

ANNUAL REPORT FOR 2006 (Year 6)



Starmount Forest Country Club Mitigation Site
Greensboro
Guilford County
EEP Project No. 360

Submitted to:

NCDENR EEP
1619 Mail Service Center
Raleigh, NC 27699-1619



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STARMOUNT FOREST 2006 SUMMARY

The following report summarizes the monitoring activities that have occurred in 2006 at the Starmount Forest Country Club Mitigation Site. The site is located in Greensboro, Guilford County, North Carolina. The site was originally designed and constructed in 1999 by the North Carolina Department of Transportation (NCDOT). Portions of the mitigation site were repaired in Winter 2005/2006. This report provides the monitoring results for the 2006 monitoring year for the entire restoration site.

The Starmount Forest Site was constructed to provide 7,950 linear feet of mitigation credit for stream impacts associated with NCDOT impacts. Per the letter from the Ecosystem Enhancement Program (EEP) to NCDOT dated August 25, 2004, the EEP has accepted the transfer of all offsite mitigation projects; including Starmount Forest. The EEP project number for Starmount Forest is 360. EEP is responsible for fulfilling the remaining monitoring requirements and future remediation for this project.

No hydrologic or vegetation monitoring is required for this project; however, a visual assessment of vegetative cover and stream stability was performed in spring 2006 and fall 2006. All restoration reaches appeared stable with herbaceous and woody vegetation covering the stream banks throughout. Vegetative cover was extensive throughout including the repaired areas. Some minor areas of erosion are present but do not present a problem to stream stability. One area of bank erosion on Thread D will require remedial action.

1.0 INTRODUCTION: STARMOUNT FOREST MITIGATION SITE

1.1 Project Description

The Starmount Forest Mitigation Site is located in Greensboro on Starmount Forest Country Club golf course. The site is located on the northwest corner of the intersection of Holden Road and West Market Street (Figure 1). The site provides 7,950 linear feet of stream restoration credit.

1.2 Project Purpose

The purpose of this report is to detail the vegetation and stream assessment in 2006 at the Starmount Forest Mitigation Site. No quantitative vegetation or stream survey is required at this site.

1.3 Project History

The following tables summarize project mitigation structure and objectives, project history, project contacts, and project background (Tables I-IV). Much of the information needed to complete the tables was not available when this report was submitted.

Project Segment	Mitigation Type	Approach	Linear Footage or Acreage	Stationing	Comment
Thread A	R/S	P1/SS	2,350	0+00 to 23+50	Priority 1 Restoration with Bank Stabilization
Thread B	R/S	P1/SS	2,866.86	0+00 to 28+66.86	Priority 1 Restoration with Bank Stabilization
Thread C	R/S	P1/SS	1,193.23	0+00 to 11+93.23	Priority 1 Restoration with Bank Stabilization
Thread D	R/S	P1/SS	1,050	0+00 to 10+50	Priority 1 Restoration with Bank Stabilization
Thread E	R	P1	400	0+00 to 4+00	Priority 1 Restoration

