoski

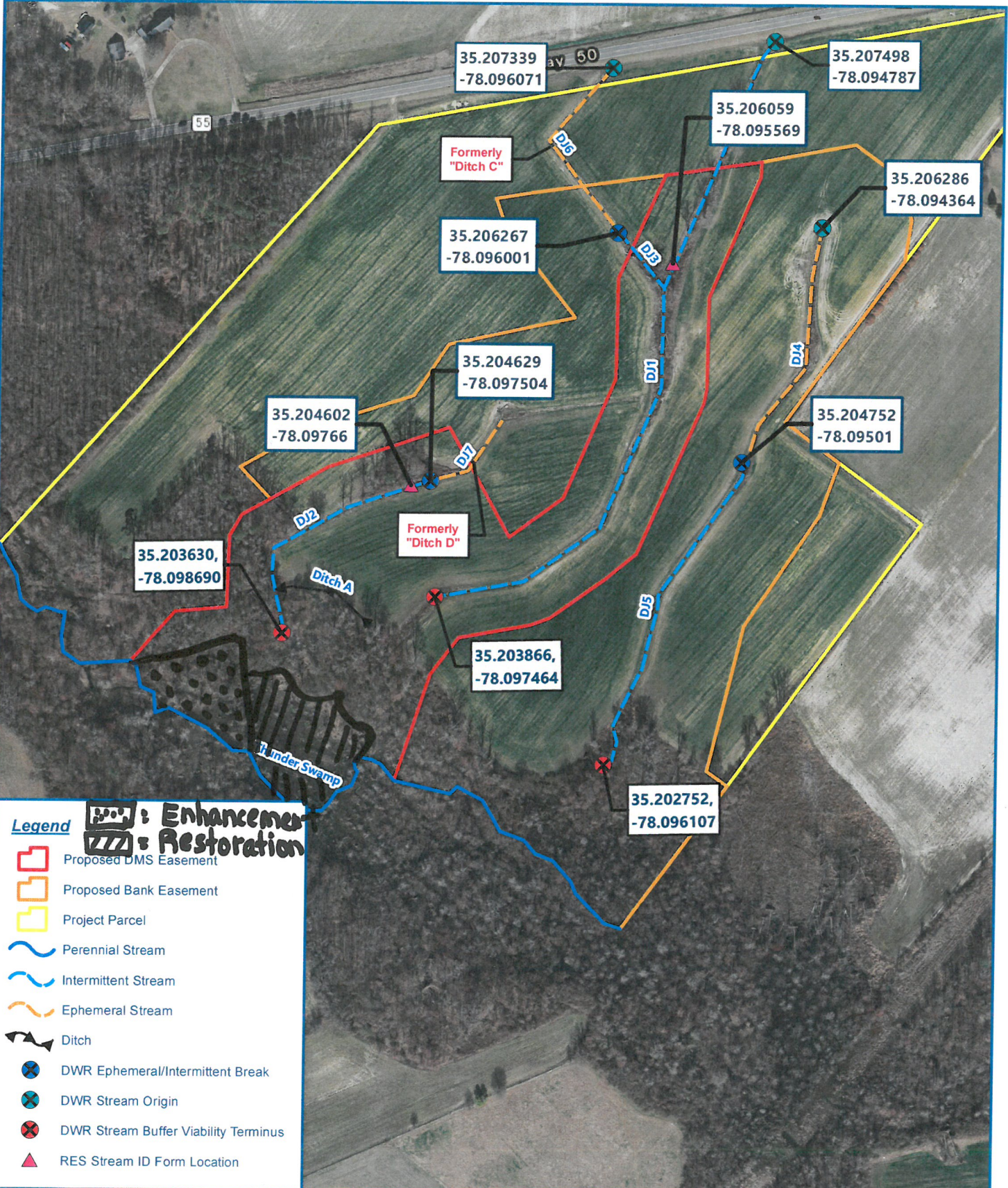
949D91BA53EF4E0...

Paul Wojoski, Supervisor
401 and Buffer Permitting Branch

PW/kym

Attachments: Figure 3b-Existing Conditions

cc: File Copy (Katie Merritt)



Legend

: Enhancement
 : Restoration

- Proposed DMS Easement
- Proposed Bank Easement
- Project Parcel
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Ditch
- DWR Ephemeral/Intermittent Break
- DWR Stream Origin
- DWR Stream Buffer Viability Terminus
- RES Stream ID Form Location

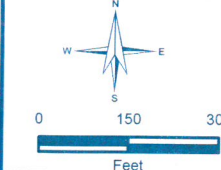


Figure 3b - Existing Conditions

Thunder Swamp Mitigation Project

Wayne County, North Carolina

Date: 5/28/2021
 Drawn by: MDD
 Checked by: KAW
 1 inch = 300 feet



KAW 7/13/21



NORTH CAROLINA
Environmental Quality

ROY COOPER
Governor
DIONNE DELLI-GATTI
Secretary
S. DANIEL SMITH
Director

May 12, 2021

20210306 ver1
Wayne County

Danny Gray Jackson and Margaret Jernigan Jackson
301 Jones Turner Rd.
Mount Olive, NC 28365
984-275-3483

Subject: **On-Site Determination** for Applicability to Neuse Riparian Buffer Rules (15A NCAC 02B .0714)

Subject Property/Project Name: **Thunder Swamp Mitigation Project**

Address/Location: 35.205912, -78.095627

Responsible Party: Environmental Banc & Exchange, LLC, a RES Company

Stream(s) Evaluated: (7) – DJ1–DJ5, Ditch C & D

Determination Date: March 24th, 2021

Staff: Allen Stewart

Determination Type: Applicability to Neuse Riparian Buffer Rules (15A NCAC 02B .0714)	
Buffer:	Stream:
X - Neuse (15A NCAC 02B .0714) - Tar-Pamlico (15A NCAC 02B .0734) - Catawba (15A NCAC 02B .0614) - Jordan (15A NCAC 02B .0267) (governmental and/or interjurisdictional projects) - Randleman (15A NCAC 02B .0724) - Goose Creek (15A NCAC 02B .0605-.0608)	X – Ephemeral/ Intermittent/Perennial Determination

Stream	E/I/P*	Not Subject	Subject	Start@	Stop@	Soil Survey	USGS Topo
DJ1	I		X	35.207498, -78.094787	35.203077, -78.098360	X	
DJ2	I	X		35.204629, -78.097504	35.203404, -78.099015		
DJ3	I		X	35.206276, -78.095985	35.205912, -78.095627	X	
DJ4	E	X		35.206286, -78.094364	35.204752, -78.09501	X	
DJ5	I		X	35.204752, -78.09501	35.202446, -78.097125	X	
Ditch C	E	X		35.207339, -78.096071	35.206276, -78.095985	X	
Ditch D	E	X		35.205041, -78.096925	35.204629, -78.097504		

*Ephemeral / Intermittent / Perennial

Dear Mr. & Mrs. Jackson,

This stream determination supersedes the previous stream determination that was issued on May 6, 2021. This determination corrects the stream segment DJ2 which was wrongly marked as subject. The feature DJ2 is not subject because it's not located on the two maps identified.

The Division of Water Resources has determined that the streams listed as "subject" above and included on the attached map have been located on the most recent published (1974) NRCS Soil Survey of Wayne County, North Carolina and/or the most recent copy of the Mt. Olive USGS Topographic map at a 1:24,000 scale and evaluated for applicability to the Neuse Riparian Buffer Rules. For each stream that is checked "Not Subject" it has been determined to not be at least intermittent, not present on the property or not represented on the most recent published (1974) NRCS Soil Survey of Wayne County, North Carolina and/or the most recent copy of the Mt. Olive USGS Topographic map at a



North Carolina Department of Environmental Quality | Division of Water Resources
Washington Regional Office | 943 Washington Square Mall | Washington, North Carolina 27889
252.946.6481

1:24,000 scale. There may be other streams or features located on the property that were not assessed and/or that do not appear on the maps referenced above but may be considered jurisdictional according to the US Army Corps of Engineers and subject to the Clean Water Act.

This on-site determination shall expire five (5) years from the date of this letter. Landowners or affected parties that dispute a determination made by the DWR may request a determination by the Director. An appeal request must be made within sixty (60) calendar days of date of this letter to the Director in writing.

*If sending via US Postal Service:
c/o Paul Wojoski
DWR – 401 & Buffer Permitting Unit
1617 Mail Service Center
Raleigh, NC 27699-1617*

*If sending via delivery service (UPS, FedEx, etc.):
c/o Paul Wojoski
DWR – 401 & Buffer Permitting Unit
512 N. Salisbury Street
Raleigh, NC 27604*

This determination is final and binding as detailed above unless an appeal is requested within sixty (60) days.

This determination only addresses the applicability to the buffer rules and does not approve any activity within the buffers or waters. The project may require a Section 404/401 Permit for the proposed activity. Any inquiries regarding applicability to the Clean Water Act should be directed to the US Army Corps of Engineers Raleigh Regulatory Field Office at (919)-554-4884 Ext. 22.

If you have questions regarding this determination, please feel free to contact Allen Stewart at (252) 946-6481.

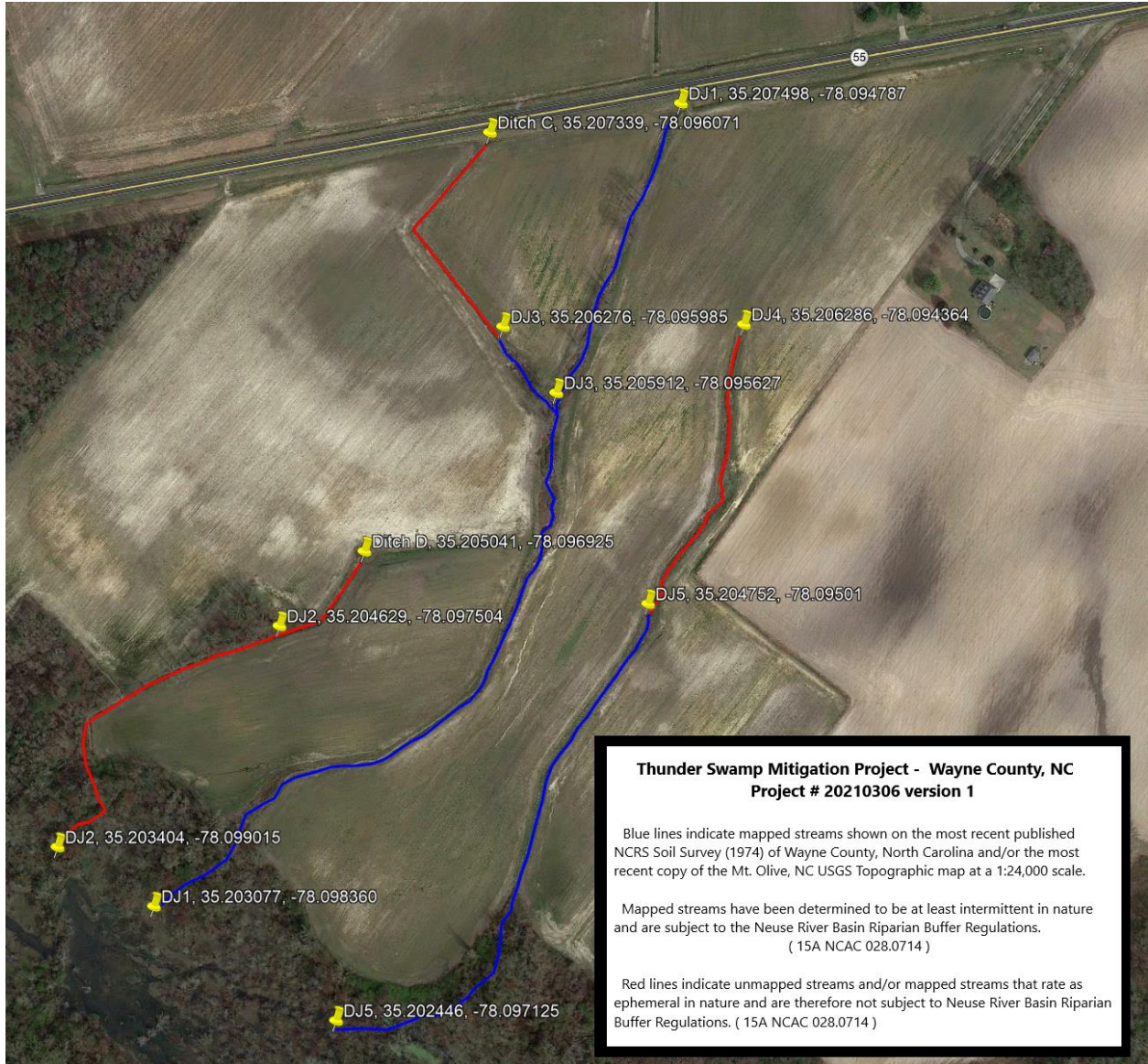
Sincerely,

Robert Tankard

Robert Tankard, Assistant Regional Supervisor
Water Quality Regional Operations Section
Division of Water Resources, NCDEQ

cc: WaRO DWR File Copy/LASERFICHE
Jamey Mceachran, Environmental Banc & Exchange, LLC, a RES Company, jmceachran@res.us
Emily Thompson, US Army Corps of Engineers Raleigh Regulatory Field Office, Emily.thompson@usace.army.mil
Katie Merritt, NCDWR 401 & Buffer Permitting Branch, Katie.Merritt@ncdenr.gov





Appendix C

Site Protection Instrument

STATE OF NORTH CAROLINA

**DEED OF CONSERVATION EASEMENT
AND RIGHT OF ACCESS PROVIDED
PURSUANT TO
FULL DELIVERY
MITIGATION CONTRACT**

_____ COUNTY

SPO File Number:

DMS Project Number:

Prepared by: Office of the Attorney General
Property Control Section
Return to: NC Department of Administration
State Property Office
1321 Mail Service Center
Raleigh, NC 27699-1321

THIS DEED OF CONSERVATION EASEMENT AND RIGHT OF ACCESS, made this _____ day of _____, 20__, by _____ *Landowner name goes here*, (“**Grantor**”), whose mailing address is _____ *Landowner address goes here* _____, to the State of North Carolina, (“**Grantee**”), whose mailing address is State of North Carolina, Department of Administration, State Property Office, 1321 Mail Service Center, Raleigh, NC 27699-1321. The designations of Grantor and Grantee as used herein shall include said parties, their heirs, successors, and assigns, and shall include singular, plural, masculine, feminine, or neuter as required by context.

WITNESSETH:

WHEREAS, pursuant to the provisions of N.C. Gen. Stat. § 143-214.8 et seq., the State of North Carolina has established the Division of Mitigation Services (formerly known as the Ecosystem Enhancement Program and Wetlands Restoration Program) within the Department of Environment and Natural Resources for the purposes of acquiring, maintaining, restoring, enhancing, creating and preserving wetland and riparian resources that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; and

WHEREAS, this Conservation Easement from Grantor to Grantee has been negotiated, arranged and provided for as a condition of a full delivery contract between (insert name and address of full delivery contract provider) and the North Carolina Department of Environment and Natural Resources, to provide stream, wetland and/or buffer mitigation pursuant to the North Carolina Department of Environment and Natural Resources Purchase and Services Contract Number _____.

