

STATE PROJECT: 020594002A

STATE OF NORTH CAROLINA
ECOSYSTEM ENHANCEMENT PROGRAM

STATE	STATE PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
N.C.	020594002A	1	9

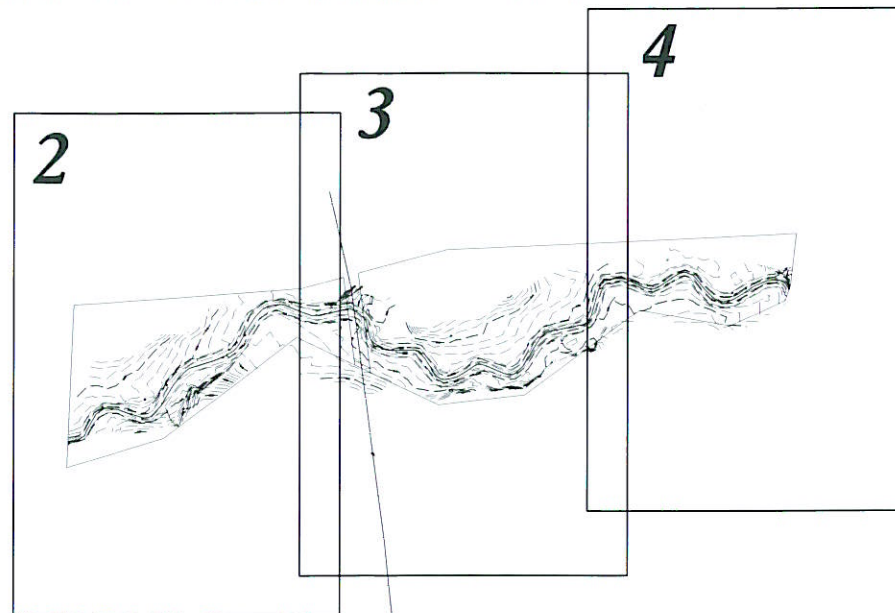


VICINITY MAP
NOT TO SCALE

RANDOLPH COUNTY

**LOCATION: McCAIN PROPERTY, UNNAMED TRIBUTARY TO BACK CREEK
SOPHIA, NORTH CAROLINA**

TYPE OF WORK: STREAM RESTORATION



INDEX OF SHEETS

- 1 TITLE SHEET
- 1-A LEGEND AND SITE CONTROL
- 2 THRU 4 STREAM PLANFORM
- 5 THRU 7 PLANTING PLAN
- 8 SURVEYOR AS-BUILT

ACCESS AT LAKE LUCAS ROAD

LAKE LUCAS ROAD

RECORD DRAWINGS

GRAPHIC SCALE



PROJECT LENGTH

PROPOSED RESTORATION LENGTH = 2,470 FEET

Prepared In the Office of:



KCI Associates
of North Carolina, P.A.
SUITE 220 LANDMARK CENTER II, 4601 SIX FORKS RD., RALEIGH NC
ENGINEERS • PLANNERS • ECOLOGISTS

CONSTRUCTION
COMPLETION DATE:

MARCH 2009

GARY M. MRYNCZA, P.E.
PROJECT ENGINEER

ADAM SPILLER / ALEX FRENCH
NATURAL CHANNEL DESIGN

PROJECT ENGINEER 06.15.09



SIGNATURE:

Prepared for:



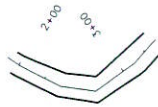
MELONIE ALLEN
NCEEP CONTACT

MCCAIN SITE CONTROL POINTS				
Point	Northing	Easting	Elevation	Description
1	734810.514	1746435.329	550.914	McCAIN #1 REBAR WITH CAP
2	734109.492	1746486.726	540.350	McCAIN #2 60D NAIL
3	733372.227	1746621.410	534.885	McCAIN #3 REBAR WITH CAP

PROJECT LEGEND

STREAM RESTORATION

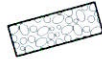
As-Built Thalweg,
Stationing, and Top of Bank



As-Built Rock Cross Vane



As-Built Rock Ford Crossing



As-Built Stone Stabilization



Pre-Restoration Stream

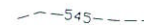


TOPOGRAPHY

Minor Contour Line



Major Contour Line



MISCELLANEOUS

As-Built Fence



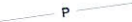
Control Point



Utility Pole



Overhead Utility Line



NO.	DESCRIPTION	DATE	APPROVED



McCAIN PROPERTY - UT TO BACK CREEK
STREAM RESTORATION PROJECT
SOPHIA, RANDOLPH COUNTY, NORTH CAROLINA

DATE: APRIL 2009
SCALE:
LEGEND AND SITE CONTROL
SHEET 1A OF 8

AS-BUILT NOTES

DEVIATIONS FROM DESIGN

THERE WERE NO CHANGES MADE TO THE DESIGNED STREAM PLANFORM DURING CONSTRUCTION.

FOR EASE OF CONSTRUCTION, THE TYPICAL CROSS-SECTIONS FROM DESIGN STATIONS 13+16 TO 20+22 BEGAN AT 12+86 AND THE TYPICAL CROSS-SECTIONS THAT WERE DESIGNED FROM STATION 12+86 TO 13+16 WERE REMOVED FROM THE DESIGN. THIS DESIGN ALTERATION IS NOT ANTICIPATED TO CAUSE ANY NEGATIVE CHANGE TO THE FUNCTION OR STABILITY OF THE RESTORED STREAM.

THE DESIGN OF THE CONFLUENCE WITH THE INCOMING DRAINAGE SWALE NEAR DESIGNED STATION 28+00 WAS CHANGED. A VERNAL POOL ON THE TERRACE, WITH A STONE STABILIZED DRAIN TO THE RESTORED STREAM WAS INSTALLED IN THIS LOCATION TO PROVIDE HABITAT AND INCREASE STORMWATER RETENTION TIME. THIS DESIGN CHANGE ELIMINATED THE NEED FOR A CROSS VANE AT THIS CONFLUENCE.

