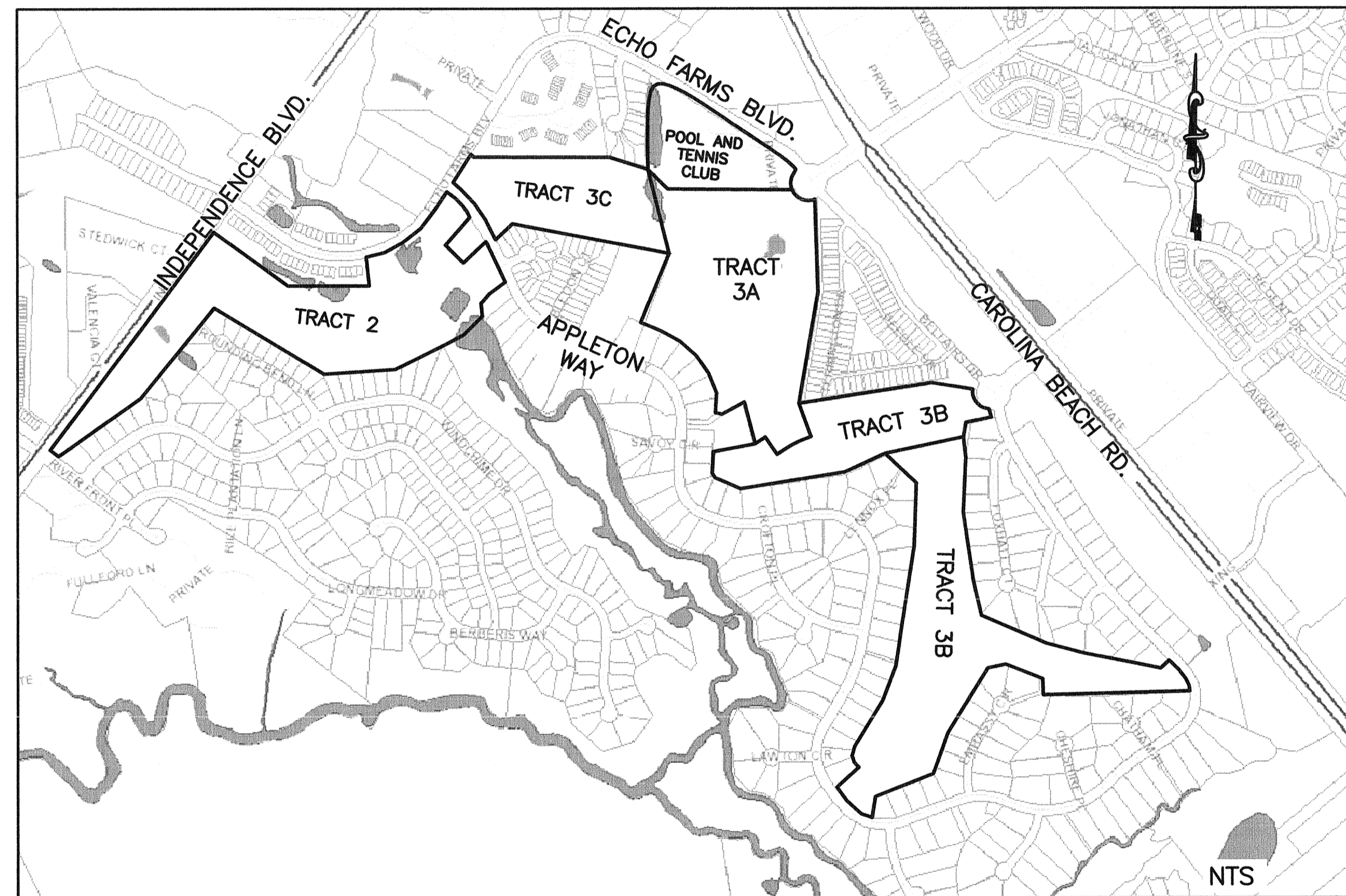


# WOODLANDS AT ECHO FARMS

## 4114 ECHO FARMS BLVD.

### WILMINGTON NC



LOCATION MAP

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_

**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

NC DENR PWSS WATER PERMIT #: \_\_\_\_\_

WATER CAPACITY: \_\_\_\_\_ GPD

DWQ SEWER PERMIT #: \_\_\_\_\_

SEWER CAPACITY: \_\_\_\_\_ GPD

SEWER SHED # AND PLANT: \_\_\_\_\_

SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

Approval of this plan establishes a zoning vested right under G.S. 160A-385.1. Unless terminated at an earlier date, the zoning vested right shall be valid until \_\_\_\_\_.

Approval of this plan, subject to the statutory requirements of G.S. 160A-385, establishes a vested right under G.S. 160A-385(b1). Unless terminated at an earlier date, the vested rights pursuant to G.S. 160A-385 shall be valid until \_\_\_\_\_.

**Anticipated Phasing**  
It is anticipated that the development will be constructed in phases, with the following tracts included in separate phases. The sequencing of the construction of these phases has not yet been determined:  
Tract 3B will be a phase;  
Tract 3A will be a second phase;  
Tract 2 will be a third phase; and  
Tract 3C will be a fourth phase.

LANDSCAPE ARCHITECT:  
**MIHALY**  
LAND DESIGN  
PLANNING • LANDSCAPE ARCHITECTURE

SURVEYOR:  
MICHAEL UNDERWOOD and ASSOCIATES, PA  
102 CINEMA DRIVE, SUITE A  
WILMINGTON, NC 28403  
PHONE: 910-815-0650  
FAX: 910-815-0393  
E-MAIL: muo@uzccr.com Firm License #C-0815

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I-1.2:	INVENTORY SITE PLAN
I-1.3:	INVENTORY SITE PLAN
I-1.4:	ZONING PLAN
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BOUNDARY AND TREE SURVEY TRACT 3B	
BOUNDARY AND TREE SURVEY TRACT 2	
BOUNDARY SURVEY TRACT 3C	
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C3.4:	TREE PLAN
C3.5:	TREE PLAN
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C4:	NOTES AND DETAILS
C4.1:	NOTES AND DETAILS

COVER SHEET  
WOODLANDS AT ECHO FARMS  
4114 ECHO FARMS BLVD.  
WILMINGTON, N. C.

LAND OWNER/APPLICANT  
ECHO FARMS, LLC  
MATRIX DEVELOPMENT GROUP  
CN4000 FORSGATE DRIVE  
CRANFURY, NJ 08512  
732-321-2900

**NORRIS & TUNSTALL**  
CONSULTING ENGINEERS P.C.  
1429 ASH-LITTLE RIVER RD. NW  
ASH, NC 28420  
PHONE (910) 387-5900

License #C-3641

16083

DES. JST  
DR. JPN  
DRW. NKS

DATE 12/2/16



COVER SHEET



**POOL AND TENNIS CLUB**

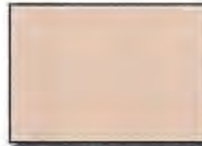
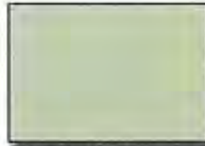

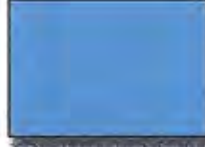

**TRACT 3C (FUTURE):**  
PROPOSED UNITS: 82 TOWNHOMES

**TRACT 2**  
PROPOSED UNITS: 63 SINGLE FAMILY LOTS

**TRACT 3A**  
PROPOSED UNITS: 240 MULTI-FAMILY UNITS  
43 TOWNHOMES

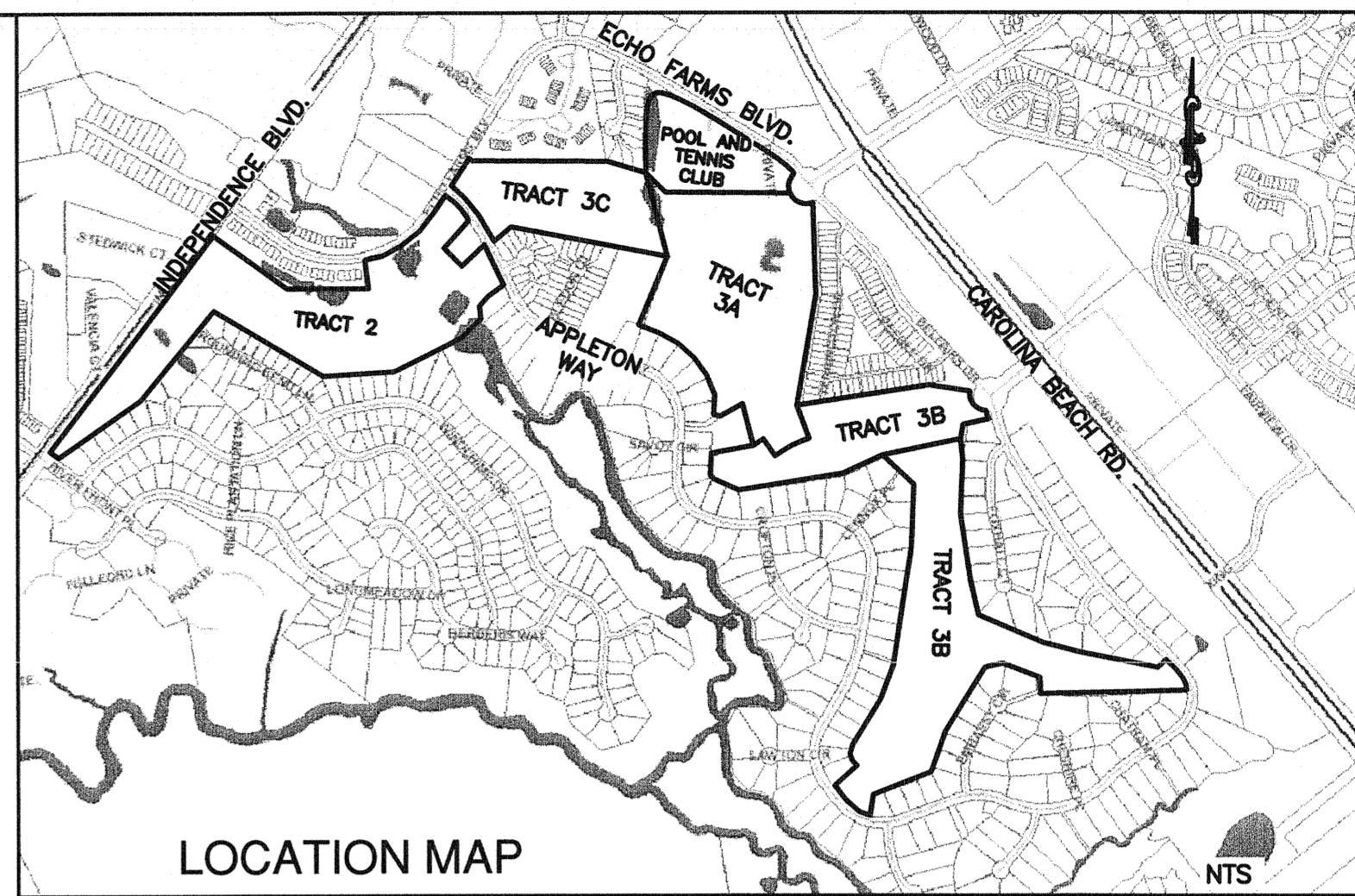
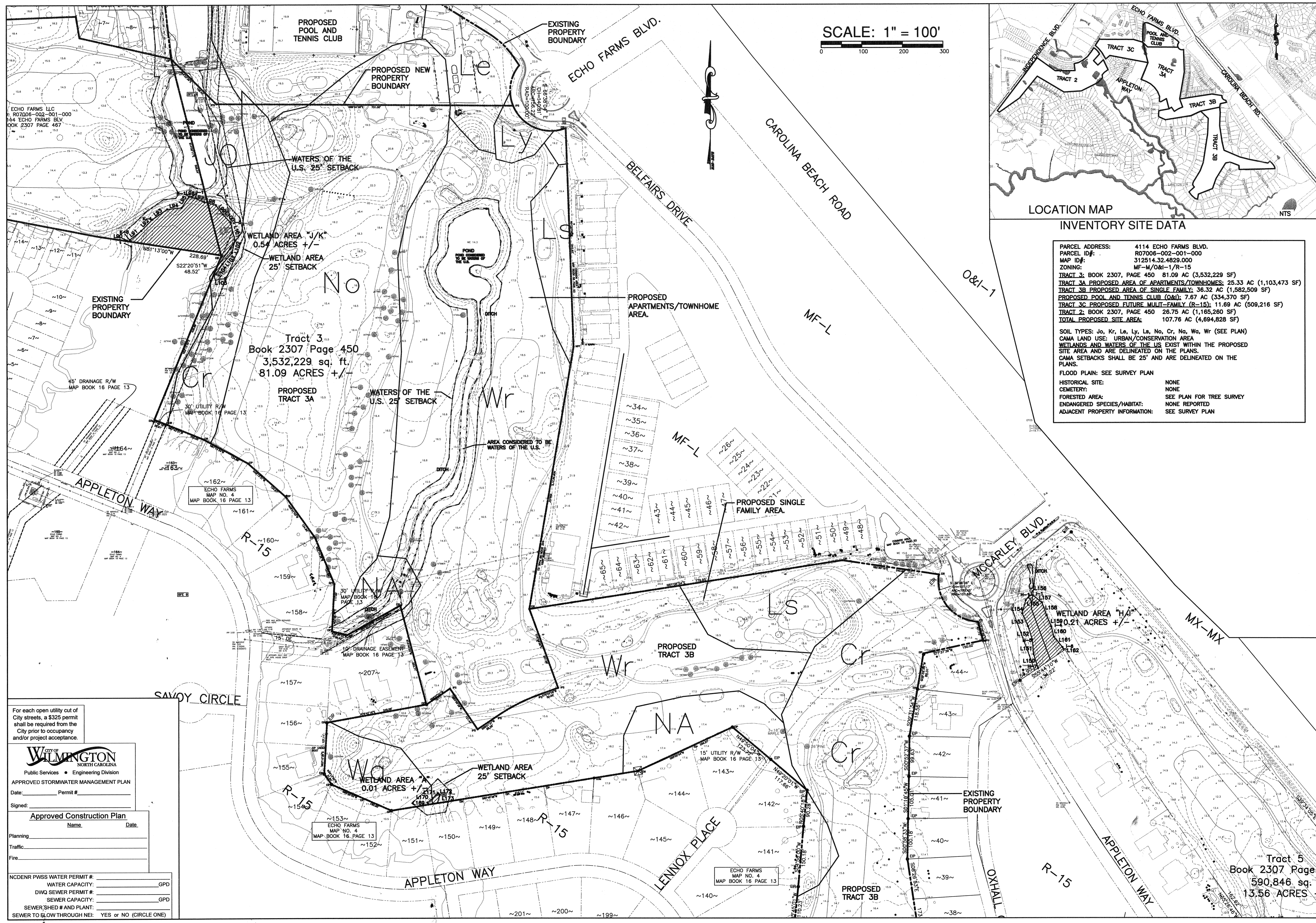
**TRACT 3B**  
PROPOSED UNITS: 108 SINGLE FAMILY LOTS

GREENSPACE CONNECTION TO KAYAK LAUNCH

- |   |                                |   |                       |
|---|--------------------------------|---|-----------------------|
|  | SINGLE-FAMILY RESIDENTIAL LOTS |  | OPEN SPACE            |
|  | MULTI-FAMILY/TOWNHOMES         |  | STORMWATER MANAGEMENT |
|   |                                |  | WETLAND AND BUFFER    |

MASTER DEVELOPMENT PLAN  
**THE WOODLANDS AT ECHO FARMS**





**INVENTORY SITE DATA**

PARCEL ADDRESS: 4114 ECHO FARMS BLVD.  
 PARCEL ID#: R07006-002-001-000  
 MAP ID#: 312514.32.4829.000  
 ZONING: MF-M/O&I-1/R-15

TRACT 3: BOOK 2307, PAGE 450 81.09 AC (3,532,229 SF)  
 TRACT 3A PROPOSED AREA OF APARTMENTS/TOWNHOMES: 25.33 AC (1,103,473 SF)  
 TRACT 3B PROPOSED AREA OF SINGLE FAMILY: 36.32 AC (1,582,509 SF)  
 PROPOSED POOL AND TENNIS CLUB (O&I): 7.67 AC (334,370 SF)  
 TRACT 3C PROPOSED FUTURE MULT-FAMILY (R-15): 11.69 AC (509,216 SF)  
 TRACT 2: BOOK 2307, PAGE 450 26.75 AC (1,165,260 SF)  
**TOTAL PROPOSED SITE AREA: 107.76 AC (4,694,828 SF)**

SOIL TYPES: Jo, Kr, La, Ly, Ls, No, Cr, Na, Wa, Wr (SEE PLAN)  
 CAMA LAND USE: URBAN/CONSERVATION AREA  
 WETLANDS AND WATERS OF THE US EXIST WITHIN THE PROPOSED SITE AREA AND ARE DELINEATED ON THE PLANS.  
 CAMA SETBACKS SHALL BE 25' AND ARE DELINEATED ON THE PLANS.

FLOOD PLAIN: SEE SURVEY PLAN

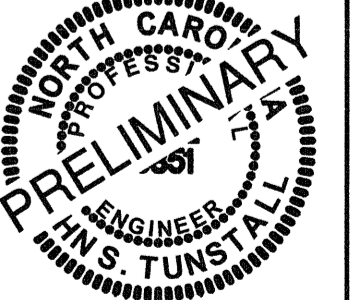
HISTORICAL SITE: NONE  
 CEMETERY: NONE  
 FORESTED AREA: SEE PLAN FOR TREE SURVEY  
 ENDANGERED SPECIES/HABITAT: NONE REPORTED  
 ADJACENT PROPERTY INFORMATION: SEE SURVEY PLAN

**INVENTORY SITE PLAN**  
**WOODLANDS AT ECHO FARMS**  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

**LAND OWNER/APPLICANT**  
 ECHO FARMS, LLC  
 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRANFURY, NJ 08512  
 732-521-2900

**NORRIS & TUNSTALL**  
 CONSULTING ENGINEERS P.C.  
 902 MARKET STREET  
 WILMINGTON, NC 28401  
 PHONE (910) 343-9653

Licence #C-3641  
**16083**  
 DES. JST  
 CDD. JPN  
 DRWN. NKS  
 DATE 12/2/16



Tract 5  
 Book 2307 Page  
 590,846 sq.  
 13.56 ACRES

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 NORTH CAROLINA  
 Public Services • Engineering Division

APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_

**Approved Construction Plan**

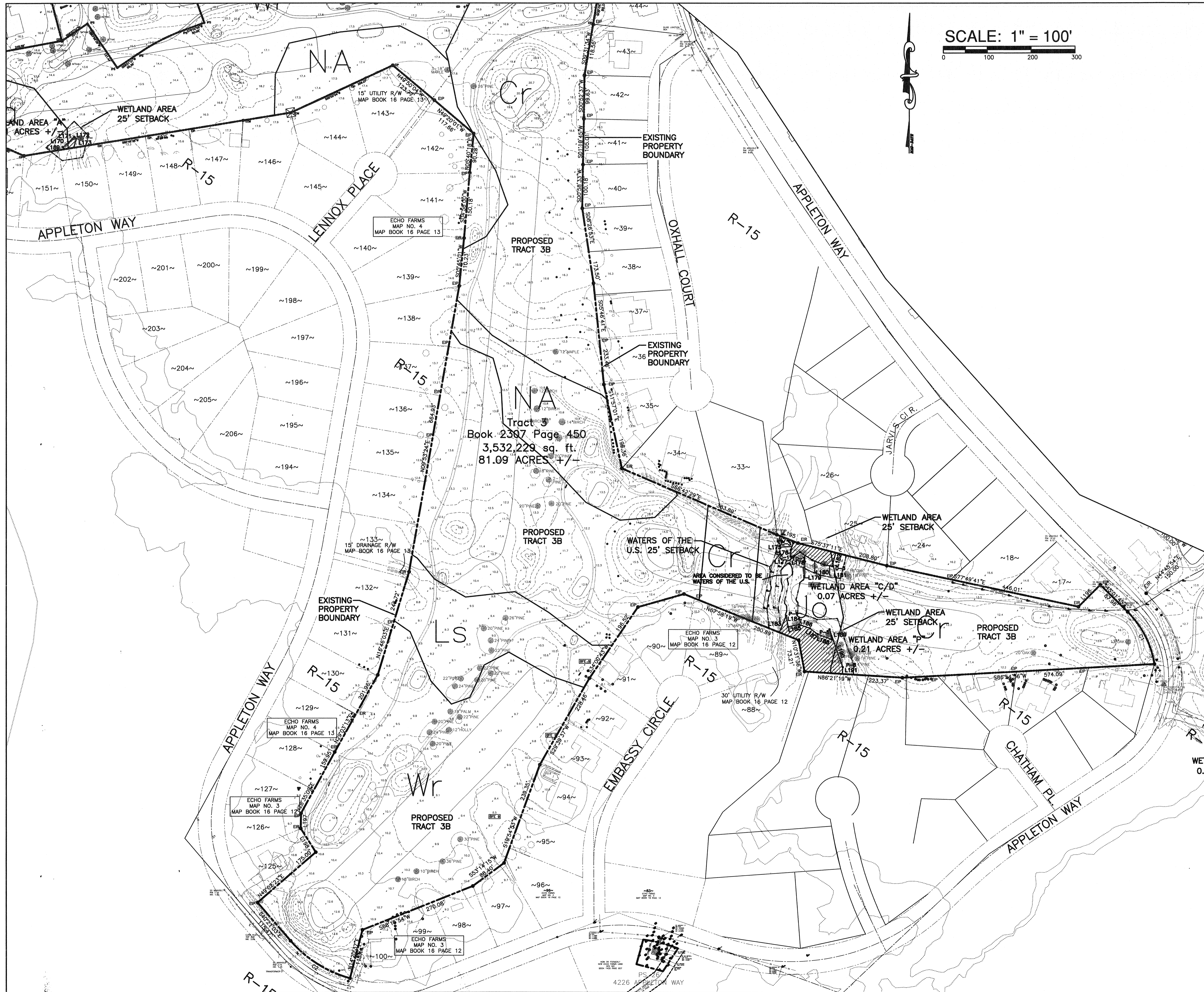
Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

NC DENR PWSS WATER PERMIT # \_\_\_\_\_ GPD  
 WATER CAPACITY: \_\_\_\_\_ GPD  
 DWQ SEWER PERMIT # \_\_\_\_\_ GPD  
 SEWER CAPACITY: \_\_\_\_\_ GPD  
 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

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SCALE: 1" = 100'

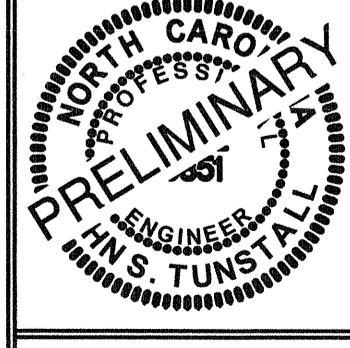
**INVENTORY SITE PLAN**  
**WOODLANDS AT ECHO FARMS**  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

**LAND OWNER/APPLICANT**  
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 1429 ASH-LITTLE RIVER RD. NW  
 ASH, NC 28620  
 PHONE (910) 281-5900

License #C-3641  
 16083

DES.	JST
CHK.	JPN
DRWL.	NKS
DATE	12/2/16



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**APPROVED STORMWATER MANAGEMENT PLAN**  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_

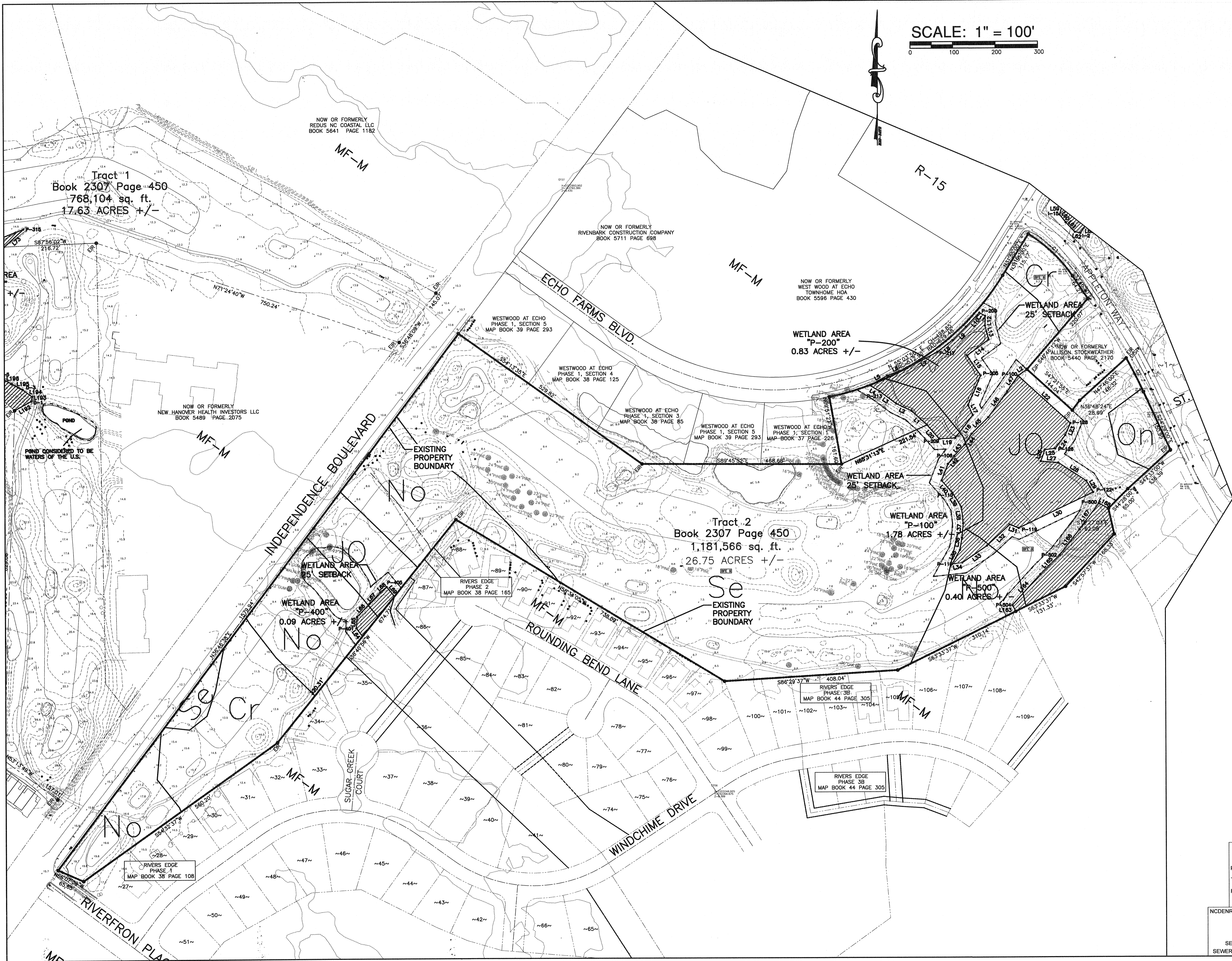
Approved Construction Plan  
 Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