R=Restoration

EI=Enhancement I

ELL=Enhancement II

S=Stabilization

PI=Priority I

PII=Priority II

PIII=Priority III

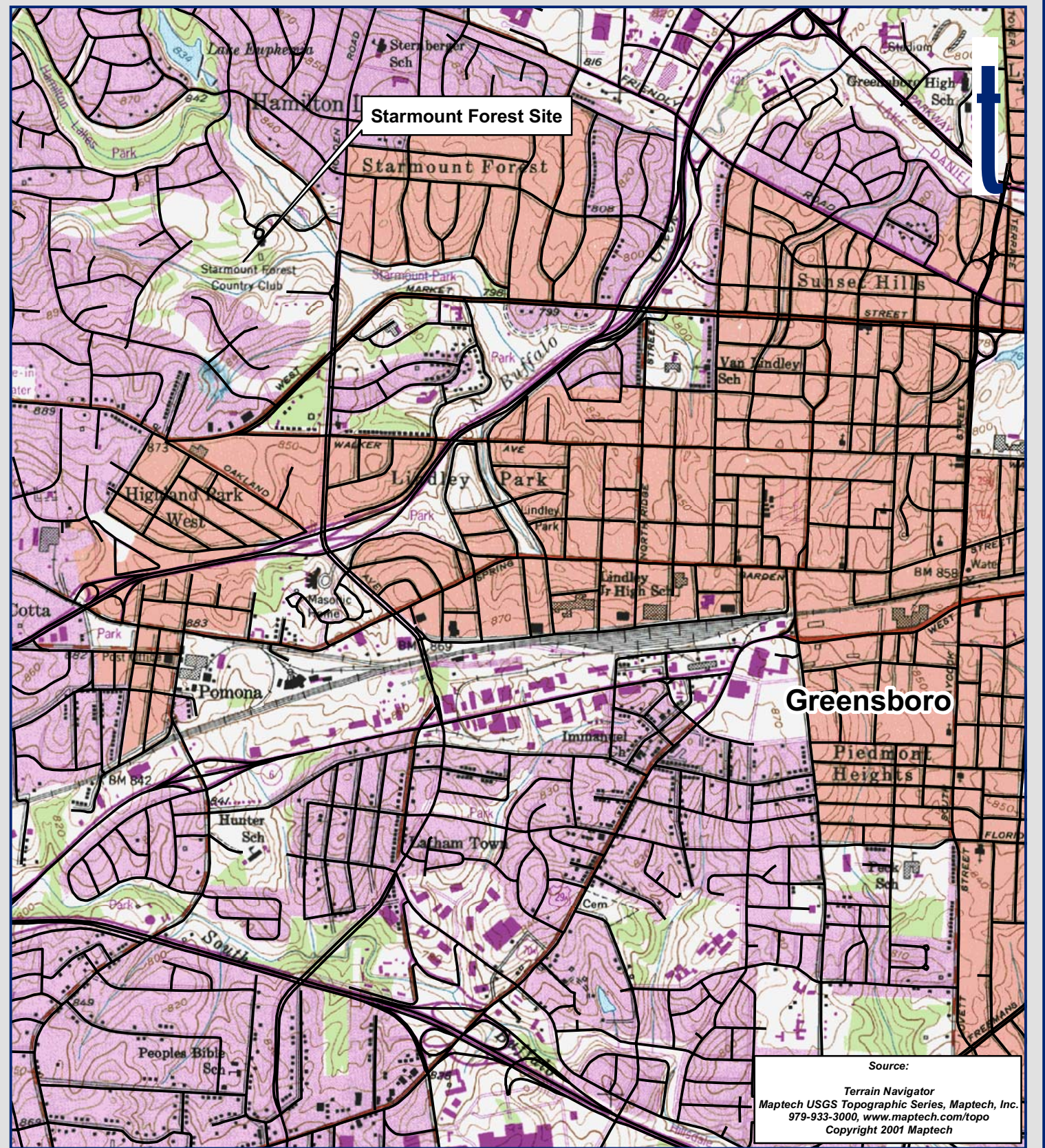
SS=Stream Bank Stabilization

Activity or Report	Scheduled Completion	Data Collection Complete	Actual Completion or Delivery
Restoration Plan	Unknown	Unknown	Unknown
Final Design-90%	Unknown	Unknown	February 1999
Construction	Unknown	Unknown	Summer 1999
Temporary S&E mix	Unknown	Unknown	Unknown
Containerized and B&B plantings for each reach/segment	Unknown	Unknown	Unknown
Mitigation Plan/As-built (Year 0 Monitoring-baseline)	Unknown	Unknown	Unknown