THE EMERGENCY CATTLE WATER ACCESS WAS INSTALLED ONE RIFFLE UPSTREAM OF ITS DESIGNED LOCATION. THIS CHANGE WAS MADE TO INCREASE THE STABILITY OF THIS ACCESS.

EXCEPT FOR THE ABOVE NOTED CHANGES THE SITE WAS BUILT AS DESIGNED. THESE CHANGES ARE SPECIFICALLY CALLED OUT ON THE DRAWING.

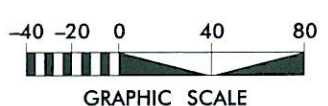
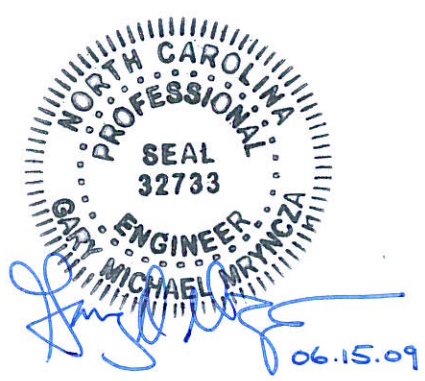
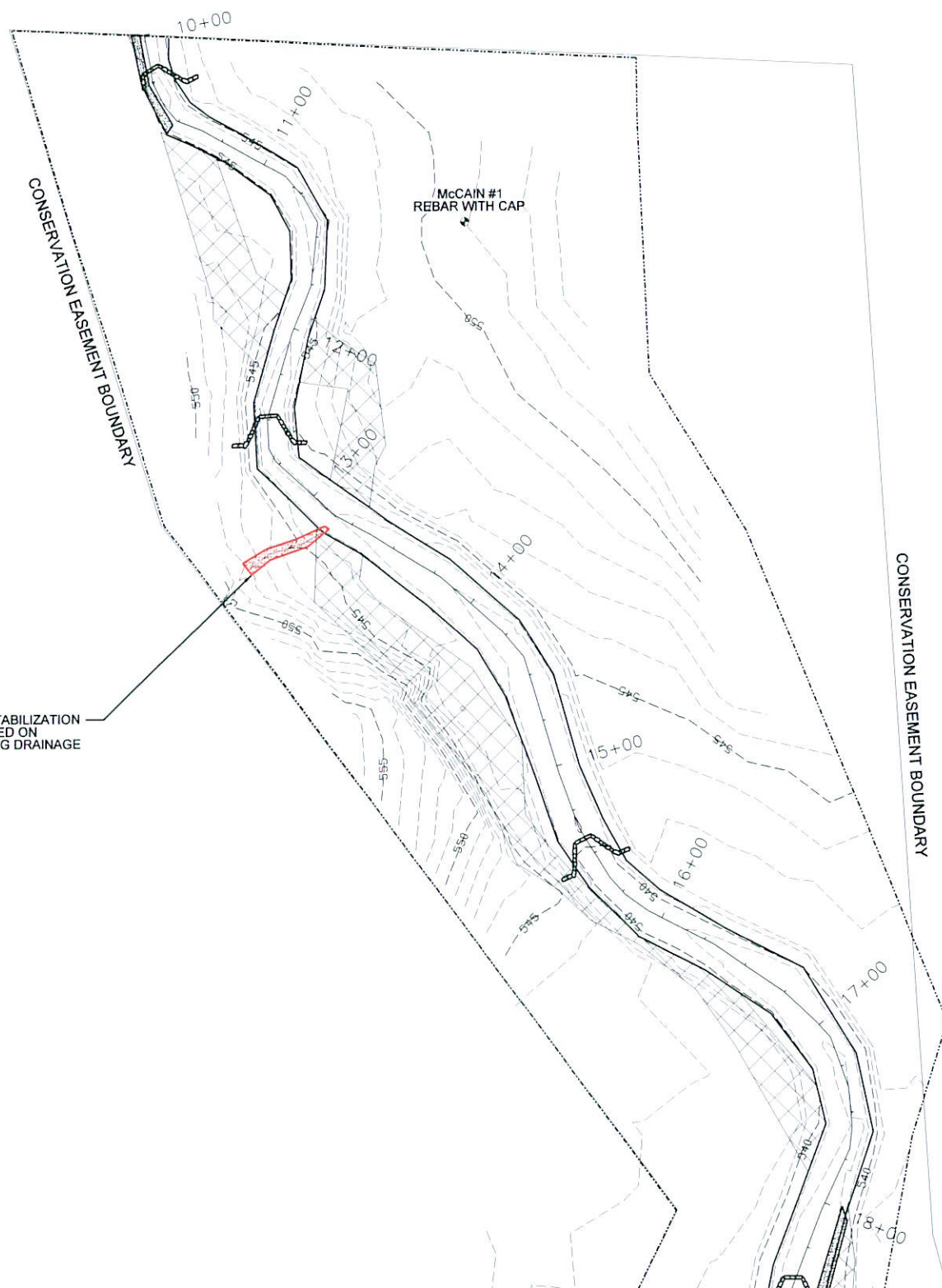
GRADING LIMITS

ALL MAJOR SITE GRADING HAS BEEN CAPTURED WITHIN THE LIMITS OF THE AS-BUILT TOPOGRAPHIC SURVEY.

SOURCE DATA

AS-BUILT TOPOGRAPHIC SURVEY PERFORMED BY CAVANAUGH & ASSOCIATES, P.A. (AS-BUILT TOPOGRAPHIC SURVEY, APRIL 16, 2009).