NCDENR PWSS WATER PERMIT # \_\_\_\_\_  
 WATER CAPACITY: \_\_\_\_\_ GPD  
 DWQ SEWER PERMIT # \_\_\_\_\_  
 SEWER CAPACITY: \_\_\_\_\_ GPD  
 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

**I-1.1**





SCALE: 1" = 100'



**INVENTORY SITE PLAN**  
WOODLANDS AT ECHO FARMS  
4114 ECHO FARMS BLVD.  
WILMINGTON, N. C.

**LAND OWNER/APPLICANT**  
ECHO FARMS, LLC  
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732-521-2900

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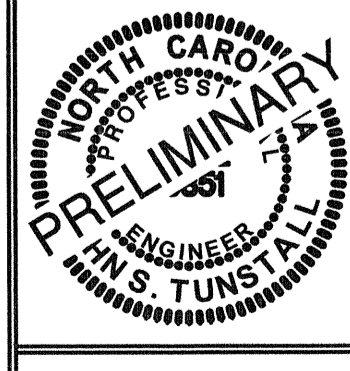
License #C-3641  
**16083**  
DES. JST  
CHK. JPN  
DRWN. NKS  
DATE 12/2/16

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**City of WILMINGTON**  
NORTH CAROLINA  
Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

**Approved Construction Plan**  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

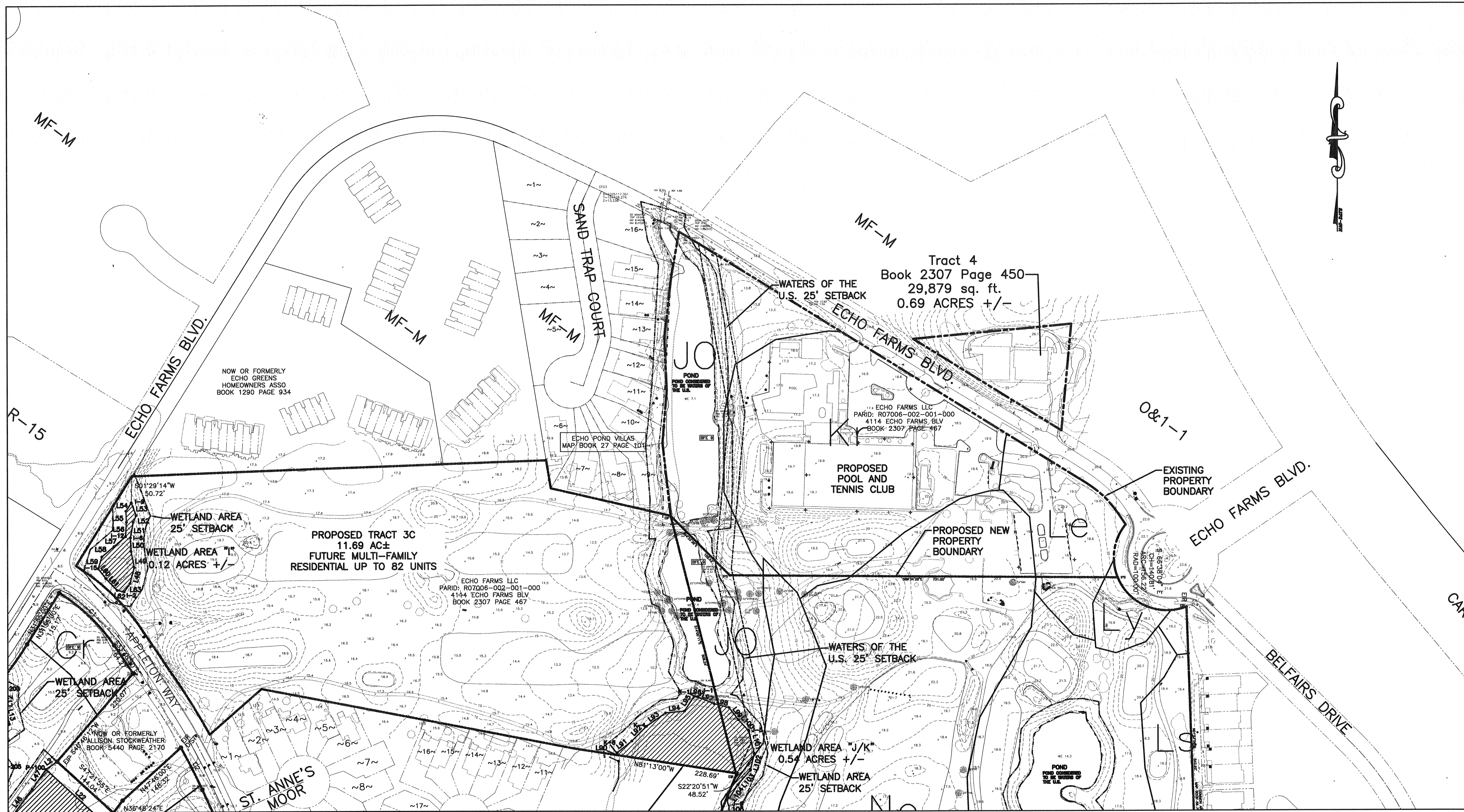
NC DENR PWSS WATER PERMIT #: \_\_\_\_\_ GPD  
WATER CAPACITY: \_\_\_\_\_ GPD  
DWQ SEWER PERMIT #: \_\_\_\_\_ GPD  
SEWER CAPACITY: \_\_\_\_\_ GPD  
SEWER SHED # AND PLANT: \_\_\_\_\_  
SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)



**I-1.2**

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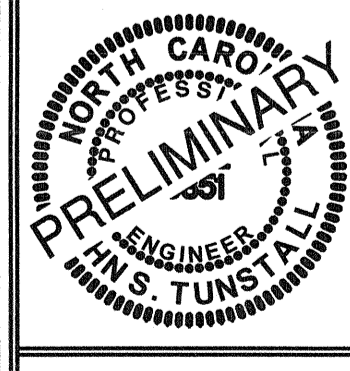


**INVENTORY SITE PLAN**  
**WOODLANDS AT ECHO FARMS**  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

**LAND OWNER/APPLICANT**  
 ECHO FARMS, LLC  
 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRANFURY, NJ 00512  
 732-521-2900

**NORRIS & TUNSTALL**  
 CONSULTING ENGINEERS P.C.  
 1429 ASHLITTLE RIVER RD. NW  
 WILMINGTON, NC 28401  
 PHONE (910) 343-9653

Licence #C-3641  
**16083**  
 DES. JST  
 CND. JPN  
 DRWN. NKS  
 DATE 12/2/16



**I-1.3**

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

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 NORTH CAROLINA  
 Public Services • Engineering Division  
**APPROVED STORMWATER MANAGEMENT PLAN**  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
 Signed: \_\_\_\_\_

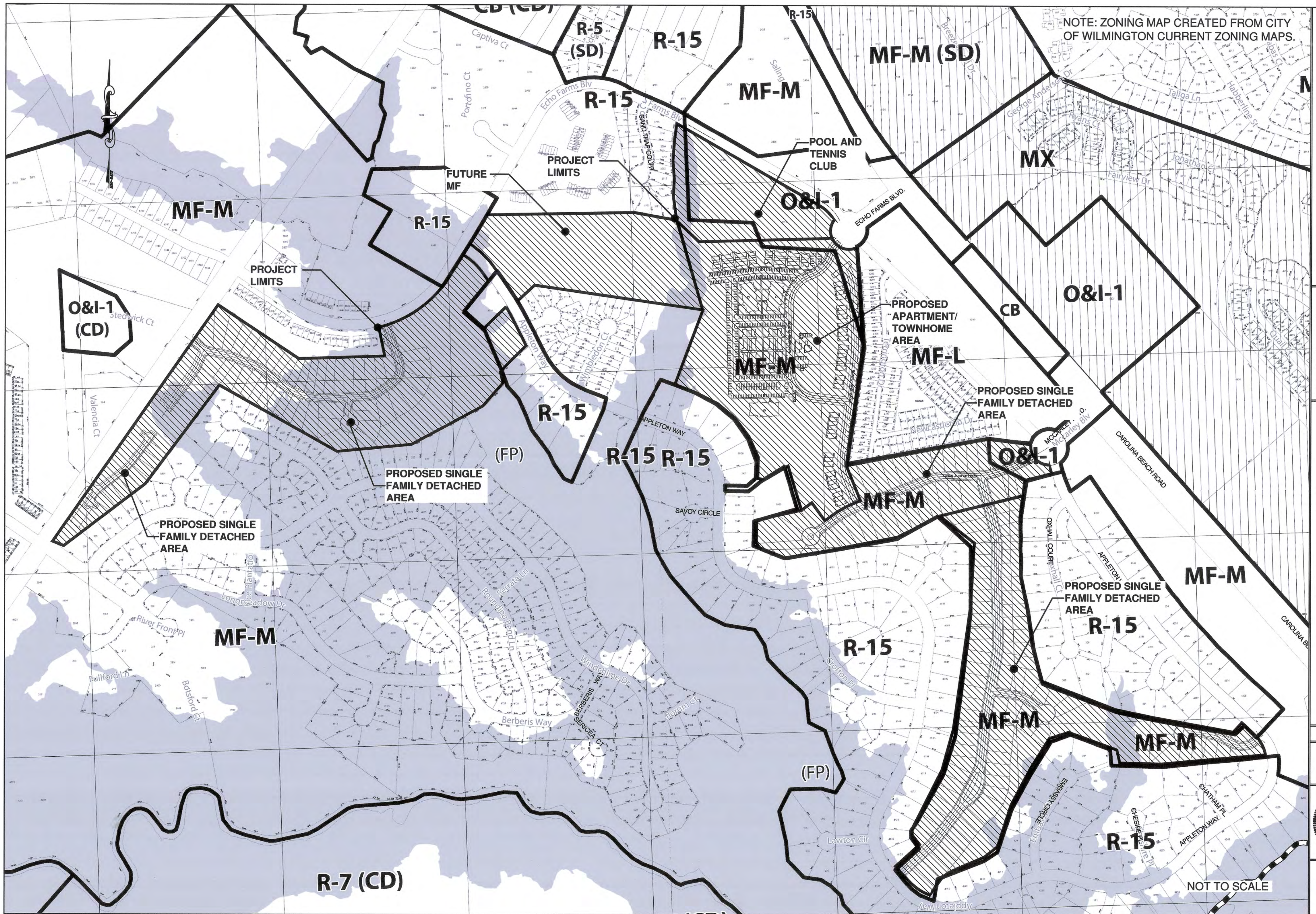
**Approved Construction Plan**  
 Name \_\_\_\_\_ Date \_\_\_\_\_  
 Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

NCDENR PWSS WATER PERMIT #: \_\_\_\_\_  
 WATER CAPACITY: \_\_\_\_\_ GPD  
 DWQ SEWER PERMIT #: \_\_\_\_\_  
 SEWER CAPACITY: \_\_\_\_\_ GPD  
 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

**SCALE: 1" = 100'**  
 0 100 200 300

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NOTE: ZONING MAP CREATED FROM CITY OF WILMINGTON CURRENT ZONING MAPS.

ZONING MAP PLAN  
 WOODLANDS AT ECHO FARMS  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

LAND OWNER/APPLICANT  
 ECHO FARMS, LLC  
 MATRIX DEVELOPMENT GROUP  
 61400 FORSGATE DRIVE  
 CHAMBERLAIN, NJ 08012  
 732-521-2900

**NORRIS & TUNSTALL**  
 CONSULTING ENGINEERS P.C.  
 1429 ASH-LITTLE RIVER RD. NW  
 WILMINGTON, NC 28420  
 902 MARKET STREET  
 WILMINGTON, NC 28401  
 PHONE (910) 343-9653

Licence #C-3641  
 16083  
 DES. JST  
 CDD. JPN  
 DRWN. NKS  
 DATE 12/2/16



I-1.4

NOT TO SCALE

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WESTWOOD AT ECHO FARMS

- PARID: R07006-003-003-000 HILL RICHARD A DENISE P 3802 ECHO FARMS BLVD BOOK 5989 PAGE 0552
PARID: R07006-003-004-000 RONEY KATHLEEN 3804 ECHO FARMS BLVD BOOK 4409 PAGE 107
PARID: R07006-003-005-000 WATER CRIB LLC 3806 ECHO FARMS BLVD BOOK 5924 PAGE 1555
PARID: R07006-003-006-000 JACKSON BETTIE J 3808 ECHO FARMS BLVD BOOK 5901 PAGE 2500
PARID: R07006-003-007-000 MORSE SHELLEY L 3810 ECHO FARMS BLVD BOOK 5919 PAGE 2659
PARID: R07006-002-016-000 CAPPS JACK CAMERON SR JANE 3812 ECHO FARMS BLVD BOOK 5971 PAGE 1972
PARID: R07006-002-017-000 WILSON ALONZO V 3814 ECHO FARMS BLVD BOOK 2840 PAGE 0068
PARID: R07006-002-018-000 WARD DIXIE T TIMOTHY ETAL 3816 ECHO FARMS BLVD BOOK 5908 PAGE 835
PARID: R07006-002-019-000 WEAVER JO S 3818 ECHO FARMS BLVD BOOK 5767 PAGE 1731
PARID: R07006-002-020-000 JAMESON JOHN F III LORI A 3820 ECHO FARMS BLVD BOOK 5943 PAGE 630
PARID: R07006-002-011-000 STRAWCUTTER JOHN W 3822 ECHO FARMS BLVD BOOK 2424 PAGE 0206
PARID: R07006-002-012-000 COLLEY CANDY RAY 3824 ECHO FARMS BLVD BOOK 5673 PAGE 2253
PARID: R07006-002-013-000 DANIELS ANDREA 3826 ECHO FARMS BLVD BOOK 5998 PAGE 1509
PARID: R07006-002-014-000 WILKINSON LEONARD J JOAN E 3828 ECHO FARMS BLVD BOOK 5974 PAGE 1780
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PARID: R07006-002-005-000 WHITE BARBARA H 3846 ECHO FARMS BLVD BOOK 4998 PAGE 1358
NOW OR FORMERLY RIVENBARK CONSTRUCTION COMPANY BOOK 5711 PAGE 698
NOW OR FORMERLY WEST WOOD AT ECHO TOWNHOME HOA BOOK 5666 PAGE 430

NOW OR FORMERLY REDUS NC COASTAL LLC BOOK 5714 PAGE 1516

NOW OR FORMERLY NEW HANOVER HEALTH INVESTORS LLC BOOK 5489 PAGE 2075

HIBISCUS WAY

INDEPENDENCE BOULEVARD

ROUNDING BEND LANE

WINDCHIME DRIVE

RIVERFRONT PLACE

WOODLANDS AT ECHO FARMS TRACT "2" 26.75 ACRES +/-

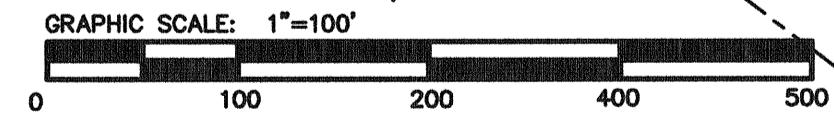
WETLAND AREA "P-200" 0.83 ACRES +/-

WETLAND AREA "P-100" 1.78 ACRES +/-

WETLAND AREA "P-500" 0.40 ACRES +/-

SURVEY REFERENCE BOOK 2307 PAGE 467

- LEGEND
ECM EXISTING CONCRETE MONUMENT
EIP EXISTING IRON PIPE
EIR EXISTING IRON REBAR
IPS IRON PIPE SET



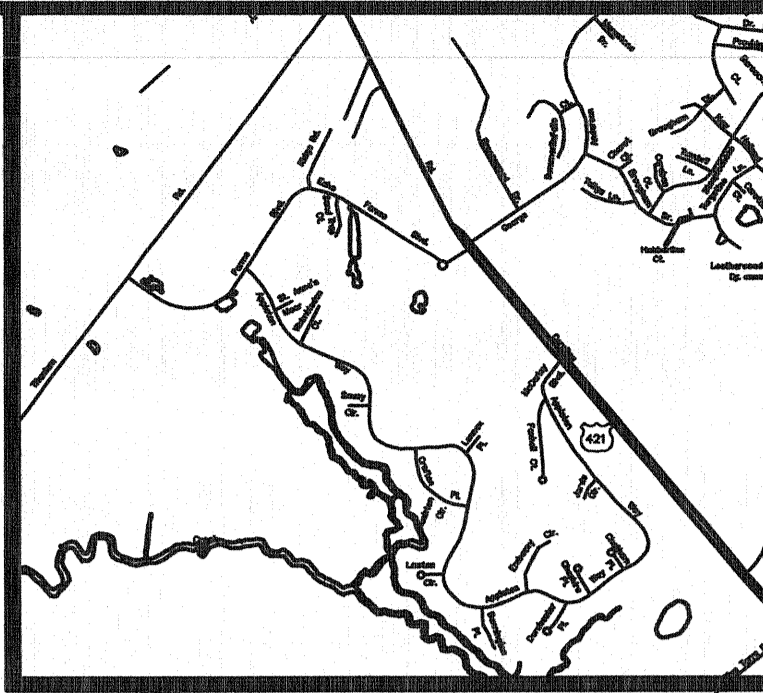
BOUNDARY AND TREE LOCATION SURVEY
WOODLANDS AT ECHO FARMS TRACT "2" 26.75 ACRES +/-
CITY OF WILMINGTON NEW HANOVER COUNTY NORTH CAROLINA
OWNER: ECHO FARMS LLC
C/O NORRIS AND TUNSTALL CONSULTING ENGINEERS
302 MARKET STREET WILMINGTON, NC 28401
MICHAEL UNDERWOOD and ASSOCIATES, PA
102 CINEMA DRIVE, SUITE A WILMINGTON, NC 28403
PHONE: 910-615-0650
FAX: 910-615-0393
E-MAIL: muo@bzccr.com FIRM License #C-0615

- PARID: R07010-002-001-000 GRAHAM FAMILY TRUST 201 WINDCHIME DR BOOK 5974 PAGE 1805
PARID: R07010-002-002-000 HINES KENNETH KATHY 205 WINDCHIME DR BOOK 4287 PAGE 428
PARID: R07010-002-003-000 TOTH LINDA L 209 WINDCHIME DR BOOK 4749 PAGE 601
PARID: R07010-002-004-000 KOCH RICHARD SHERIDAN TERESA D 213 WINDCHIME DR BOOK 5427 PAGE 2600
PARID: R07010-002-005-000 EZZATI ROSTAM MOJGAN 217 WINDCHIME DR BOOK 5364 PAGE 2169
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PARID: R07010-002-008-000 FULTON THOMAS G ROSA L 3800 SUGAR CREEK CT BOOK 5549 PAGE 831
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PARID: R07010-002-048-000 TESTA EDWARD J LUNE A 3825 ROUNDING BEND LN BOOK 4160 PAGE 841
PARID: R07010-002-049-000 KOVES MICHELLE L 3829 ROUNDING BEND LN BOOK 5579 PAGE 803
PARID: R07010-002-050-000 FERRELL LARRY B LINDA J 3833 ROUNDING BEND LN BOOK 3448 PAGE 623
PARID: R07010-002-051-000 WEEKS CASSIE INEZ ETAL 3837 ROUNDING BEND LN BOOK 5510 PAGE 2468
PARID: R07010-002-052-000 HANCOCK JULIE E ETAL 305 WINDCHIME DR BOOK 2894 PAGE 139
PARID: R07010-002-055-000 SCARD JOHN F JOANNE 309 WINDCHIME DR BOOK 5833 PAGE 526
PARID: R07010-002-098-000 WARE LARRY G SHIRLEY C 313 WINDCHIME DR BOOK 4350 PAGE 0018
PARID: R07010-002-099-000 BRASSARD DAVID C MAY SMITH 317 WINDCHIME DR BOOK 4512 PAGE 110
PARID: R07010-002-101-000 STANKO STEVEN M 321 WINDCHIME DR BOOK 5992 PAGE 2708
PARID: R07010-002-101-000 FLAHERTY DOROTHY A 325 WINDCHIME DR BOOK 9912 PAGE 3012
PARID: R07010-002-102-000 WEST OAIL ETA L 329 WINDCHIME DR BOOK 5858 PAGE 1029
PARID: R07010-002-103-000 MAUNEY STEVE LYNDIA 333 WINDCHIME DR BOOK 5915 PAGE 2104
PARID: R07010-002-104-000 GIBSON RICHARD E DEBORAH A 337 WINDCHIME DR BOOK 4760 PAGE 694

FLOOD LEGEND
FLOOD INFORMATION TAKEN FROM FLOOD INSURANCE RATE MAP, COMMUNITY PANEL 3720312500, EFFECTIVE DATE APRIL 3, 2006.

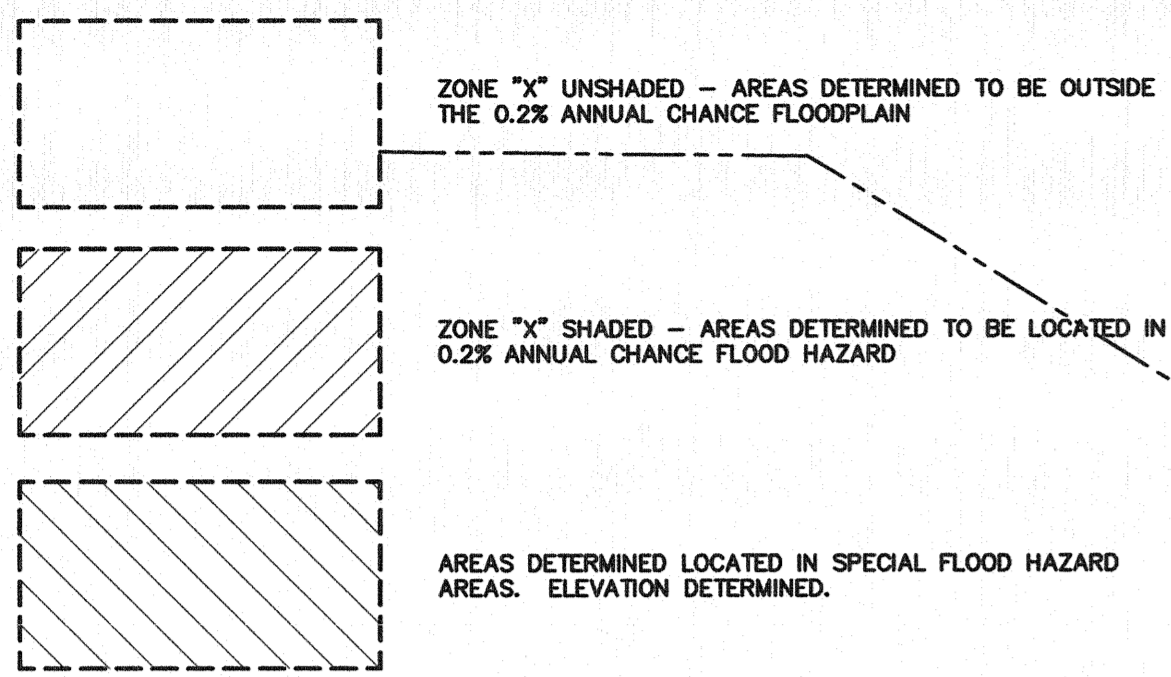
- ZONE "X" UNSHADED - AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN
ZONE "X" SHADED - AREAS DETERMINED TO BE LOCATED IN A 0.2% ANNUAL CHANCE FLOOD HAZARD
AREAS DETERMINED LOCATED IN SPECIAL FLOOD HAZARD AREAS. ELEVATION DETERMINED.

NORTH CAROLINA COUNTY
I, MICHAEL N. UNDERWOOD, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION DESCRIPTION AS SHOWN ON THE FACE OF THIS PLAT. THE PLAT IS ACCURATE AND CORRECT AND THAT THE INFORMATION SHOWN THEREON IS TRUE AND CORRECT AND THAT THE SURVEY WAS MADE IN ACCORDANCE WITH THE STANDARDS OF PRACTICE FOR LAND SURVEYING IN NORTH CAROLINA.
MICHAEL N. UNDERWOOD, R.L.S.
REGISTRATION NUMBER L-2982
SEAL OR STAMP





FLOOD LEGEND  
 FLOOD INFORMATION TAKEN FROM FLOOD INSURANCE RATE MAP, COMMUNITY PANEL 3720312500J, EFFECTIVE DATE APRIL 3, 2006.



PARID: R06519-001-001-000 BUCK NEWMAN D III ELIZABETH H 3907 ECHO FARMS BLVD BOOK 5029 PAGE 2688

PARID: R07007-003-001-002 KYZER MELODY 3903 ECHO FARMS BLVD BOOK 5934 PAGE 953

WETLAND AREA "I" 0.12 ACRES +/-

WOODLANDS AT ECHO FARMS TRACT "3C"

Tract 3C, 11.69 Ac +/-, Future Development: MF Residential 82 units.

ECHO POND VILLAS

- PARID: R07007-005-001-000 JONES RONALD D HRS 3725 SAND TRAP CT BOOK 9912 PAGE 415
- PARID: R07007-005-002-000 CAPE FEAR REGIONAL CDC 3723 SAND TRAP CT BOOK 5688 PAGE 2341
- PARID: R07007-005-003-000 RHODES MICHAEL LINDA 3721 SAND TRAP CT BOOK 5913 PAGE 1147
- PARID: R07007-005-004-000 STEPHENS ALLEN J KATHLEEN D B 3719 SAND TRAP CT BOOK 5788 PAGE 239

ECHO POND VILLAS MAP BOOK 27 PAGE 101

POND CONSIDERED TO BE WATERS OF THE U.S.