WHEREAS, The State of North Carolina is qualified to be the Grantee of a Conservation Easement pursuant to N.C. Gen. Stat. § 121-35; and

WHEREAS, the Department of Environment and Natural Resources and the United States Army Corps of Engineers, Wilmington District entered into a Memorandum of Understanding, (MOU) duly executed by all parties on November 4, 1998. This MOU recognized that the Wetlands Restoration Program was to provide effective compensatory mitigation for authorized impacts to wetlands, streams and other aquatic resources by restoring, enhancing and preserving the wetland and riparian areas of the State; and

WHEREAS, the Department of Environment and Natural Resources, the North Carolina Department of Transportation and the United States Army Corps of Engineers, Wilmington District entered into a Memorandum of Agreement, (MOA) duly executed by all parties in Greensboro, NC on July 22, 2003, which recognizes that the Division of Mitigation Services (formerly Ecosystem Enhancement Program) is to provide for compensatory mitigation by effective protection of the land, water and natural resources of the State by restoring, enhancing and preserving ecosystem functions; and

WHEREAS, the Department of Environment and Natural Resources, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the North Carolina Wildlife Resources Commission, the North Carolina Division of Water Quality, the North Carolina Division of Coastal Management, and the National Marine Fisheries Service entered into an agreement to continue the In-Lieu Fee operations of the North Carolina Department of Natural Resources' Division of Mitigation Services (formerly Ecosystem Enhancement Program) with an effective date of 28 July, 2010, which supersedes and replaces the previously effective MOA and MOU referenced above; and

WHEREAS, the acceptance of this instrument for and on behalf of the State of North Carolina was granted to the Department of Administration by resolution as approved by the Governor and Council of State adopted at a meeting held in the City of Raleigh, North Carolina, on the 8th day of February 2000; and

WHEREAS, the Division of Mitigation Services in the Department of Environment and Natural Resources, which has been delegated the authority authorized by the Governor and Council of State to the Department of Administration, has approved acceptance of this instrument; and

WHEREAS, Grantor owns in fee simple certain real property situated, lying, and being in _____ Township, _____ County, North Carolina (the "**Property**"), and being more particularly described as that certain parcel of land containing approximately _____ acres and being conveyed to the Grantor by deed as recorded in **Deed Book** _____ **at Page** _____ of the _____ County Registry, North Carolina; and

WHEREAS, Grantor is willing to grant a Conservation Easement and Right of Access over the herein described areas of the Property, thereby restricting and limiting the use of the areas of the Property subject to the Conservation Easement to the terms and conditions and purposes hereinafter set forth, and Grantee is willing to accept said Easement and Access Rights. The Conservation Easement shall be for the protection and benefit of the waters of **if known, insert name of stream, branch, river or waterway here.**

NOW, THEREFORE, in consideration of the mutual covenants, terms, conditions, and restrictions hereinafter set forth, Grantor unconditionally and irrevocably hereby grants and conveys unto Grantee, its successors and assigns, forever and in perpetuity, a Conservation Easement and Right of Access together with an access easement to and from the Conservation Easement Area described below.

The Conservation Easement Area consists of the following:

Tracts Number _____ containing a total of _____ **acres** as shown on the plats of survey entitled "Final Plat, Conservation Easement for North Carolina Division of Mitigation Services, Project Name: _____, SPO File No. _____, DMS Site No. _____, Property of _____," dated _____, 20__ by *name of surveyor*, PLS Number _____ and recorded in the _____ County, North Carolina Register of Deeds at **Plat Book** _____ **Pages** _____.

See attached "**Exhibit A**", Legal Description of area of the Property hereinafter referred to as the "Conservation Easement Area"

The purposes of this Conservation Easement are to maintain, restore, enhance, construct, create and preserve wetland and/or riparian resources in the Conservation Easement Area that contribute to the protection and improvement of water quality, flood prevention, fisheries, aquatic habitat, wildlife habitat, and recreational opportunities; to maintain permanently the Conservation Easement Area in its natural condition, consistent with these purposes; and to prevent any use of the Easement Area that will significantly impair or interfere with these purposes. To achieve these purposes, the following conditions and restrictions are set forth:

I. DURATION OF EASEMENT

Pursuant to law, including the above referenced statutes, this Conservation Easement and Right of Access shall be perpetual and it shall run with, and be a continuing restriction upon the use of, the Property, and it shall be enforceable by the Grantee against the Grantor and against Grantor's heirs, successors and assigns, personal representatives, agents, lessees, and licensees.

II. ACCESS EASEMENT

choose one option based on survey and deed, delete other

[SPECIFIC LOCATION OPTION] Grantor hereby grants and conveys unto Grantee, its employees, agents, successors and assigns, a perpetual, non-exclusive easement for ingress and egress over and upon the Property at all reasonable times and at the location more particularly described on **Exhibit ___** (“Access Easement”) attached hereto and incorporated herein by this reference, to access the Conservation Easement Area for the purposes set forth herein. This grant of easement shall not vest any rights in the public and shall not be construed as a public dedication of the Access Easement. Grantor covenants, represents and warrants that it is the sole owner of and is seized of the Property in fee simple and has the right to grant and convey this Access Easement.

[GENERAL LOCATION OPTION] Grantor hereby grants and conveys unto Grantee, its employees, agents, successors and assigns, a perpetual, non-exclusive easement for ingress and egress over and upon the Property at all reasonable times and at such location as practically necessary to access the Conservation Easement Area for the purposes set forth herein (“Access Easement”). This grant of easement shall not vest any rights in the public and shall not be construed as a public dedication of the Access Easement. Grantor covenants, represents and warrants that it is the sole owner of and is seized of the Property in fee simple and has the right to grant and convey this Access Easement.

III. GRANTOR RESERVED USES AND RESTRICTED ACTIVITIES

The Conservation Easement Area shall be restricted from any development or usage that would impair or interfere with the purposes of this Conservation Easement. Unless expressly reserved as a compatible use herein, any activity in, or use of, the Conservation Easement Area by the Grantor is prohibited as inconsistent with the purposes of this Conservation Easement. Any rights not expressly reserved hereunder by the Grantor have been acquired by the Grantee. Any rights not expressly reserved hereunder by the Grantor, including the rights to all mitigation credits, including, but not limited to, stream, wetland, and riparian buffer mitigation units, derived from each site within the area of the Conservation Easement, are conveyed to and belong to the Grantee. Without limiting the generality of the foregoing, the following specific uses are prohibited, restricted, or reserved as indicated:

A. Recreational Uses. Grantor expressly reserves the right to undeveloped recreational uses, including hiking, bird watching, hunting and fishing, and access to the Conservation Easement Area for the purposes thereof.

B. Motorized Vehicle Use. Motorized vehicle use in the Conservation Easement Area is prohibited except within a Crossing Area(s) or Road or Trail as shown on the recorded survey plat.

C. Educational Uses. The Grantor reserves the right to engage in and permit others to engage in educational uses in the Conservation Easement Area not inconsistent with this Conservation Easement, and the right of access to the Conservation Easement Area for such purposes including organized educational activities such as site visits and observations. Educational uses of the property shall not alter vegetation, hydrology or topography of the site.

D. Damage to Vegetation. Except within Crossing Area(s) as shown on the recorded survey plat and as related to the removal of non-native plants, diseased or damaged trees, or vegetation that destabilizes or renders unsafe the Conservation Easement Area to persons or natural habitat, all cutting, removal, mowing, harming, or destruction of any trees and vegetation in the Conservation Easement Area is prohibited.

E. Industrial, Residential and Commercial Uses. All industrial, residential and commercial uses are prohibited in the Conservation Easement Area.

F. Agricultural Use. All agricultural uses are prohibited within the Conservation Easement Area including any use for cropland, waste lagoons, or pastureland.

G. New Construction. There shall be no building, facility, mobile home, antenna, utility pole, tower, or other structure constructed or placed in the Conservation Easement Area.

H. Roads and Trails. There shall be no construction or maintenance of new roads, trails, walkways, or paving in the Conservation Easement.

All existing roads, trails and crossings within the Conservation Easement Area shall be shown on the recorded survey plat.

I. Signs. No signs shall be permitted in the Conservation Easement Area except interpretive signs describing restoration activities and the conservation values of the Conservation Easement Area, signs identifying the owner of the Property and the holder of the Conservation Easement, signs giving directions, or signs prescribing rules and regulations for the use of the Conservation Easement Area.

J. Dumping or Storing. Dumping or storage of soil, trash, ashes, garbage, waste, abandoned vehicles, appliances, machinery, or any other material in the Conservation Easement Area is prohibited.

K. Grading, Mineral Use, Excavation, Dredging. There shall be no grading, filling, excavation, dredging, mining, drilling, hydraulic fracturing; removal of topsoil, sand, gravel, rock, peat, minerals, or other materials.

L. Water Quality and Drainage Patterns. There shall be no diking, draining, dredging, channeling, filling, leveling, pumping, impounding or diverting, causing, allowing or permitting the diversion of surface or underground water in the Conservation Easement Area. No altering or tampering with water control structures or devices, or disruption or alteration of the restored, enhanced, or created drainage patterns is allowed. All removal of wetlands, polluting or discharging into waters, springs, seeps, or wetlands, or use of pesticide or biocides in the Conservation Easement Area is prohibited. In the event of an emergency interruption or shortage of all other water sources, water from within the Conservation Easement Area may temporarily be withdrawn for good cause shown as needed for the survival of livestock on the Property.

M. Subdivision and Conveyance. Grantor voluntarily agrees that no further subdivision, partitioning, or dividing of the Conservation Easement Area portion of the Property owned by the Grantor in fee simple (“fee”) that is subject to this Conservation Easement is allowed. Any future transfer of the Property shall be subject to this Conservation Easement and Right of Access and to the Grantee’s right of unlimited and repeated ingress and egress over and across the Property to the Conservation Easement Area for the purposes set forth herein.

N. Development Rights. All development rights are permanently removed from the Conservation Easement Area and are non-transferrable.

O. Disturbance of Natural Features. Any change, disturbance, alteration or impairment of the natural features of the Conservation Easement Area or any intentional introduction of non-native plants, trees and/or animal species by Grantor is prohibited.

The Grantor may request permission to vary from the above restrictions for good cause shown, provided that any such request is not inconsistent with the purposes of this Conservation Easement, and the Grantor obtains advance written approval from the Division of Mitigation Services, 1652 Mail Services Center, Raleigh, NC 27699-1652.

IV. GRANTEE RESERVED USES

A. Right of Access, Construction, and Inspection. The Grantee, its employees, agents, successors and assigns, shall have a perpetual Right of Access over and upon the Conservation Easement Area to undertake or engage in any activities necessary to construct, maintain, manage, enhance, repair, restore, protect, monitor and inspect the stream, wetland and any other riparian resources in the Conservation Easement Area for the purposes set forth herein or any long-term management plan for the Conservation Easement Area developed pursuant to this Conservation Easement.

B. Restoration Activities. These activities include planting of trees, shrubs and herbaceous vegetation, installation of monitoring wells, utilization of heavy equipment to grade, fill, and prepare the soil, modification of the hydrology of the site, and installation of natural and manmade materials as needed to direct in-stream, above ground, and subterranean water flow.

C. Signs. The Grantee, its employees and agents, successors or assigns, shall be permitted to place signs and witness posts on the Property to include any or all of the following: describe the project, prohibited activities within the Conservation Easement, or identify the project boundaries and the holder of the Conservation Easement.

D. Fences. Conservation Easements are purchased to protect the investments by the State (Grantee) in natural resources. Livestock within conservations easements damages the investment and can result in reductions in natural resource value and mitigation credits which would cause financial harm to the State. Therefore, Landowners (Grantor) with livestock are required to restrict livestock access to the Conservation Easement area. Repeated failure to do so may result in the State (Grantee) repairing or installing livestock exclusion devices (fences) within the conservation area for the purpose of restricting livestock access. In such cases, the landowner (Grantor) must provide access to the State (Grantee) to make repairs.

E. Crossing Area(s). The Grantee is not responsible for maintenance of crossing area(s), however, the Grantee, its employees and agents, successors or assigns, reserve the right to repair crossing area(s), at its sole discretion and to recover the cost of such repairs from the Grantor if such repairs are needed as a result of activities of the Grantor, his successors or assigns.

V. ENFORCEMENT AND REMEDIES

A. Enforcement. To accomplish the purposes of this Conservation Easement, Grantee is allowed to prevent any activity within the Conservation Easement Area that is inconsistent with the purposes of this Conservation Easement and to require the restoration of such areas or features in the Conservation Easement Area that may have been damaged by such unauthorized activity or use. Upon any breach of the terms of this Conservation Easement by Grantor, the Grantee shall, except as provided below, notify the Grantor in writing of such breach and the Grantor shall have ninety (90) days after receipt of such notice to correct the damage caused by such breach. If the breach and damage remains uncured after ninety (90) days, the Grantee may enforce this Conservation Easement by bringing appropriate legal proceedings including an action to recover damages, as well as injunctive and other relief. The Grantee shall also have the power and authority, consistent with its statutory authority: (a) to prevent any impairment of the Conservation Easement Area by acts which may be unlawful or in violation of this Conservation Easement; (b) to otherwise preserve or protect its interest in the Property; or (c) to seek damages from any appropriate person or entity. Notwithstanding the foregoing, the Grantee reserves the immediate right, without notice, to obtain a temporary restraining order, injunctive or other appropriate relief, if the breach is or would irreversibly or otherwise materially impair the benefits to be derived from this Conservation Easement, and the Grantor and Grantee acknowledge that the damage would be irreparable and remedies at law inadequate. The rights and remedies of the Grantee provided hereunder shall be in addition to, and not in lieu of, all other rights and remedies available to Grantee in connection with this Conservation Easement.

B. Inspection. The Grantee, its employees and agents, successors and assigns, have the right, with reasonable notice, to enter the Conservation Easement Area over the Property at reasonable times for the purpose of inspection to determine whether the Grantor is complying with the terms, conditions and restrictions of this Conservation Easement.

C. Acts Beyond Grantor's Control. Nothing contained in this Conservation Easement shall be construed to entitle Grantee to bring any action against Grantor for any injury or change in the Conservation Easement Area caused by third parties, resulting from causes beyond the Grantor's control, including, without limitation, fire, flood, storm, and earth movement, or from any prudent action taken in good faith by the Grantor under emergency conditions to prevent, abate, or mitigate significant injury to life or damage to the Property resulting from such causes.

D. Costs of Enforcement. Beyond regular and typical monitoring expenses, any costs incurred by Grantee in enforcing the terms of this Conservation Easement against Grantor, including, without limitation, any costs of restoration necessitated by Grantor's acts or omissions in violation of the terms of this Conservation Easement, shall be borne by Grantor.

E. No Waiver. Enforcement of this Easement shall be at the discretion of the Grantee and any forbearance, delay or omission by Grantee to exercise its rights hereunder in the event of any breach of any term set forth herein shall not be construed to be a waiver by Grantee.

VI. MISCELLANEOUS

A. This instrument sets forth the entire agreement of the parties with respect to the Conservation Easement and supersedes all prior discussions, negotiations, understandings or agreements relating to the Conservation Easement. If any provision is found to be invalid, the remainder of the provisions of the Conservation Easement, and the application of such provision to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

B. Grantor is responsible for any real estate taxes, assessments, fees, or charges levied upon the Property. Grantee shall not be responsible for any costs or liability of any kind related to the ownership, operation, insurance, upkeep, or maintenance of the Property, except as expressly provided herein. Upkeep of any constructed bridges, fences, or other amenities on the Property are the sole responsibility of the Grantor. Nothing herein shall relieve the Grantor of the obligation to comply with federal, state or local laws, regulations and permits that may apply to the exercise of the Reserved Rights.

C. Any notices shall be sent by registered or certified mail, return receipt requested to the parties at their addresses shown herein or to other addresses as either party establishes in writing upon notification to the other.