ROCK STABILIZATION
INSTALLED ON
INCOMING DRAINAGE
SWALE



MATCHLINE SEE SHEET 3

MATCHLINE SEE SHEET 3

NO.	DESCRIPTION	DATE	APPROVED



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RALEIGH, NORTH CAROLINA 27609

**McCain Property - UT to Back Creek
Stream Restoration Project**
SOPHIA, RANDOLPH COUNTY, NORTH CAROLINA
STATION 10+00 TO STATION 18+52

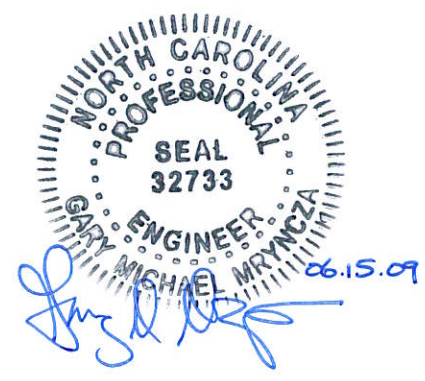
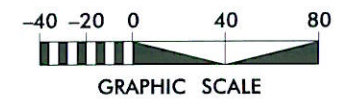
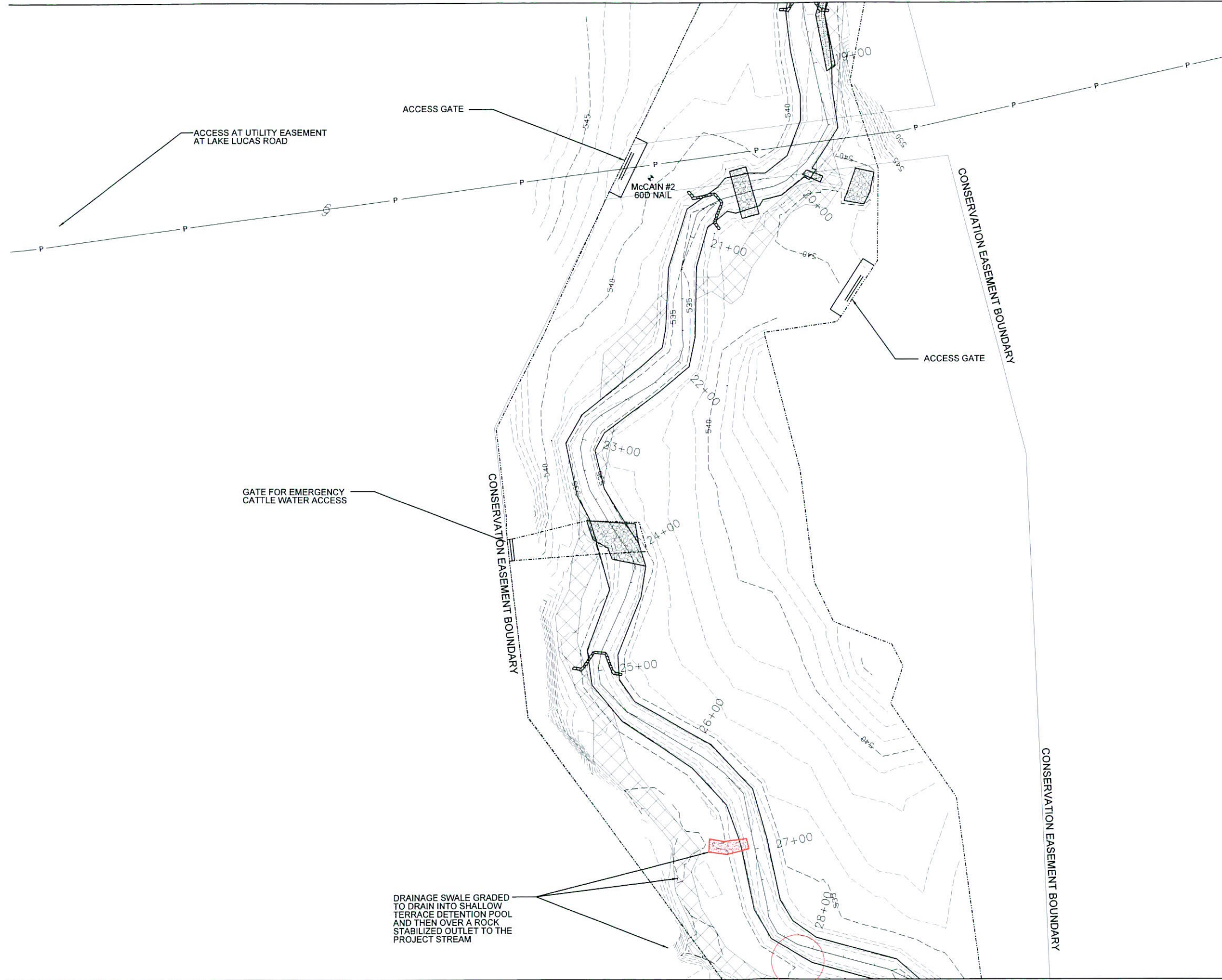
DATE: APRIL 2009
SCALE: 1" = 40'

STREAM PLANFORM

SHEET 2 OF 8

MATCHLINE SEE SHEET 2

MATCHLINE SEE SHEET 2



MATCHLINE SEE SHEET 4

MATCHLINE SEE SHEET 4

NO.	DESCRIPTION	DATE	APPROVED



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McCain Property - UT to Back Creek
Stream Restoration Project
SOPHIA, RANDOLPH COUNTY, NORTH CAROLINA
STATION 18+52 TO STATION 28+80