ECHO FARMS LLC  
 PARID: R07006-002-001-000  
 4114 ECHO FARMS BLV  
 BOOK 2307 PAGE 467

ECHO FARMS TOWNHOUSES

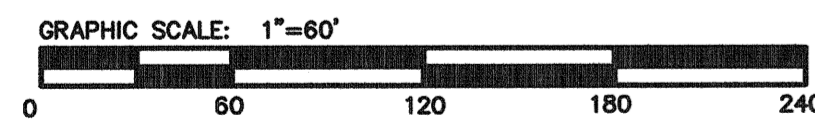
- PARID: R07007-002-011-000 CHERINGTON JUDITH MCINTYRE GENE L SUZANN B 301 SAINT ANNES MOOR CT BOOK 2710 PAGE 0700
- PARID: R07007-002-012-000 RIDLEY EUGENE MAXINE GAIL 303 SAINT ANNES MOOR CT BOOK 3817 PAGE 458
- PARID: R07007-002-013-000 VITHALANI KIRTI J THERESA L 305 SAINT ANNES MOOR CT BOOK 5578 PAGE 1584
- PARID: R07007-002-014-000 NELSON CHRISTINE A 307 SAINT ANNES MOOR CT BOOK 5322 PAGE 2561
- PARID: R07007-002-015-000 STRUTHERS C J 309 SAINT ANNES MOOR CT BOOK 1228 PAGE 1713
- PARID: R07007-002-016-000 BROPHY MARY CATHERINE HRS 311 SAINT ANNES MOOR CT BOOK 9804 PAGE 2406
- PARID: R07007-002-038-000 MCINTYRE GENE L SUZANN B 320 WIMBLETON CT BOOK 1565 PAGE 1640
- PARID: R07007-002-037-000 VINAL ELIZABETH C 322 WIMBLETON CT BOOK 2889 PAGE 1206
- PARID: R07007-002-036-000 ALDEN JOANNE M JOHN C 324 WIMBLETON CT BOOK 2662 PAGE 334
- PARID: R07007-002-035-000 BATUUS MARY T 323 WIMBLETON CT BOOK 5766 PAGE 1514
- PARID: R07007-002-034-000 ARNOLD JEAN D 321 WIMBLETON CT BOOK 9911 PAGE 1614
- PARID: R07007-002-033-000 VANGRAAFFELAND PETER JULIANNE TREME 319 WIMBLETON CT BOOK 5335 PAGE 2347

CHANNEL CONSIDERED TO BE WATERS OF THE U.S.

WETLAND AREA "J/K" 0.54 ACRES +/-

SURVEY REFERENCE BOOK 2307 PAGE 467

LEGEND  
 ECM EXISTING CONCRETE MONUMENT  
 EIP EXISTING IRON PIPE  
 EIR EXISTING IRON REBAR  
 IPS IRON PIPE SET



BOUNDARY AND TREE LOCATION SURVEY  
**WOODLANDS AT ECHO FARMS TRACT "3C"**  
 11.69 ACRES +/-  
 Tract 3C, 11.69 Ac +/-, Future Development: MF Residential 82 units.

CITY OF WILMINGTON NEW HAVEN COUNTY NORTH CAROLINA

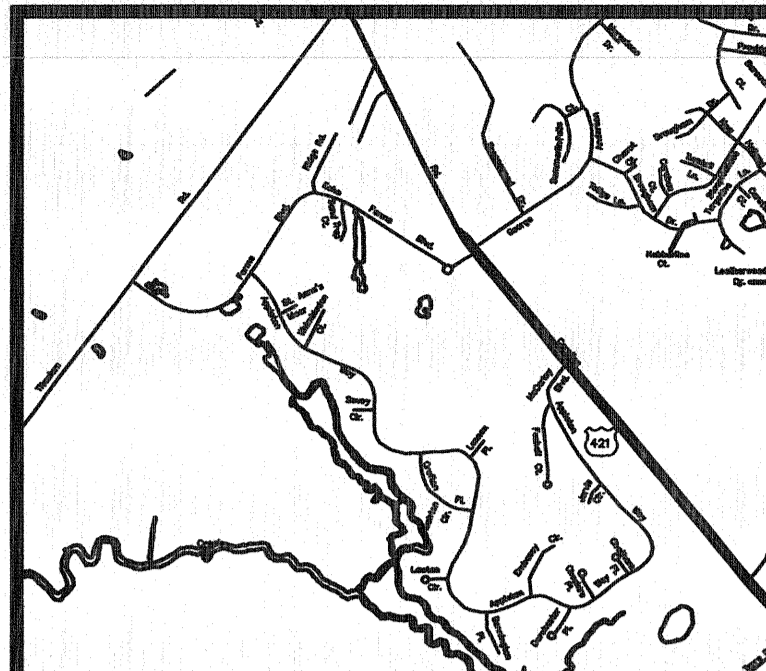
OWNER: ECHO FARMS LLC  
 C/O NORRIS AND TUNSTALL CONSULTING ENGINEERS  
 902 MARKET STREET  
 WILMINGTON, NC 28401

MICHAEL UNDERWOOD and ASSOCIATES, PA  
 102 CINEMA DRIVE, SUITE A  
 WILMINGTON, NC 28403  
 PHONE: 910-815-0650  
 FAX: 910-815-0383  
 E-MAIL: muo@bzecrr.com Firm License #0-0515

SURVEYED: APPROVED: mnu  
 DRAWN BY: tbn DATE: DEC.16  
 CHECKED BY: mnu SCALE: 1"=60'

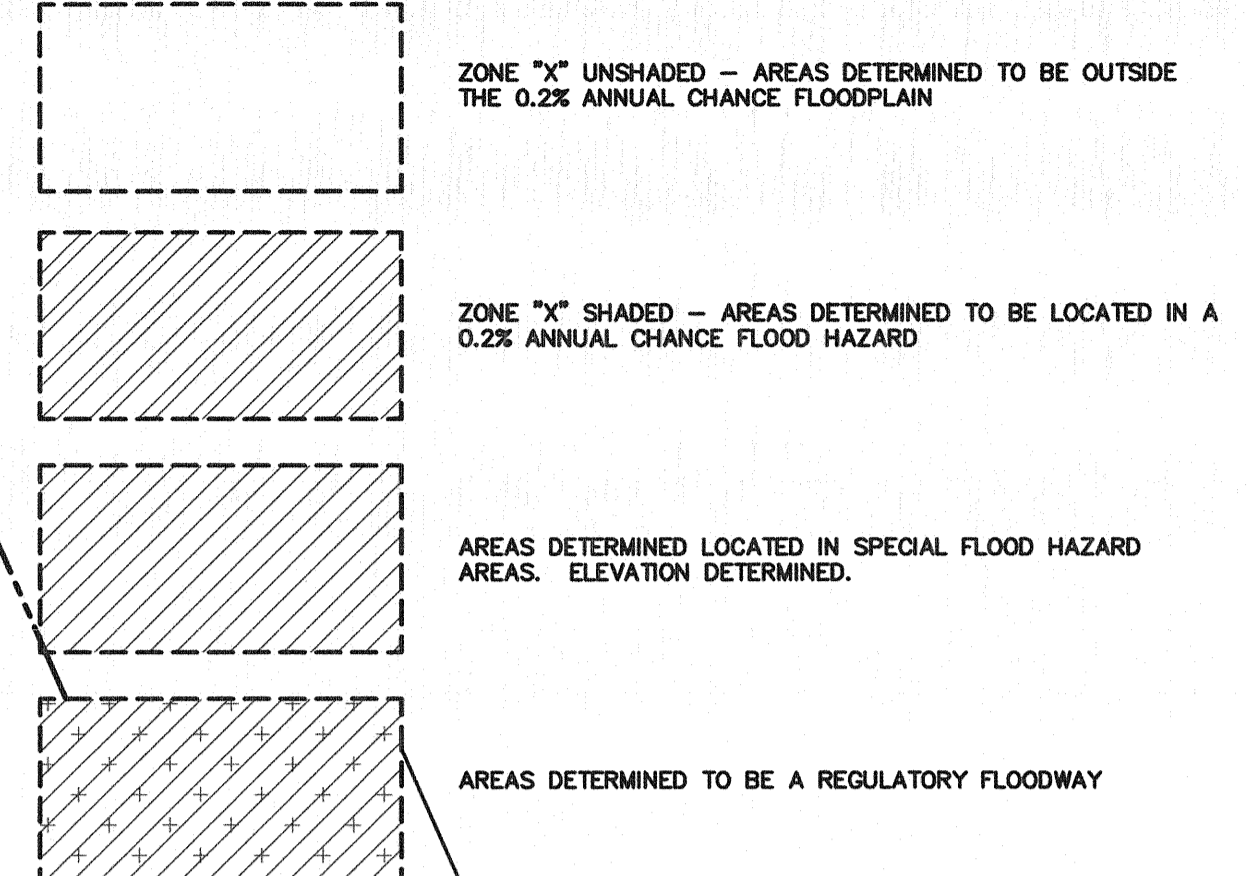
NORTH CAROLINA COUNTY  
 I, MICHAEL N. UNDERWOOD, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION DESCRIPTION AS SHOWN ON THE FACE OF THIS PLAT ERROR OF  $\pm 0.01$  FEET PER 100 FEET OF DISTANCE. THIS PLAT IS NOT TO BE USED FOR ANY OTHER PURPOSES WITHOUT THE WRITTEN CONSENT OF MICHAEL N. UNDERWOOD AND ASSOCIATES, P.A.  
 MICHAEL N. UNDERWOOD, R.L.S.  
 REGISTRATION NUMBER L-2882  
 SEAL OR STAMP





VICINITY MAP  
NO SCALE

**FLOOD LEGEND**  
 FLOOD INFORMATION TAKEN FROM FLOOD INSURANCE RATE MAP, COMMUNITY PANEL 3720312500, EFFECTIVE DATE APRIL 3, 2006.

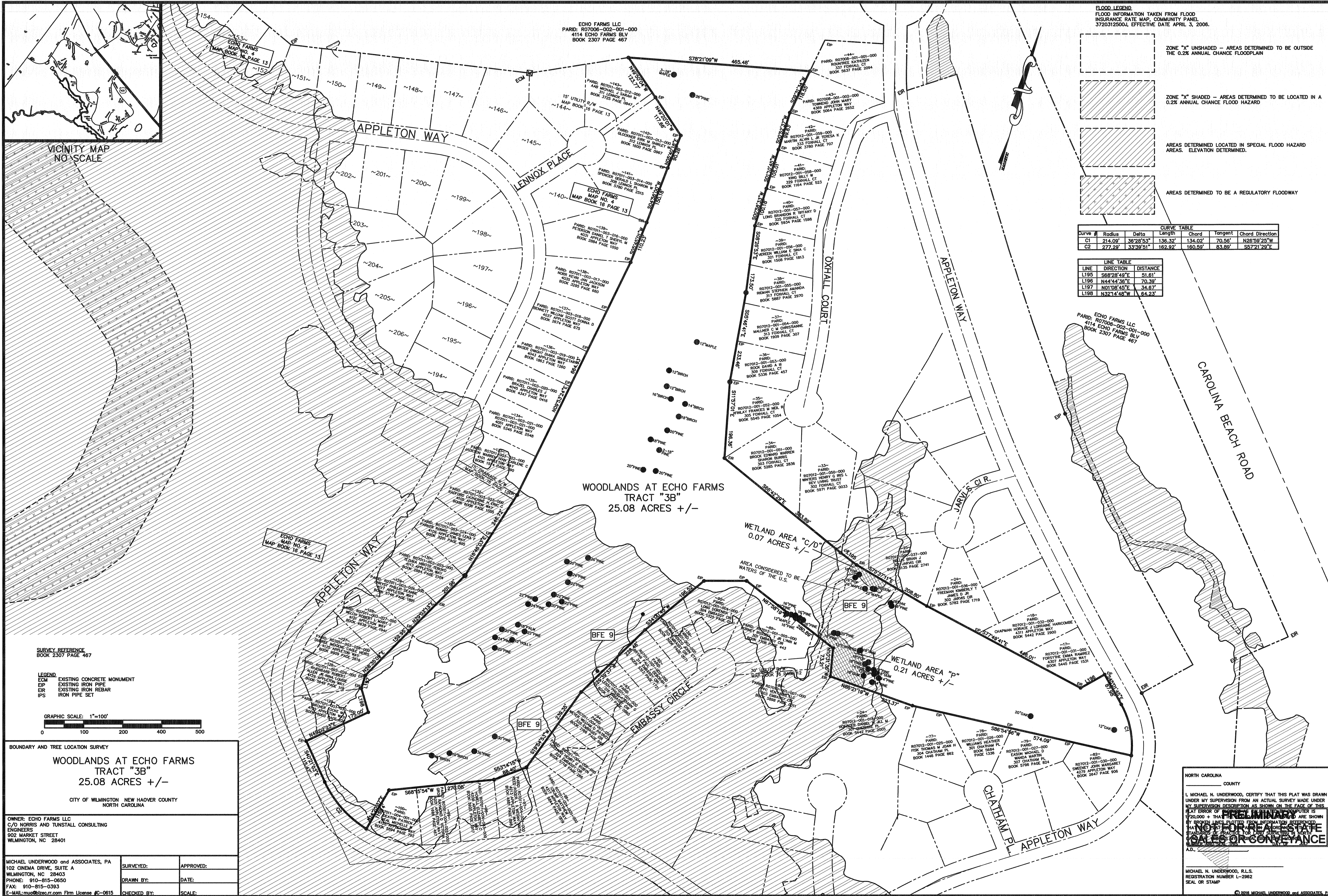


**CURVE TABLE**

Curve #	Radius	Delta	Length	Chord	Tangent	Chord Direction
C1	214.09'	36°28'53"	136.32'	134.02'	70.58'	N26°58'25"W
C2	277.29'	33°39'51"	162.92'	160.59'	83.89'	S57°21'29"E

**LINE TABLE**

LINE	DIRECTION	DISTANCE
L195	S68°28'49"E	51.61'
L196	N44°44'36"E	70.39'
L197	N01°08'45"E	34.67'
L198	N32°14'48"W	64.23'



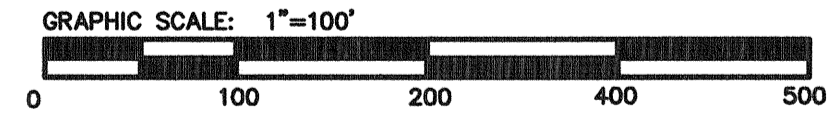
WOODLANDS AT ECHO FARMS  
TRACT "3B"  
25.08 ACRES +/-

WETLAND AREA "C/D"  
0.07 ACRES +/-

WETLAND AREA "P"  
0.21 ACRES +/-

SURVEY REFERENCE  
BOOK 2307 PAGE 467

**LEGEND**  
 ECM EXISTING CONCRETE MONUMENT  
 EIP EXISTING IRON PIPE  
 EIR EXISTING IRON REBAR  
 IPS IRON PIPE SET



**BOUNDARY AND TREE LOCATION SURVEY**

**WOODLANDS AT ECHO FARMS TRACT "3B"**  
25.08 ACRES +/-

CITY OF WILMINGTON NEW HAVOER COUNTY NORTH CAROLINA

OWNER: ECHO FARMS LLC  
C/O NORRIS AND TUNSTALL CONSULTING ENGINEERS  
902 MARKET STREET WILMINGTON, NC 28401

MICHAEL UNDERWOOD and ASSOCIATES, PA  
102 CINEMA DRIVE, SUITE A WILMINGTON, NC 28403  
PHONE: 910-815-0650  
FAX: 910-815-0393  
E-MAIL: mu@bzec.com Firm License #C-0615

SURVEYED:	APPROVED:
DRAWN BY:	DATE:
CHECKED BY:	SCALE:

NORTH CAROLINA COUNTY

I, MICHAEL N. UNDERWOOD, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION DESCRIPTION AS SHOWN ON THE FACE OF THIS PLAT ERROR OF **PRELIMINARY** COMPUTER IS 1/20,000 + THAT THE **PRELIMINARY** ARE SHOWN BY BROKEN LINES PLOTTED FROM INFORMATION RECEIVED. HAVING PLOTTED THIS PLAT BY AN ELECTRONIC METHOD I AM NOT PROVIDING A GUARANTEE OF ACCURACY NOR AM I PROVIDING A GUARANTEE OF THE ACCURACY OF THE INFORMATION RECEIVED. I AM NOT PROVIDING A GUARANTEE OF THE ACCURACY OF THE INFORMATION RECEIVED.

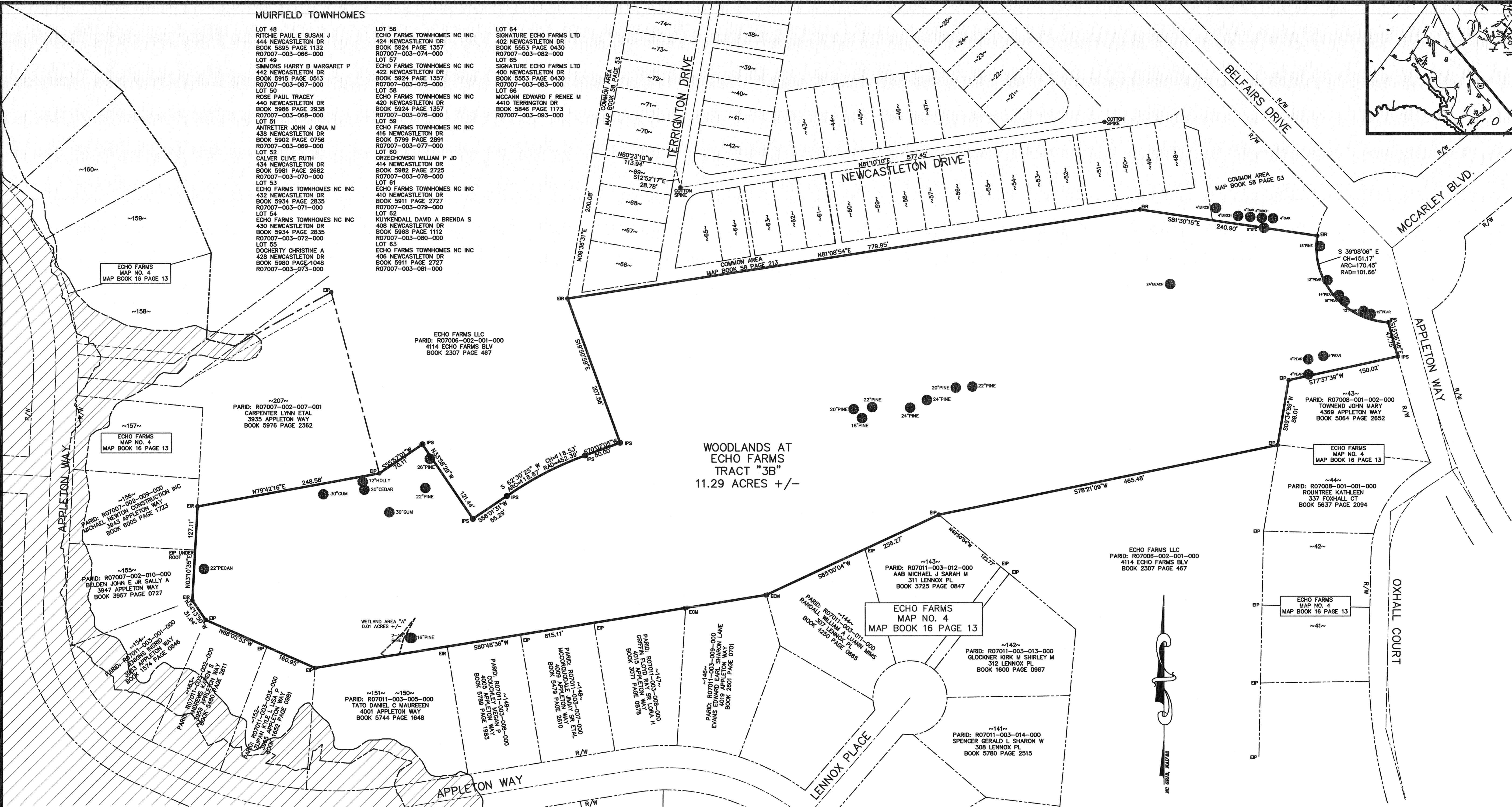
MICHAEL N. UNDERWOOD, R.L.S.  
REGISTRATION NUMBER L-2962  
SEAL OR STAMP

© 2016 MICHAEL UNDERWOOD and ASSOCIATES, PA

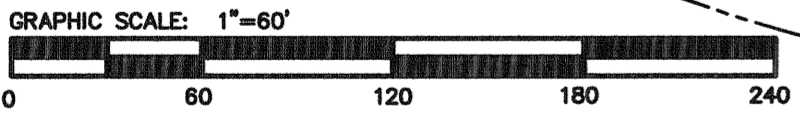


MUIRFIELD TOWNHOMES

- LOT 48  
RITCHIE PAUL E SUSAN J  
444 NEWCASTLETON DR  
BOOK 5895 PAGE 1132  
R07007-003-068-000
- LOT 49  
SIMMONS HARRY B MARGARET P  
442 NEWCASTLETON DR  
BOOK 5915 PAGE 0513  
R07007-003-067-000
- LOT 50  
ROSE PAUL TRACEY  
440 NEWCASTLETON DR  
BOOK 5986 PAGE 2938  
R07007-003-068-000
- LOT 51  
ANTRETTER JOHN J GINA M  
438 NEWCASTLETON DR  
BOOK 5902 PAGE 0756  
R07007-003-069-000
- LOT 52  
CALVER CLIVE RUTH  
434 NEWCASTLETON DR  
BOOK 5981 PAGE 2682  
R07007-003-070-000
- LOT 53  
ECHO FARMS TOWNHOMES NC INC  
432 NEWCASTLETON DR  
BOOK 5934 PAGE 2835  
R07007-003-071-000
- LOT 54  
ECHO FARMS TOWNHOMES NC INC  
430 NEWCASTLETON DR  
BOOK 5934 PAGE 2835  
R07007-003-072-000
- LOT 55  
DOCHERTY CHRISTINE A  
428 NEWCASTLETON DR  
BOOK 5980 PAGE 1048  
R07007-003-073-000
- LOT 56  
ECHO FARMS TOWNHOMES NC INC  
424 NEWCASTLETON DR  
BOOK 5924 PAGE 1357  
R07007-003-074-000
- LOT 57  
ECHO FARMS TOWNHOMES NC INC  
422 NEWCASTLETON DR  
BOOK 5924 PAGE 1357  
R07007-003-075-000
- LOT 58  
ECHO FARMS TOWNHOMES NC INC  
420 NEWCASTLETON DR  
BOOK 5924 PAGE 1357  
R07007-003-076-000
- LOT 59  
ECHO FARMS TOWNHOMES NC INC  
416 NEWCASTLETON DR  
BOOK 5799 PAGE 2891  
R07007-003-077-000
- LOT 60  
ORZECZOWSKI WILLIAM P JO  
414 NEWCASTLETON DR  
BOOK 5982 PAGE 2725  
R07007-003-078-000
- LOT 61  
ECHO FARMS TOWNHOMES NC INC  
410 NEWCASTLETON DR  
BOOK 5911 PAGE 2727  
R07007-003-079-000
- LOT 62  
KUYKENDALL DAVID A BRENDA S  
408 NEWCASTLETON DR  
BOOK 5968 PAGE 1112  
R07007-003-080-000
- LOT 63  
ECHO FARMS TOWNHOMES NC INC  
406 NEWCASTLETON DR  
BOOK 5911 PAGE 2727  
R07007-003-081-000
- LOT 64  
SIGNATURE ECHO FARMS LTD  
402 NEWCASTLETON DR  
BOOK 5553 PAGE 0430  
R07007-003-082-000
- LOT 65  
SIGNATURE ECHO FARMS LTD  
400 NEWCASTLETON DR  
BOOK 5553 PAGE 0430  
R07007-003-083-000
- LOT 66  
MCCANN EDWARD F RENEE M  
4410 TERRINGTON DR  
BOOK 5846 PAGE 1173  
R07007-003-093-000



WOODLANDS AT ECHO FARMS TRACT "3B" 11.29 ACRES +/-



**BOUNDARY AND TREE LOCATION SURVEY**  
**WOODLANDS AT ECHO FARMS TRACT "3B"**  
 11.29 ACRES +/-  
 CITY OF WILMINGTON NEW HAVER COUNTY NORTH CAROLINA

OWNER: ECHO FARMS LLC  
 C/O NORRIS AND TUNSTALL CONSULTING ENGINEERS  
 902 MARKET STREET  
 WILMINGTON, NC 28401

MICHAEL UNDERWOOD and ASSOCIATES, PA  
 102 CINEMA DRIVE, SUITE A  
 WILMINGTON, NC 28403  
 PHONE: 910-815-0650  
 FAX: 910-815-0393  
 E-MAIL: muo@bizccr.com Firm License PC-0615

SURVEYED: DC APPROVED: MNU  
 DRAWN BY: TBM DATE: NOV.16  
 CHECKED BY: MNU SCALE: 1"=60'

- SURVEY REFERENCE**  
 BOOK 2307 PAGE 467
- LEGEND**  
 ECM EXISTING CONCRETE MONUMENT  
 EIP EXISTING IRON PIPE  
 EIR EXISTING IRON REBAR  
 IPS IRON PIPE SET

**FLOOD LEGEND**  
 FLOOD INFORMATION TAKEN FROM FLOOD INSURANCE RATE MAP, COMMUNITY PANEL 3720312500J, EFFECTIVE DATE APRIL 3, 2006.

- ZONE "X" UNSHADED - AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN
- ZONE "X" SHADED - AREAS DETERMINED TO BE LOCATED IN A 0.2% ANNUAL CHANCE FLOOD HAZARD
- AREAS DETERMINED LOCATED IN SPECIAL FLOOD HAZARD AREAS. ELEVATION DETERMINED.

NORTH CAROLINA COUNTY

I, MICHAEL N. UNDERWOOD, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION DESCRIPTION AS SHOWN ON THE FACE OF THIS PLAT. THE ERROR OF THE SURVEY IS LESS THAN ONE HUNDREDTH (1/100) OF THE DISTANCE MEASURED. THE PLAT IS ACCURATE TO WITHIN ONE HUNDREDTH (1/100) OF AN INCH PER 100 FEET. THE PLAT IS ACCURATE TO WITHIN ONE HUNDREDTH (1/100) OF AN INCH PER 100 FEET. THE PLAT IS ACCURATE TO WITHIN ONE HUNDREDTH (1/100) OF AN INCH PER 100 FEET.

MICHAEL N. UNDERWOOD, R.L.S.  
 REGISTRATION NUMBER L-2982  
 SEAL OR STAMP

© 2016 MICHAEL UNDERWOOD and ASSOCIATES, PA



**FLOOD LEGEND**  
 FLOOD INFORMATION TAKEN FROM FLOOD INSURANCE RATE MAP, COMMUNITY PANEL 3720312500A, EFFECTIVE DATE APRIL 3, 2006.

ZONE "X" UNSHADED - AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN

ZONE "X" SHADED - AREAS DETERMINED TO BE LOCATED IN A 0.2% ANNUAL CHANCE FLOOD HAZARD

AREAS DETERMINED LOCATED IN SPECIAL FLOOD HAZARD AREAS. ELEVATION DETERMINED.