D. Grantor shall notify Grantee in writing of the name and address and any party to whom the Property or any part thereof is to be transferred at or prior to the time said transfer is made. Grantor further agrees that any subsequent lease, deed, or other legal instrument by which any interest in the Property is conveyed is subject to the Conservation Easement herein created.

E. The Grantor and Grantee agree that the terms of this Conservation Easement shall survive any merger of the fee and easement interests in the Property or any portion thereof.

F. This Conservation Easement and Right of Access may be amended, but only in writing signed by all parties hereto, or their successors or assigns, if such amendment does not affect the qualification of this Conservation Easement or the status of the Grantee under any applicable laws, and is consistent with the purposes of the Conservation Easement. The owner of the Property shall notify the State Property Office and the U.S. Army Corps of Engineers in writing sixty (60) days prior to the initiation of any transfer of all or any part of the Property or of any request to void or modify this Conservation Easement. Such notifications and modification requests shall be addressed to:

Division of Mitigation Services Program Manager
NC State Property Office
1321 Mail Service Center
Raleigh, NC 27699-1321

and

General Counsel
US Army Corps of Engineers
69 Darlington Avenue
Wilmington, NC 28403

G. The parties recognize and agree that the benefits of this Conservation Easement are in gross and assignable provided, however, that the Grantee hereby covenants and agrees, that in the event it transfers or assigns this Conservation Easement, the organization receiving the interest will be a qualified holder under N.C. Gen. Stat. § 121-34 et seq. and § 170(h) of the Internal Revenue Code, and the Grantee further covenants and agrees that the terms of the transfer or assignment will be such that the transferee or assignee will be required to continue in perpetuity the conservation purposes described in this document.

VII. QUIET ENJOYMENT

Grantor reserves all remaining rights accruing from ownership of the Property, including the right to engage in or permit or invite others to engage in only those uses of the Conservation Easement Area that are expressly reserved herein, not prohibited or restricted herein, and are not inconsistent with the purposes of this Conservation Easement. Without limiting the generality of the foregoing, the Grantor expressly reserves to the Grantor, and the Grantor's invitees and licensees, the right of access to the Conservation Easement Area, and the right of quiet enjoyment of the Conservation Easement Area,

TO HAVE AND TO HOLD, the said rights and easements perpetually unto the State of North Carolina for the aforesaid purposes,

AND Grantor covenants that Grantor is seized of the Property in fee and has the right to convey the permanent Conservation Easement herein granted; that the same is free from encumbrances and that Grantor will warrant and defend title to the same against the claims of all persons whomsoever.

IN TESTIMONY, WHEREOF, the Grantor has hereunto set his hand and seal, the day and year first above written.

_____ (SEAL)

NORTH CAROLINA
COUNTY OF _____

I, _____, a Notary Public in and for the County and State aforesaid, do hereby certify that _____, Grantor, personally appeared before me this day and acknowledged the execution of the foregoing instrument.

IN WITNESS, WHEREOF, I have hereunto set my hand and Notary Seal this the _____ day of _____, 20__.

Notary Public

My commission expires:

Exhibit A

[INSERT LEGAL DESCRIPTION]

Appendix D

Approved FHWA Categorical Exclusion Form

Appendix A

Categorical Exclusion Form for Division of Mitigation Services Projects
Version 2

Note: Only Appendix A should be submitted (along with any supporting documentation) as the environmental document.

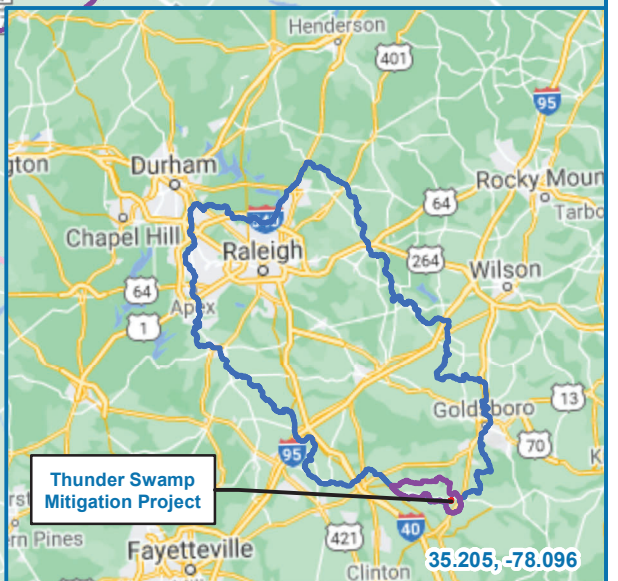
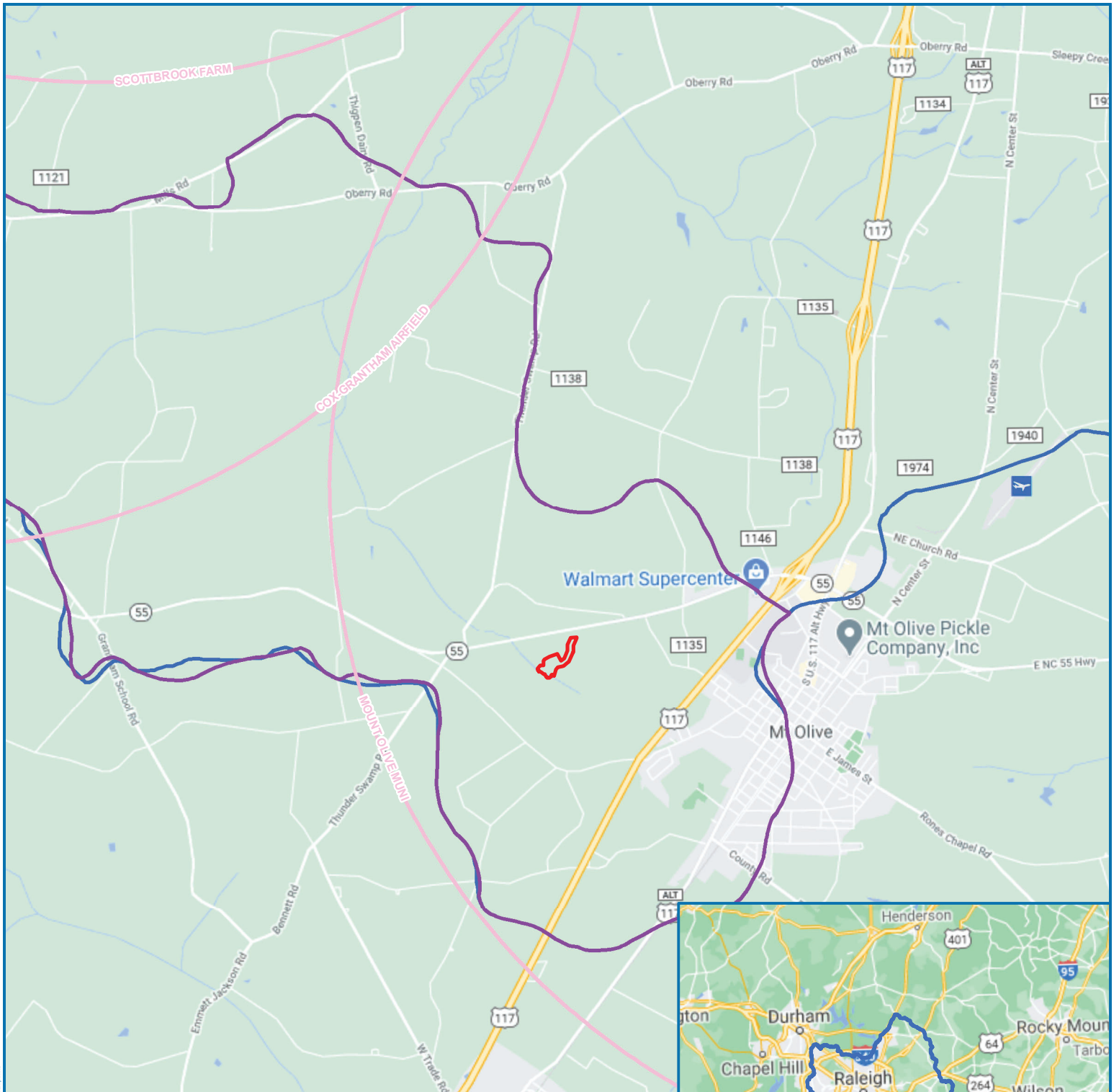
Part 1: General Project Information	
Project Name:	Thunder Swamp Mitigation Project
County Name:	Wayne County
DMS Number:	100181
Project Sponsor:	Environmental Banc & Exchange, LLC
Project Contact Name:	Katie Webber
Project Contact Address:	3600 Glenwood Avenue, Suite 100, Raleigh, NC 27612
Project Contact E-mail:	kwebber@res.us
DMS Project Manager:	Lin Xu
Project Description	
<p>The Thunder Swamp Project encompasses 16.74 acres proposed conservation easement on one parcel in Wayne County, North Carolina. The Project will involve buffer restoration and preservation of Thunder Swamp and several of its unnamed tributaries. Riparian areas of streams and select ditches that are currently used for crop production will be converted to forest by planting trees, whereas existing areas of forest will be preserved. Ultimately, the Project will protect approximately 692,370 square feet of riparian buffer area.</p>	
For Official Use Only	
Reviewed By:	
6/17/2021	<i>Lin Xu</i>
Date	DMS Project Manager
Conditional Approved By:	
Date	For Division Administrator FHWA
<input type="checkbox"/> Check this box if there are outstanding issues	
Final Approval By:	
<i>6-21-21</i>	<i>Donald W Brew</i>
Date	For Division Administrator FHWA

Part 2: All Projects Regulation/Question		Response
Coastal Zone Management Act (CZMA)		
1. Is the project located in a CAMA county?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Does the project involve ground-disturbing activities within a CAMA Area of Environmental Concern (AEC)?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Has a CAMA permit been secured?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Has NCDPCM agreed that the project is consistent with the NC Coastal Management Program?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)		
1. Is this a "full-delivery" project?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Has the zoning/land use of the subject property and adjacent properties ever been designated as commercial or industrial?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
3. As a result of a limited Phase I Site Assessment, are there known or potential hazardous waste sites within or adjacent to the project area?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
4. As a result of a Phase I Site Assessment, are there known or potential hazardous waste sites within or adjacent to the project area?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
5. As a result of a Phase II Site Assessment, are there known or potential hazardous waste sites within the project area?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
6. Is there an approved hazardous mitigation plan?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
National Historic Preservation Act (Section 106)		
1. Are there properties listed on, or eligible for listing on, the National Register of Historic Places in the project area?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Does the project affect such properties and does the SHPO/THPO concur?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. If the effects are adverse, have they been resolved?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act)		
1. Is this a "full-delivery" project?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Does the project require the acquisition of real estate?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
3. Was the property acquisition completed prior to the intent to use federal funds?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
4. Has the owner of the property been informed: * prior to making an offer that the agency does not have condemnation authority; and * what the fair market value is believed to be?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Part 3: Ground-Disturbing Activities	
Regulation/Question	Response
<u>American Indian Religious Freedom Act (AIRFA)</u>	
1. Is the project located in a county claimed as "territory" by the Eastern Band of Cherokee Indians?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Is the site of religious importance to American Indians?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Is the project listed on, or eligible for listing on, the National Register of Historic Places?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Have the effects of the project on this site been considered?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<u>Antiquities Act (AA)</u>	
1. Is the project located on Federal lands?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Will there be loss or destruction of historic or prehistoric ruins, monuments or objects of antiquity?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Will a permit from the appropriate Federal agency be required?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Has a permit been obtained?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<u>Archaeological Resources Protection Act (ARPA)</u>	
1. Is the project located on federal or Indian lands (reservation)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Will there be a loss or destruction of archaeological resources?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Will a permit from the appropriate Federal agency be required?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Has a permit been obtained?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<u>Endangered Species Act (ESA)</u>	
1. Are federal Threatened and Endangered species and/or Designated Critical Habitat listed for the county?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Is Designated Critical Habitat or suitable habitat present for listed species?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
3. Are T&E species present or is the project being conducted in Designated Critical Habitat?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Is the project "likely to adversely affect" the specie and/or "likely to adversely modify" Designated Critical Habitat?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
5. Does the USFWS/NOAA-Fisheries concur in the effects determination?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
6. Has the USFWS/NOAA-Fisheries rendered a "jeopardy" determination?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Executive Order 13007 (Indian Sacred Sites)	
1. Is the project located on Federal lands that are within a county claimed as "territory" by the EBCI?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Has the EBCI indicated that Indian sacred sites may be impacted by the proposed project?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Have accommodations been made for access to and ceremonial use of Indian sacred sites?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Farmland Protection Policy Act (FPPA)	
1. Will real estate be acquired?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Has NRCS determined that the project contains prime, unique, statewide or locally important farmland?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
3. Has the completed Form AD-1006 been submitted to NRCS?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Fish and Wildlife Coordination Act (FWCA)	
1. Will the project impound, divert, channel deepen, or otherwise control/modify any water body?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Have the USFWS and the NCWRC been consulted?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Land and Water Conservation Fund Act (Section 6(f))	
1. Will the project require the conversion of such property to a use other than public, outdoor recreation?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Has the NPS approved of the conversion?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Magnuson-Stevens Fishery Conservation and Management Act (Essential Fish Habitat)	
1. Is the project located in an estuarine system?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Is suitable habitat present for EFH-protected species?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
3. Is sufficient design information available to make a determination of the effect of the project on EFH?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
4. Will the project adversely affect EFH?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
5. Has consultation with NOAA-Fisheries occurred?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Migratory Bird Treaty Act (MBTA)	
1. Does the USFWS have any recommendations with the project relative to the MBTA?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Have the USFWS recommendations been incorporated?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Wilderness Act	
1. Is the project in a Wilderness area?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2. Has a special use permit and/or easement been obtained from the maintaining federal agency?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

EXHIBITS



Legend

-  Proposed Easement
-  Service Area - 03020201 (Excluding Falls Lake Watershed)
-  14-Digit HUC - 03020201170030
-  5 Mile Aviation Zone