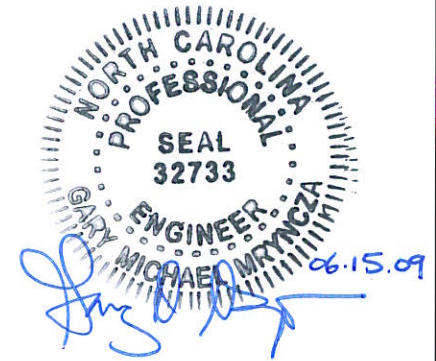
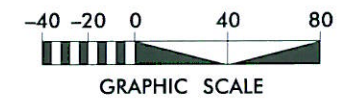
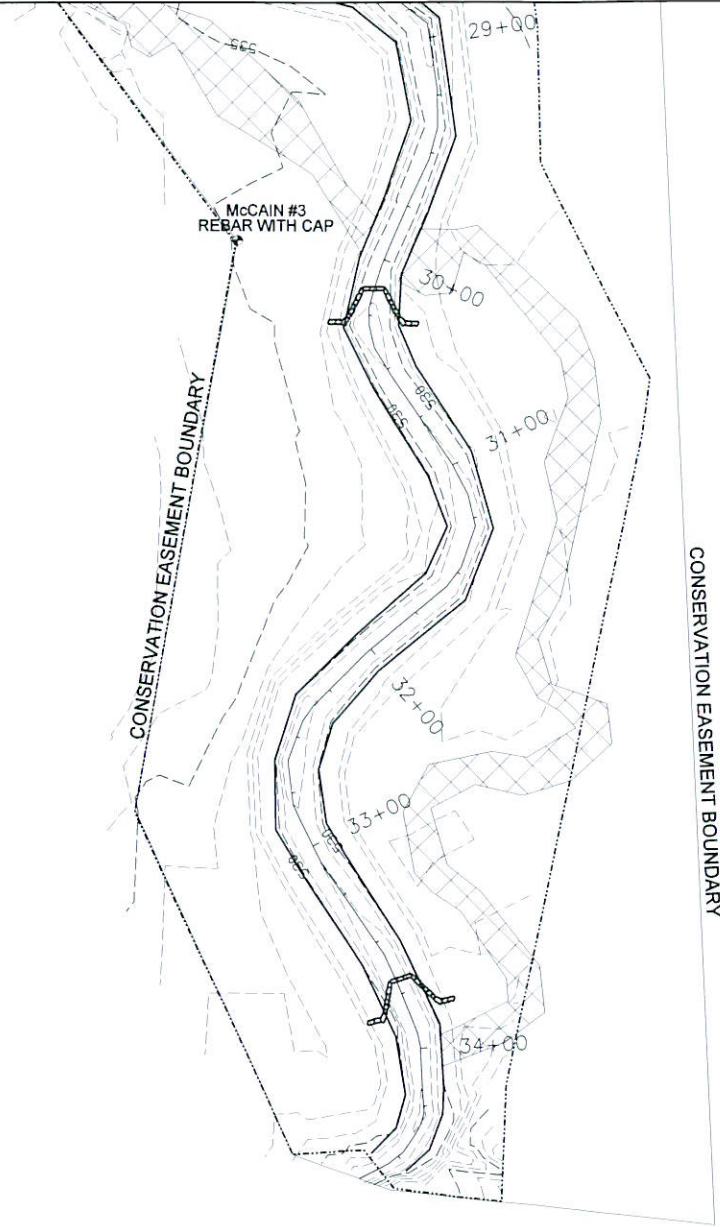
DATE: APRIL 2009
SCALE: 1" = 40'

STREAM
PLANFORM

SHEET 3 OF 8

MATCHLINE SEE SHEET 3

MATCHLINE SEE SHEET 3



NO.	DATE	DESCRIPTION	APPROVED



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**McCain Property - UT to Back Creek
Stream Restoration Project**
SOPHIA, RANDOLPH COUNTY, NORTH CAROLINA
STATION 28+80 TO STATION 34+70

DATE: APRIL 2009
SCALE: 1" = 40'

STREAM
PLANFORM

SHEET 4 OF 8



PLANTING PLAN AND SPECIES COMPOSITION

RIPARIAN PLANTING AREA = 7.6 ACRES

12" - 18" BARE ROOT MATERIAL
436 STEMS/ACRE (10' X 10' SPACING), RANDOM SPECIES PLACEMENT

SCIENTIFIC NAME	COMMON NAME	% OF TOTAL	# OF PLANTS
PLATANUS OCCIDENTALIS	SYCAMORE	10	332
QUERCUS PAGODA	CHERRYBARK OAK	15	497
FRAXINUS PENNSYLVANICA	GREEN ASH	15	497
BETULA NIGRA	RIVER BIRCH	10	332
LIRIODENDRON TULIPIFERA	TULIP POPLAR	10	332
QUERCUS PHELLOS	WILLOW OAK	20	664
CORNUS AMOMUM	SILKY DOGWOOD	10	332
DIOSPYROS VIRGINIANA	PERSIMMON	5	167
CALLICARPA AMERICANA	AMERICAN BEAUTYBERRY	5	167
		100	3,320