Structural maintenance	Unknown	Unknown	Unknown
Year 1 Monitoring	Unknown	Unknown	Fall 2000
Year 2 Monitoring	Unknown	Unknown	Fall 2001
Year 3 Monitoring	Unknown	Unknown	Fall 2002
Year 4 Monitoring	Unknown	Unknown	Fall 2003
Year 5 Monitoring	Unknown	Unknown	Fall 2004
Repair to threads B & D	Unknown	Unknown	Winter 2005/2006
Monitoring	Fall 2006	Sep-06	Nov-06

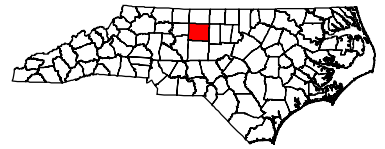
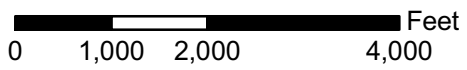
Designer	NCDOT Raleigh, North Carolina
Primary project design POC	Unknown
Construction Contractor	Unknown
Construction Contractor POC	Unknown
Planting Contractor	Unknown
Planting Contractor POC	Unknown
Seeding Contractor	Unknown
Seeding Contractor POC	Unknown
Seed Mix Sources	Unknown
Nursery Stock Suppliers	Unknown
Monitoring Performers-2004	NCDOT Roadside Environmental Unit 1425 Rock Quarry Road Raleigh, NC 27610 M. Green and J. Wait
Monitoring Performers-2005	NCDOT Roadside Environmental Unit 1425 Rock Quarry Road Raleigh, NC 27610 M. Green and J. Wait
Monitoring Performers-2006	WK Dickson and Co., Inc. 3101 John Humphries Wynd. Raleigh, NC 27612 Mr. Daniel Ingram (919) 782-0495
Vegetation Monitoring POC	N/A
Wetland Monitoring POC	N/A

Project County	Guilford
Drainage Area	465 acres
Drainage impervious cover estimate (%)	>20%
Stream order	1 st and 2 nd
Physiographic region	Piedmont
Ecoregion	Southern Outer Piedmont
Rosgen classification of As-built	C
Cowardin classification	N/A
Dominant soil types	Cecil sandy clay loam Madison sandy loam
Reference site ID	N/A
USGS HUC for Project	Buffalo Creek - HUC 03030002
NCDWQ sub-basin for project and reference	Project: 03-06-03, Reference: N/A
NCDWQ classification for project and reference	C, NSW
Any portion of project segment upstream of a 303(d) listed segment?	No
Reasons for 303d listing or stressor	N/A
% of project easement fenced	None – in City park, Country Club



Source:
 Terrain Navigator
 Maptech USGS Topographic Series, Maptech, Inc.
 979-933-3000, www.maptech.com/topo
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Starmount Forest Country Club Mitigation Site
 Vicinity Map
 Greensboro, NC



2.0 VEGETATION: STARMOUNT FOREST MITIGATION SITE

2.1 Description of Species

The following species were planted in the restoration area:

Table V. Starmount Forest Planted Species

Common Name	Scientific Name
Silky dogwood	<i>Cornus amomum</i>
Black chokeberry	<i>Aronia melanocarpa</i>
Red chokeberry	<i>Aronia arbutifolia</i>
Lowbush blueberry	<i>Vaccinium angustifolium</i>
Witch hazel	<i>Hamamelis virginiana</i>
River birch	<i>Betula nigra</i>
Green ash	<i>Fraxinus pennsylvanica</i>
Red maple	<i>Acer rubrum</i>
American sycamore	<i>Platanus occidentalis</i>
Flowering dogwood	<i>Cornus florida</i>

2.2 Results of Vegetation Assessment

The Starmount Forest site was visited in Spring 2006 and Fall 2006 to visually assess vegetation. Starmount Forest Country Club is an intensively maintained landscape for purposes of golf play. The planted vegetation and live stakes appeared to be present in sufficient density to provide stability, habitat, and aesthetics. Golf course maintenance has not impacted vegetative cover beyond approved maintenance areas. The repair areas on threads B and D were stable and the temporary seeding and live stakes were in good shape. Other species noted: soft rush (*Juncus effusus*), turf grasses, Japanese honeysuckle, and jewel weed (*Impatiens capensis*).