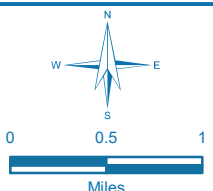
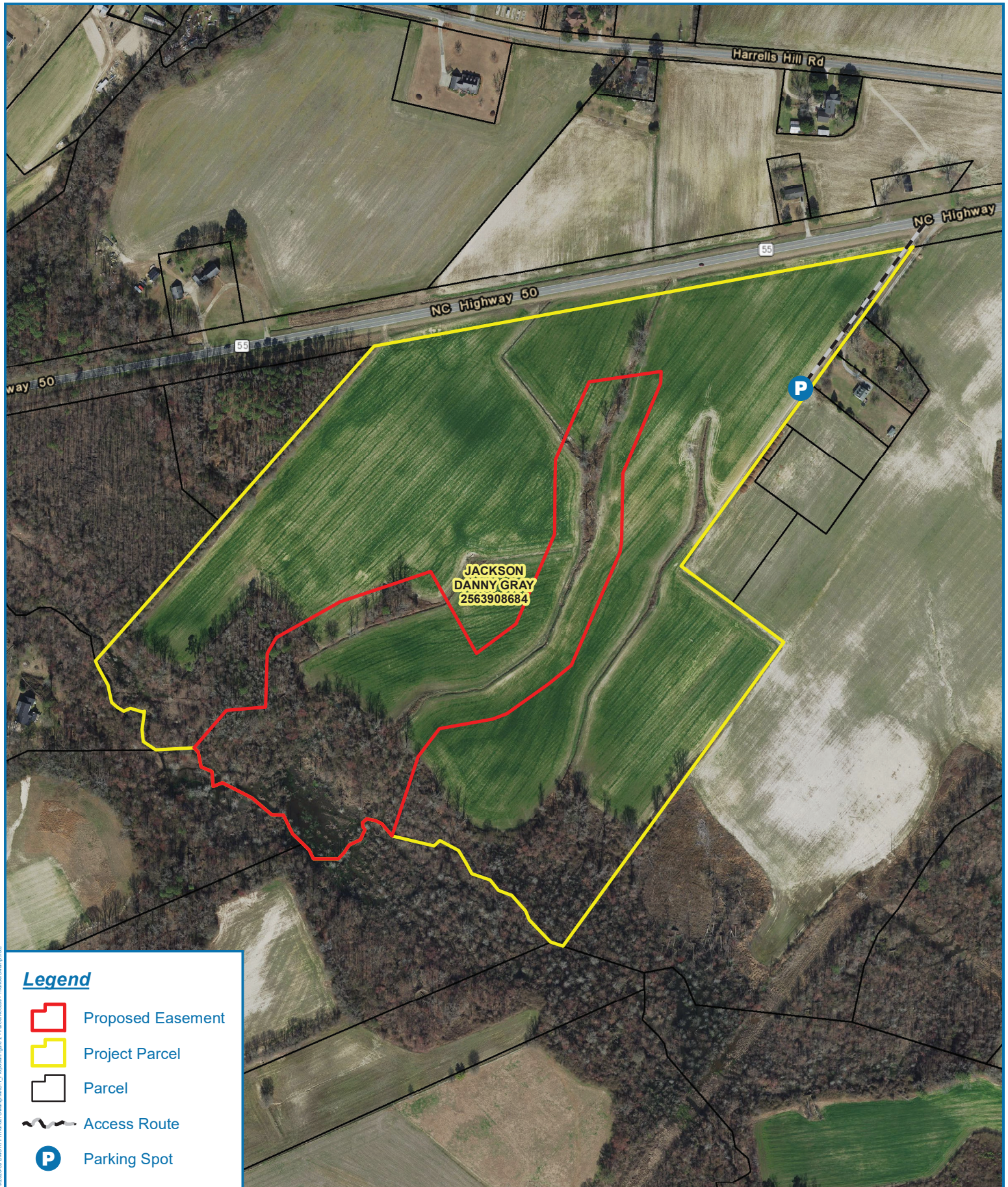


Figure 1 - Project Vicinity
Thunder Swamp Mitigation Project
 Wayne County, North Carolina






Date: 12/28/2020
 Drawn by: MDD
 Checked by: KAW
 1 inch = 1 mile



Document Path: R:\Registers\p\p\03020201170030_Thunder_Swamp\MDD_03020201170030_Thunder_Swamp_Visibility\Figure 1 - Project Vicinity_ThunderSwamp.mxd



Legend

-  Proposed Easement
-  Project Parcel
-  Parcel
-  Access Route
-  Parking Spot

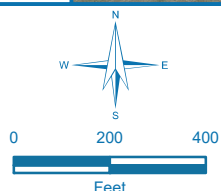
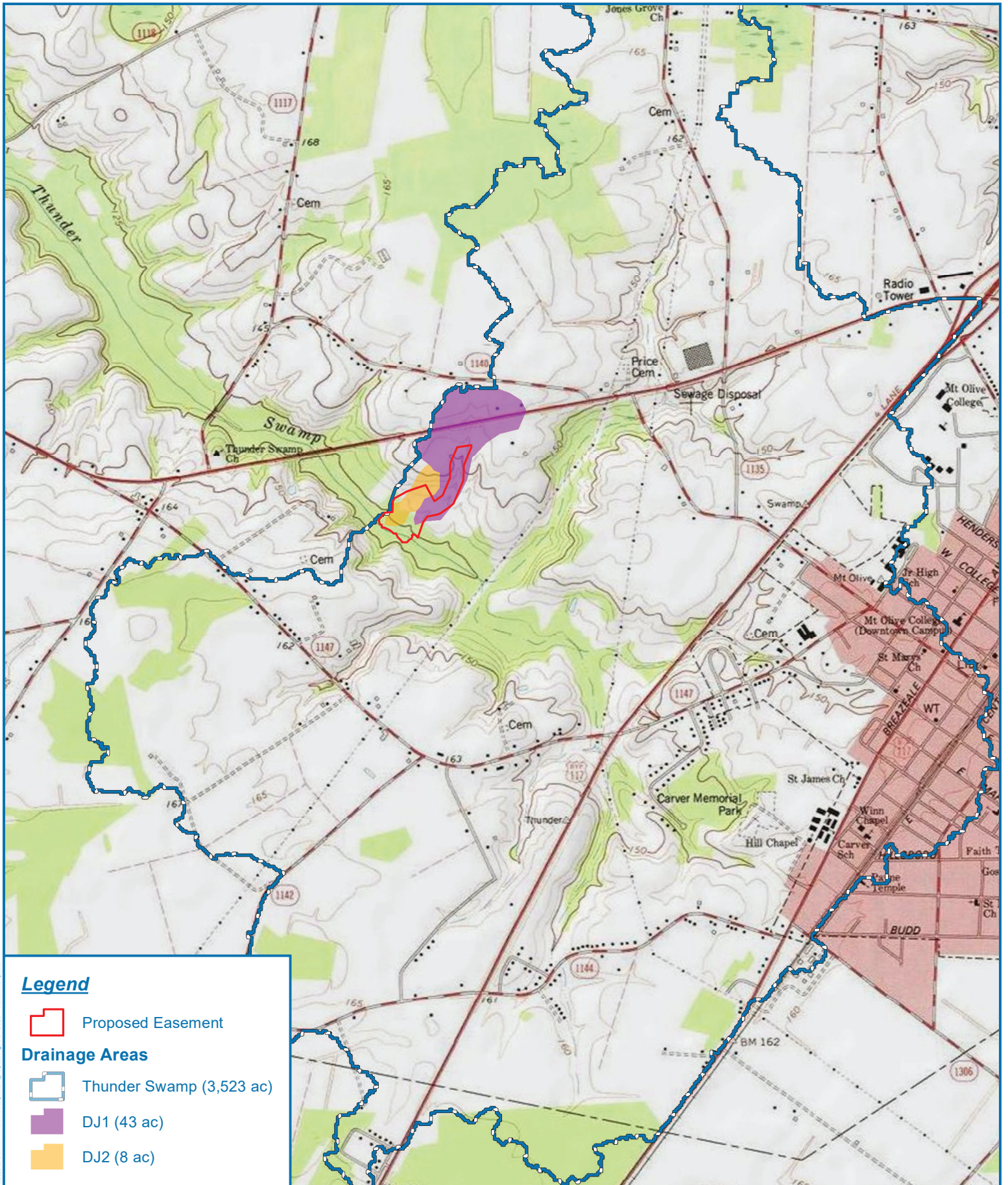


Figure 2 - Parcel Access
Thunder Swamp Mitigation Project
 Wayne County, North Carolina

Date: 9/1/2020
Drawn by: MDE
Checked by: KAW
1 inch = 400 feet



Document Path: R:\Registration\Projects\NC\2020\09_DMS\RP\Thunder_Swamp\M001_Proposal\Figure 2 - Parcel Access - Thunder_Swamp.mxd



Legend

 Proposed Easement

Drainage Areas

 Thunder Swamp (3,523 ac)

 DJ1 (43 ac)

 DJ2 (8 ac)

Figure 3 - USGS Quadrangle
Mount Olive (1977)

Thunder Swamp
Mitigation Project

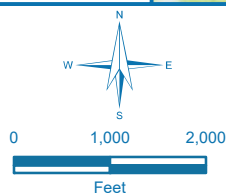
Wayne County, North Carolina

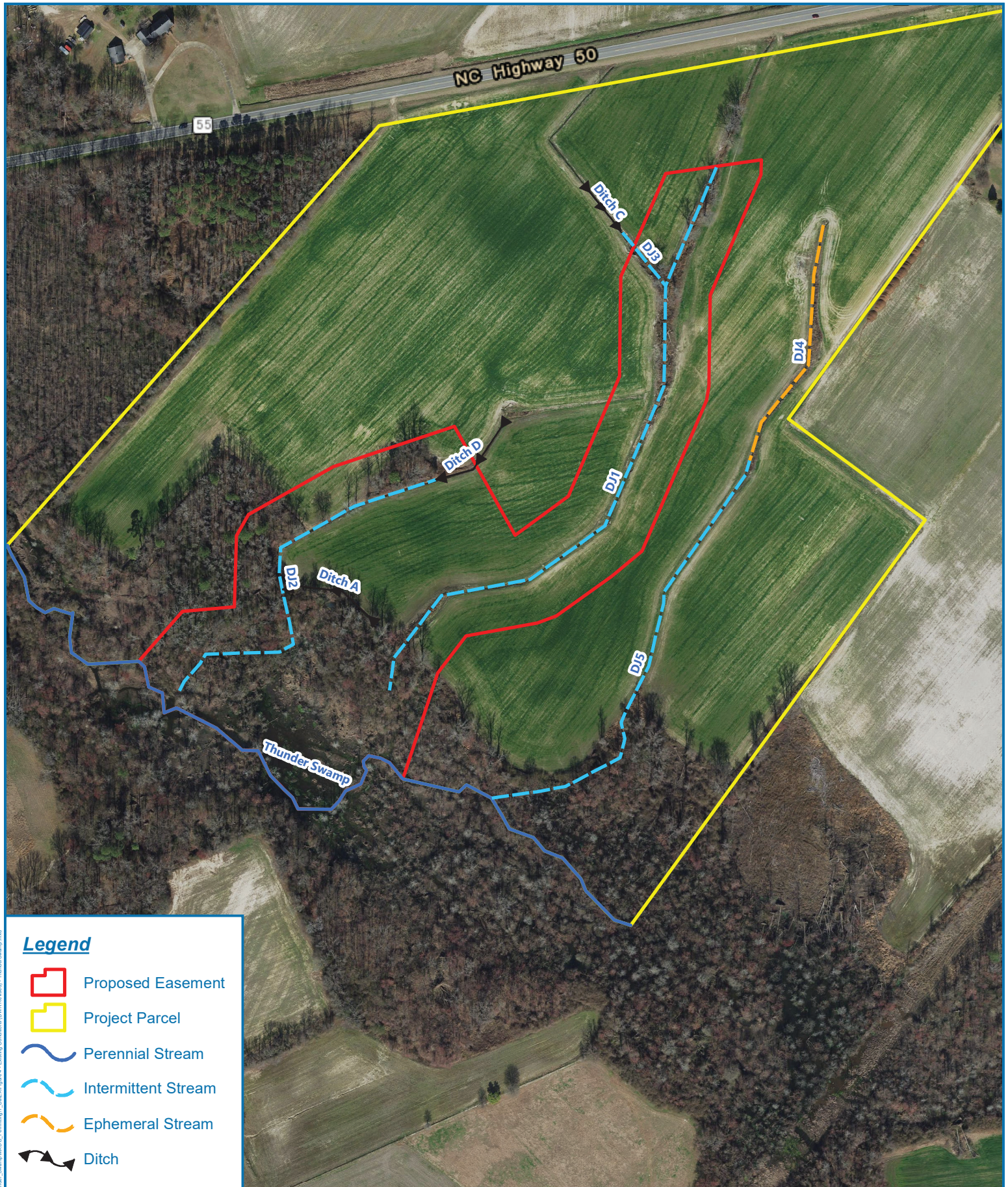
Date: 9/4/2020

Drawn by: MDD

Checked by: KAW

1 inch = 2,000 feet





Legend






-  Proposed Easement
-  Project Parcel
-  Perennial Stream
-  Intermittent Stream
-  Ephemeral Stream
-  Ditch