AREAS DETERMINED TO BE A REGULATORY FLOODWAY

**CURVE TABLE**

Curve #	Radius	Delta	Length	Chord	Tangent	Chord Direction
C1	452.39'	150°3'19"	118.87'	118.53'	59.78'	S82°30'25"W
C3	100.00'	89°30'28"	156.22'	140.81'	99.14'	S66°38'04"E

**LINE TABLE**

LINE	DIRECTION	DISTANCE
L1	S70°02'05"W	50.00'
L2	S56°01'31"W	55.29'
L3	N33°58'29"W	121.44'
L4	S55°57'01"W	70.11'
L5	N76°41'22"W	38.92'
L6	N67°44'18"W	29.91'

**MUIRFIELD TOWNHOMES**

LOT 68 MICHAEL EDWARD F RENEE M 4410 TERRINGTON DR BOOK 5846 PAGE 1131 R07007-003-003-000  
 LOT 67 EVANS JENNIFER POLLAK 4408 TERRINGTON DR BOOK 5887 PAGE 0079 R07007-003-004-000  
 LOT 66 DISTRIA ROBERT L KAREN M 4404 TERRINGTON DR BOOK 5843 PAGE 1487 R07007-003-005-000  
 LOT 65 RECH CHARLES L ELEANOR L 4402 TERRINGTON DR BOOK 5842 PAGE 2345 R07007-003-006-000  
 LOT 70 SIGNATURE ECHO FARMS LTD 4344 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 71 SIGNATURE ECHO FARMS LTD 4342 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 72 SIGNATURE ECHO FARMS LTD 4340 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 73 SIGNATURE ECHO FARMS LTD 4338 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 74 ECHO FARMS TOWNHOMES NC INC 4336 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 75 ECHO FARMS TOWNHOMES NC INC 4334 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 76 ECHO FARMS TOWNHOMES NC INC 4332 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 77 SIGNATURE ECHO FARMS LTD 4330 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 78 SIGNATURE ECHO FARMS LTD 4328 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 79 SIGNATURE ECHO FARMS LTD 4326 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 80 SIGNATURE ECHO FARMS LTD 4324 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 81 SIGNATURE ECHO FARMS LTD 4322 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 82 ANDERSON LORI C 4320 TERRINGTON DR BOOK 5528 PAGE 1505 R07007-003-005-000  
 LOT 83 BRENNAN MARCELLA F 4318 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 84 CANNON MICHAEL W ETAL 4316 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 85 ECHO FARMS TOWNHOMES NC INC 4314 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 86 ECHO FARMS TOWNHOMES NC INC 4312 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 87 SIGNATURE ECHO FARMS LTD 4310 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 88 SIGNATURE ECHO FARMS LTD 4308 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 89 SIGNATURE ECHO FARMS LTD 4306 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 90 SIGNATURE ECHO FARMS LTD 4304 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 91 SIGNATURE ECHO FARMS LTD 4302 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 92 SIGNATURE ECHO FARMS LTD 4300 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 93 SIGNATURE ECHO FARMS LTD 4298 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 94 SIGNATURE ECHO FARMS LTD 4296 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 95 SIGNATURE ECHO FARMS LTD 4294 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 96 SIGNATURE ECHO FARMS LTD 4292 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
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 LOT 99 SIGNATURE ECHO FARMS LTD 4286 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 100 SIGNATURE ECHO FARMS LTD 4284 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000

LOT 75 ECHO FARMS TOWNHOMES NC INC 4332 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 76 ECHO FARMS TOWNHOMES NC INC 4330 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 77 SIGNATURE ECHO FARMS LTD 4328 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 78 SIGNATURE ECHO FARMS LTD 4326 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 79 SIGNATURE ECHO FARMS LTD 4324 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 80 SIGNATURE ECHO FARMS LTD 4322 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 81 SIGNATURE ECHO FARMS LTD 4320 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 82 ANDERSON LORI C 4318 TERRINGTON DR BOOK 5528 PAGE 1505 R07007-003-005-000  
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 LOT 84 CANNON MICHAEL W ETAL 4314 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 85 ECHO FARMS TOWNHOMES NC INC 4312 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 86 ECHO FARMS TOWNHOMES NC INC 4310 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 87 SIGNATURE ECHO FARMS LTD 4308 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 88 SIGNATURE ECHO FARMS LTD 4306 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 89 SIGNATURE ECHO FARMS LTD 4304 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 90 SIGNATURE ECHO FARMS LTD 4302 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 91 SIGNATURE ECHO FARMS LTD 4300 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 92 SIGNATURE ECHO FARMS LTD 4298 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
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 LOT 94 SIGNATURE ECHO FARMS LTD 4294 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 95 SIGNATURE ECHO FARMS LTD 4292 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 96 SIGNATURE ECHO FARMS LTD 4290 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 97 SIGNATURE ECHO FARMS LTD 4288 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 98 SIGNATURE ECHO FARMS LTD 4286 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 99 SIGNATURE ECHO FARMS LTD 4284 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 100 SIGNATURE ECHO FARMS LTD 4282 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000

LOT 75 ECHO FARMS TOWNHOMES NC INC 4332 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 76 ECHO FARMS TOWNHOMES NC INC 4330 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 77 SIGNATURE ECHO FARMS LTD 4328 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 78 SIGNATURE ECHO FARMS LTD 4326 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 79 SIGNATURE ECHO FARMS LTD 4324 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 80 SIGNATURE ECHO FARMS LTD 4322 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
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 LOT 82 ANDERSON LORI C 4318 TERRINGTON DR BOOK 5528 PAGE 1505 R07007-003-005-000  
 LOT 83 BRENNAN MARCELLA F 4316 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 84 CANNON MICHAEL W ETAL 4314 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 85 ECHO FARMS TOWNHOMES NC INC 4312 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
 LOT 86 ECHO FARMS TOWNHOMES NC INC 4310 TERRINGTON DR BOOK 5572 PAGE 2958 R07007-003-005-000  
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 LOT 89 SIGNATURE ECHO FARMS LTD 4304 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 90 SIGNATURE ECHO FARMS LTD 4302 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 91 SIGNATURE ECHO FARMS LTD 4300 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 92 SIGNATURE ECHO FARMS LTD 4298 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
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 LOT 94 SIGNATURE ECHO FARMS LTD 4294 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 95 SIGNATURE ECHO FARMS LTD 4292 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
 LOT 96 SIGNATURE ECHO FARMS LTD 4290 TERRINGTON DR BOOK 5583 PAGE 0430 R07007-003-005-000  
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ECHO FARMS LLC  
 PARID: R07006-002-001-000  
 4114 ECHO FARMS BLV  
 BOOK 2307 PAGE 487

**ECHO POND VILLAS**

LOT 9 STEPHENS ALLEN J KATHLEEN D B 3719 SAND TRAP CT BOOK 5788 PAGE 0239 R07007-005-004-000

ECHO FARMS LLC  
 PARID: R07006-002-001-000  
 4114 ECHO FARMS BLV  
 BOOK 2307 PAGE 487

**WOODLANDS AT ECHO FARMS TRACT "3A"**  
 25.36 ACRES +/-

**BOUNDARY AND TREE LOCATION SURVEY**  
**WOODLANDS AT ECHO FARMS TRACT "3A"**  
 25.36 ACRES +/-  
 CITY OF WILMINGTON - NEW HAVER COUNTY  
 NORTH CAROLINA

OWNER: ECHO FARMS LLC  
 C/O NORRIS AND TUNSTALL CONSULTING ENGINEERS  
 902 MARKET STREET  
 WILMINGTON, NC 28401

MICHAEL UNDERWOOD and ASSOCIATES, PA  
 102 CINEMA DRIVE, SUITE A  
 WILMINGTON, NC 28403  
 PHONE: 910-815-0650  
 FAX: 910-815-0353  
 E-MAIL: muo@tac.com Firm License #C-0615

SURVEYED BY: DC APPROVED BY: MNU  
 DRAWN BY: TBM DATE: NOV, 16  
 CHECKED BY: MNU SCALE: 1"=60'

**SURVEY REFERENCE**  
 BOOK 2307 PAGE 487

**LEGEND**  
 ECM EXISTING CONCRETE MONUMENT  
 EIP EXISTING IRON PIPE  
 EIR EXISTING IRON REBAR  
 IPS IRON PIPE SET  
 NPS NO POINT SET  
 BFE BASE FLOOD ELEVATION

**GRAPHIC SCALE: 1"=60'**  
 0 60 120 180 240

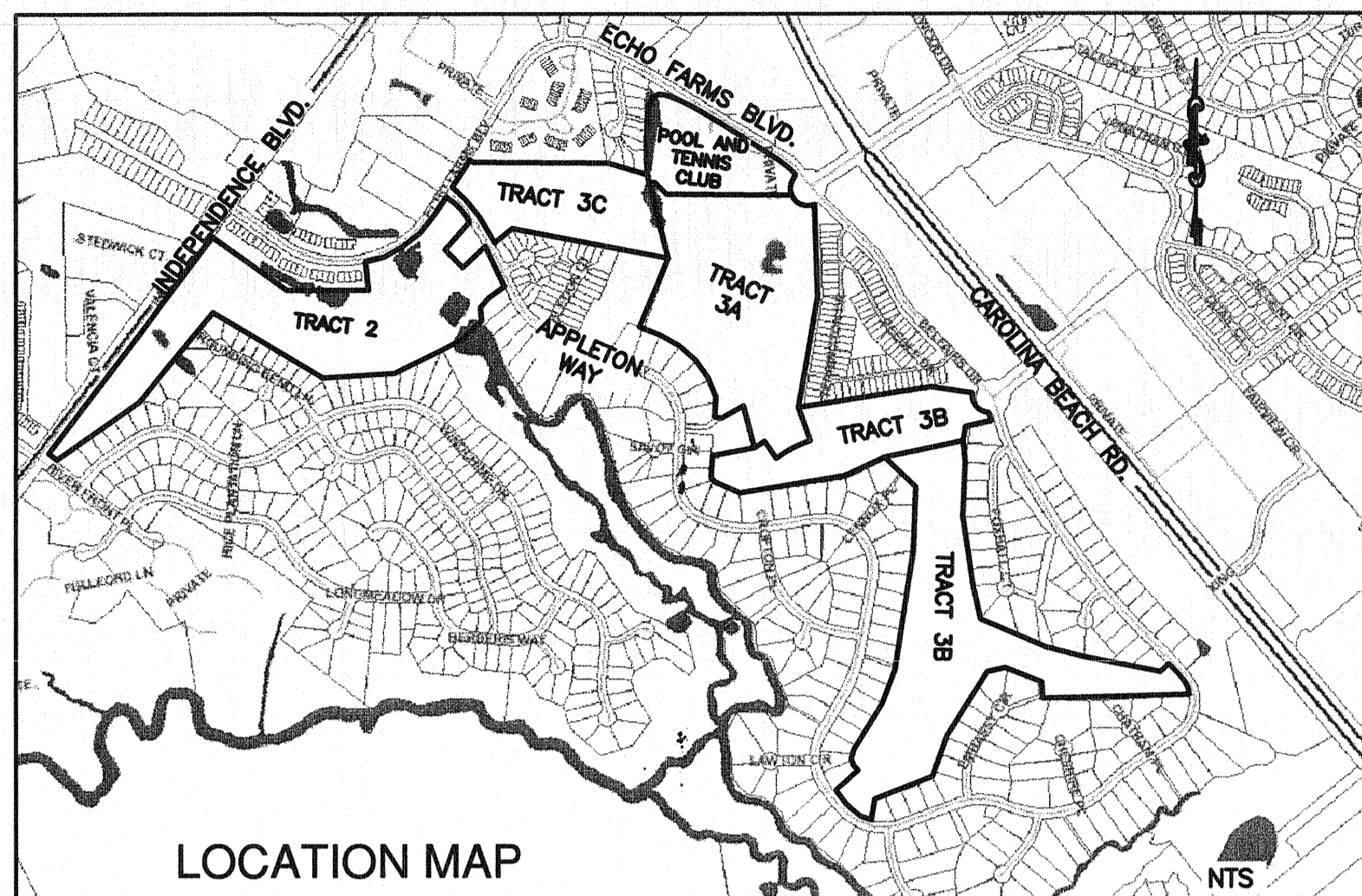
NORTH CAROLINA COUNTY

I, MICHAEL N. UNDERWOOD, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION DESCRIPTION AS SHOWN ON THE FACE OF THIS PLAT. I HAVE CAUSED THIS PLAT TO BE PRINTED BY COMPUTER AND I HAVE CAUSED THIS PLAT TO BE PRINTED ON A SCALE OF 1"=60' ± THAT THE PLAT IS A TRUE AND CORRECT REPRESENTATION OF THE SURVEY AND THAT THE INFORMATION REFERENCED HEREON HAS BEEN OBTAINED FROM A REPUTABLE SOURCE AND THAT I AM A LICENSED SURVEYOR IN THE STATE OF NORTH CAROLINA. I HAVE CAUSED THIS PLAT TO BE PRINTED ON A SCALE OF 1"=60' ± THAT THE PLAT IS A TRUE AND CORRECT REPRESENTATION OF THE SURVEY AND THAT THE INFORMATION REFERENCED HEREON HAS BEEN OBTAINED FROM A REPUTABLE SOURCE AND THAT I AM A LICENSED SURVEYOR IN THE STATE OF NORTH CAROLINA.

MICHAEL N. UNDERWOOD, R.L.S.  
 REGISTRATION NUMBER L-2982  
 SEAL OR STAMP

© 2016 MICHAEL UNDERWOOD and ASSOCIATES, PA





**SITE DATA TABLE**

EXISTING PARCEL ID#: R07006-002-001-000  
 EXISTING MAP ID#: 312514.32.4828.000  
 SITE ADDRESS: 4114 ECHO FARMS BLVD.  
 ZONING: MF-M/O&I-1  
 CURRENT PROPERTY OWNER: ECHO FARMS LLC  
 TRACT 3: BOOK 2307, PAGE 450 81.09 AC (3,532,229 SF)  
 TRACT 3A PROPOSED AREA OF APARTMENTS/TOWNHOMES: 25.33 AC (1,103,473 SF)  
 TRACT 3B PROPOSED AREA OF SINGLE FAMILY: 36.32 AC (1,582,509 SF)  
 PROPOSED POOL AND TENNIS CLUB (O&I): 7.67 AC (334,370 SF)  
 TRACT 3C PROPOSED FUTURE MULTI-FAMILY (R-15): 11.69 AC (509,216 SF)  
 TRACT 2: BOOK 2307, PAGE 450 28.75 AC (1,185,260 SF)  
 TOTAL PROPOSED SITE AREA: 107.76 AC (4,694,828 SF)  
 CAMA LAND CLASSIFICATION: URBAN/CONSERVATION AREA

**REQUIRED SETBACKS:**  
 MF: F=35' R=25' SI=20 SC=30  
 ATT/DET/DU/TR/Q: F=15' R=15' SI=5 SC=10

**PROPOSED SETBACKS:** PROVIDED AS PER CODE  
**BUILDING SEPARATION:** 16' MIN. REQUIRED AND PROVIDED  
**REQUIRED LOT COVERAGE:**  
 MF: 30%  
 ATT/DET/DU/TR/Q: 50%  
**PROPOSED LOT COVERAGE:**  
 MF AND TOWNHOMES: 13.25%  
 SINGLE FAMILY DETACHED: 50% MAX. AS PER CODE  
**REQUIRED BUILDING HEIGHT:** 35'-96' WITH ADDITIONAL YARD REQUIREMENTS.

**REQUIRED DENSITY:** 17 UNITS/ACRE  
 PROPOSED DENSITY TRACT 3A (252 UNITS): 9.94 UNITS/ACRE  
 PROPOSED DENSITY TRACT 3B (106 UNITS): 2.91 UNITS/ACRE  
 PROPOSED DENSITY TRACT 2 (63 UNITS): 2.35 UNITS/ACRE  
 PROPOSED DENSITY FUTURE TRACT 3C (82 UNITS): 7.01 UNITS/ACRE

**PARKING REQUIREMENT RESIDENTIAL:**  
 MAX: 2.5 PER UNIT  
 MIN: 0-1 BEDROOM 1.5; 2 BEDROOM 2; 3 OR MORE BEDROOMS 2.5  
 PARKING REQUIREMENT MF APARTMENTS: MAX. 540/MIN. 372  
 PARKING PROVIDED MF APARTMENTS: 383  
 HC PARKING PROVIDED MF APARTMENTS: 8  
 HC PARKING PROVIDED MF APARTMENTS: 16  
 BICYCLE PARKING PROVIDED MF APARTMENTS: 20  
 BICYCLE PARKING PROVIDED MF APARTMENTS: 20

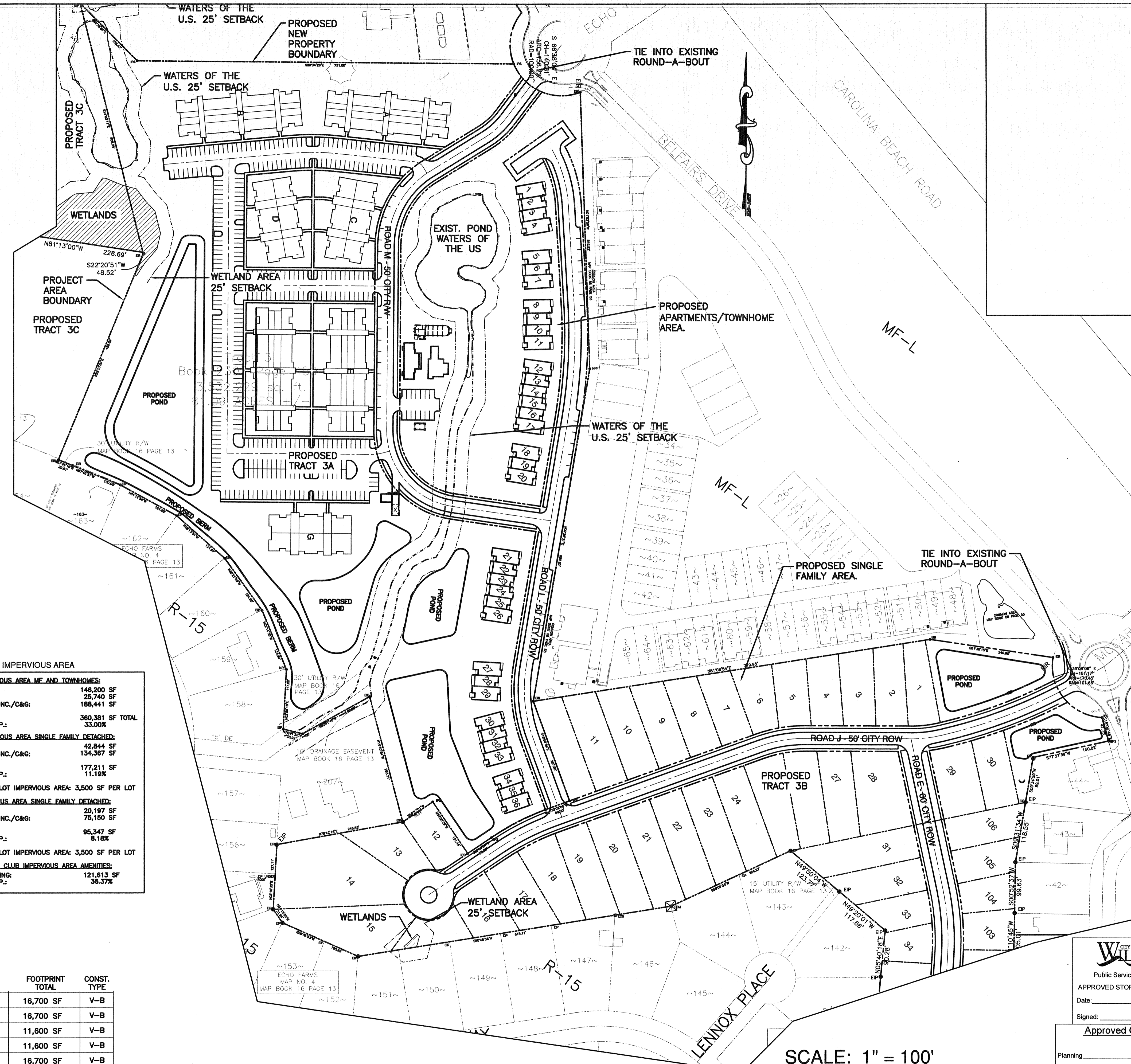
**PARKING REQUIREMENT TOWNHOMES:** MAX. 5/MIN. 2.5 PER UNIT  
 PARKING PROVIDED TOWNHOMES: 90 SPACES  
 PARKING PROVIDED TOWNHOMES: 94 TOTAL (22 ON STREET)

**OPEN SPACE REQUIREMENT TRACT 3A MF:** 35% OF TRACT AREA MINUS PONDS, MARSH, ETC. 17.5% ACTIVE/PASSIVE; 17% ACTIVE/PASSIVE/OPEN; AS PER ARTICLE 7  
 1,103,473 - 919,774 ± X .35 = 321,921 ± SF / 7.39 ± AC REQUIRED AREA AVAILABLE: 11.21 AC

**OPEN SPACE REQUIREMENT SE:** 0.03 AC PER LOT  
 TRACT 3B REQUIRED: 4.08 AC AVAILABLE: 6.34 AC  
 TRACT 2 REQUIRED: 1.77 AC AVAILABLE: 10.00 AC

**STREYARD FOR NON SINGLE FAMILY:** 12 MULTIPLIER  
**FOUNDATION PLANTINGS MULTIFAMILY APARTMENTS:** 12% FACE OF BUILDING X LENGTH  
**INTERIOR LANDSCAPING MULTIFAMILY APARTMENTS:** 20% CANOPY COVER  
**SOLID WASTE DISPOSAL:**  
 MF: DUMPSTER  
 TOWN HOMES: HAND CART  
 SF: HAND CART

**WATER AND SEWER CAPACITY:**  
 MF: 240 G.P.D PER UNIT = 51,840 G.P.D.  
 TOWN HOMES: 360 G.P.D. PER UNIT = 12,960 G.P.D.  
 SF: 480 G.P.D. PER UNIT = 81,120 G.P.D.  
**ADJACENT PROPERTY INFORMATION:** SEE SURVEY PLAN



**IMPERVIOUS AREA**

**TRACT 3A IMPERVIOUS AREA MF AND TOWNHOMES:**  
 BUILDINGS: 148,200 SF  
 SIDEWALK: 25,740 SF  
 ASPHALT/CONC./C&G: 188,441 SF  
 TOTAL: 362,381 SF TOTAL  
 PERCENT IMP.: 33.00%

**TRACT 3B IMPERVIOUS AREA SINGLE FAMILY DETACHED:**  
 SIDEWALK: 42,844 SF  
 ASPHALT/CONC./C&G: 134,387 SF  
 TOTAL: 177,231 SF  
 PERCENT IMP.: 11.18%

**TRACT 2 IMPERVIOUS AREA SINGLE FAMILY DETACHED:**  
 SIDEWALK: 20,197 SF  
 ASPHALT/CONC./C&G: 75,150 SF  
 TOTAL: 95,347 SF  
 PERCENT IMP.: 8.18%

**ALLOCATED LOT IMPERVIOUS AREA: 3,500 SF PER LOT**

**TRACT 2 IMPERVIOUS AREA SINGLE FAMILY DETACHED:**  
 SIDEWALK: 20,197 SF  
 ASPHALT/CONC./C&G: 75,150 SF  
 TOTAL: 95,347 SF  
 PERCENT IMP.: 8.18%

**ALLOCATED LOT IMPERVIOUS AREA: 3,500 SF PER LOT**

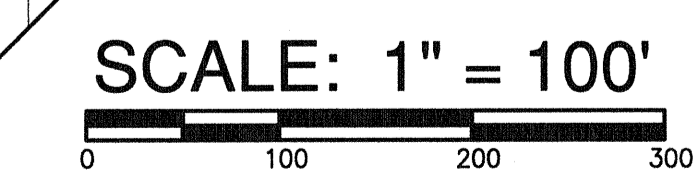
**POOL AND TENNIS CLUB IMPERVIOUS AREA AMENITIES:**  
 TOTAL EXISTING: 121,613 SF  
 PERCENT IMP.: 36.37%

**MULTI-FAMILY APARTMENTS**

BUILDING	# ON SITE	STORIES	HEIGHT	UNITS	1 BEDROOM	2 BEDROOM	BLDG. AREA TOTAL	FOOTPRINT TOTAL	CONST. TYPE
A	1	3	35'	36			42,600 SF	16,700 SF	V-B
B	1	3	35'	36			42,600 SF	16,700 SF	V-B
C	1	3	35'	24			26,400 SF	11,600 SF	V-B
D	1	3	35'	24			26,400 SF	11,600 SF	V-B
E	1	3	35'	36			42,600 SF	16,700 SF	V-B
F	1	3	35'	36			42,600 SF	16,700 SF	V-B
G	1	3	35'	24			26,400 SF	11,600 SF	V-B
MAIL KIOSK	1	1	16'±				300 SF	300 SF	
POOL HOUSE	1	1	16'±				1,200 SF	1,200 SF	
CLUB HOUSE	1	1	18'±				1,700 SF	1,700 SF	
<b>TOTAL</b>	<b>10</b>			<b>216</b>	<b>120</b>	<b>96</b>	<b>252,800 SF</b>	<b>104,800 SF</b>	

**TOWNHOMES**

BUILDING	# ON SITE	STORIES	HEIGHT	UNITS	BEDROOMS/UNIT	FOOTPRINT UNIT	FOOTPRINT TOTAL	BLDG. AREA TOTAL
3 UNIT	4	2	26'±	12	3 (36)	3,500 SF	14,000 SF	14,000 SF
4 UNIT	3	2	26'±	12	3 (36)	4,800 SF	13,800 SF	13,800 SF
6 UNIT	2	2	26'±	12	3 (36)	6,800 SF	13,600 SF	13,600 SF
<b>TOTAL</b>	<b>9</b>			<b>36</b>	<b>108</b>		<b>41,400 SF</b>	<b>41,400 SF</b>



For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

NCDENR PWSS WATER PERMIT #: \_\_\_\_\_ GPD  
 DWQ SEWER PERMIT #: \_\_\_\_\_ GPD  
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 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

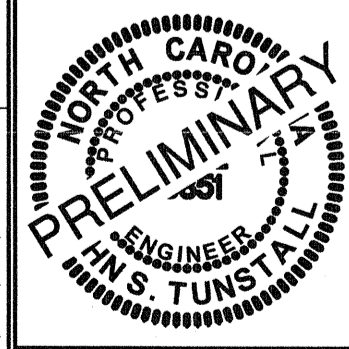
**OVERALL SITE PLAN**  
**WOODLANDS AT ECHO FARMS**  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

**LAND OWNER/APPLICANT**  
 ECHO FARMS, LLC  
 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRANFURY, NJ 07015  
 732-521-2900

**NORRIS & TUNSTALL**  
 CONSULTING ENGINEERS P.C.  
 902 MARKET STREET  
 WILMINGTON, NC 28401  
 1429 ASHLITTLE RIVER RD. NW  
 ASH, NC 28420  
 PHONE (910) 345-9653  
 PHONE (910) 287-5900