2.3 Vegetation Conclusions

This site consists of a narrow riparian zone planted with a combination of low growing vegetation in golf play areas and woody vegetation in other areas. The 2006 vegetation assessment revealed all planted vegetation is sufficiently dense and stable and no remedial actions are warranted.

3.0 STREAM: STARMOUNT FOREST MITIGATION SITE

The Starmount Forest stream channel threads A-E were visually inspected during the spring and fall of 2006. The channel was walked and compared to the construction plans. The pedestrian survey included inspection for:

- structure failure
- bank erosion
- head cuts,
- aggradation
- other potential impacts to stability.

The channel appears stable with herbaceous and woody vegetation covering the stream banks throughout the project reach. Some minor erosion was observed (Photos in Appendix A). Special attention will be paid to these areas during subsequent monitoring in 2007.

Particular attention was paid to the repair areas on Thread B (169 linear feet) and Thread D (314 linear feet). Thread B is stable and well vegetated. The repairs appear successful and no further remedial actions are needed. Thread D contains one area of bank erosion that will need repair in the future. This problem area is discussed in more detail in Appendix B.

Overall the channel had excellent habitat diversity, well developed undercut banks, and coarse bed material. As previously stated, no cross section or profile survey of this site is required.

APPENDIX A

**STARMOUNT FOREST 2006
SITE PHOTOGRAPHS**



Starmount Forest 2006, Thread A, STA 1+25, downstream.



Starmount Forest 2006, Thread A, STA 5+00, downstream.



Starmount Forest 2006, Thread A, STA 11+50, upstream.



Starmount Forest 2006, Thread A, STA 18+00, downstream.



Starmount Forest 2006, Thread A, STA 23+00, upstream.



Starmount Forest 2006, Thread B, STA 2+25, downstream.



Starmount Forest 2006, Thread B, STA 3+50, upstream.



Starmount Forest 2006, Thread B, STA 7+25, downstream.



Starmount Forest 2006, Thread B, STA 12+00, downstream



Starmount Forest 2006, Thread B, STA 13+75, upstream



Starmount Forest 2006, Thread B, STA 21+50, downstream



Starmount Forest 2006, Thread B, STA 27+00, upstream



Starmount Forest 2006, Thread C, STA 2+50, downstream



Starmount Forest 2006, Thread C, STA 5+50, upstream



Starmount Forest 2006, Thread D, STA 2+75, downstream



Starmount Forest 2006, Thread D, STA 4+00, upstream



Starmount Forest 2006, Thread D, STA 7+00, downstream



Starmount Forest 2006, Thread E, STA 1+50, downstream



Starmount Forest 2006, Thread E, STA 3+50, upstream



Starmount Forest 2006, Thread D, minor bank erosion at STA 4+80.



Starmount Forest 2006, Thread D, minor bank erosion at STA 7+10.



Starmount Forest 2006, typical channel condition.

Appendix B
(Click here)

APPENDIX B

**STARMOUNT FOREST 2006
INTEGRATED PROJECT PROBLEM AREAS PLAN VIEW**

STARMOUNT FOREST 2006
Integrated project problem areas plan view

**Exhibit Table B.1. Integrated Project Problem Areas
Starmount Forest (EEP Project No. 360)**

Feature Issue	Station Numbers	Suspected Cause	Photo Number
Erosion on right bank beneath cart path bridge	Thread B STA 2+30	Insufficient vegetative cover and/or bank protection	PA #1
Aggradation, central bar formation	Thread B STA 4+50	Excess sediment input from upstream sources, insufficient water velocity to move sediment	PA #2
Erosion on left bank	Thread D 5+50 to 6+00	Insufficient bank protection and potential improper design	PA #3



Starmount Forest 2006, PA #1.