Figure 4 - Existing Conditions

**Thunder Swamp
Mitigation Project**

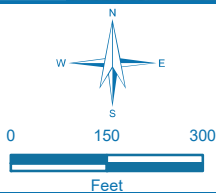
Wayne County, North Carolina

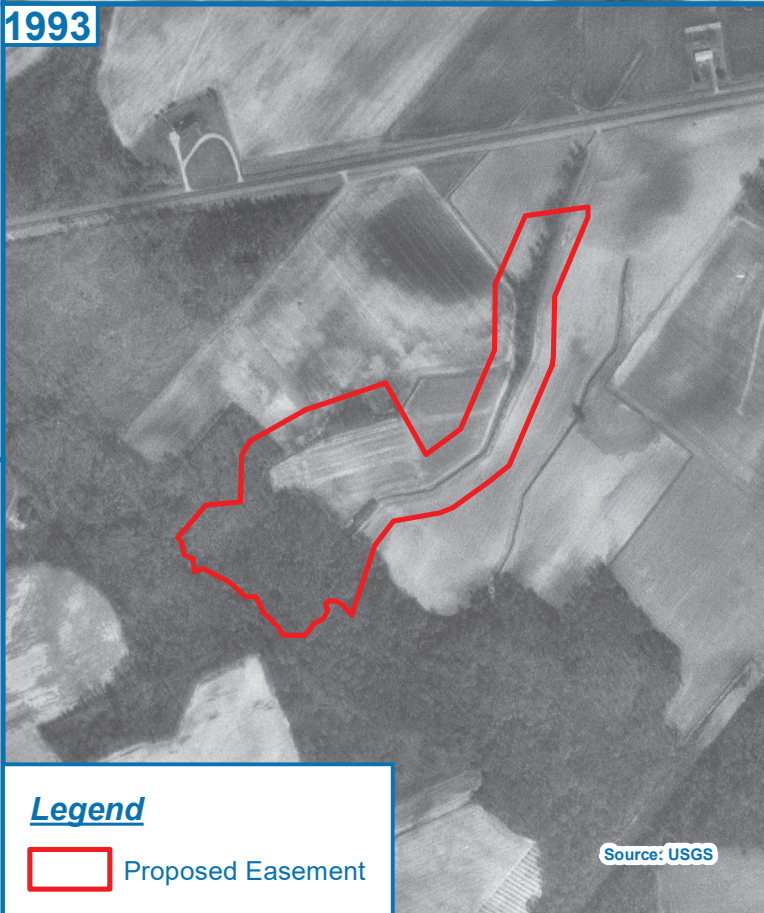
Date: 4/8/2021

Drawn by: MDD

Checked by: KAW

1 inch = 300 feet





Legend

 Proposed Easement

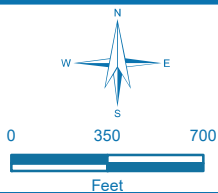


Figure 5 - Historic Imagery

**Thunder Swamp
Mitigation Project**

Wayne County, North Carolina

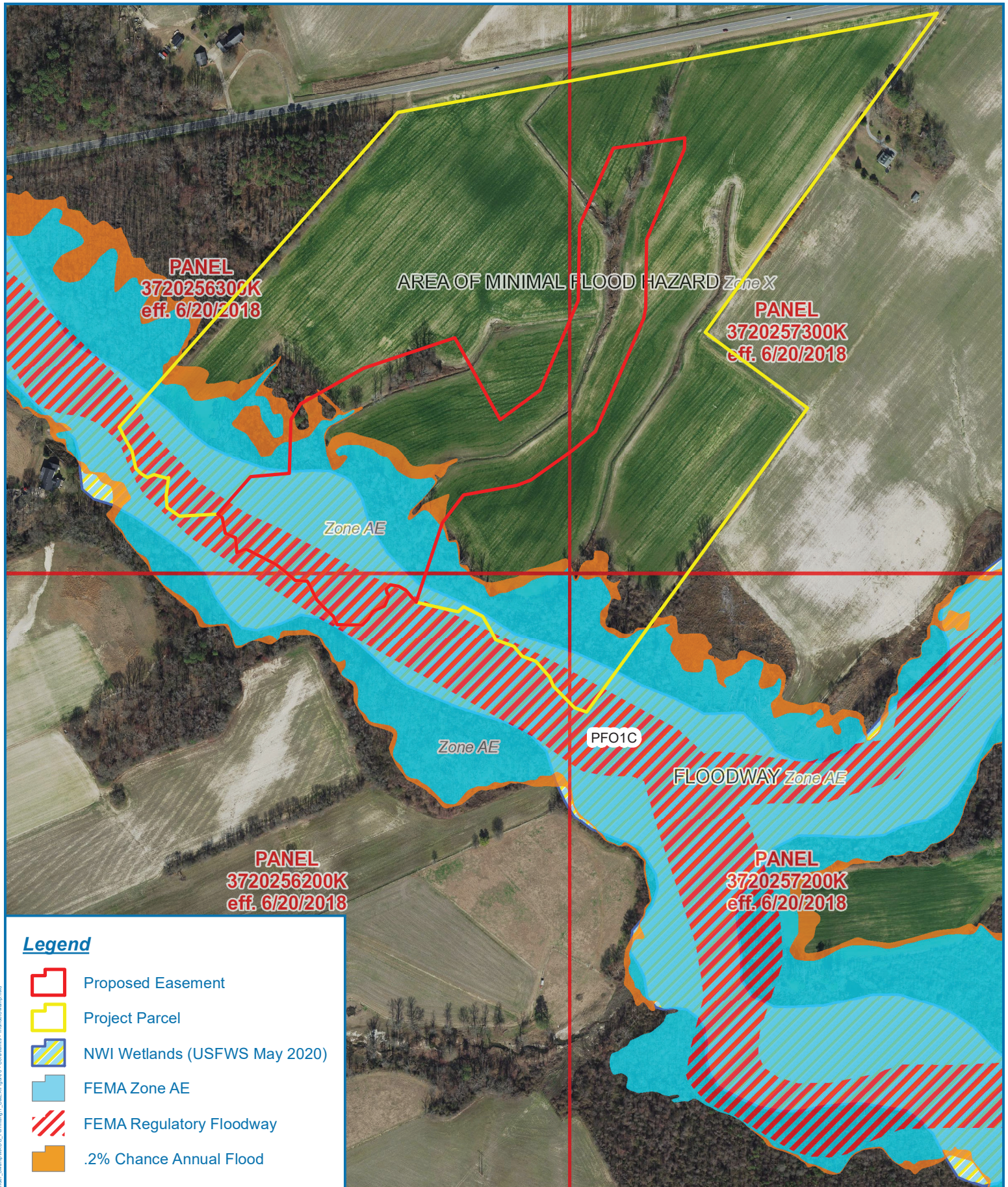
Date: 12/28/2020

Drawn by: MDD

Checked by: KAW

1 inch = 700 feet





Legend

-  Proposed Easement
-  Project Parcel
-  NWI Wetlands (USFWS May 2020)
-  FEMA Zone AE
-  FEMA Regulatory Floodway
-  .2% Chance Annual Flood

Figure 6 - Project Constraints

Thunder Swamp Mitigation Project

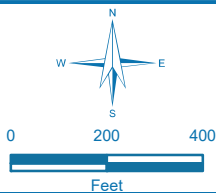
Wayne County, North Carolina

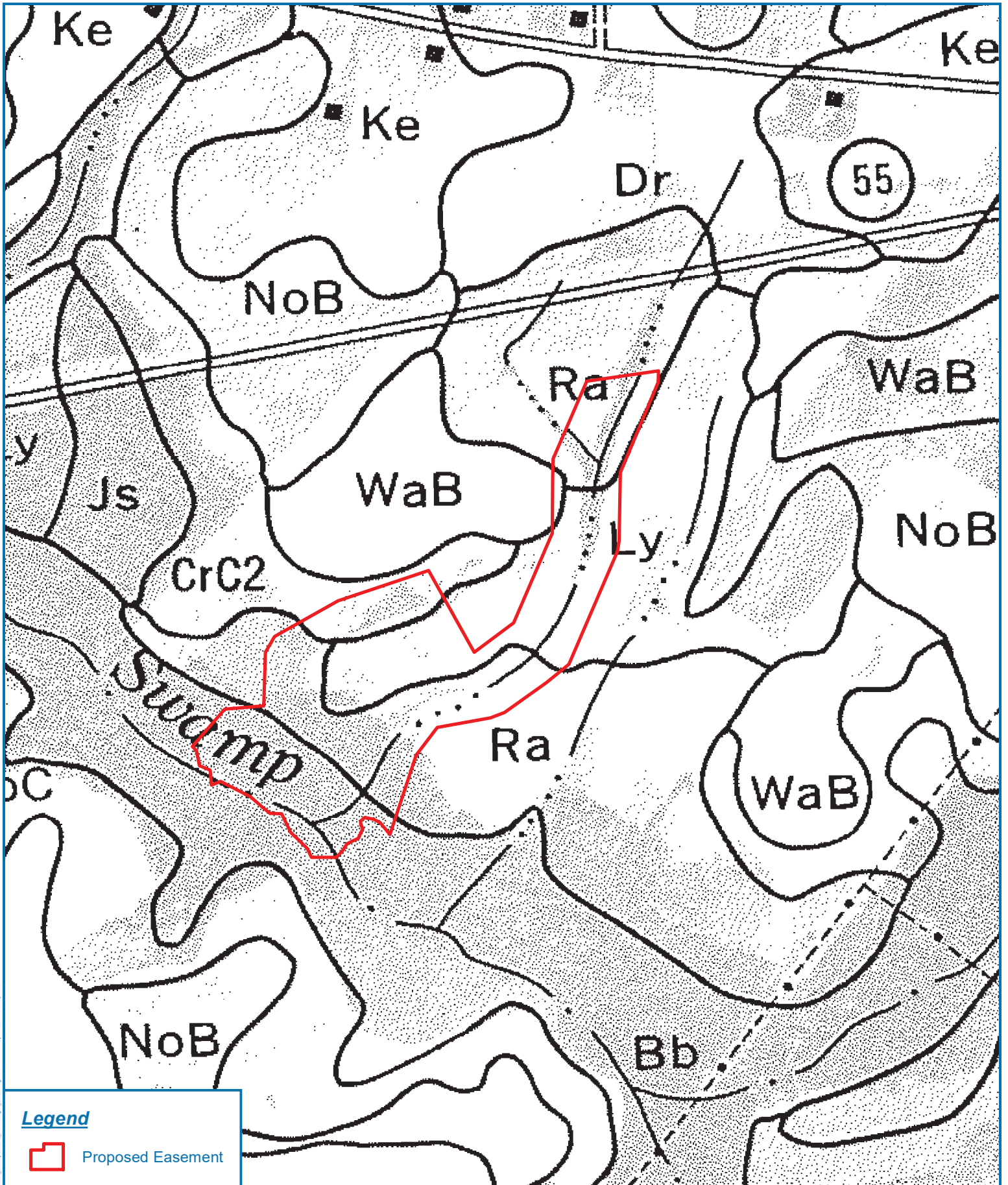
Date: 4/8/2021

Drawn by: MDD

Checked by: KAW

1 inch = 400 feet





Legend

 Proposed Easement

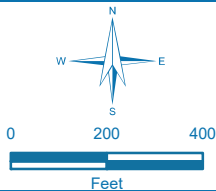


Figure 7 - NRCS Soil Survey (1974)

**Thunder Swamp
Mitigation Project**

Wayne County, North Carolina

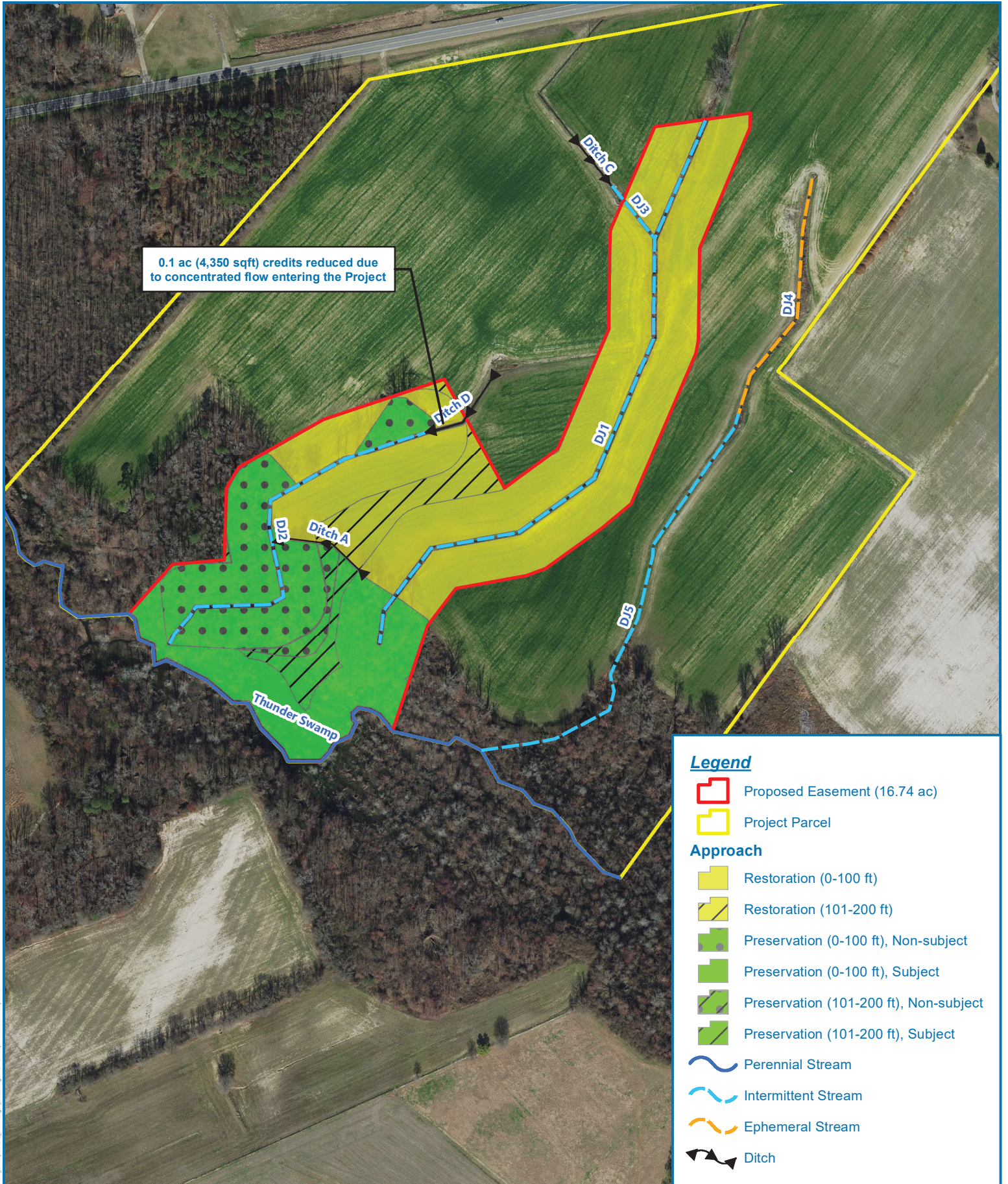
Date: 4/8/2021

Drawn by: MDD

Checked by: KAW

1 inch = 400 feet





0.1 ac (4,350 sqft) credits reduced due to concentrated flow entering the Project

Legend

- Proposed Easement (16.74 ac)
- Project Parcel
- Approach**
- Restoration (0-100 ft)
- Restoration (101-200 ft)
- Preservation (0-100 ft), Non-subject
- Preservation (0-100 ft), Subject
- Preservation (101-200 ft), Non-subject
- Preservation (101-200 ft), Subject
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Ditch

Figure 8 - Conceptual Design

Thunder Swamp Mitigation Project

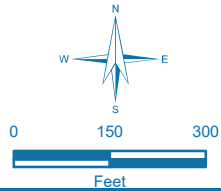
Wayne County, North Carolina

Date: 4/8/2021

Drawn by: MDD

Checked by: KAW

1 inch = 300 feet



EDR REPORT

Thunder Swamp

W NC 55 Hwy

Mount Olive, NC 28365

Inquiry Number: 6372145.2s

February 18, 2021

The EDR Radius Map™ Report with GeoCheck®



6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

W NC 55 HWY
MOUNT OLIVE, NC 28365

COORDINATES

Latitude (North): 35.2048710 - 35° 12' 17.53"
Longitude (West): 78.0966670 - 78° 5' 48.00"
Universal Transverse Mercator: Zone 17
UTM X (Meters): 764316.3
UTM Y (Meters): 3899427.2
Elevation: 137 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map: 5947432 MOUNT OLIVE, NC
Version Date: 2013

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from: 20141018
Source: USDA

MAPPED SITES SUMMARY

Target Property Address:
W NC 55 HWY
MOUNT OLIVE, NC 28365

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
--------	-----------	---------	-------------------	--------------------	-------------------------------

NO MAPPED SITES FOUND

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL..... National Priority List
Proposed NPL..... Proposed National Priority List Sites
NPL LIENS..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY..... Federal Facility Site Information listing
SEMS..... Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE..... Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG..... RCRA - Large Quantity Generators
RCRA-SQG..... RCRA - Small Quantity Generators
RCRA-VSQG..... RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS..... Land Use Control Information System

EXECUTIVE SUMMARY

US ENG CONTROLS..... Engineering Controls Sites List
US INST CONTROLS..... Institutional Controls Sites List

Federal ERNS list

ERNS..... Emergency Response Notification System

State- and tribal - equivalent NPL

NC HSDS..... Hazardous Substance Disposal Site

State- and tribal - equivalent CERCLIS

SHWS..... Inactive Hazardous Sites Inventory

State and tribal landfill and/or solid waste disposal site lists

SWF/LF..... List of Solid Waste Facilities
DEBRIS..... Solid Waste Active Disaster Debris Sites Listing
OLI..... Old Landfill Inventory
LCID..... Land-Clearing and Inert Debris (LCID) Landfill Notifications

State and tribal leaking storage tank lists

LAST..... Leaking Aboveground Storage Tanks
LUST..... Regional UST Database
INDIAN LUST..... Leaking Underground Storage Tanks on Indian Land
LUST TRUST..... State Trust Fund Database

State and tribal registered storage tank lists

FEMA UST..... Underground Storage Tank Listing
UST..... Petroleum Underground Storage Tank Database
AST..... AST Database
INDIAN UST..... Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

INST CONTROL..... No Further Action Sites With Land Use Restrictions Monitoring

State and tribal voluntary cleanup sites

VCP..... Responsible Party Voluntary Action Sites
INDIAN VCP..... Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS..... Brownfields Projects Inventory

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS..... A Listing of Brownfields Sites

EXECUTIVE SUMMARY

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY.....	Recycling Center Listing
HIST LF.....	Solid Waste Facility Listing
INDIAN ODI.....	Report on the Status of Open Dumps on Indian Lands
ODI.....	Open Dump Inventory
DEBRIS REGION 9.....	Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS.....	Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL.....	Delisted National Clandestine Laboratory Register
US CDL.....	National Clandestine Laboratory Register