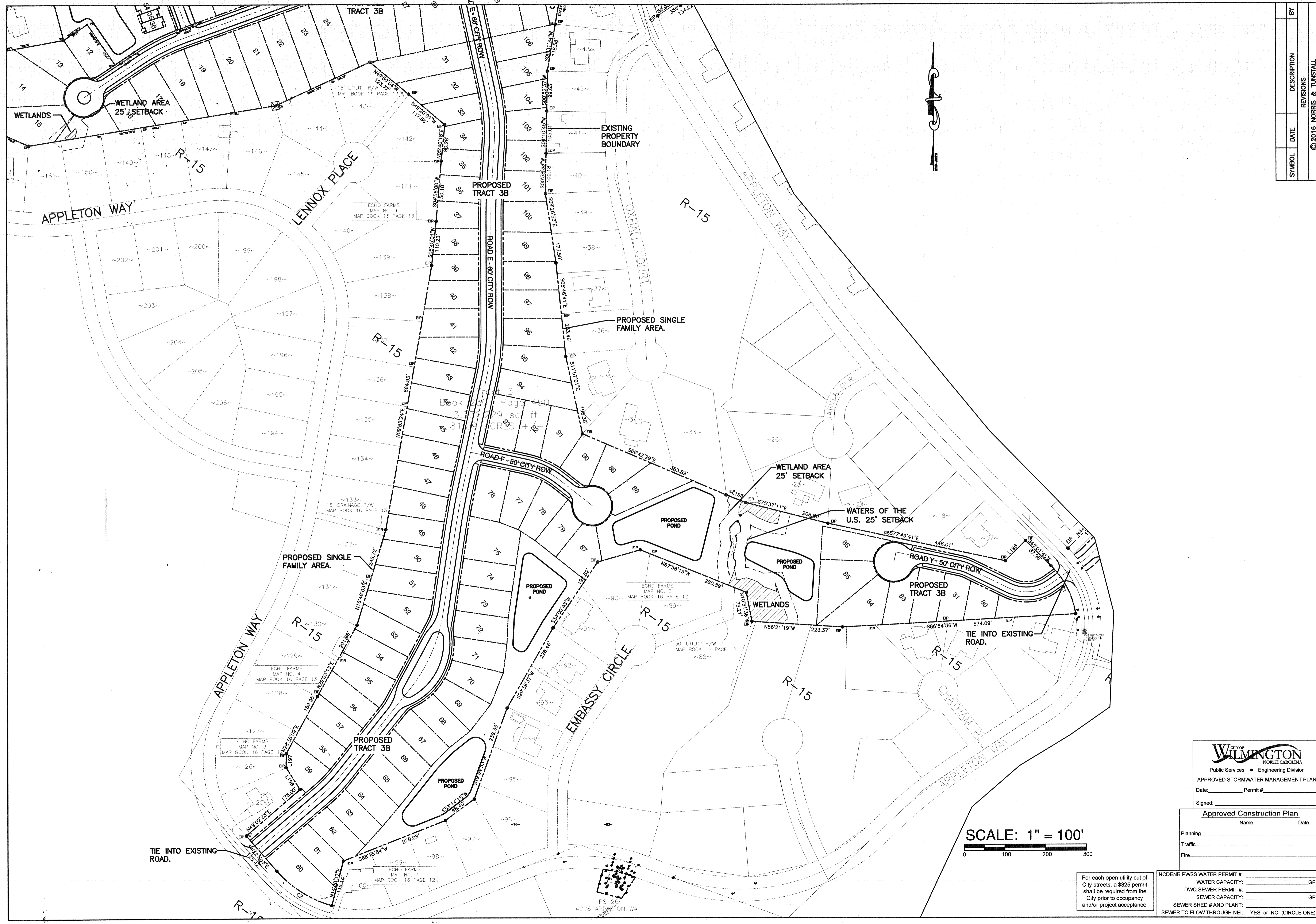
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DES. JST  
 CKD. JPN  
 DRWN. NKS  
 DATE 12/2/16



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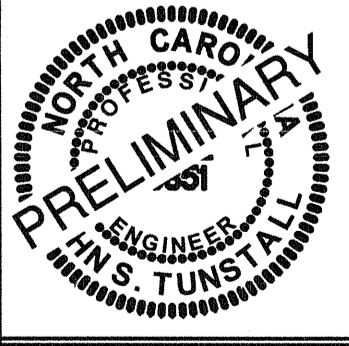
SYMBOL	DATE	DESCRIPTION	BY
		REVISIONS	

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 61400 FORSGATE DRIVE  
 CRANFURY, NJ 08512  
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**C0.1**

City of **WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
**APPROVED STORMWATER MANAGEMENT PLAN**  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_  
**Approved Construction Plan**  
 Name \_\_\_\_\_ Date \_\_\_\_\_  
 Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

**SCALE: 1" = 100'**  
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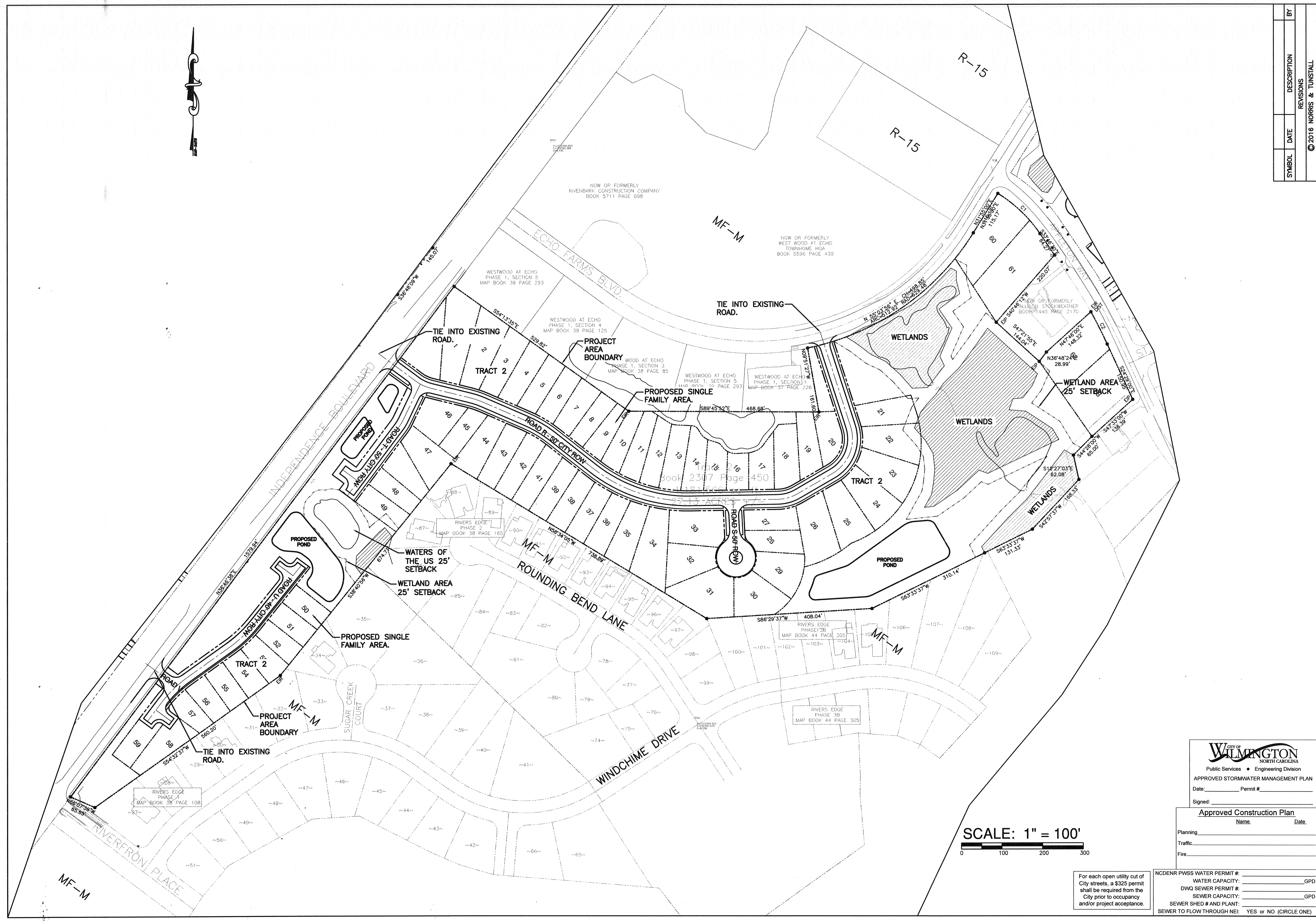
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SYMBOL	DATE	DESCRIPTION	BY
		REVISIONS	
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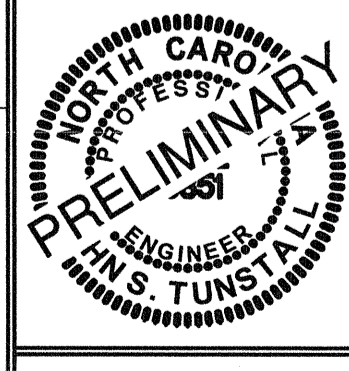
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CHK.	JPN
DRWN.	NKS
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**C0.2**

**CITY OF WILMINGTON**  
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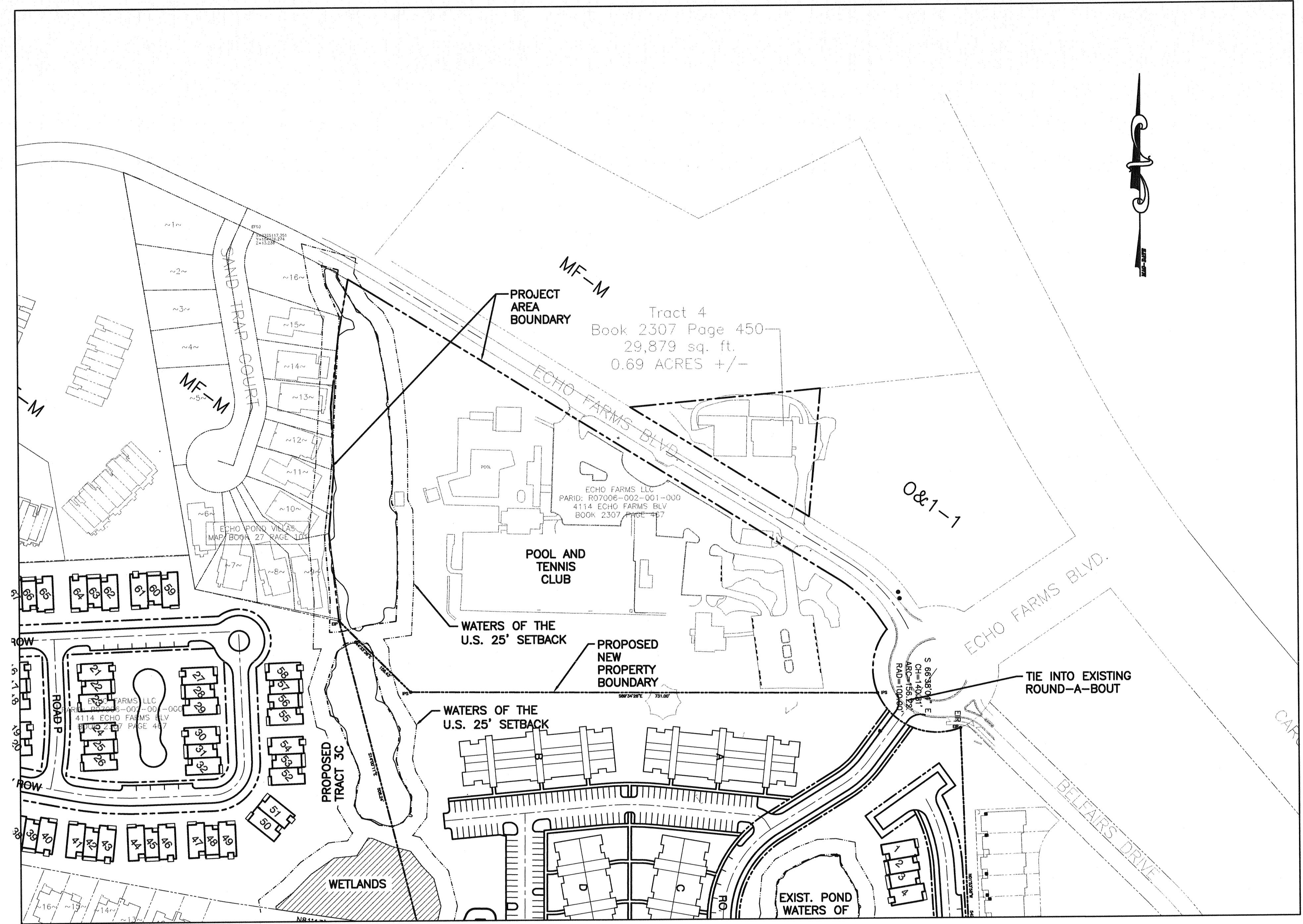
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 NORTH CAROLINA  
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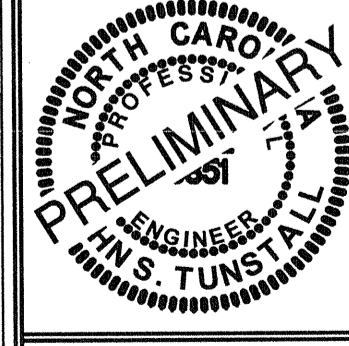
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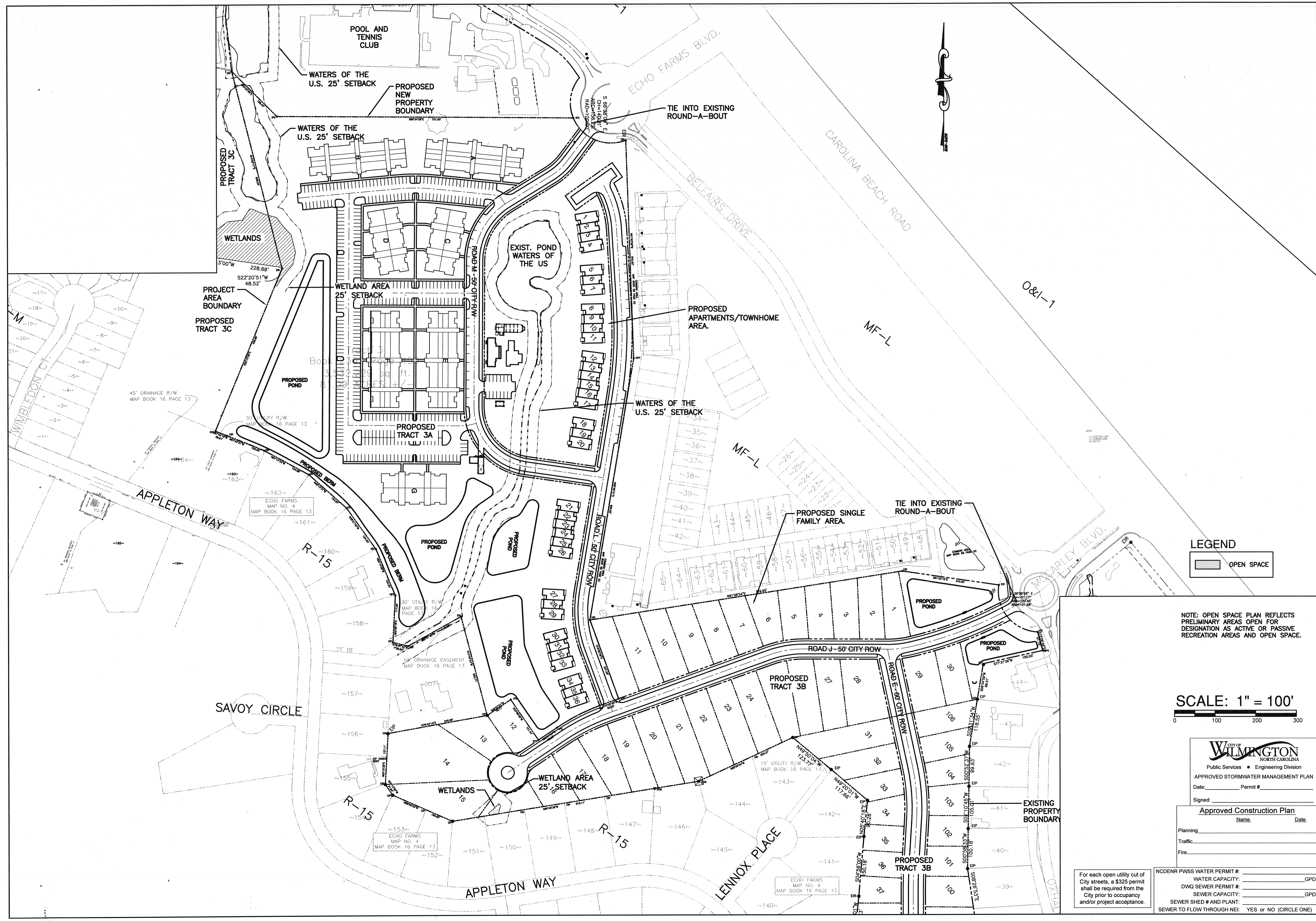
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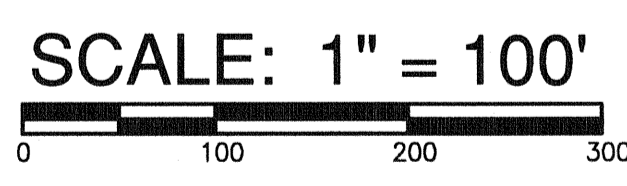




**LEGEND**

□ OPEN SPACE

NOTE: OPEN SPACE PLAN REFLECTS PRELIMINARY AREAS OPEN FOR DESIGNATION AS ACTIVE OR PASSIVE RECREATION AREAS AND OPEN SPACE.



**CITY OF WILMINGTON**  
 NORTH CAROLINA  
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**Approved Construction Plan**

Name \_\_\_\_\_ Date \_\_\_\_\_

Planning \_\_\_\_\_

Traffic \_\_\_\_\_

Fire \_\_\_\_\_

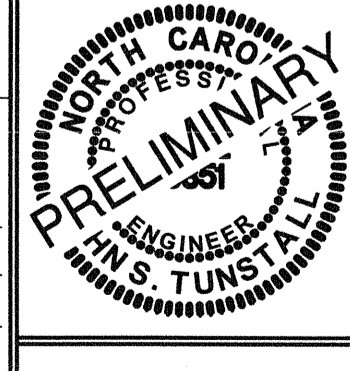
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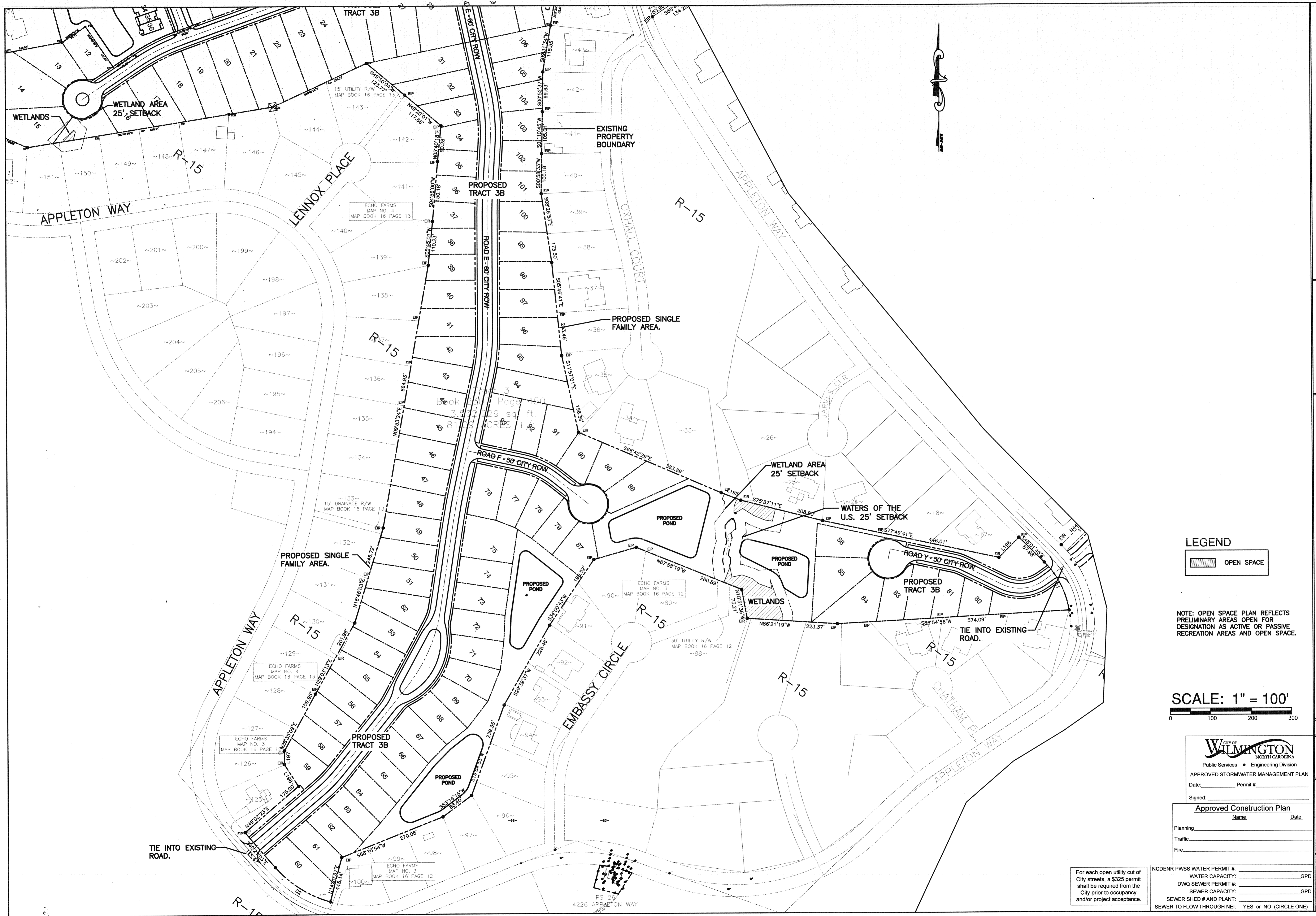
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**16083**  
 DES. JST  
 CDR. JPN  
 DRWN. NKS  
 DATE 12/2/16



**C0.4**





**LEGEND**  
 [Symbol] OPEN SPACE

NOTE: OPEN SPACE PLAN REFLECTS PRELIMINARY AREAS OPEN FOR DESIGNATION AS ACTIVE OR PASSIVE RECREATION AREAS AND OPEN SPACE.

**SCALE: 1" = 100'**  
 0 100 200 300

**City of WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
 Signed: \_\_\_\_\_

**Approved Construction Plan**  
 Name \_\_\_\_\_ Date \_\_\_\_\_  
 Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.  
 NCDENR PWSS WATER PERMIT #: \_\_\_\_\_ GPD  
 WATER CAPACITY: \_\_\_\_\_ GPD  
 DWQ SEWER PERMIT #: \_\_\_\_\_ GPD  
 SEWER CAPACITY: \_\_\_\_\_ GPD  
 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

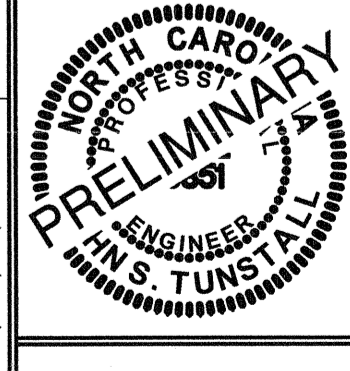
OPEN SPACE PLAN  
 WOODLANDS AT ECHO FARMS  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

LAND OWNER/APPLICANT  
 ECHO FARMS, LLC  
 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRANBURY, NJ 08512  
 732-521-2900

**NORRIS & TUNSTALL**  
 CONSULTING ENGINEERS P.C.  
 902 MARKET STREET  
 WILMINGTON, NC 28401  
 1429 ASH-LITTLE RIVER RD., NW  
 WASHINGTON, NC 28041  
 PHONE (910) 343-9625  
 PHONE (710) 287-5900

License #C-3641

**16083**  
 DES. JST  
 CDD. JPN  
 DRWN. NKS  
 DATE 12/2/16



**C0.5**



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**LEGEND**

OPEN SPACE

NOTE: OPEN SPACE PLAN REFLECTS PRELIMINARY AREAS OPEN FOR DESIGNATION AS ACTIVE OR PASSIVE RECREATION AREAS AND OPEN SPACE.