* UNDISTURBED FORESTED AREAS WITHIN PLANTING ZONE WERE NOT BE PLANTED



STREAM ZONE = 0.38 ACRES

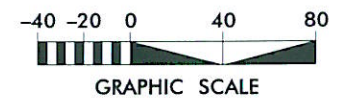
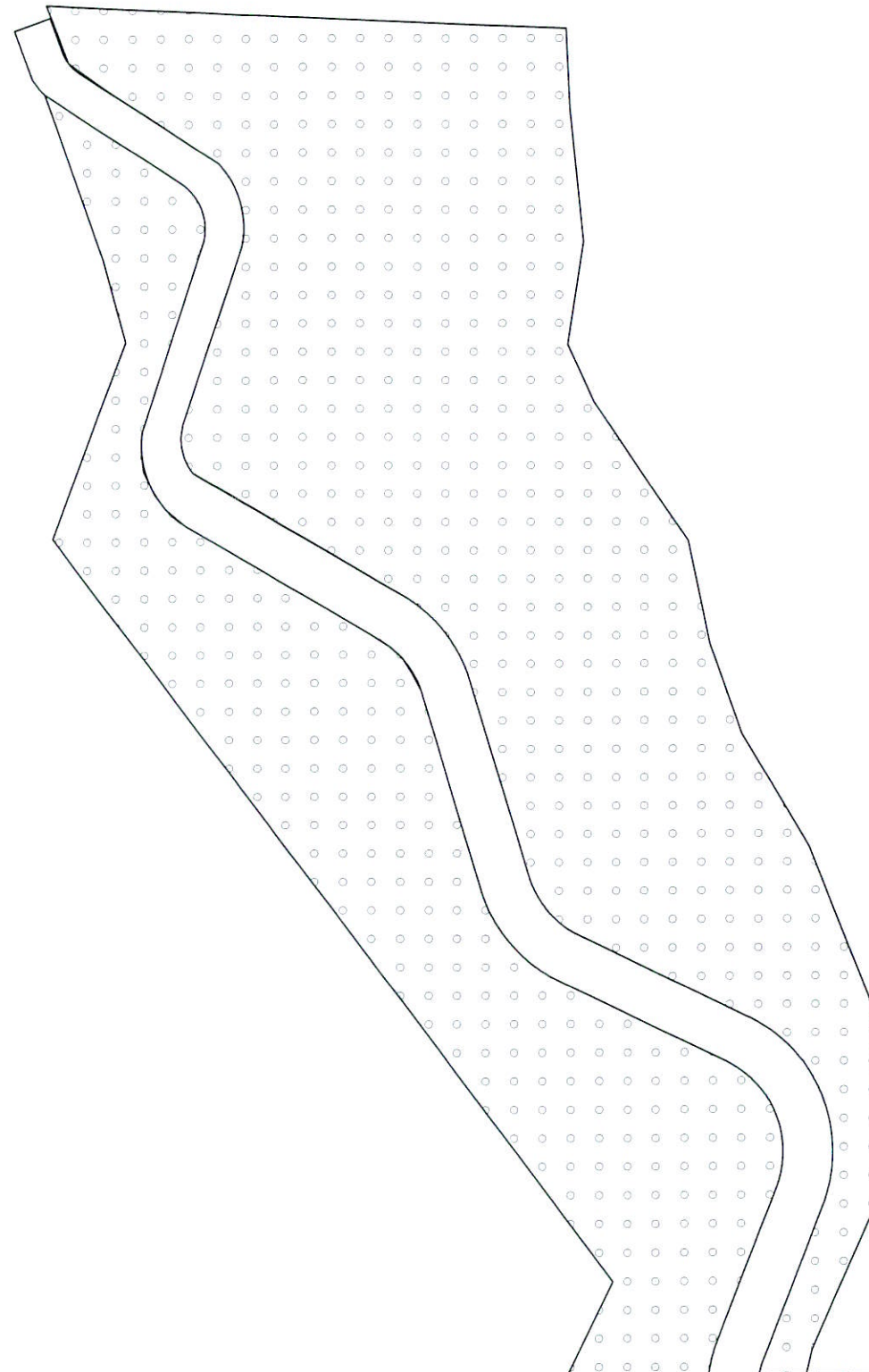
LIVE STAKES: 1.5' TO 2' LENGTHS, 1/2' TO 2" DIAMETER
3' CENTER SPACING, RANDOM SPECIES PLACEMENT

SCIENTIFIC NAME	COMMON NAME
SALIX NIGRA	BLACK WILLOW
SALIX SERICEA	SILKY WILLOW
CORNUS AMOMUM	SILKY DOGWOOD
SAMBUCUS CANADENSIS	ELDERBERRY

NOTE: NO SINGLE LIVE STAKING SPECIES MAKES UP MORE THAN 40% OF THE 2,000 LIVE STAKES INSTALLED

AS-BUILT NOTES

THE ABOVE PLANTED SPECIES LISTS REFLECT APPROVED SUBSTITUTIONS TO THE DESIGNED PLANTING PLAN.



MATCHLINE SEE SHEET 6

MATCHLINE SEE SHEET 6

NO.	DATE	DESCRIPTION	APPROVED

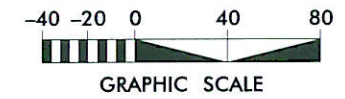
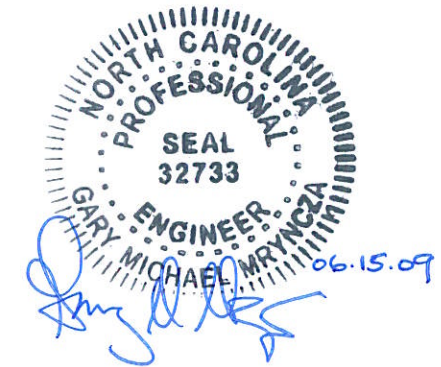
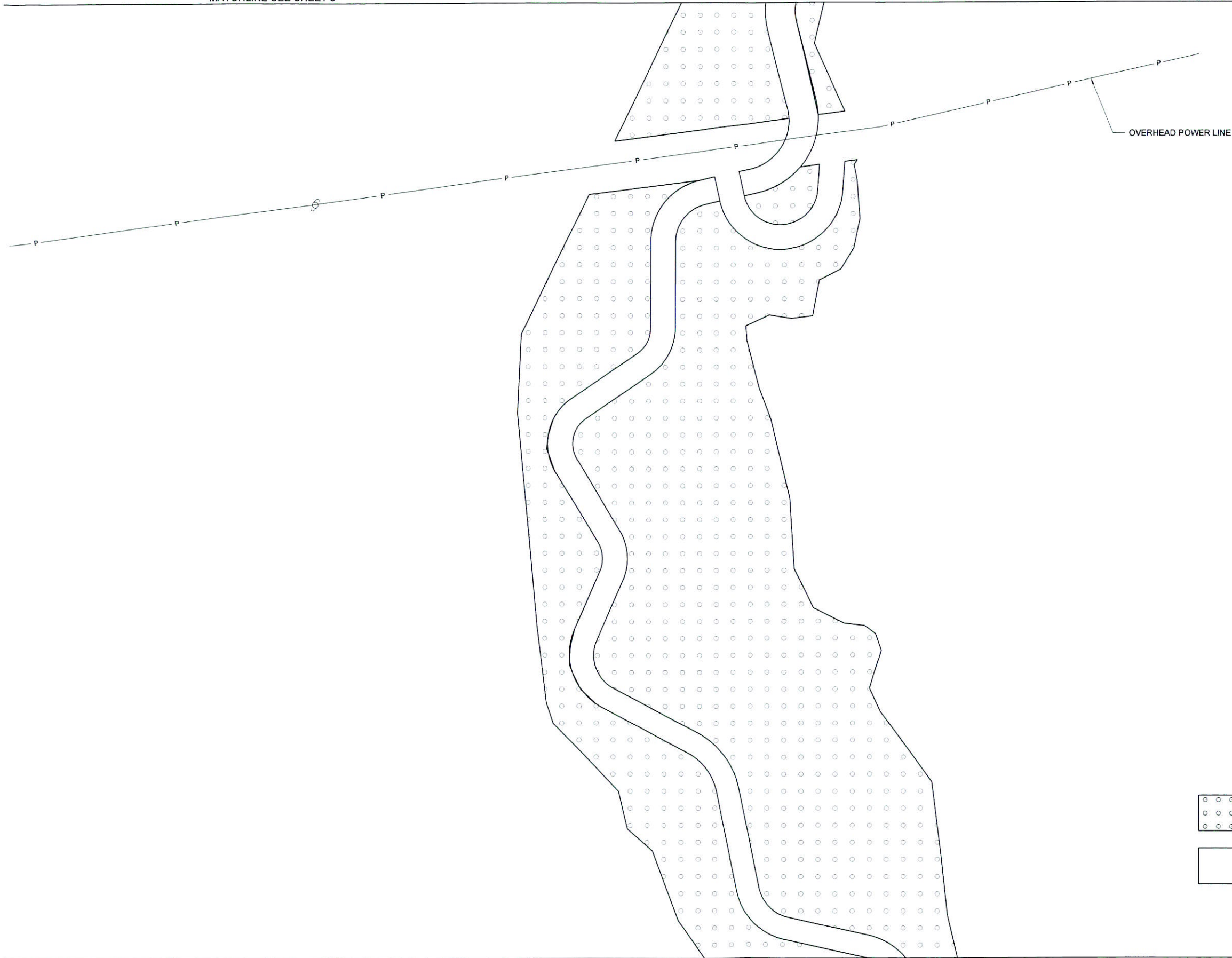