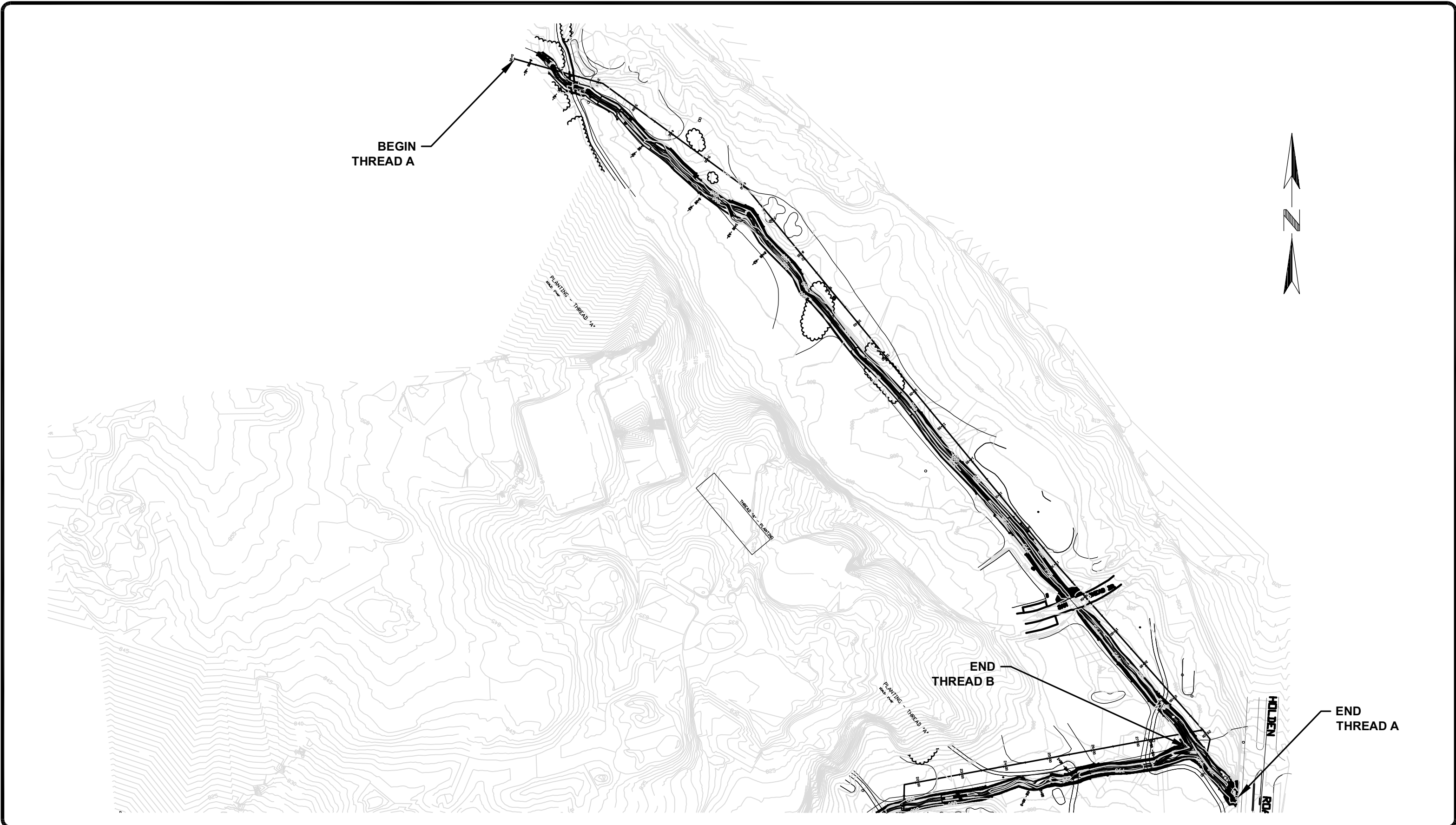
Starmount Forest 2006, PA #2.