**SCALE: 1" = 100'**

**CITY OF WILMINGTON**  
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Signed: \_\_\_\_\_  
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 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

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 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

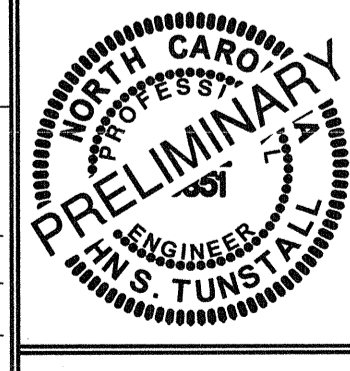
**OPEN SPACE PLAN**  
**WOODLANDS AT ECHO FARMS**  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

**LAND OWNER/APPLICANT**  
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 902 MARKET STREET  
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 1429 ASH-LITTLE RIVER RD., NW  
 WILMINGTON, NC 28403  
 PHONE (910) 267-5366

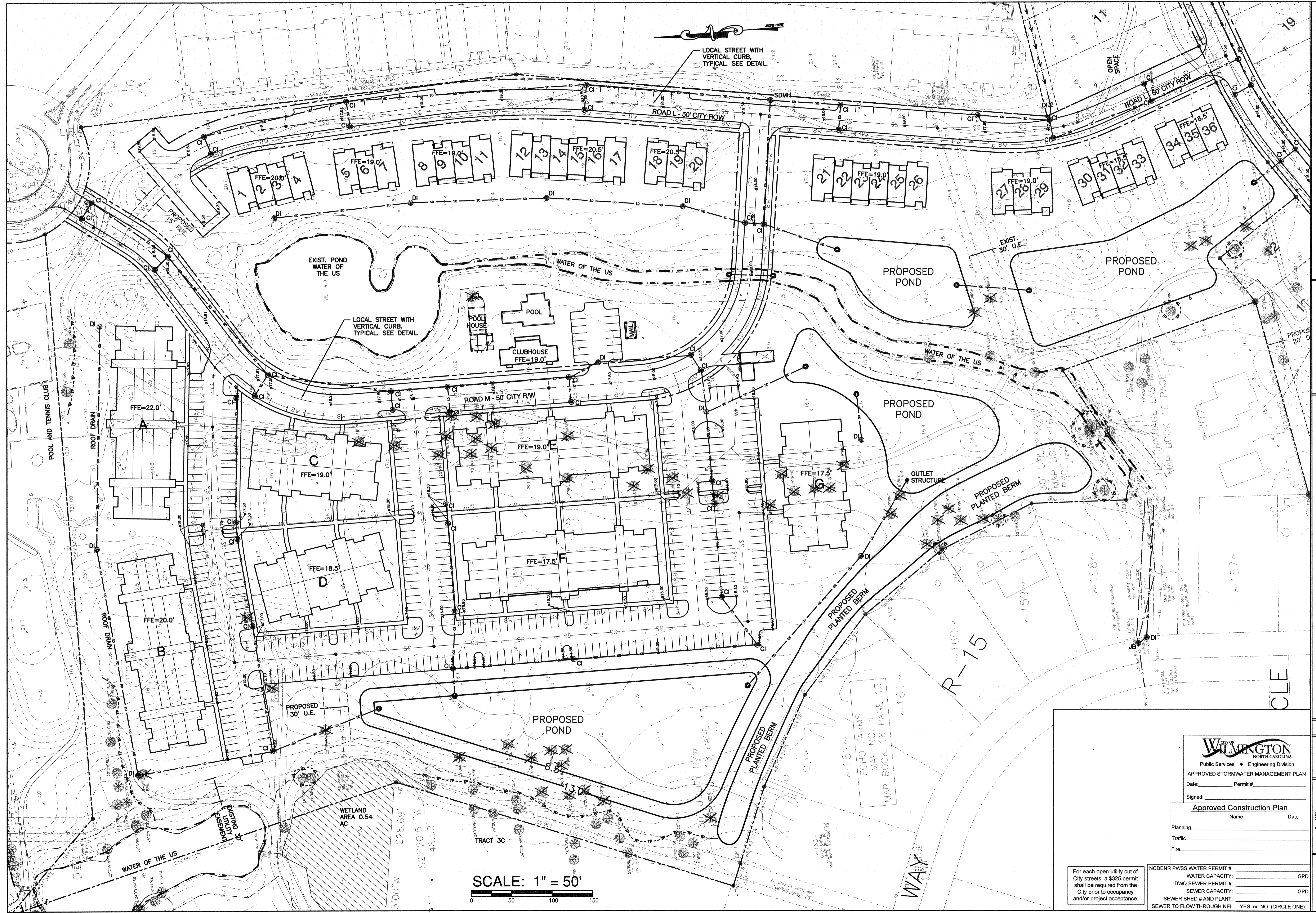
Licence #C-3641  
**16083**

DES. JST  
 CDR. JPN  
 DRWL. NKS  
 DATE 12/2/16



**C0.6**





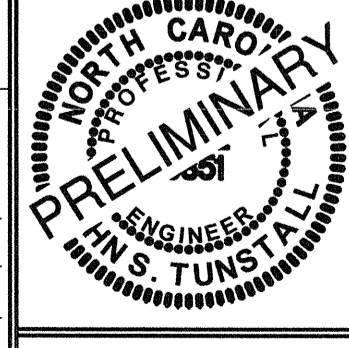
SCALE: 1" = 50'  
 0 50 100 150

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NCDENR PWSS WATER PERMIT # \_\_\_\_\_ GPD  
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City of WILMINGTON  
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 APPROVED STORMWATER MANAGEMENT PLAN  
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Approved Construction Plan  
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 Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_



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 WILMINGTON, NC 28401  
 PHONE (910) 345-9653

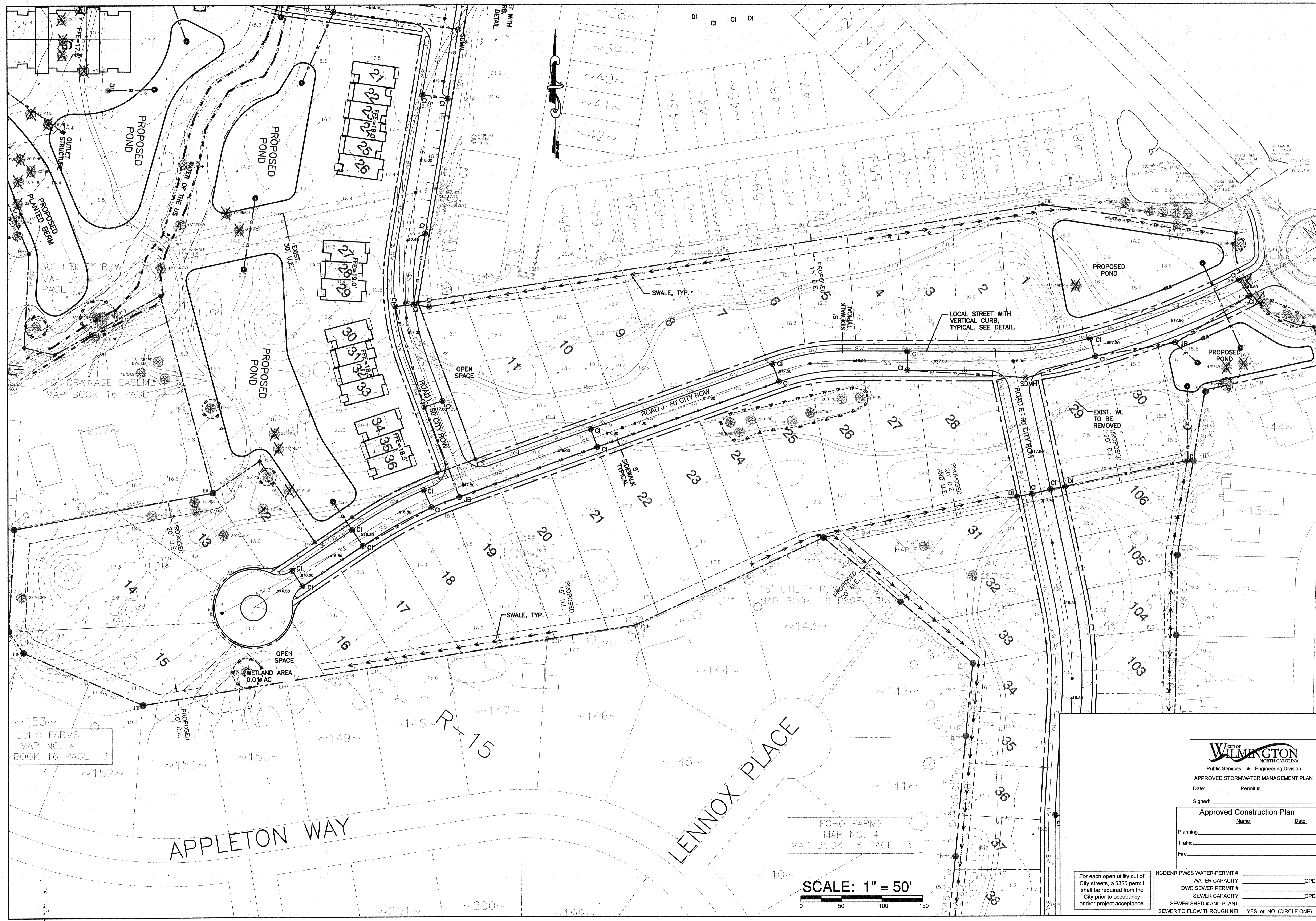
1429 ASH-LITTLE RIVER RD. NW  
 ASH, NC 28420  
 PHONE (910) 287-5900

License #C-3641  
**16083**  
 DES. JST  
 CDR. JPN  
 DRWN. NKS  
 DATE 12/2/16

**C1**

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 ECHO FARMS, LLC  
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 CN4000 FORSGATE DRIVE  
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GRADING, DRAINAGE AND EROSION CONTROL PLAN  
 WOODLANDS AT ECHO FARMS  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

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 1429 ASHLITTLE RIVER RD. NW  
 ASH, NC 28420  
 PHONE (910) 281-5900

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 CDD. JPN  
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DATE 12/2/16

**PRELIMINARY**

**C1.1**

City of **WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
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 Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

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 SEWER CAPACITY: \_\_\_\_\_ GPD  
 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

ECHO FARMS  
 MAP NO. 4  
 MAP BOOK 16 PAGE 13

SCALE: 1" = 50'  
 0 50 100 150

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NC DENR PWSS WATER PERMIT # \_\_\_\_\_  
 WATER CAPACITY: \_\_\_\_\_ GPD  
 DWQ SEWER PERMIT # \_\_\_\_\_  
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**Approved Construction Plan**  
 Name: \_\_\_\_\_ Date: \_\_\_\_\_

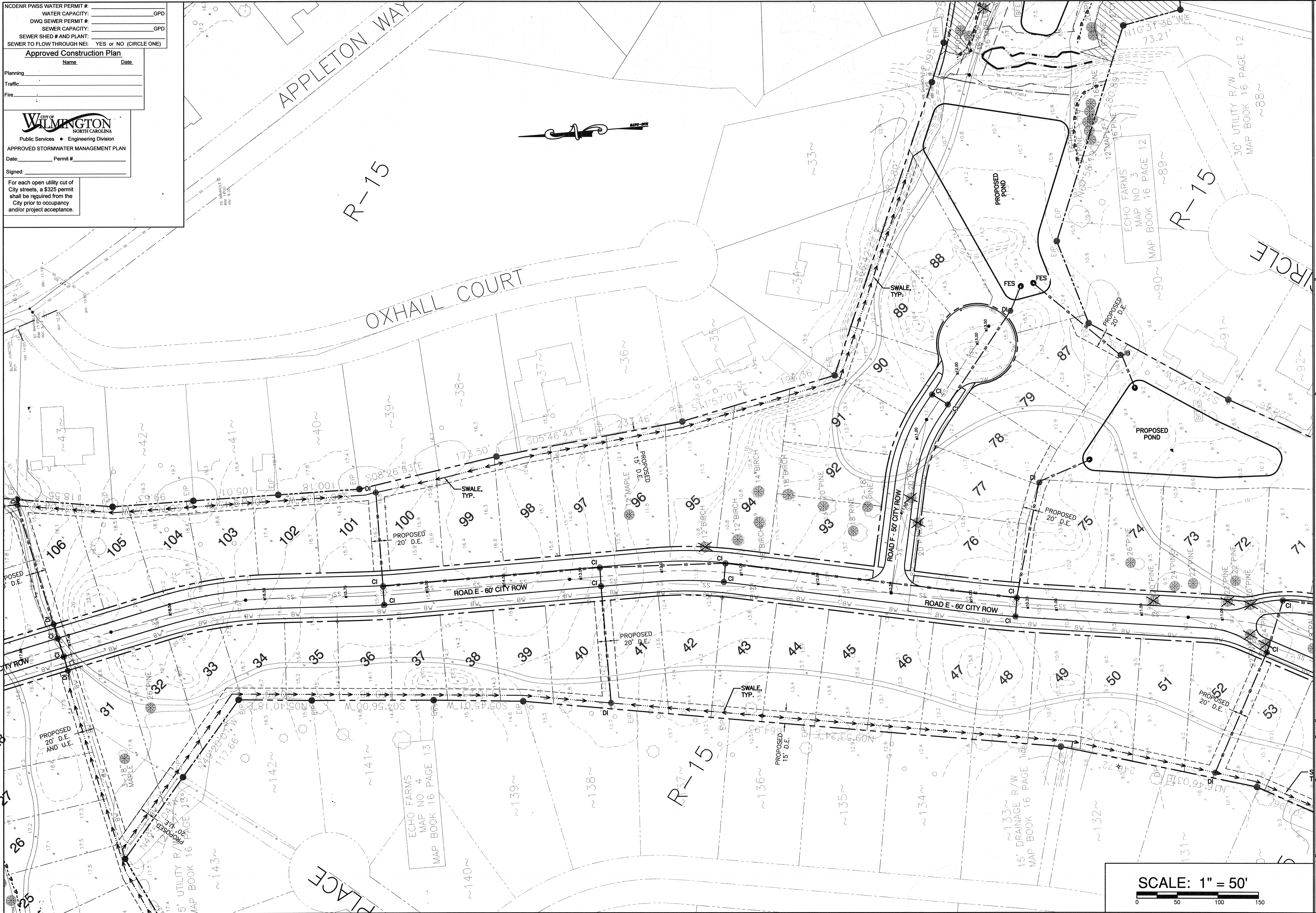
Planning: \_\_\_\_\_  
 Traffic: \_\_\_\_\_  
 Fire: \_\_\_\_\_

**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN

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Signed: \_\_\_\_\_

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**LAND OWNER/APPLICANT**  
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 CRANFURY, NJ 08512  
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**GRADING, DRAINAGE AND EROSION CONTROL PLAN**  
 WOODLANDS AT ECHO FARMS  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

**NORRIS & TUNSTALL**  
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 WILMINGTON, NC 28401  
 PHONE (910) 343-9653

License #C-3641  
 16083

DES. JST  
 CDD. JPN  
 DRWN. NKS

DATE 12/2/16

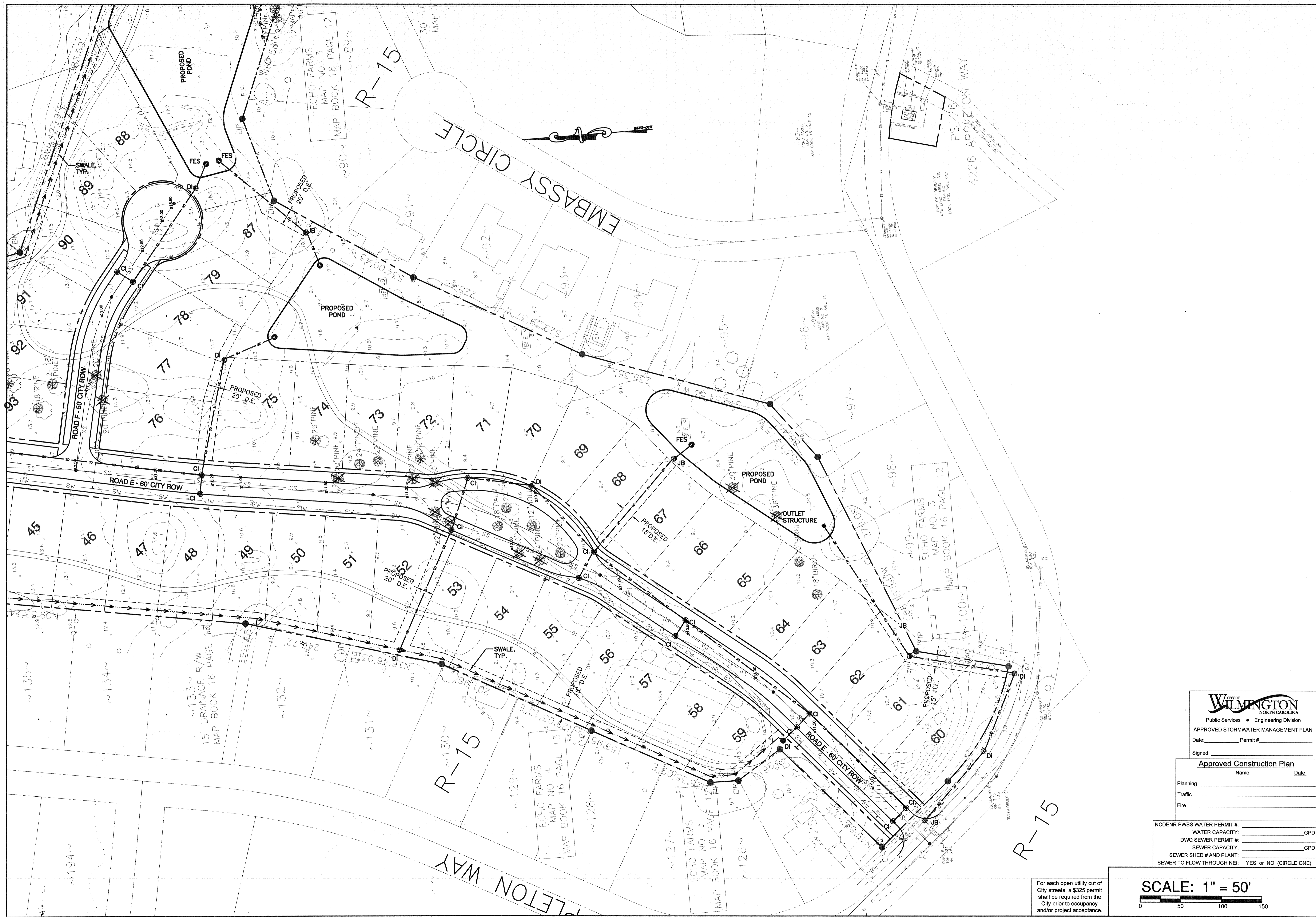
**PRELIMINARY**

**C1.2**

SCALE: 1" = 50'

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For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

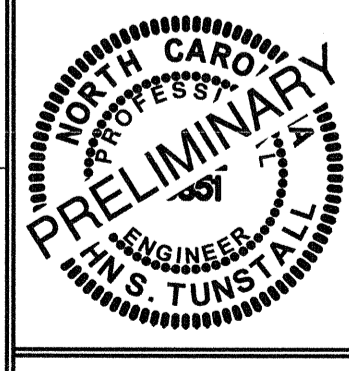
**SCALE: 1" = 50'**

**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
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 Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_  
**Approved Construction Plan**  
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Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

NCDENR PWSS WATER PERMIT # \_\_\_\_\_  
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 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)



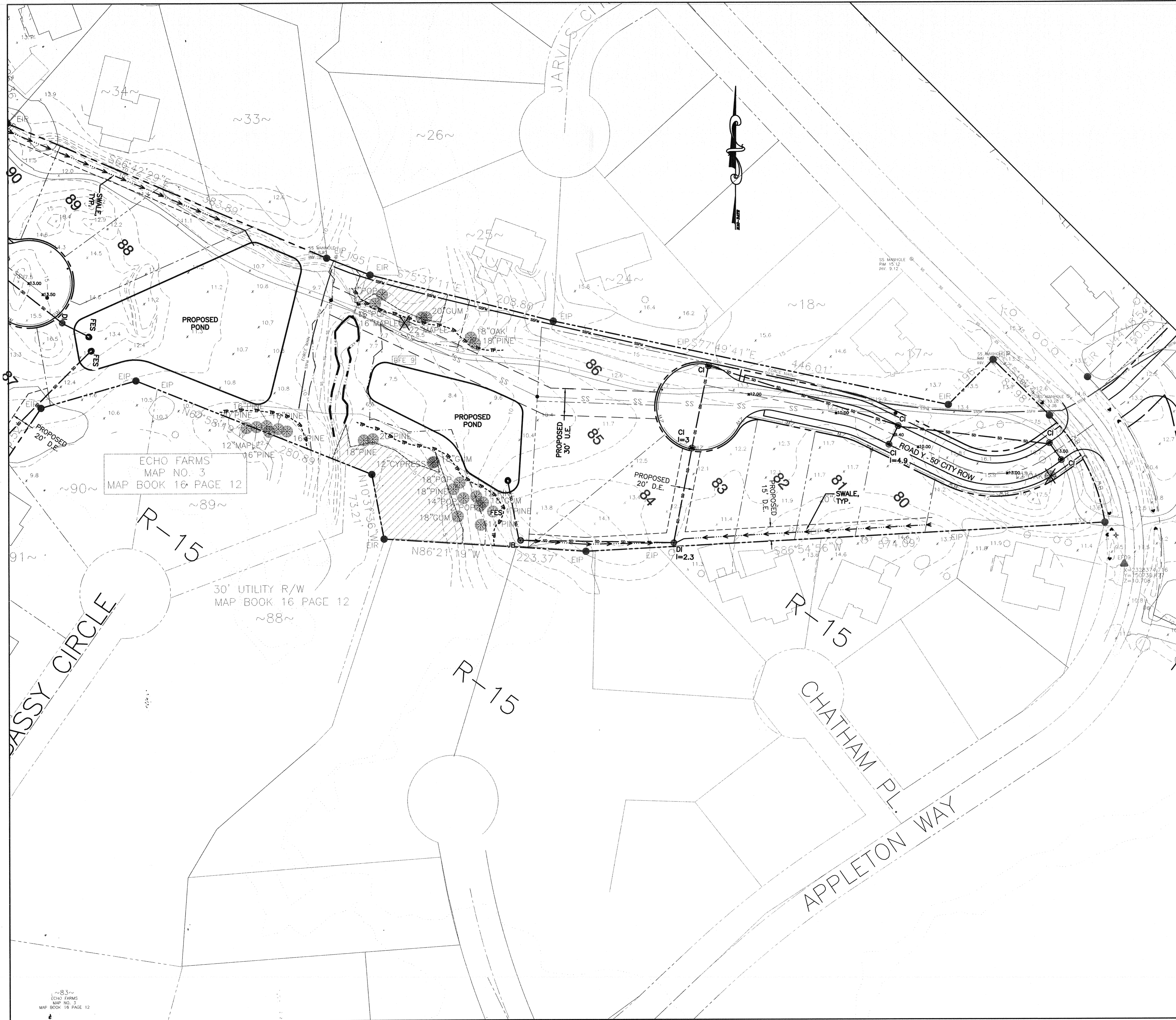
**C1.3**

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LAND OWNER/APPLICANT  
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 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRANFURY, NJ 00512  
 732-521-2900

GRADING, DRAINAGE AND EROSION CONTROL PLAN  
 WOODLANDS AT ECHO FARMS  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.





ECHO FARMS  
MAP NO. 3  
MAP BOOK 16 PAGE 12

30' UTILITY R/W  
MAP BOOK 16 PAGE 12

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Signed: \_\_\_\_\_  
**Approved Construction Plan**  
Name: \_\_\_\_\_ Date: \_\_\_\_\_

Planning \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

NC DENR PWSS WATER PERMIT # \_\_\_\_\_  
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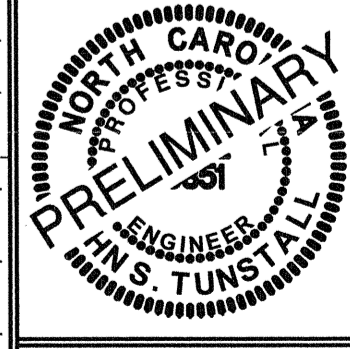
**SCALE: 1" = 50'**  
0 50 100 150

**GRADING, DRAINAGE AND EROSION CONTROL PLAN**  
WOODLANDS AT ECHO FARMS  
4114 ECHO FARMS BLVD.  
WILMINGTON, N. C.

**LAND OWNER/APPLICANT**  
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732-521-2900

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**C1.4**

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ECHO FARMS  
MAP NO. 3  
MAP BOOK 16 PAGE 12



MF-M

NOW OR FORMERLY  
WEST WOOD AT ECHO  
TOWNHOME HOA  
BOOK 5596 PAGE 430

WESTWOOD AT ECHO  
PHASE 1, SECTION 5  
MAP BOOK 39 PAGE 293

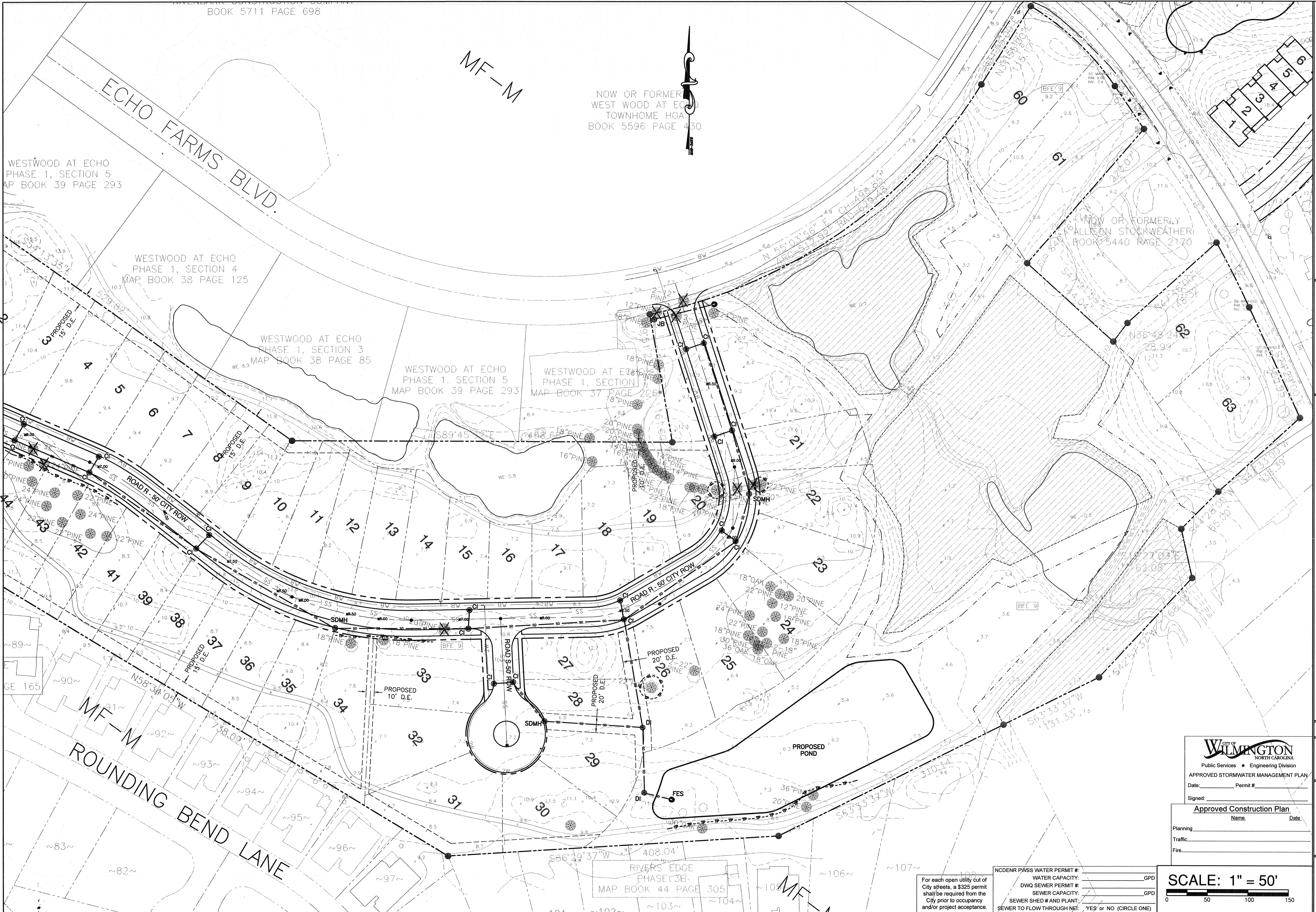
WESTWOOD AT ECHO  
PHASE 1, SECTION 4  
MAP BOOK 38 PAGE 125