McCain Property - UT to Back Creek
Stream Restoration Project
Sophia, Randolph County, North Carolina
Station 10+00 to Station 18+52

DATE: APRIL 2009
SCALE: 1" = 40'
PLANTING PLAN
SHEET 5 OF 8

MATCHLINE SEE SHEET 5

MATCHLINE SEE SHEET 5



-  RIPARIAN BUFFER PLANTING AREA
-  STREAM ZONE - LIVE STAKING

MATCHLINE SEE SHEET 7

MATCHLINE SEE SHEET 7

NO.	DATE	DESCRIPTION	APPROVED



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**McCain Property - UT to Back Creek
Stream Restoration Project**
SOPHIA, RANDOLPH COUNTY, NORTH CAROLINA
STATION 18+52 TO STATION 28+80

DATE: APRIL 2009
SCALE: 1" = 40'

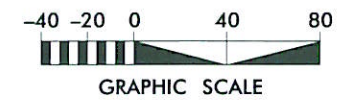
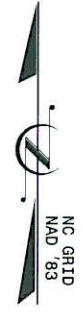
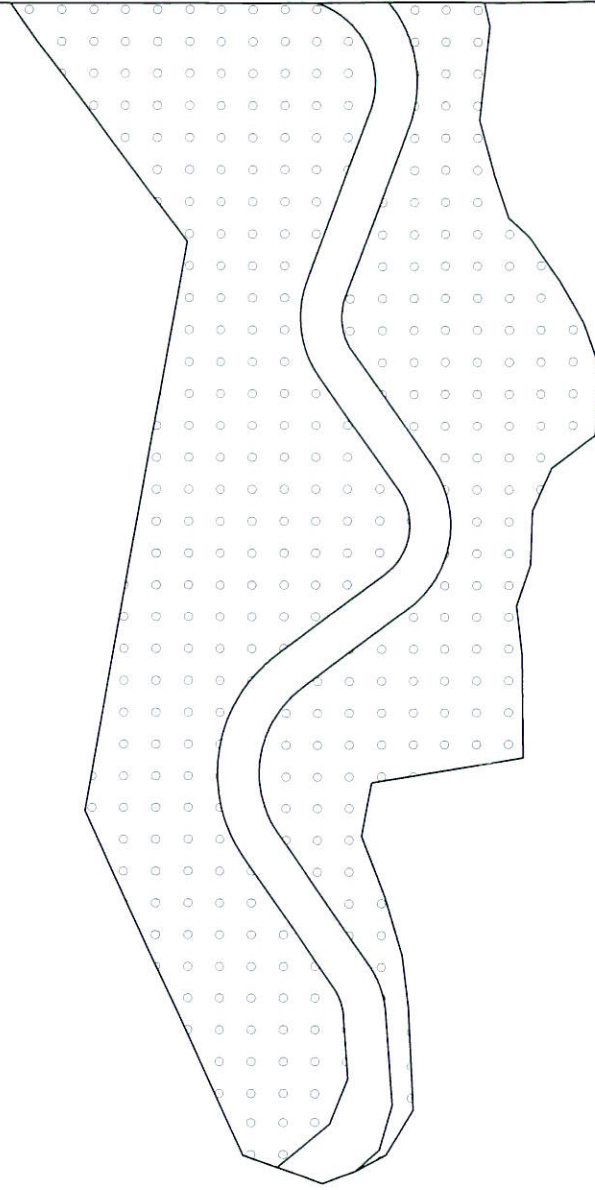
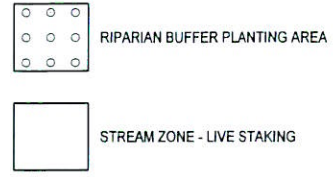
PLANTING PLAN

SHEET 6 OF 8

REVISIONS

MATCHLINE SEE SHEET 6

MATCHLINE SEE SHEET 6



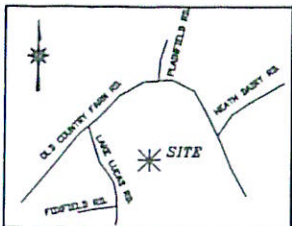
NO.	DATE	DESCRIPTION	BY	APPROVED



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RALEIGH, NORTH CAROLINA 27609