Starmount Forest 2006, PA #3.



Starmount Forest 2006, PA #3.



PROJECT MANAGER
DPI
DRAWN BY
TRS
APPROVED BY
MAP DATE
PROJECT NUMBER
5045700RA

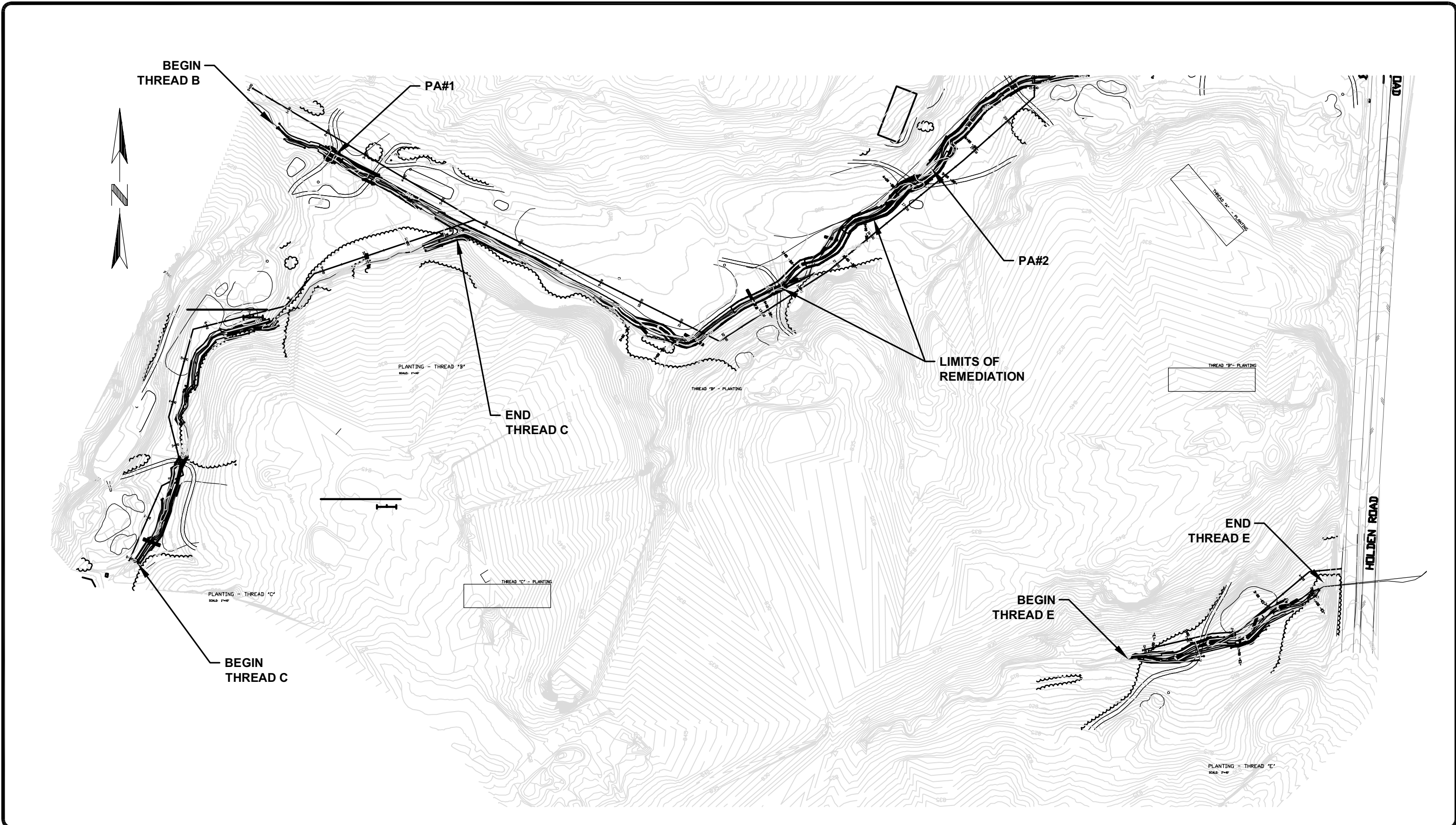
WK DICKSON
Engineers • Planners • Surveyors
Landscape Architects