Local Land Records

LIENS 2.....	CERCLA Lien Information
--------------	-------------------------

Records of Emergency Release Reports

HMIRS.....	Hazardous Materials Information Reporting System
SPILLS.....	Spills Incident Listing
IMD.....	Incident Management Database
SPILLS 90.....	SPILLS 90 data from FirstSearch
SPILLS 80.....	SPILLS 80 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR.....	RCRA - Non Generators / No Longer Regulated
FUDS.....	Formerly Used Defense Sites
DOD.....	Department of Defense Sites
SCRD DRYCLEANERS.....	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR.....	Financial Assurance Information
EPA WATCH LIST.....	EPA WATCH LIST
2020 COR ACTION.....	2020 Corrective Action Program List
TSCA.....	Toxic Substances Control Act
TRIS.....	Toxic Chemical Release Inventory System
SSTS.....	Section 7 Tracking Systems
ROD.....	Records Of Decision
RMP.....	Risk Management Plans
RAATS.....	RCRA Administrative Action Tracking System
PRP.....	Potentially Responsible Parties
PADS.....	PCB Activity Database System
ICIS.....	Integrated Compliance Information System
FTTS.....	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS.....	Material Licensing Tracking System
COAL ASH DOE.....	Steam-Electric Plant Operation Data
COAL ASH EPA.....	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER.....	PCB Transformer Registration Database
RADINFO.....	Radiation Information Database
HIST FTTS.....	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS.....	Incident and Accident Data
CONSENT.....	Superfund (CERCLA) Consent Decrees

EXECUTIVE SUMMARY

INDIAN RESERV.	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
FUELS PROGRAM	EPA Fuels Program Registered Listing
AIRS	Air Quality Permit Listing
ASBESTOS	ASBESTOS
COAL ASH	Coal Ash Disposal Sites
DRYCLEANERS	Drycleaning Sites
Financial Assurance	Financial Assurance Information Listing
NPDES	NPDES Facility Location Listing
UIC	Underground Injection Wells Listing
AOP	Animal Operation Permits Listing
MINES MRDS	Mineral Resources Data System
CCB	Coal Ash Structural Fills (CCB) Listing
SEPT HAULERS	Permitted Septage Haulers Listing
PCSRP	Petroleum-Contaminated Soil Remediation Permits

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS	Recovered Government Archive State Hazardous Waste Facilities List
RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

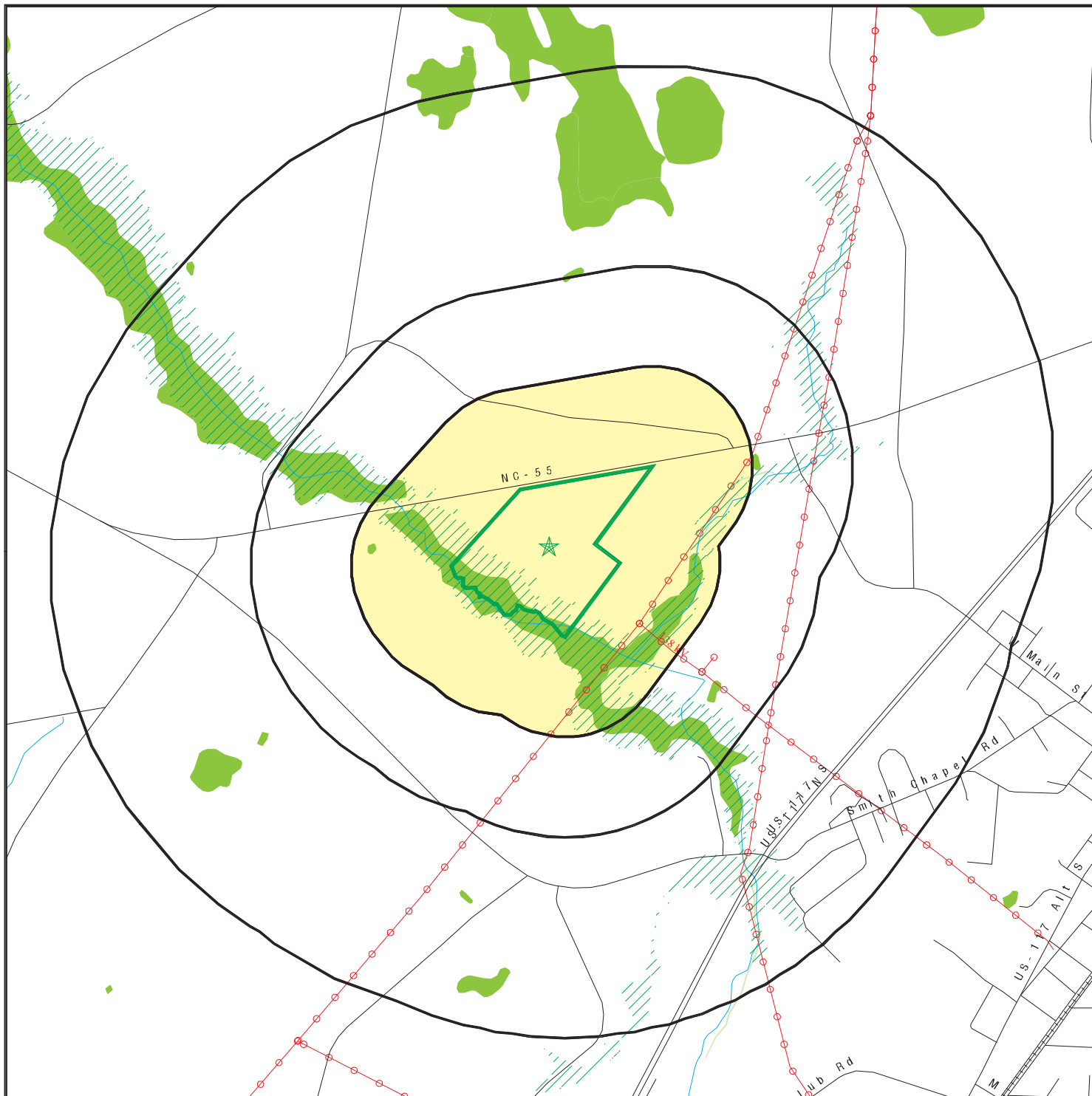
Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 6372145.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

Power transmission lines

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Hazardous Substance Disposal Sites


















This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Thunder Swamp
 ADDRESS: W NC 55 Hwy
 Mount Olive NC 28365
 LAT/LONG: 35.204871 / 78.096667

CLIENT: Resource Environmental Solutions, LLC
 CONTACT: Heath Hidlay
 INQUIRY #: 6372145.2s
 DATE: February 18, 2021 11:13 am

DETAIL MAP - 6372145.2S



- | | | |
|---|---|--|
|  Target Property |  Indian Reservations BIA |  Hazardous Substance Disposal Sites |
|  Sites at elevations higher than or equal to the target property |  Power transmission lines |  |
|  Sites at elevations lower than the target property |  Special Flood Hazard Area (1%) | |
|  Manufactured Gas Plants |  0.2% Annual Chance Flood Hazard | |
|  Sensitive Receptors |  National Wetland Inventory | |
|  National Priority List Sites |  State Wetlands | |
|  Dept. Defense Sites | | |



This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Thunder Swamp
 ADDRESS: W NC 55 Hwy
 Mount Olive NC 28365
 LAT/LONG: 35.204871 / 78.096667

CLIENT: Resource Environmental Solutions, LLC
 CONTACT: Heath Hidlay
 INQUIRY #: 6372145.2s
 DATE: February 18, 2021 11:14 am

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
<i>Federal NPL site list</i>								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
<i>Federal Delisted NPL site list</i>								
Delisted NPL	1.000		0	0	0	0	NR	0
<i>Federal CERCLIS list</i>								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
<i>Federal CERCLIS NFRAP site list</i>								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
<i>Federal RCRA CORRACTS facilities list</i>								
CORRACTS	1.000		0	0	0	0	NR	0
<i>Federal RCRA non-CORRACTS TSD facilities list</i>								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
<i>Federal RCRA generators list</i>								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
<i>Federal institutional controls / engineering controls registries</i>								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
<i>Federal ERNS list</i>								
ERNS	0.001		0	NR	NR	NR	NR	0
<i>State- and tribal - equivalent NPL</i>								
NC HSDS	1.000		0	0	0	0	NR	0
<i>State- and tribal - equivalent CERCLIS</i>								
SHWS	1.000		0	0	0	0	NR	0
<i>State and tribal landfill and/or solid waste disposal site lists</i>								
SWF/LF	0.500		0	0	0	NR	NR	0
DEBRIS	0.500		0	0	0	NR	NR	0
OLI	0.500		0	0	0	NR	NR	0
LCID	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
<i>State and tribal leaking storage tank lists</i>								
LAST	0.500		0	0	0	NR	NR	0
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
LUST TRUST	0.500		0	0	0	NR	NR	0
<i>State and tribal registered storage tank lists</i>								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
<i>State and tribal institutional control / engineering control registries</i>								
INST CONTROL	0.500		0	0	0	NR	NR	0
<i>State and tribal voluntary cleanup sites</i>								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
<i>State and tribal Brownfields sites</i>								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
<u>ADDITIONAL ENVIRONMENTAL RECORDS</u>								
<i>Local Brownfield lists</i>								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
<i>Local Lists of Landfill / Solid Waste Disposal Sites</i>								
SWRCY	0.500		0	0	0	NR	NR	0
HIST LF	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
<i>Local Lists of Hazardous waste / Contaminated Sites</i>								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
<i>Local Land Records</i>								
LIENS 2	0.001		0	NR	NR	NR	NR	0
<i>Records of Emergency Release Reports</i>								
HMIRS	0.001		0	NR	NR	NR	NR	0
SPILLS	0.001		0	NR	NR	NR	NR	0
IMD	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SPILLS 90	0.001		0	NR	NR	NR	NR	0
SPILLS 80	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
AIRS	0.001		0	NR	NR	NR	NR	0
ASBESTOS	0.001		0	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
AOP	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
CCB	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SEPT HAULERS	0.001		0	NR	NR	NR	NR	0
PCSRP	0.500		0	0	0	NR	NR	0
<u>EDR HIGH RISK HISTORICAL RECORDS</u>								
<i>EDR Exclusive Records</i>								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
<u>EDR RECOVERED GOVERNMENT ARCHIVES</u>								
<i>Exclusive Recovered Govt. Archives</i>								
RGA HWS	0.001		0	NR	NR	NR	NR	0
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

NO SITES FOUND

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
------	--------	-----------	--------------	-----	-------------

NO SITES FOUND

UNIFORM ACT LETTER



3600 Glenwood Avenue, Suite 100
Raleigh, NC 27612

Corporate Headquarters
6575 West Loop South, Suite 300
Bellaire, TX 77401
Main: 713.520.5400

April 28, 2021

Danny Gray Jackson
Margaret Jernigan Jackson
301 Jones Turner Road
Mount Olive, NC 28365

Re: Thunder Swamp Mitigation Project

Mr. and Mrs. Jackson:

As part of the environmental documentation process in preparation for the stream mitigation project on your property, this letter is to inform you of provisions in the Federal Highway Administration Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, referred to as the Uniform Act.

The Uniform Act requires that we inform you in writing that this conservation easement transaction is voluntary and that the project is being developed by Environmental Banc & Exchange, LLC for the North Carolina Division of Mitigation Services (NCDMS). Neither EBX nor NCDMS have the authority to acquire the property by eminent domain. In addition, EBX believes that the agreed purchase price for the conservation easement area represents the fair market value.

This letter is for your information, and you do not need to respond. As always, please feel free to call me at 919-302-2324 with any questions.

Sincerely,

A handwritten signature in blue ink that reads 'Kenton Beal'.

Kenton Beal
Land Representative

USDA FORM AD-1006



Natural Resources
Conservation Service

May 5, 2021

North Carolina
State Office

Heath Hidlay
Ecologist
Resource Environmental Solutions
3600 Glenwood Avenue, Suite 100
Raleigh, NC 27612

4407 Bland Rd.
Suite 117
Raleigh
North Carolina 27609
Voice (704) 680-3541
Fax (844) 325-2156

Dear Heath Hidlay;

The following information is in response to your request soliciting comments regarding the Thunder Swamp Mitigation Project Site in Wayne County, NC.

Projects are subject to Farmland Protection Policy Act (FPPA) requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency.

For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land. Farmland means prime or unique farmlands as defined in section 1540(c)(1) of the Act or farmland that is determined by the appropriate state or unit of local government agency or agencies with concurrence of the Secretary to be farmland of statewide or local importance.

"Farmland" does not include land already in or committed to urban development or water storage. Farmland "already in" urban development or water storage includes all such land with a density of 30 structures per 40-acre area. Farmland already in urban development also includes lands identified as "urbanized area" (UA) on the Census Bureau Map, or as urban area mapped with a "tint overprint" on the USGS topographical maps, or as "urban-built-up" on the USDA Important Farmland Maps. See over for more information.

The area in question includes land classified as Prime Farmland. In accordance with the Code of Federal Regulations 7CFR 658, Farmland Protection Policy Act, the CPA-106 was initiated. NRCS Completed Parts II, IV, V of the form and returned for completion by the requesting agency.

If you have any questions, please feel free to call me at (704) 680-3541 office or (704) 754-6734 cell.

Sincerely,

Kristin L May
Acting State Soil Scientist

cc:

Carl Kirby, acting supervisory soil conservationist, NRCS, Snow Hill, NC

FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)		Date Of Land Evaluation Request 03/16/2021			
Name of Project Thunder Swamp Riparian Buffer Project		Federal Agency Involved Federal Highway Admin (FHWA)			
Proposed Land Use Conservation Easement		County and State Wayne County, NC			
PART II (To be completed by NRCS)		Date Request Received By NRCS 4/1/2021		Person Completing Form: Kristin mav	
Does the site contain Prime, Unique, Statewide or Local Important Farmland? <i>(If no, the FPPA does not apply - do not complete additional parts of this form)</i>		YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	Acres Irrigated None	Average Farm Size 300
Major Crop(s) Corn	Farmable Land In Govt. Jurisdiction Acres: 86.96 % 310,477		Amount of Farmland As Defined in FPPA Acres: 86.96 % 310,477		
Name of Land Evaluation System Used Wayne Co. LESA	Name of State or Local Site Assessment System NA		Date Land Evaluation Returned by NRCS 5/5/2021		
PART III (To be completed by Federal Agency)		Alternative Site Rating			
		Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly		17.1			
B. Total Acres To Be Converted Indirectly					
C. Total Acres In Site		17.1			
PART IV (To be completed by NRCS) Land Evaluation Information					
A. Total Acres Prime And Unique Farmland		0			
B. Total Acres Statewide Important or Local Important Farmland		1.1			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0.0003			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		79.10			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)		38			
PART VI (To be completed by Federal Agency) Site Assessment Criteria <i>(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)</i>		Maximum Points	Site A	Site B	Site C
1. Area In Non-urban Use		(15)	12		
2. Perimeter In Non-urban Use		(10)	10		
3. Percent Of Site Being Farmed		(20)	17		
4. Protection Provided By State and Local Government		(20)	0		
5. Distance From Urban Built-up Area		(15)	5		
6. Distance To Urban Support Services		(15)	10		
7. Size Of Present Farm Unit Compared To Average		(10)	0		
8. Creation Of Non-farmable Farmland		(10)	0		
9. Availability Of Farm Support Services		(5)	5		
10. On-Farm Investments		(20)	8		
11. Effects Of Conversion On Farm Support Services		(10)	0		
12. Compatibility With Existing Agricultural Use		(10)	0		
TOTAL SITE ASSESSMENT POINTS		160	67	0	0
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)		100	38	0	0
Total Site Assessment (From Part VI above or local site assessment)		160	67	0	0
TOTAL POINTS (Total of above 2 lines)		260	105	0	0
Site Selected:		Date Of Selection		Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input type="checkbox"/>	
Reason For Selection:					
Name of Federal agency representative completing this form:					Date:

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

- Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, <http://fppa.nrcs.usda.gov/lesa/>.
- Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s) of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)
- Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.
- Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.
- Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.
- Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.
- Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.
2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.

Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

CORRESPONDENCE



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Raleigh Field Office
P.O. Box 33726
Raleigh, NC 27636-3726

Date: 4/1/2021

Self-Certification Letter

Project Name Thunder Swamp Riparian Buffer Mitigation Project

Dear Applicant:

Thank you for using the U.S. Fish and Wildlife Service (Service) Raleigh Ecological Services online project review process. By printing this letter in conjunction with your project review package, you are certifying that you have completed the online project review process for the project named above in accordance with all instructions provided, using the best available information to reach your conclusions. This letter, and the enclosed project review package, completes the review of your project in accordance with the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884), as amended (ESA), and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c, 54 Stat. 250), as amended (Eagle Act). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 U.S.C. 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office for this certification to be valid. This letter and the project review package will be maintained in our records.

The species conclusions table in the enclosed project review package summarizes your ESA and Eagle Act conclusions. Based on your analysis, mark all the determinations that apply:

- “no effect” determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- “may affect, not likely to adversely affect” determinations for proposed/listed species and/or proposed/designated critical habitat; and/or
- “may affect, likely to adversely affect” determination for the Northern long-eared bat (*Myotis septentrionalis*) and relying on the findings of the January 5, 2016, Programmatic Biological Opinion for the Final 4(d) Rule on the Northern long-eared bat;
- “no Eagle Act permit required” determinations for eagles.

We certify that use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package results in reaching the appropriate determinations. Therefore, we concur with the “no effect” or “not likely to adversely affect” determinations for proposed and listed species and proposed and designated critical habitat; the “may affect” determination for Northern long-eared bat; and/or the “no Eagle Act permit required” determinations for eagles. Additional coordination with this office is not needed. Candidate species are not legally protected pursuant to the ESA. However, the Service encourages consideration of these species by avoiding adverse impacts to them. Please contact this office for additional coordination if your project action area contains candidate species. Should project plans change or if additional information on the distribution of proposed or listed species, proposed or designated critical habitat, or bald eagles becomes available, this determination may be reconsidered. This certification letter is valid for 1 year. Information about the online project review process including instructions, species information, and other information regarding project reviews within North Carolina is available at our website <http://www.fws.gov/raleigh/pp.html>. If you have any questions, you can write to us at Raleigh@fws.gov or please contact Leigh Mann of this office at 919-856-4520, ext. 10.

Sincerely,

/s/Pete Benjamin

Pete Benjamin
Field Supervisor
Raleigh Ecological Services

Enclosures - project review package

Species Conclusions Table

Project Name: _____ Thunder Swamp _____

Date: _____ 3/1/2021 _____

Species / Resource Name	Conclusion	ESA Section 7 / Eagle Act Determination	Notes / Documentation
Red-cockaded Woodpecker (<i>Picoides borealis</i>)	No suitable habitat present	No effect	After surveying the site and consulting the USFWS species profile, it was determined no suitable habitat is present onsite.
Neuse River Waterdog (<i>Necturus lewisii</i>)	No suitable habitat present	No effect	After surveying the site and consulting the USFWS species profile, it was determined no suitable habitat is present onsite.
Carolina Madtom (<i>Noturus furiosus</i>)	No suitable habitat present	No effect	After surveying the site and consulting the USFWS species profile, it was determined no suitable habitat is present onsite.
Northern Long-Eared Bat (<i>Myotis septentrionalis</i>)	No impact to existing vegetation	No effect	
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Unlikely to disturb nesting bald eagles	No Eagle Act Permit required	
No Critical Habitat	No critical habitat present	No effect	

Acknowledgement: I agree that the above information about my proposed project is true. I used all of the provided resources to make an informed decision about impacts in the immediate and surrounding areas.

Heath Hidlay / Ecologist

3/1/2021

Signature / Title

Date



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Raleigh Ecological Services Field Office
Post Office Box 33726
Raleigh, NC 27636-3726
Phone: (919) 856-4520 Fax: (919) 856-4556

In Reply Refer To:
Consultation Code: 04EN2000-2021-SLI-0770
Event Code: 04EN2000-2021-E-01675
Project Name: Thunder Swamp

March 01, 2021

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The species list generated pursuant to the information you provided identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Section 7 of the Act requires that all federal agencies (or their designated non-federal representative), in consultation with the Service, insure that any action federally authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any federally-listed endangered or threatened species. A biological assessment or evaluation may be prepared to fulfill that requirement and in determining whether additional consultation with the Service is necessary. In addition to the federally-protected species list, information on the species' life histories and habitats and information on completing a biological assessment or

evaluation and can be found on our web page at <http://www.fws.gov/raleigh>. Please check the web site often for updated information or changes

If your project contains suitable habitat for any of the federally-listed species known to be present within the county where your project occurs, the proposed action has the potential to adversely affect those species. As such, we recommend that surveys be conducted to determine the species' presence or absence within the project area. The use of North Carolina Natural Heritage program data should not be substituted for actual field surveys.

If you determine that the proposed action may affect (i.e., likely to adversely affect or not likely to adversely affect) a federally-protected species, you should notify this office with your determination, the results of your surveys, survey methodologies, and an analysis of the effects of the action on listed species, including consideration of direct, indirect, and cumulative effects, before conducting any activities that might affect the species. If you determine that the proposed action will have no effect (i.e., no beneficial or adverse, direct or indirect effect) on federally listed species, then you are not required to contact our office for concurrence (unless an Environmental Impact Statement is prepared). However, you should maintain a complete record of the assessment, including steps leading to your determination of effect, the qualified personnel conducting the assessment, habitat conditions, site photographs, and any other related articles.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

Not all Threatened and Endangered Species that occur in North Carolina are subject to section 7 consultation with the U.S Fish and Wildlife Service. Atlantic and shortnose sturgeon, sea turtles, when in the water, and certain marine mammals are under purview of the National Marine Fisheries Service. If your project occurs in marine, estuarine, or coastal river systems you should also contact the National Marine Fisheries Service, <http://www.nmfs.noaa.gov/>

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office. If you have any questions or comments, please contact John Ellis of this office at john_ellis@fws.gov.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Raleigh Ecological Services Field Office

Post Office Box 33726

Raleigh, NC 27636-3726

(919) 856-4520

Project Summary

Consultation Code: 04EN2000-2021-SLI-0770

Event Code: 04EN2000-2021-E-01675

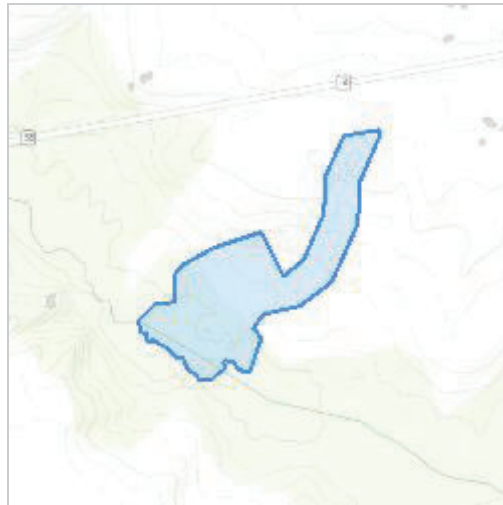
Project Name: Thunder Swamp

Project Type: LAND - RESTORATION / ENHANCEMENT

Project Description: Buffer Mitigation Project

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@35.204591050000005,-78.09784990757137,14z>



Counties: Wayne County, North Carolina

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Red-cockaded Woodpecker <i>Picoides borealis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7614	Endangered

Amphibians

NAME	STATUS
Neuse River Waterdog <i>Necturus lewisi</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6772	Proposed Threatened

Fishes

NAME	STATUS
Carolina Madtom <i>Noturus furiosus</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/528	Proposed Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.



Roy Cooper, Governor

D. Reid Wilson, Secretary

Walter Clark
Director, Division of Land and Water Stewardship

NCNHDE-14090

March 1, 2021

Matthew DeAngelo
Resource Environmental Solutions, LLC
302 Jefferson Street
Raleigh, NC 27607
RE: Thunder Swamp Buffer Project

Dear Matthew DeAngelo:

The North Carolina Natural Heritage Program (NCNHP) appreciates the opportunity to provide information about natural heritage resources for the project referenced above.

Based on the project area mapped with your request, a query of the NCNHP database indicates that there are no records for rare species, important natural communities, natural areas, and/or conservation/managed areas within the proposed project boundary. Please note that although there may be no documentation of natural heritage elements within the project boundary, it does not imply or confirm their absence; the area may not have been surveyed. The results of this query should not be substituted for field surveys where suitable habitat exists. In the event that rare species are found within the project area, please contact the NCNHP so that we may update our records.

The attached 'Potential Occurrences' table summarizes rare species and natural communities that have been documented within a one-mile radius of the property boundary. The proximity of these records suggests that these natural heritage elements may potentially be present in the project area if suitable habitat exists. Tables of natural areas and conservation/managed areas within a one-mile radius of the project area, if any, are also included in this report.

If a Federally-listed species is found within the project area or is indicated within a one-mile radius of the project area, the NCNHP recommends contacting the US Fish and Wildlife Service (USFWS) for guidance. Contact information for USFWS offices in North Carolina is found here: <https://www.fws.gov/offices/Directories/ListOffices.cfm?statecode=37>.

Please note that natural heritage element data are maintained for the purposes of conservation planning, project review, and scientific research, and are not intended for use as the primary criteria for regulatory decisions. Information provided by the NCNHP database may not be published without prior written notification to the NCNHP, and the NCNHP must be credited as an information source in these publications. Maps of NCNHP data may not be redistributed without permission.

The NC Natural Heritage Program may follow this letter with additional correspondence if a Dedicated Nature Preserve, Registered Heritage Area, Land and Water Fund easement, or Federally-listed species are documented near the project area.

If you have questions regarding the information provided in this letter or need additional assistance, please contact Rodney A. Butler at rodney.butler@ncdcr.gov or 919-707-8603.

Sincerely,
NC Natural Heritage Program

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area
 Thunder Swamp Buffer Project
 March 1, 2021
 NCNHDE-14090

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Freshwater Fish	36884	Notropis chalybaeus	Ironcolor Shiner	1961-06-12	H	4-Low	---	Significantly Rare	G4	S2S3

No Natural Areas are Documented Within a One-mile Radius of the Project Area

No Managed Areas are Documented Within a One-mile Radius of the Project Area

Definitions and an explanation of status designations and codes can be found at <https://ncnhde.natureserve.org/help>. Data query generated on March 1, 2021; source: NCNHP, Q4 January 2021. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

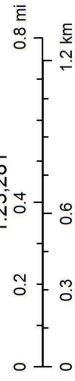
NCNHDE-14090: Thunder Swamp Buffer Project



March 1, 2021

- Project Boundary
- Buffered Project Boundary

1:23,281



Sources: Esri, HERE, Garmin, Intermap, increment P. Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geobase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



☒ NORTH CAROLINA WILDLIFE RESOURCES COMMISSION ☒

Cameron Ingram, Executive Director

May 3, 2021

Mr. Heath Hidlay
Resource Environmental Solutions
3600 Glenwood Avenue, Suite 100
Raleigh, NC 27612

Subject: Request for Environmental Information for Thunder Swamp Buffer Mitigation Project, Wayne County, North Carolina.

Dear Mr. Hidlay,

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the proposed project description. Comments are provided in accordance with certain provisions of the Clean Water Act of 1977 (as amended), Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667e) and North Carolina General Statutes (G.S. 113-131 et seq.).

Contracted by the NC Division of Mitigation Resources, Resource Environmental Solutions has developed the Thunder Swamp Buffer Mitigation Project. The 16.74-acre conservation easement site will restore and preserve riparian buffer. Land use within and surrounding the project area is comprised of row crop production and mature forests. The project area is located along NC Highway 55, southwest of its intersection with West Main Street, west of Mt Olive.

The project area drains to Thunder Swamp in the Neuse River basin. Stream restoration projects often improve water quality and aquatic habitat. Establishing native, forested buffers in riparian areas will improve both aquatic and terrestrial habitats and provide a travel corridor for wildlife species.

In addition to stringent best management practices for erosion and sediment control during construction, the NCWRC recommends the use of biodegradable and wildlife-friendly sediment and erosion control devices. Silt fencing, fiber rolls and/or other products should have loose-weave netting that is made of natural fiber materials with movable joints between the vertical and horizontal twines. Silt fencing and similar products that have been reinforced with plastic or metal mesh should be avoided as they impede the movement of terrestrial wildlife species. Excessive silt and sediment loads can have detrimental effects on aquatic resources including destruction of spawning habitat, suffocation of eggs and clogging of gills. Any invasive plant species found onsite should be removed and destroyed.

Page 2

May 3, 2021

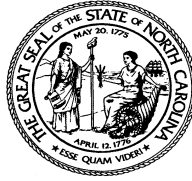
Scoping – Thunder Swamp Buffer Mitigation Project

Thank you for the opportunity to review and comment on this project. If I can be of further assistance, please contact me at (910) 409-7350 or gabriela.garrison@ncwildlife.org.

Sincerely,

A handwritten signature in blue ink that reads "Gabriela Garrison". The signature is written in a cursive, flowing style.

Gabriela Garrison
Eastern Piedmont Habitat Conservation Coordinator
Habitat Conservation Program



**North Carolina Department of Natural and Cultural Resources
State Historic Preservation Office**

Ramona M. Bartos, Administrator

Governor Roy Cooper
Secretary Susi H. Hamilton

Office of Archives and History
Deputy Secretary Kevin Cherry

June 9, 2021

Heath Hidlay
Resources Environmental, LLC
3600 Glenwood Avenue, Suite 100
Raleigh, NC 27612

hhidlay@res.us

Re: Thunder Swamp Buffer Mitigation Site, 35.205, -78.096, Wayne County, ER 21-1120

Dear Mr. Hidlay:

Thank you for your letter of April 1, 2021, regarding the above-referenced undertaking. We have reviewed the submittal and offer the following comments.

We have conducted a review of the project and are aware of no historic resources which would be affected by the project. Therefore, we have no comment on the project as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-814-6579 or environmental.review@ncdcr.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

A handwritten signature in blue ink that reads "Renee Gledhill-Earley".

for Ramona Bartos, Deputy
State Historic Preservation Officer

Appendix E

Invasive Species Plan

INVASIVE SPECIES PLAN

Annual monitoring and semi-annual site visits will be conducted to assess the condition of the finished project. These site inspections may identify the presence of invasive vegetation. RES will treat invasive species vegetation within the project area and provide remedial action on a case by- case basis. Common invasive species vegetation found onsite, such as Chinese privet (*Ligustrum sinense*), Chinaberry (*Melia azedarach*), and kudzu (*Pueraria montana*), will be treated to allow native plants to become established within the conservation easement. Invasive species vegetation will be treated by approved mechanical and/or chemical methods such that the percent composition of exotic/invasive species is less than 5% of the total riparian buffer area. Any control methods requiring herbicide application will be performed in accordance with NC Department of Agriculture (NCDA) rules and regulations. Additionally, some stream reaches contain dense thickets of greenbriers and grape vines along their banks that have the potential to become a nuisance; therefore, some of these areas may be thinned and/or removed mechanically if there is a threat to planted vegetation. If areas of invasive species exist within the easement, they will be monitored yearly as part of the monitoring protocol and treated if necessary. If required, problem areas will continue to be treated until the project easement shows overall trending towards meeting all monitoring requirements.