McCain Property - UT to Back Creek
Stream Restoration Project
Sophia, Randolph County, North Carolina
STATION 28+80 TO STATION 34+70

DATE: APRIL 2009
SCALE: 1" = 40'
PLANTING PLAN
SHEET 7 OF 8



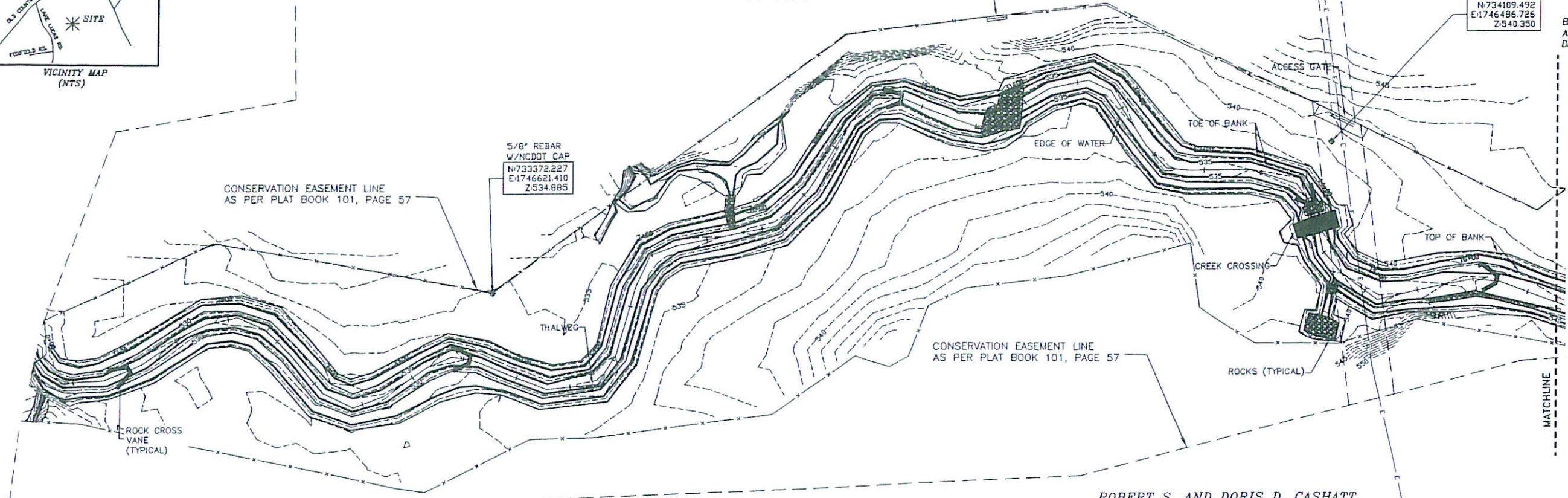
VICINITY MAP (NTS)

THE SIGRID N. MCCAIN TRUST
DEED BOOK 1841, PAGE 1819
PARCEL 7743-54-6054



BASED ON NC GRID (NAD 83/95)
AS PER PLAT BOOK 101, PAGE 57.
DATED: NOVEMBER 10, 2005

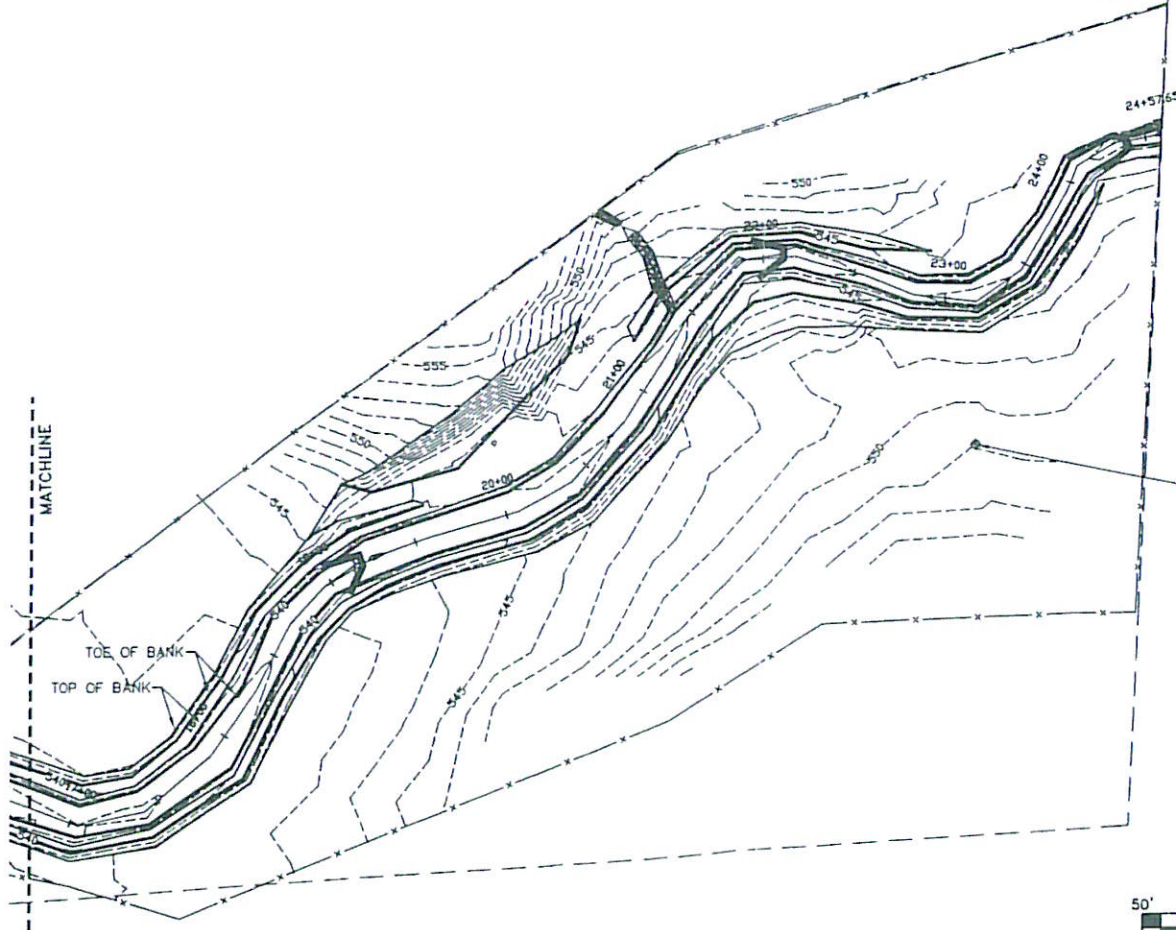
60D MAG NAIL
N:734109.492
E:1746486.726
Z:540.350