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**INTEGRATED PROJECT PROBLEM AREAS
2006 (YEAR 6) PLAN VIEW
STARMOUNT FOREST COUNTRY CLUB MITIGATION SITE
GREENSBORO, NORTH CAROLINA**



PROJECT MANAGER DPI	DRAWING SCALE 1"=200'
DRAWN BY TRS	SURVEY DATE
APPROVED BY	MAP DATE
PROJECT NUMBER 5045700RA	



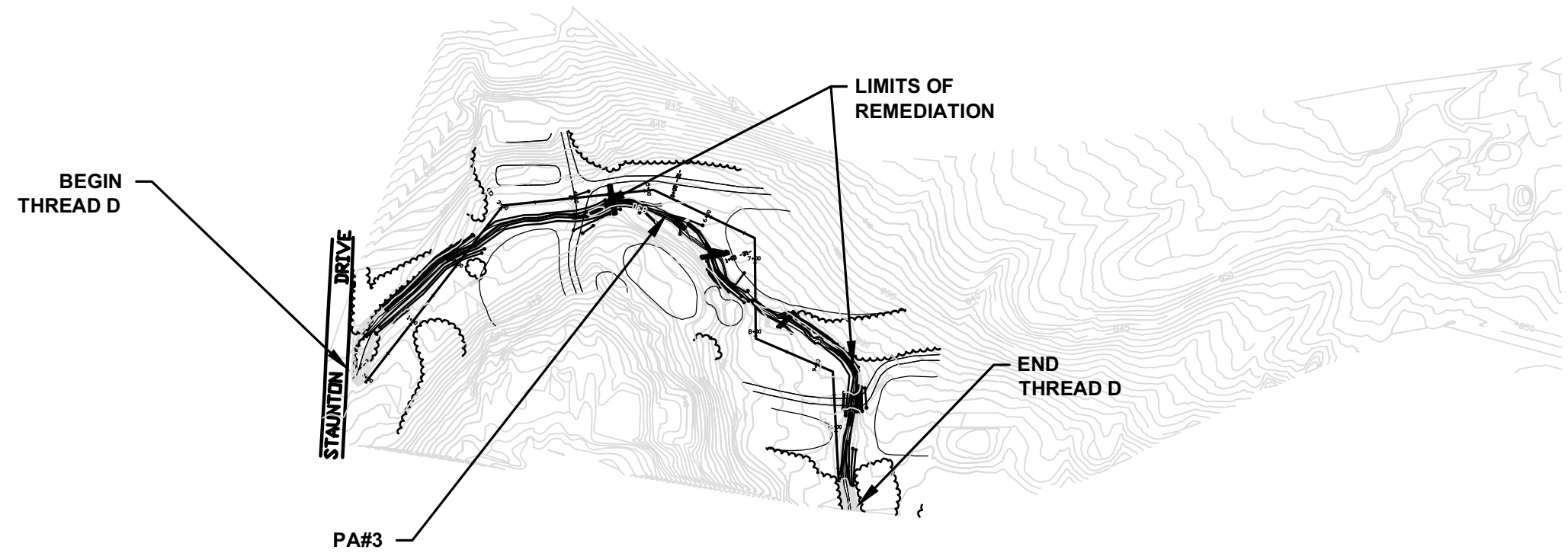
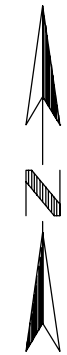
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DPI	1"=200'
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