WESTWOOD AT ECHO  
PHASE 1, SECTION 3  
MAP BOOK 38 PAGE 85

WESTWOOD AT ECHO  
PHASE 1, SECTION 5  
MAP BOOK 39 PAGE 293

WESTWOOD AT ECHO  
PHASE 1, SECTION  
MAP BOOK 37 PAGE 228

NOW OR FORMERLY  
ALLISON STOCKWEATHER  
BOOK 5440 PAGE 2170



LAND OWNER/APPLICANT  
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CRANFURY, NJ 07012  
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WILMINGTON, NC 28401  
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**CITY OF WILMINGTON**  
NORTH CAROLINA  
Public Services • Engineering Division  
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Date: Permit #  
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Approved Construction Plan  
Name: \_\_\_\_\_ Date: \_\_\_\_\_  
Planning: \_\_\_\_\_  
Traffic: \_\_\_\_\_  
Fire: \_\_\_\_\_

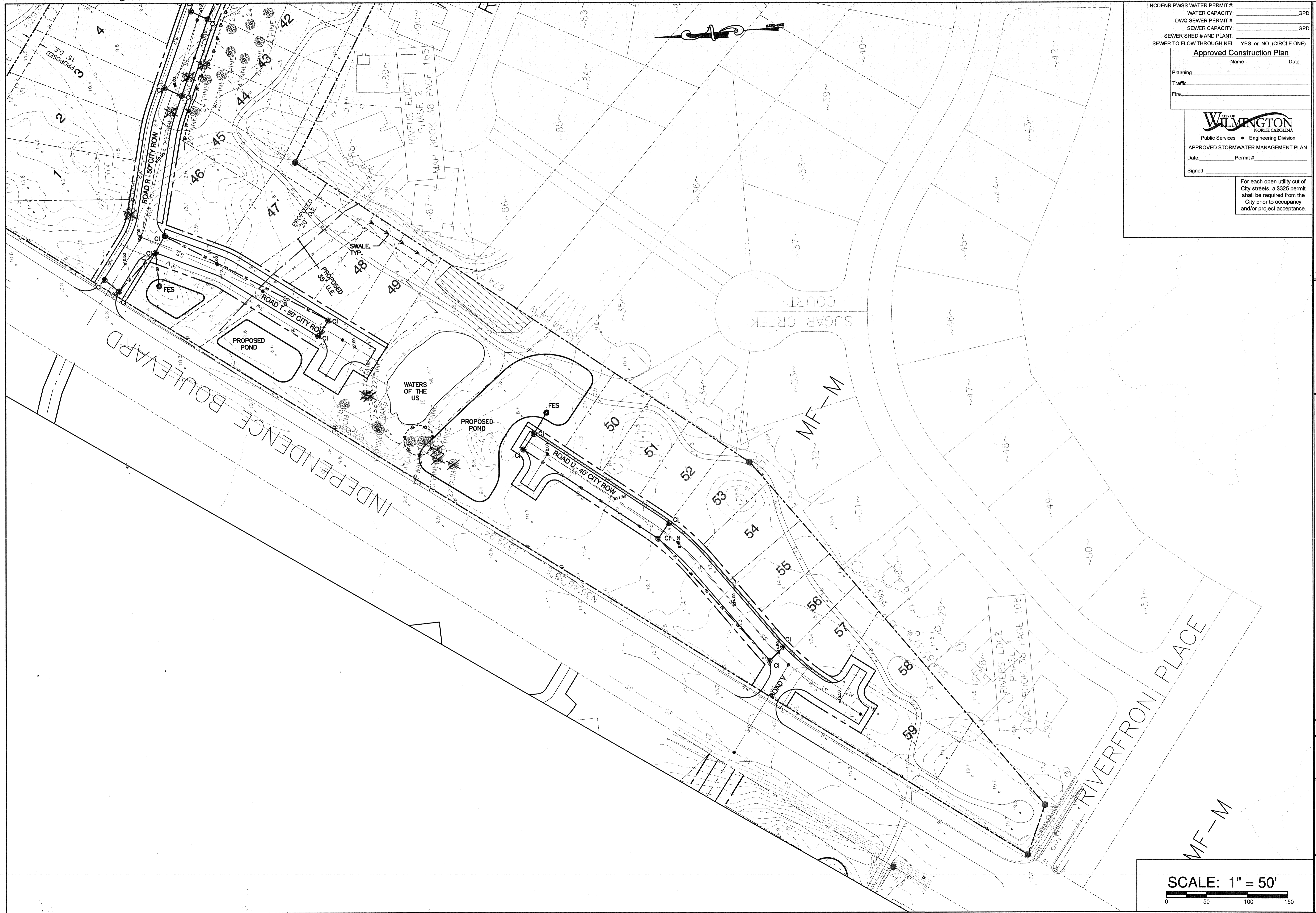
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WATER CAPACITY: \_\_\_\_\_ GPD  
DWQ SEWER PERMIT #: \_\_\_\_\_  
SEWER CAPACITY: \_\_\_\_\_ GPD  
SEWER SHED # AND PLANT: \_\_\_\_\_  
SEWER TO FLOW THROUGH NET: YES/ OR NO (CIRCLE ONE)

**SCALE: 1" = 50'**  
0 50 100 150

**C1.5**

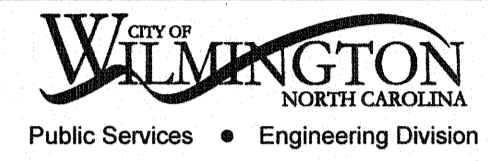




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**Approved Construction Plan**  
 Name: \_\_\_\_\_ Date: \_\_\_\_\_

Planning: \_\_\_\_\_  
 Traffic: \_\_\_\_\_  
 Fire: \_\_\_\_\_

  
 Public Services • Engineering Division  
**APPROVED STORMWATER MANAGEMENT PLAN**  
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 Signed: \_\_\_\_\_

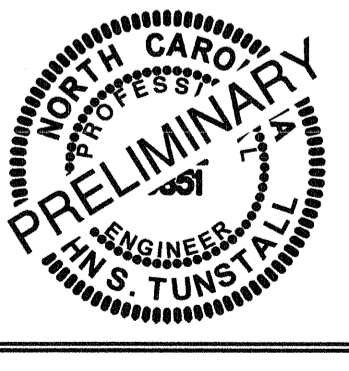
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**GRADING, DRAINAGE AND EROSION CONTROL PLAN**  
**WOODLANDS AT ECHO FARMS**  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

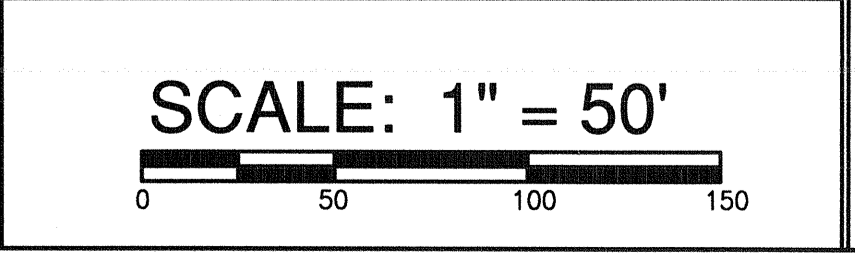
**LAND OWNER/APPLICANT**  
 ECHO FARMS, LLC  
 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRANBURY, NJ 00512  
 732-521-2900

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 902 MARKET STREET  
 WILMINGTON, NC 28401  
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Licence #C-3641  
**16083**  
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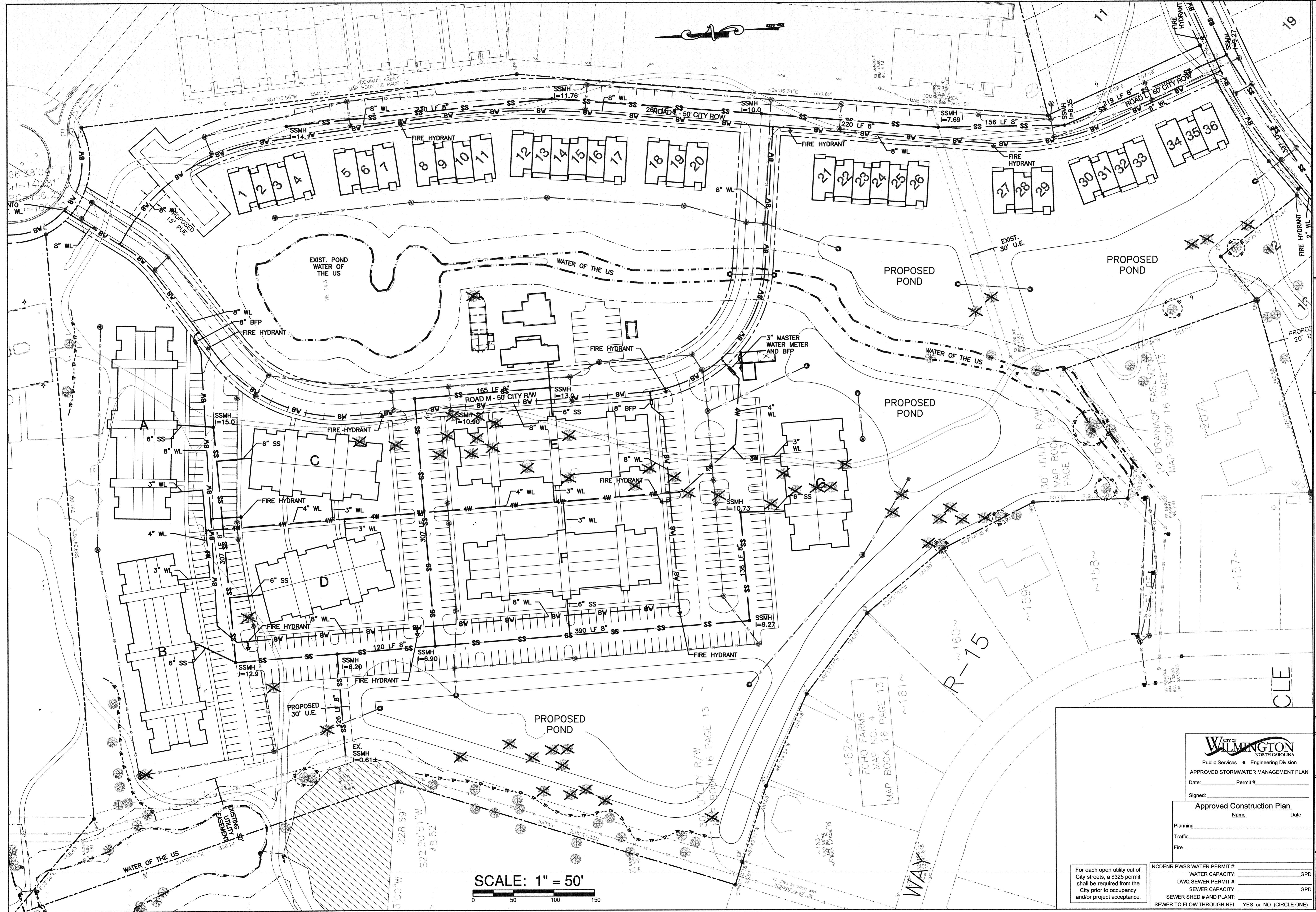


**C1.6**



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UTILITY PLAN  
 WOODLANDS AT ECHO FARMS  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

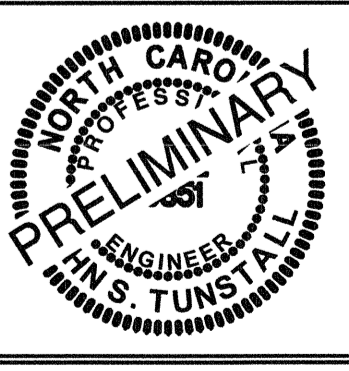
LAND OWNER/APPLICANT  
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**C2**

City of WILMINGTON  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
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Approved Construction Plan  
 Name \_\_\_\_\_ Date \_\_\_\_\_  
 Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

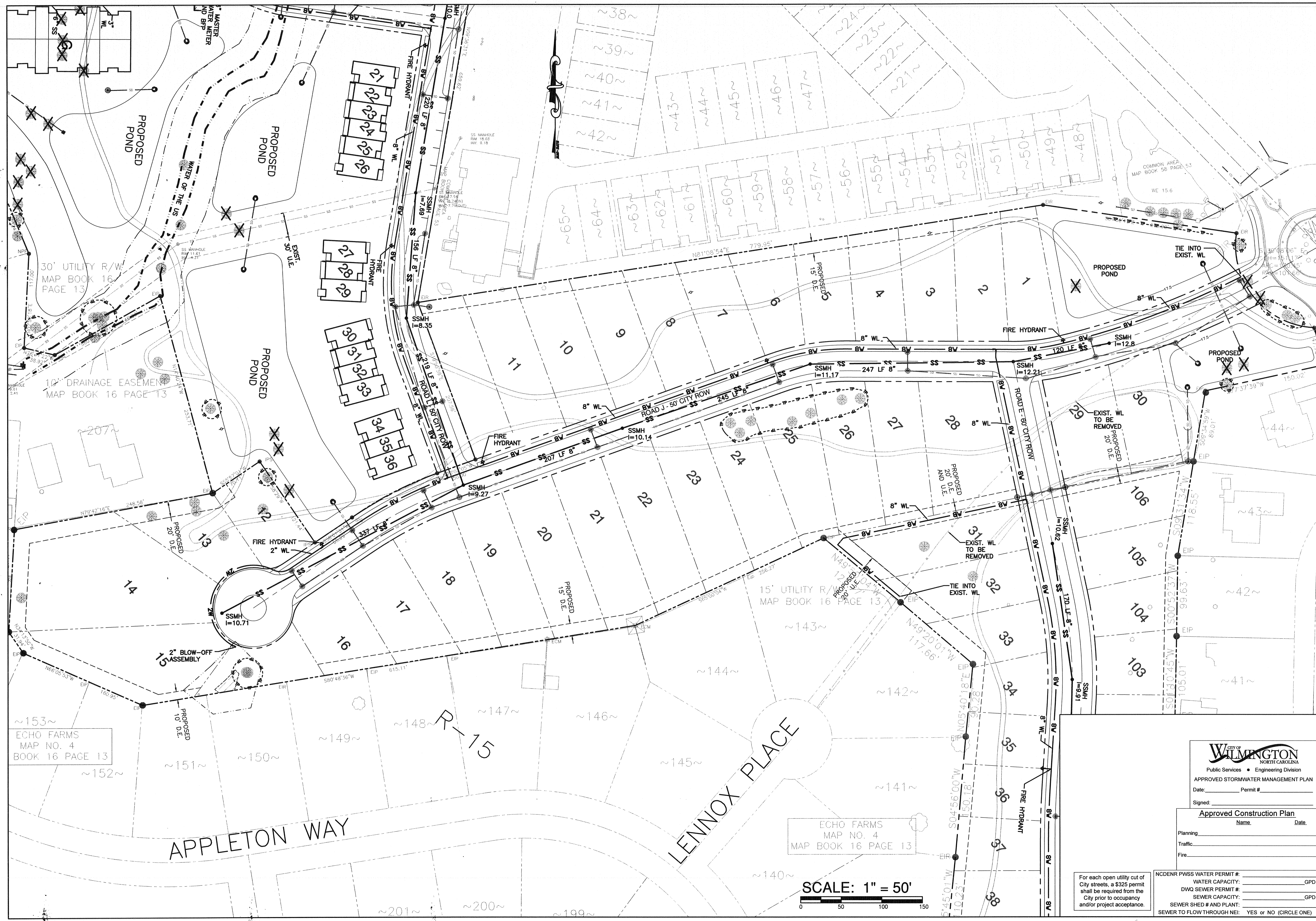
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 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

SCALE: 1" = 50'  
 0 50 100 150

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ECHO FARMS  
 MAP NO. 4  
 BOOK 16 PAGE 13

ECHO FARMS  
 MAP NO. 4  
 MAP BOOK 16 PAGE 13

**SCALE: 1" = 50'**  
 0 50 100 150

  
 Public Services • Engineering Division  
**APPROVED STORMWATER MANAGEMENT PLAN**  
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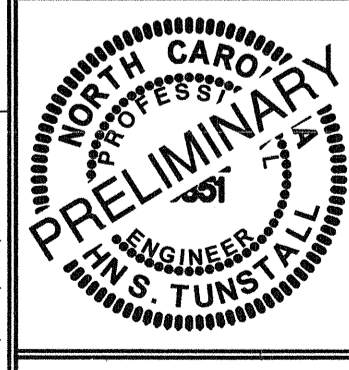
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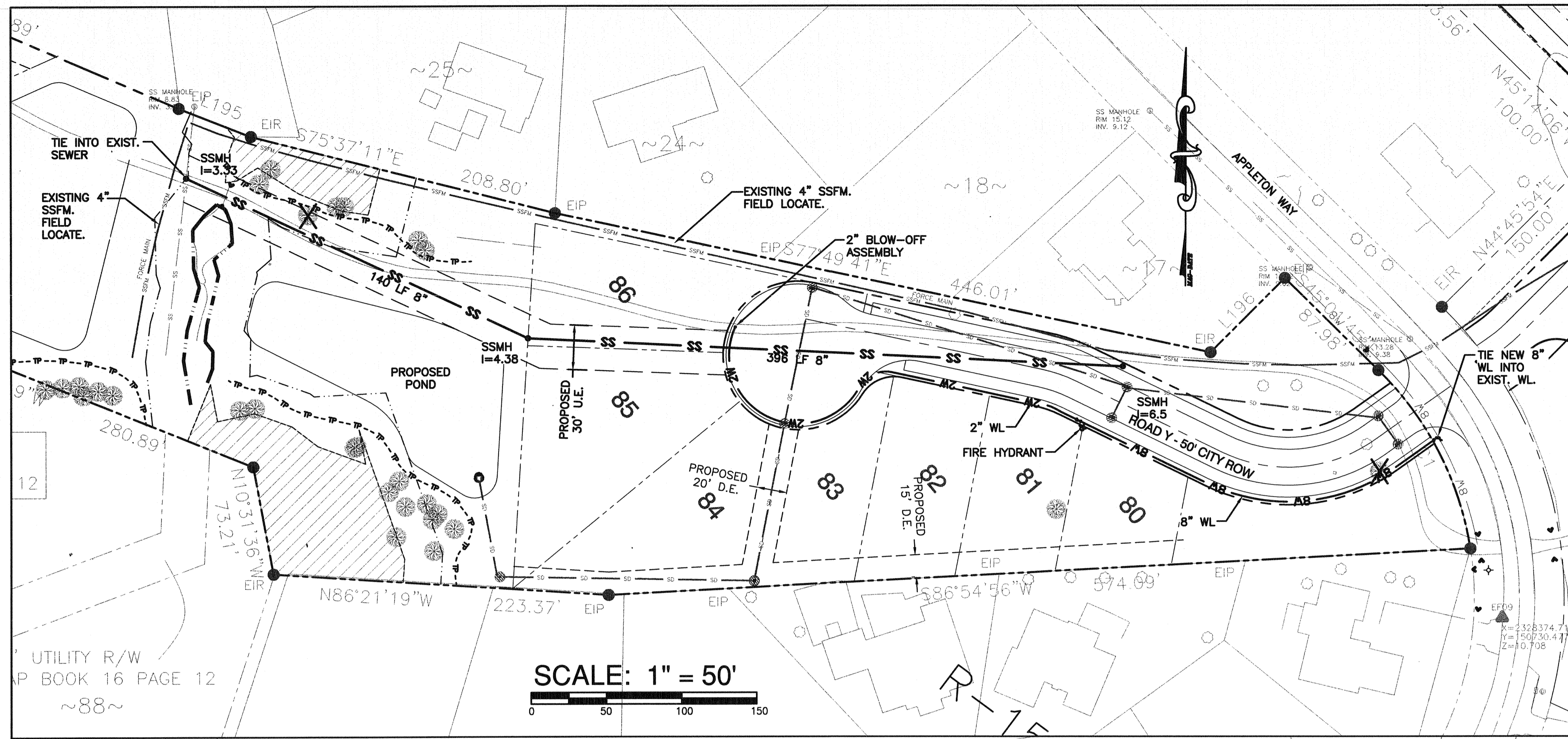
**UTILITY PLAN**  
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 CONSULTING ENGINEERS P.C.  
 902 MARKET STREET  
 WILMINGTON, NC 28401  
 1429 ASH-LITTLE RIVER RD., NW  
 ASH, NC 28420  
 PHONE (910) 343-9653  
 PHONE (910) 281-5906

License #C-3641  
**16083**  
 DES. JST  
 CDR. JPN  
 DRWL. NKS  
 DATE 12/2/16  
  
**C2.1**





SCALE: 1" = 50'

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
 Signed: \_\_\_\_\_

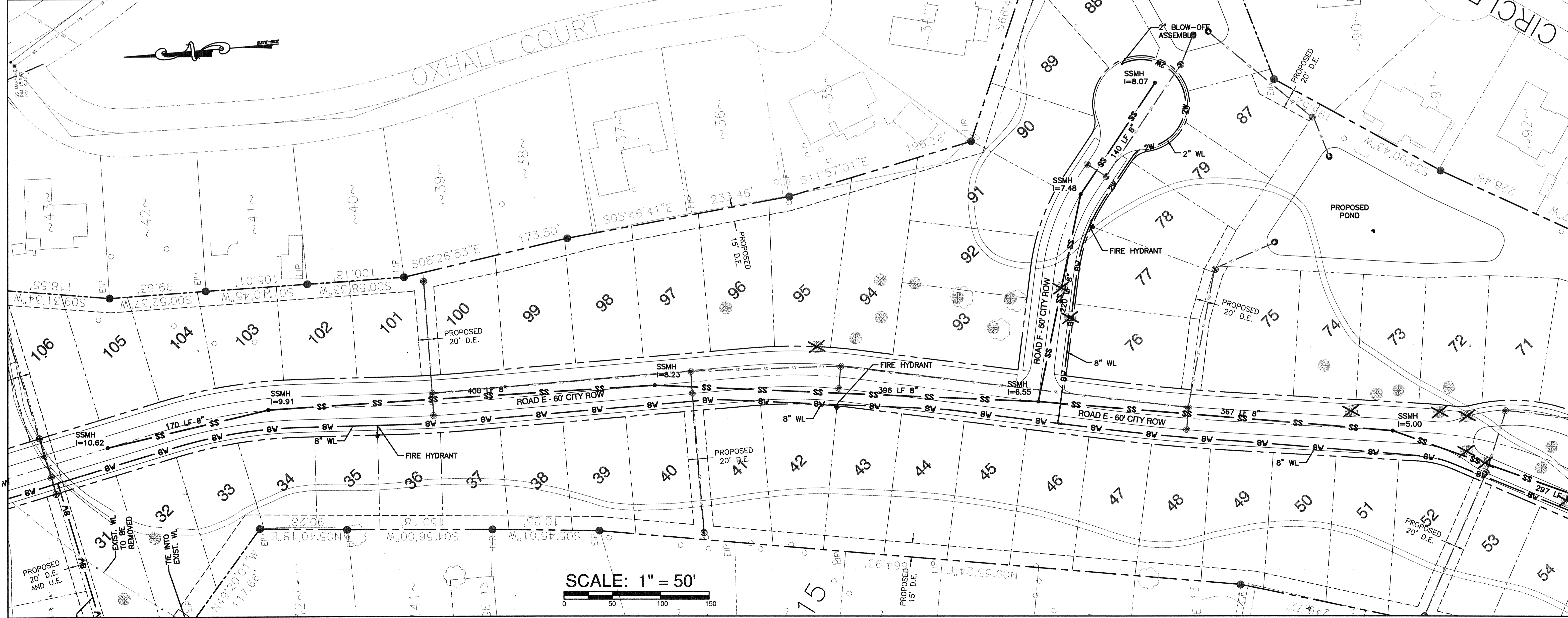
**Approved Construction Plan**

Name	Date
Planning	
Traffic	
Fire	

NCDENR PWSS WATER PERMIT # \_\_\_\_\_  
 WATER CAPACITY: \_\_\_\_\_ GPD  
 DWQ SEWER PERMIT # \_\_\_\_\_  
 SEWER CAPACITY: \_\_\_\_\_ GPD  
 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

UTILITY PLAN  
 WOODLANDS AT ECHO FARMS  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

LAND OWNER/APPLICANT  
 ECHO FARMS, LLC  
 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRANFURY, NJ 00512  
 732-321-2900



SCALE: 1" = 50'

**NORRIS & TUNSTALL**  
 CONSULTING ENGINEERS P.C.

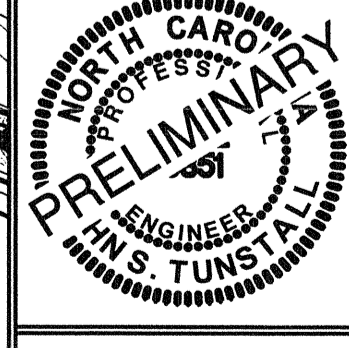
902 MARKET STREET  
 WILMINGTON, NC 28401  
 PHONE (910) 343-9653

1429 ASHLITTLE RIVER RD. NW  
 ASH, NC 28420  
 PHONE (910) 287-5900

License #C-3641  
 16083

DES. JST  
 DRN. JPN  
 DRW. NKS

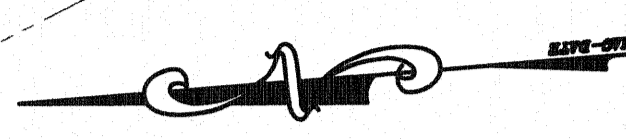
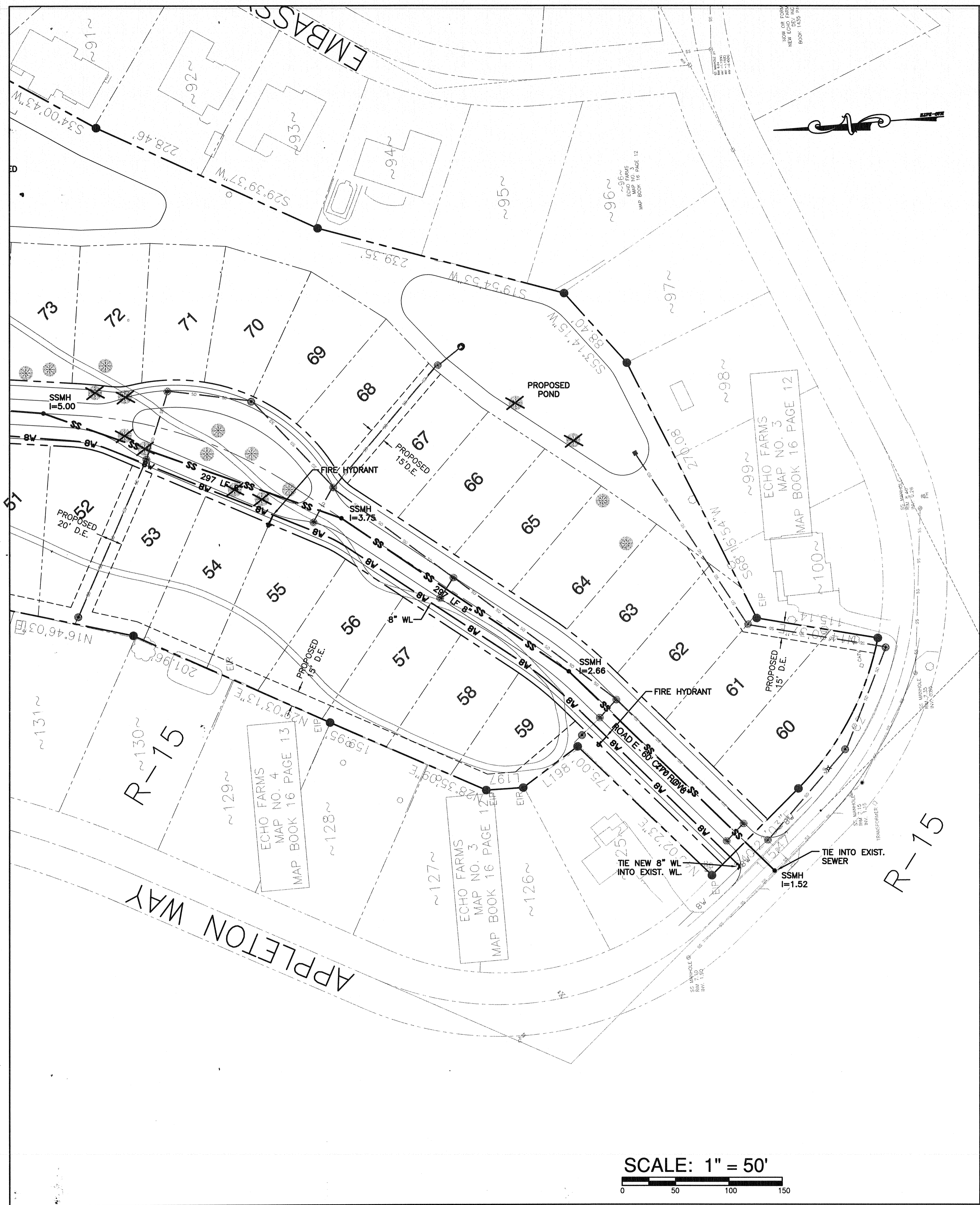
DATE 12/2/16



**C2.2**

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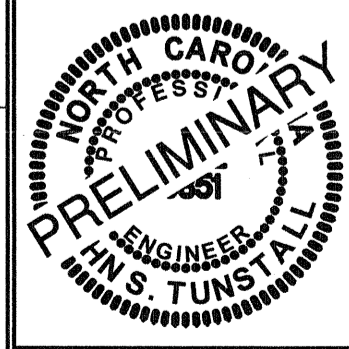
SCALE: 1" = 50'  
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NCDENR PWSS WATER PERMIT # \_\_\_\_\_ GPD  
 WATER CAPACITY: \_\_\_\_\_ GPD  
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 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES OR NO (CIRCLE ONE)

**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_  
**Approved Construction Plan**  
 Name \_\_\_\_\_ Date \_\_\_\_\_  
 Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_



**C2.3**

**NORRIS & TUNSTALL**  
 CONSULTING ENGINEERS P.C.  
 902 MARKET STREET  
 WILMINGTON, NC 28401  
 PHONE (910) 343-9653

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 PHONE (910) 287-5900

LAND OWNER/APPLICANT  
**ECHO FARMS, LLC**  
 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRANFURY, NJ 08512  
 732-521-2900

UTILITY PLAN  
 WOODLANDS AT ECHO FARMS  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.