ROBERT S. AND DORIS D. CASHATT
DEED BOOK 990, PAGE 458
PARCEL 7743-74-7227

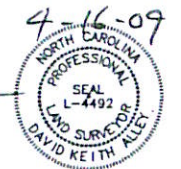
LEGEND:
THESE STANDARD SYMBOLS WILL BE FOUND IN THE DRAWING.

- | | | |
|----------------------------------------------------------|------------------------|-------------------|
| ○ UNMARKED POINT | ⊕ GAS VALVE | ■ ROCKS |
| ⊙ EXISTING IRON REBAR (EIR) | ⊕ TELEPHONE MANHOLE | ▲ ROCK CROSS VANE |
| ⊙ 1/2" NEW IRON REBAR (NIR) | ⊕ ELECTRICAL MANHOLE | ■ CREEK CROSSING |
| ⊙ EXISTING IRON PIPE (EIP) | ⊕ ELECTRICAL BOX | |
| ⊙ R.R. SPIKE FOUND | ⊕ TRANSFORMER | |
| ⊙ R.R. SPIKE SET | ⊕ POWER / UTILITY POLE | |
| ⊙ PK NAIL FOUND | ⊕ LIGHT POLE | |
| ⊙ PK NAIL SET | ⊕ SEWER MANHOLE | |
| ⊙ CONCRETE MONUMENT FOUND | ⊕ SEWER CLEAN-OUT | |
| ⊙ CONCRETE MONUMENT SET | ⊕ CURB INLET | |
| ⊕ FIRE HYDRANT | ⊕ YARD INLET | |
| ⊕ WATER VALVE | | |
| ⊕ WATER METER | | |
| ⊕ WELL | | |
| ⊕ SIGN | | |
| — R/W RIGHT OF WAY | | |
| — C/L CENTER LINE | | |
| — N.T.S. NOT TO SCALE | | |
| — CORRUGATED PLASTIC PIPE | | |
| — WATER | | |
| — SANITARY SEWER | | |
| — OVERHEAD POWER | | |
| — NATURAL GAS | | |
| — WOVEN WIRE FENCE | | |
| — RIGHT OF WAY LINE | | |
| — LINES PLATTED FROM DEEDS OR RECORDED PLATS OR AS NOTED | | |
| — N.C. GRID (TIE) | | |
| — MAJOR CONTOUR | | |
| — MINOR CONTOUR | | |



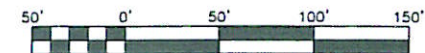
5/8" REBAR W/CAP
N:734810.514
E:1746435.329
Z:550.914

I, DAVID K. ALLEY, CERTIFY THAT UNDER MY DIRECTION AND SUPERVISION, THIS MAP WAS DRAWN FROM AN ACTUAL FIELD SURVEY MADE BY: CAVANAUGH AND ASSOCIATES, P.A.
N. C. PROFESSIONAL LAND SURVEYOR L-4492



NOTES

- 1.) ALL PROPERTIES SHOWN HEREON ARE SUBJECT TO ANY EASEMENT (WRITTEN OR UNWRITTEN).
- 2.) ALL FEATURES ARE MARKED AS SHOWN IN THE LEGEND UNLESS OTHERWISE NOTED.
- 3.) DEED REFERENCES: CONSERVATION EASEMENT AND EASEMENT OF INGRESS AND EGRESS DEED BOOK 1874, PAGE 313 AND PLAT BOOK 101, PAGE 57.
- 4.) THIS MAP IS NOT INTENDED TO BE PREPARED FOR RECORDING IN ACCORDANCE WITH G.S. 47-30, AS AMENDED.
- 5.) THE BENCH MARK FOR ALL ELEVATIONS IS MCCAIN #3 (NOW DESTROYED), A CONTROL POINT SET BY KCI ASSOCIATES OF NC.
- 6.) ALL DISTANCES SHOWN HEREON ARE HORIZONTAL GROUND DISTANCES UNLESS OTHERWISE NOTED.
- 7.) THE COMBINED SCALE FACTOR FOR THE ENTIRE PROJECT IS 0.99988573 (GROUND TO GRID).
- 8.) ALL UTILITIES SHOWN WERE LOCATED BY PHYSICAL ABOVE GROUND EVIDENCE AND THEREFORE ALL SUBSURFACE UTILITIES MAY NOT BE SHOWN ON THIS SURVEY.
- 9.) ALL CONTOURS ARE AT A 1 FOOT CONTOUR INTERVAL.
- 10.) ALL EASEMENT AND BOUNDARY INFORMATION BASED ON PLAT BOOK 101, PAGE 57.



DATE	SHEET NO.	REV.	DESCRIPTION	DATE
APRIL 05, 2009	1			
PROJECT NO. 12.08.027				
FIELD ENGINEER: JCA, ALP				
DRAWN BY: KHA, DKA				
CHECKED: DKA				
SCALE: 1"=50'				

AS-BUILT SURVEY OF LANDS OWNED BY

THE SIGRID N. MCCAIN TRUST

TABERNACLE TOWNSHIP--RANDOLPH COUNTY--NC

CAVANAUGH
Solutions through integrity and partnership

Cavanaugh & Associates, P.A. 308 West Fourth Street, Suite 1A Winston Salem, NC 27101
336/759-9001 fax: 336/759-1005 www.cavanaughassociates.com