Appendix F

Financial Assurance

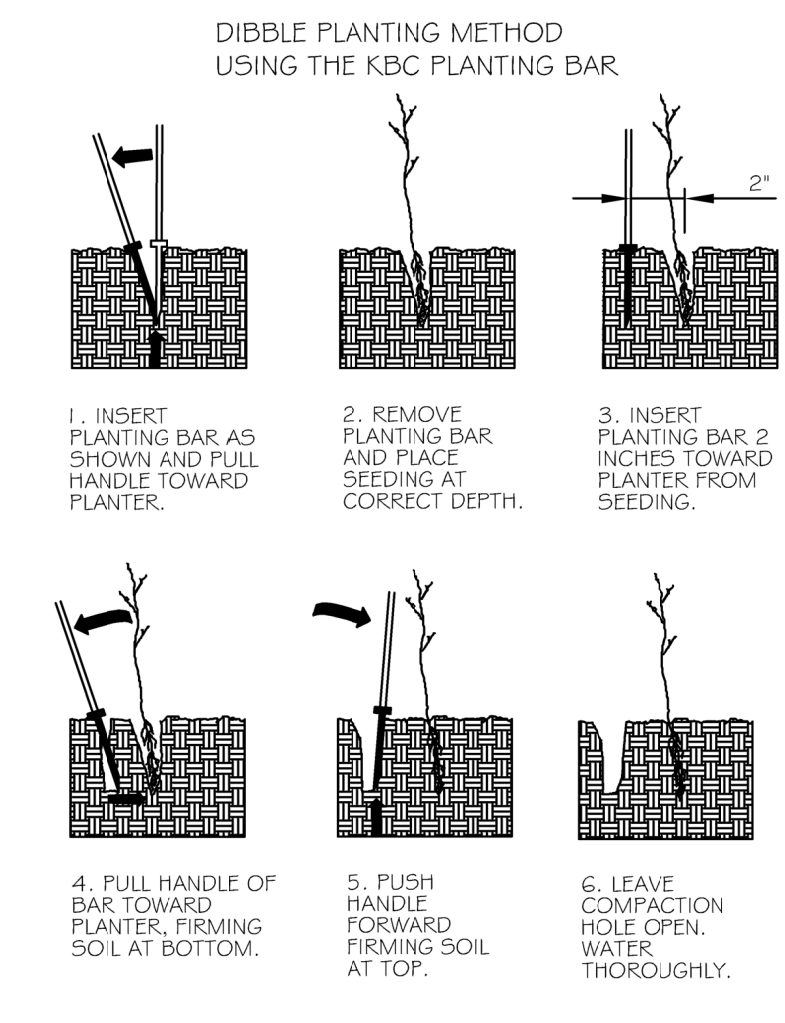
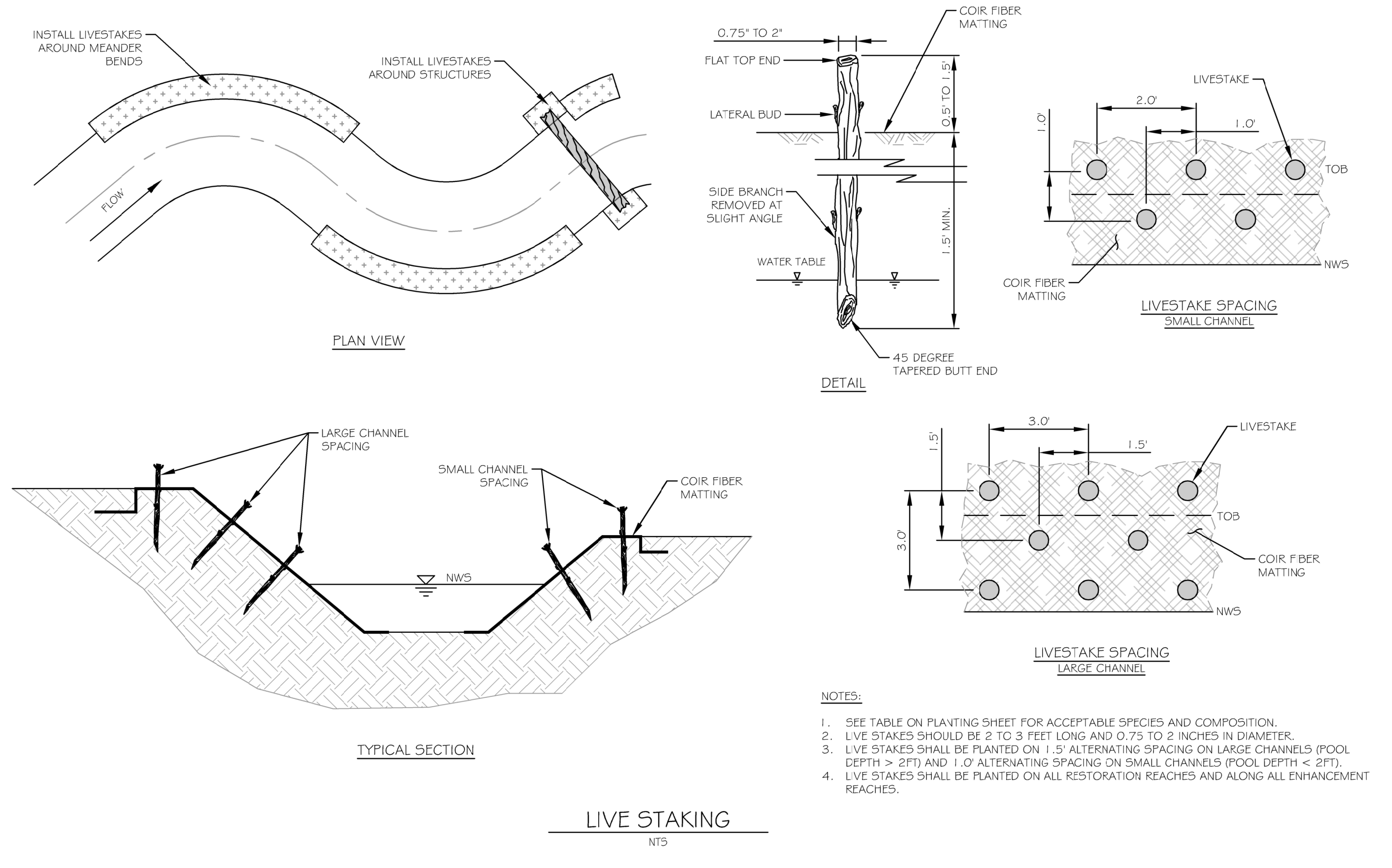
FINANCIAL ASSURANCE

Pursuant to Section IV H and Appendix III of the NCDEQ DMS (formerly Ecosystem Enhancement Program) In-Lieu Fee Instrument dated July 28, 2010, the North Carolina Department of Environmental Quality (NCDEQ) has provided the USACE-Wilmington District with a formal commitment to fund projects to satisfy mitigation requirements assumed by NCDEQ DMS. This commitment provides financial assurance for all mitigation projects implemented by the program.

Appendix G

Design Detail Sheet

FILE NAME: C:\Users\lucaroll\OneDrive - Resource Environmental Solutions, LLC\Desktop\0391_SHT_DETAILS.dwg SAVED BY: Bearroll



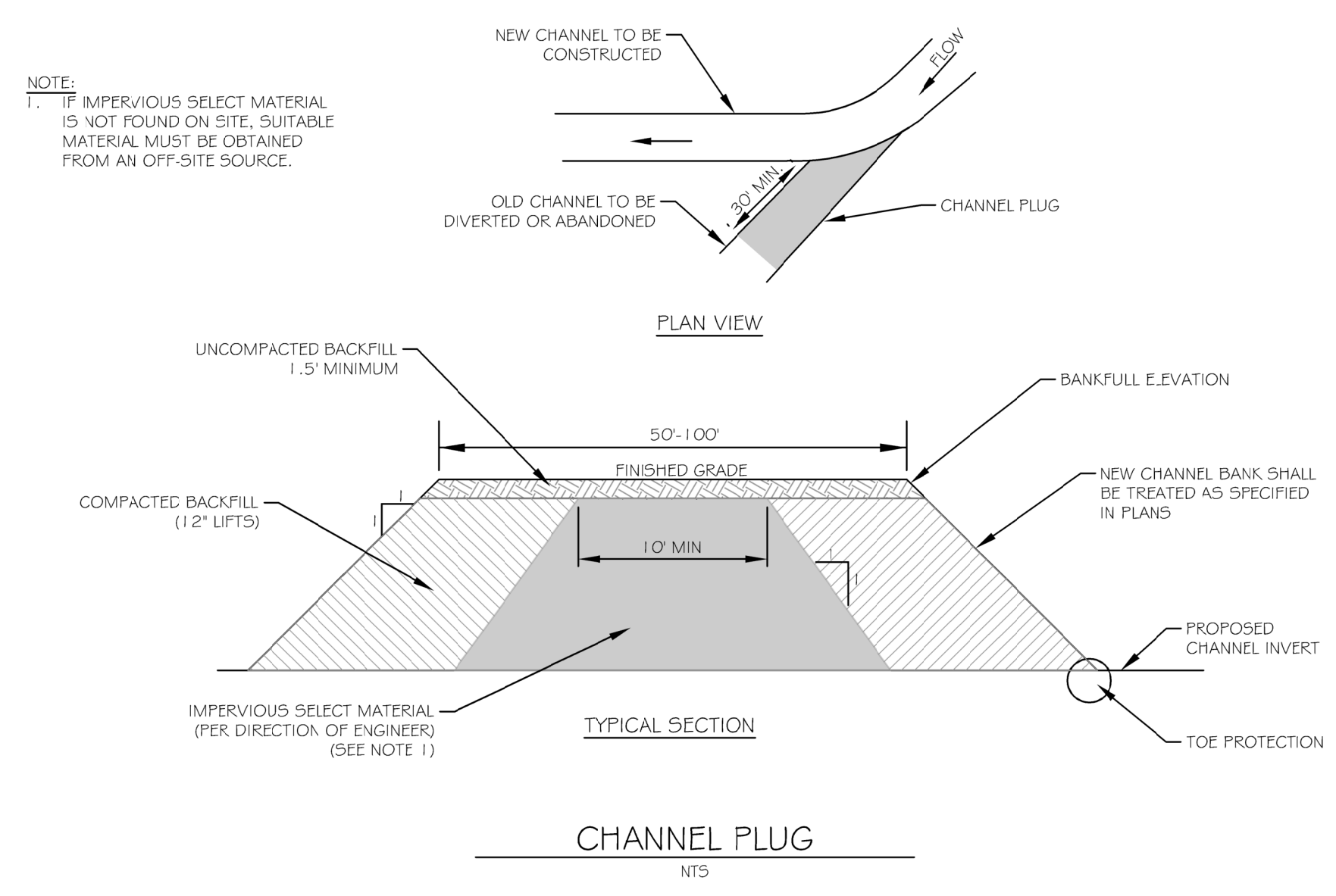
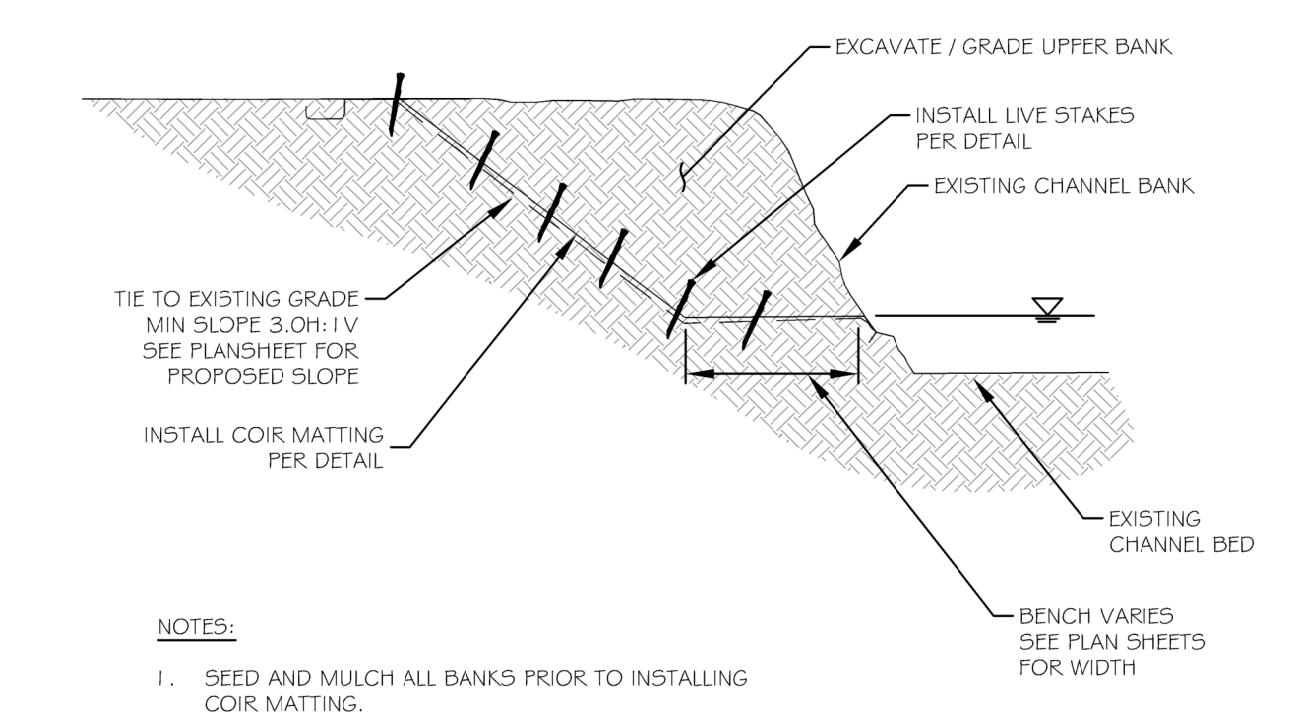
PLANTING NOTES:
PLANTING BAG
DURING PLANTING, SEEDLINGS SHALL BE KEPT IN A MOIST CANVAS BAG OR SIMILAR CONTAINER TO PREVENT THE ROOT SYSTEMS FROM DRYING.

NOTES:
BARE ROOTS SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

KBC PLANTING BAR
PLANTING BAR SHALL HAVE A BLADE WITH A TRIANGULAR CROSS SECTION, AND SHALL BE 1/2 INCHES LONG, 4 INCHES WIDE AND 1 INCH THICK AT CENTER.

ROOT PRUNING
ALL SEEDLINGS SHALL BE ROOT PRUNED, IF NECESSARY, SO THAT NO ROOTS EXTEND MORE THAN 10 INCHES BELOW THE ROOT COLLAR.

BARE ROOT PLANTING
NTS



3600 Glenwood Ave, Suite 100
Raleigh, NC 27612
Main: 919.829.9909
www.res.us

Engineering Services Provided By:
RES Environmental Operating Company, LLC
License: F-1428

SEAL

REVISIONS:

PLOT DATE:
PLOT DATE

RELEASED FOR:
PRELIMINARY

PROJECT NAME:
PROJNAME
LOCATION
LOCATION
DRAWING TITLE:
SHEET TITLE

PROJECT NUMBER:
PROJECT MANAGER:
DESIGNED:
DRAWN:
CHECKED:

PROJNO
PROJMGR
DESIGNER
DRAFTER
CHECKEDBY

SHEET NUMBER:
SHEETNO