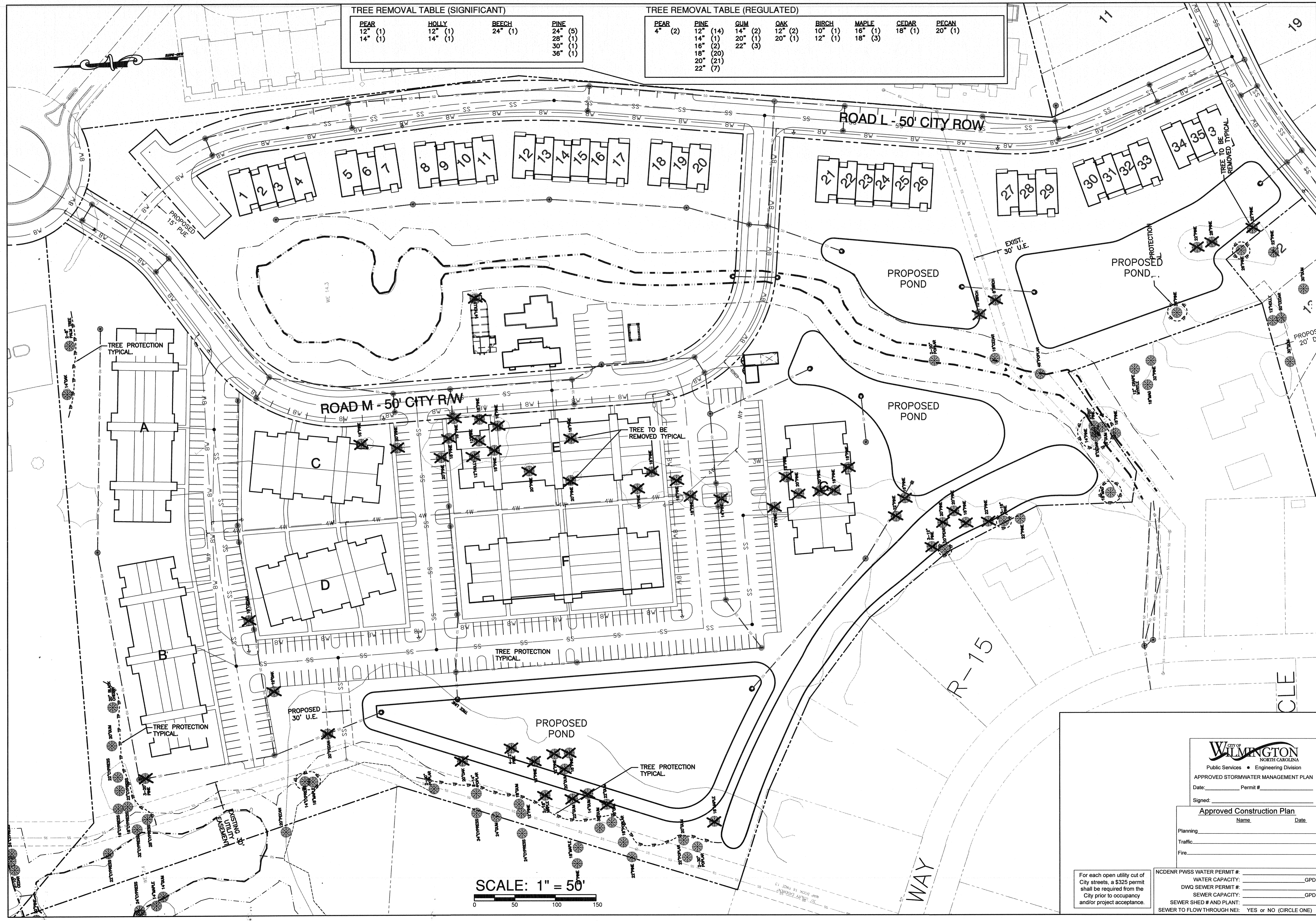


**TREE REMOVAL TABLE (SIGNIFICANT)**

PEAR	HOLLY	BEECH	PINE
12" (1)	12" (1)	24" (1)	24" (5)
14" (1)	14" (1)		28" (1)
			30" (1)
			36" (1)

**TREE REMOVAL TABLE (REGULATED)**

PEAR	PINE	GUM	OAK	BIRCH	MAPLE	CEDAR	PECAN
4" (2)	12" (14)	14" (2)	12" (2)	10" (1)	16" (1)	18" (1)	20" (1)
	14" (1)	20" (1)	20" (1)	12" (1)	16" (1)		
	16" (2)	22" (3)					
	18" (20)						
	20" (21)						
	22" (7)						



SCALE: 1" = 50'

**TREE PLAN**  
**WOODLANDS AT ECHO FARMS**  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

**LAND OWNER/APPLICANT**  
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 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRANFURY, NJ 080512  
 732-521-2900

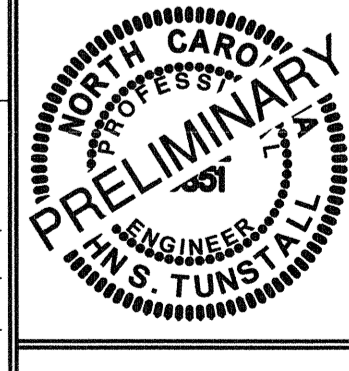
**NORRIS & TUNSTALL**  
 CONSULTING ENGINEERS P.C.  
 902 MARKET STREET  
 WILMINGTON, NC 28401  
 PHONE (910) 343-9635

License #C-3641  
**16083**  
 DES. JST  
 CHD. JPN  
 DRWL. NKS  
 DATE 12/2/16

**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
 Signed: \_\_\_\_\_

**Approved Construction Plan**  
 Name \_\_\_\_\_ Date \_\_\_\_\_  
 Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

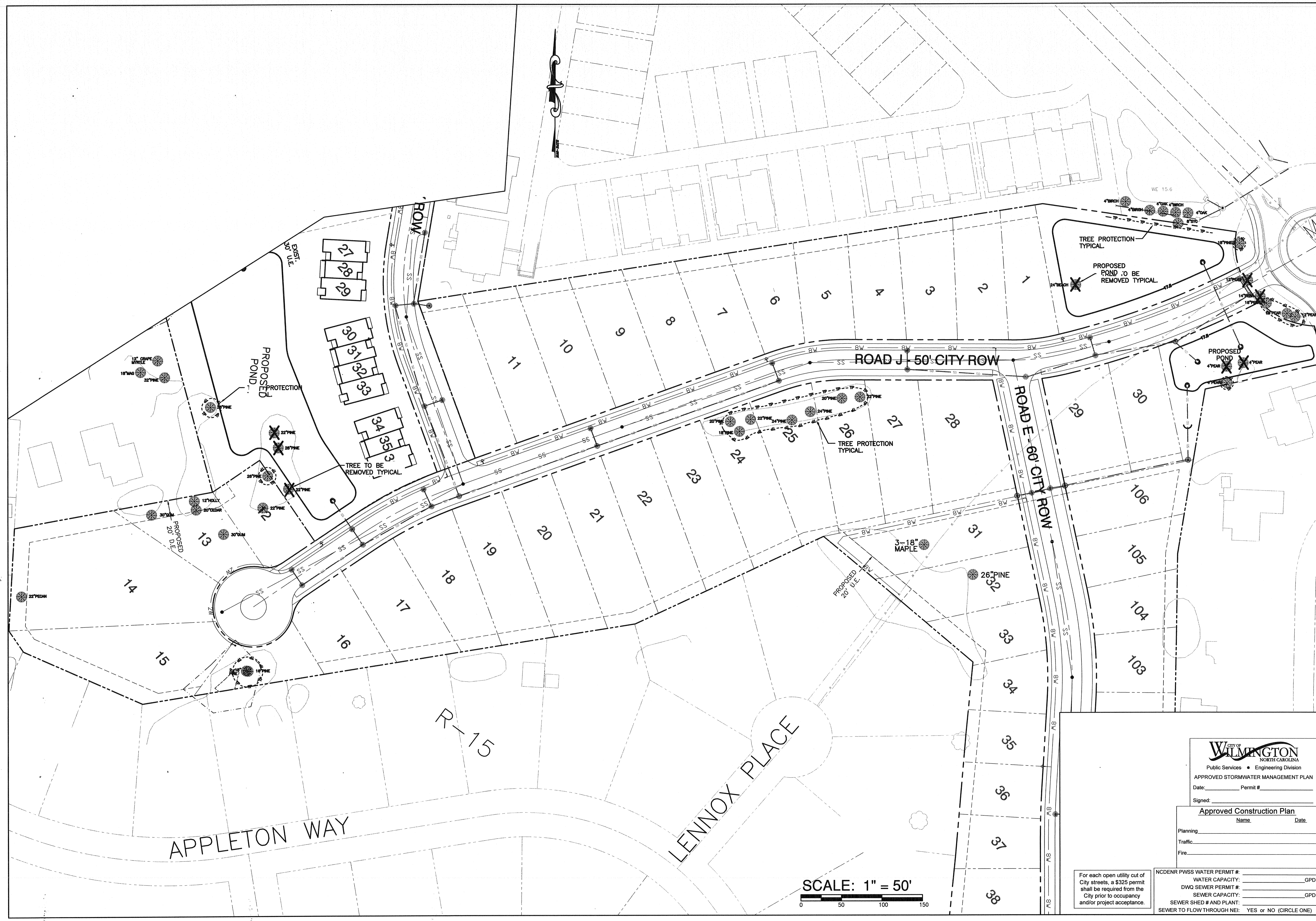
For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.  
 NCDENR PWSS WATER PERMIT #: \_\_\_\_\_ GPD  
 DWQ SEWER PERMIT #: \_\_\_\_\_ GPD  
 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)



**C3**



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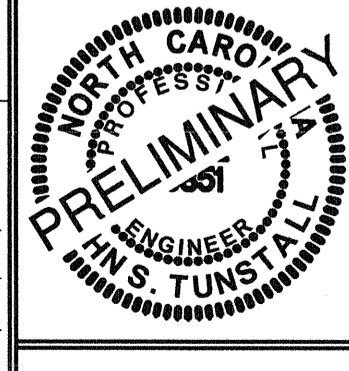
**TREE PLAN**  
**WOODLANDS AT ECHO FARMS**  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

**LAND OWNER/APPLICANT**  
 ECHO FARMS, LLC  
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 732-521-2900

**NORRIS & TUNSTALL**  
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 902 MARKET STREET  
 WILMINGTON, NC 28401  
 PHONE (910) 345-9655

Licence #C-3641

**16083**  
 DES. JST  
 CRD. JPN  
 DRWN. NKS  
 DATE 12/2/16



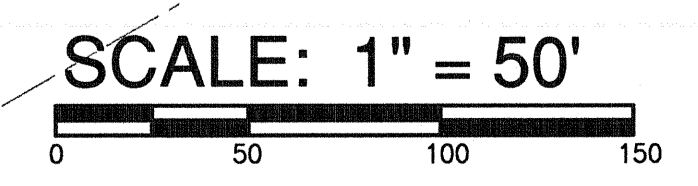
**C3.1**

**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
 Signed: \_\_\_\_\_

**Approved Construction Plan**  
 Name \_\_\_\_\_ Date \_\_\_\_\_  
 Planning \_\_\_\_\_  
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 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

**Approved Construction Plan**

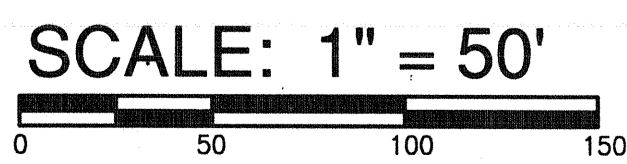
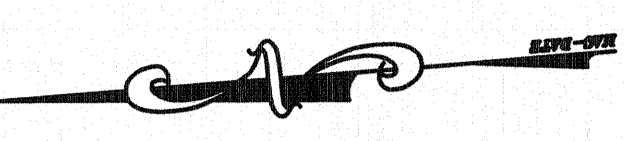
Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Planning: \_\_\_\_\_  
 Traffic: \_\_\_\_\_  
 Fire: \_\_\_\_\_



Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN

Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_  
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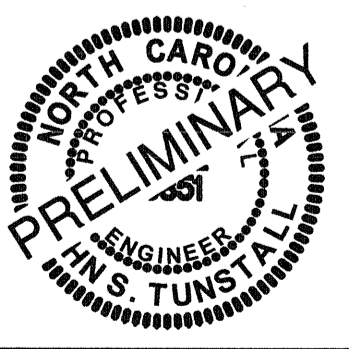


**LAND OWNER/APPLICANT**  
 ECHO FARMS, LLC  
 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRAWFORD, NJ 08512  
 732-521-2900

**TREE PLANS**  
 WOODLANDS AT ECHO FARMS  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

**NORRIS & TUNSTALL**  
 CONSULTING ENGINEERS P.C.  
 902 MARKET STREET  
 WILMINGTON, NC 28401  
 PHONE (910) 343-9653

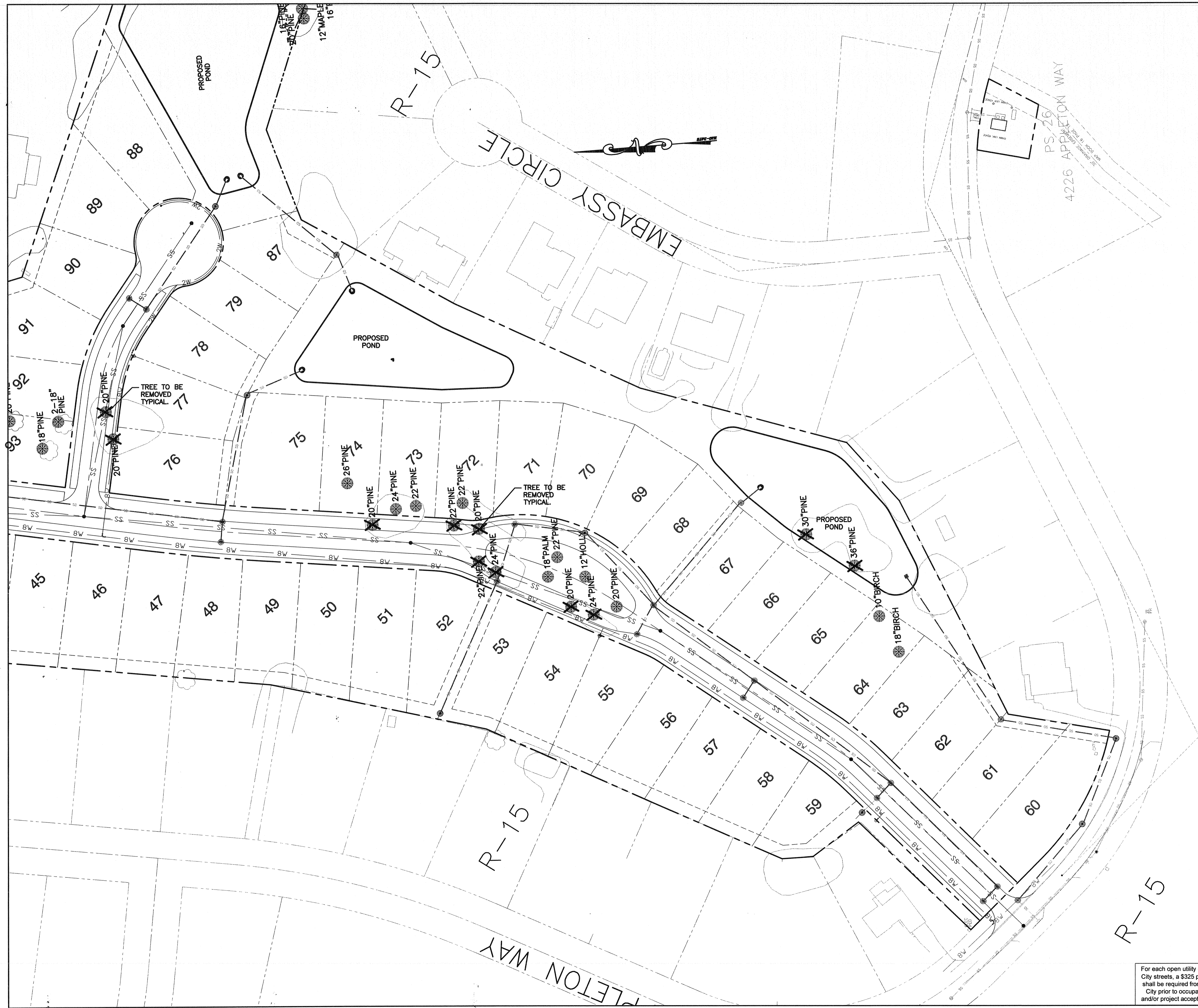
Licence #C-3641  
 16083  
 DES. JST  
 CDR. JPN  
 DRWN. NKS  
 DATE 12/2/16



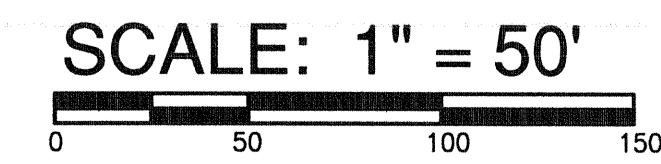
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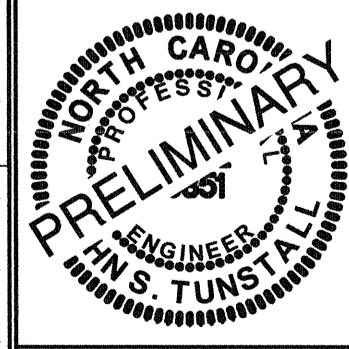
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NC DENR PWSS WATER PERMIT # \_\_\_\_\_ GPD  
 WATER CAPACITY: \_\_\_\_\_ GPD  
 DWQ SEWER PERMIT # \_\_\_\_\_ GPD  
 SEWER CAPACITY: \_\_\_\_\_ GPD  
 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NE: YES OR NO (CIRCLE ONE)

Approved Construction Plan  
 Name \_\_\_\_\_ Date \_\_\_\_\_  
 Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

City of WILMINGTON  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
 Signed: \_\_\_\_\_



DES. JST  
 CKD. JPN  
 DRWN. NKS  
 DATE 12/2/16

16083

License #C-3641

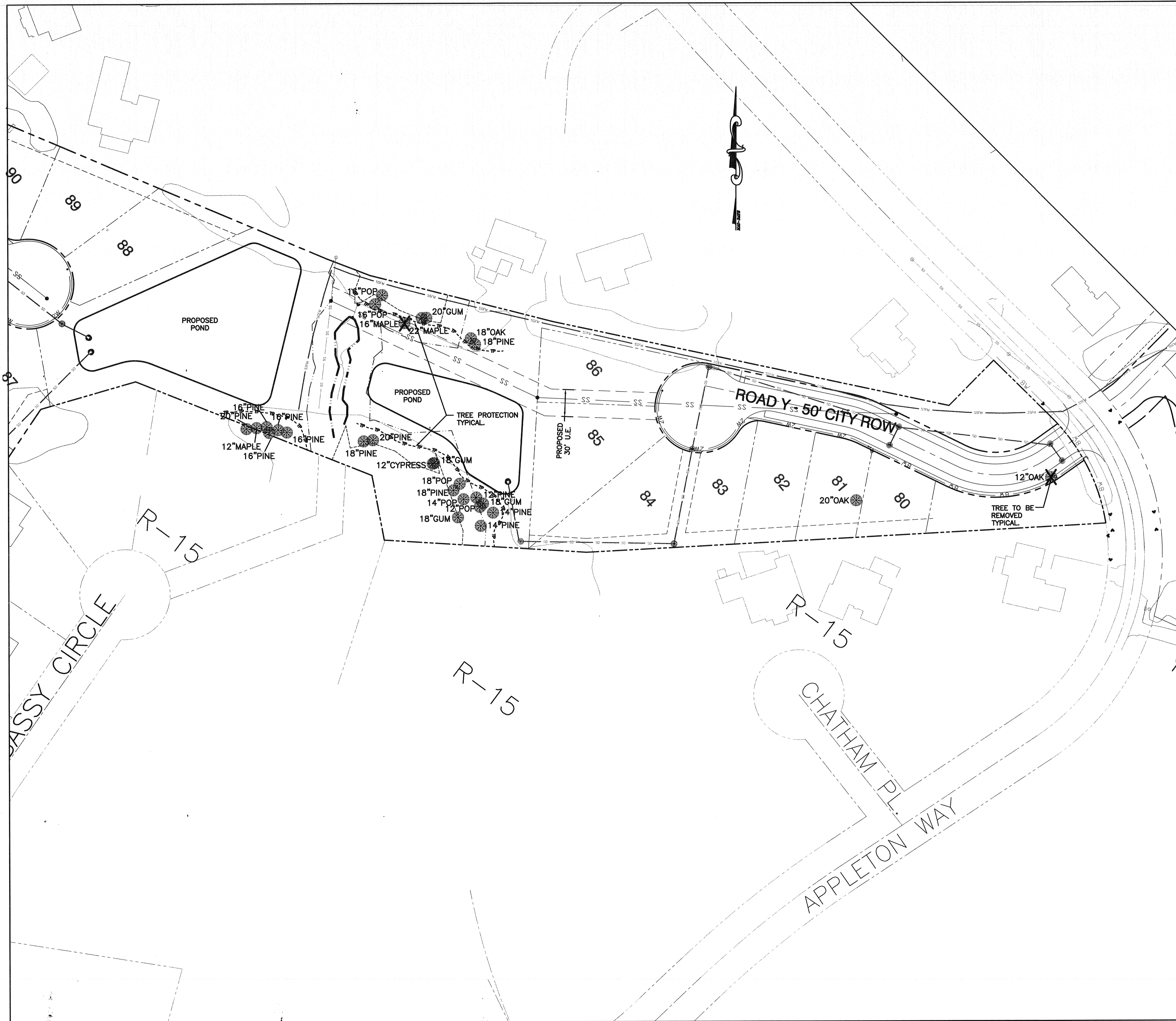
**NORRIS & TUNSTALL**  
 CONSULTING ENGINEERS P.C.  
 902 MARKET STREET  
 WILMINGTON, NC 28401  
 PHONE (910) 343-9653

LAND OWNER/APPLICANT  
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 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRANFURY, NJ 080512  
 732-521-2900

TREE PLAN  
 WOODLANDS AT ECHO FARMS  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

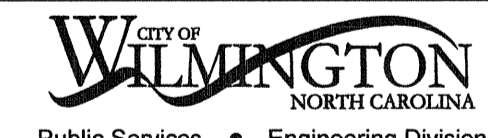
**C3.3**





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 Public Services • Engineering Division  
**APPROVED STORMWATER MANAGEMENT PLAN**  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_  
**Approved Construction Plan**  
 Name: \_\_\_\_\_ Date: \_\_\_\_\_

Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

NCDENR PWSS WATER PERMIT #: \_\_\_\_\_  
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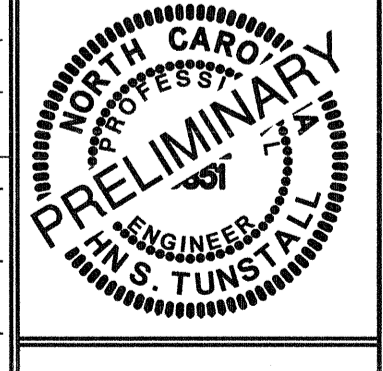
**SCALE: 1" = 50'**  


**TREE PLAN**  
**WOODLANDS AT ECHO FARMS**  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

**LAND OWNER/APPLICANT**  
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 MATRIX DEVELOPMENT GROUP  
 CN4000 FORSGATE DRIVE  
 CRANBURY, NJ 08512  
 732-521-2900

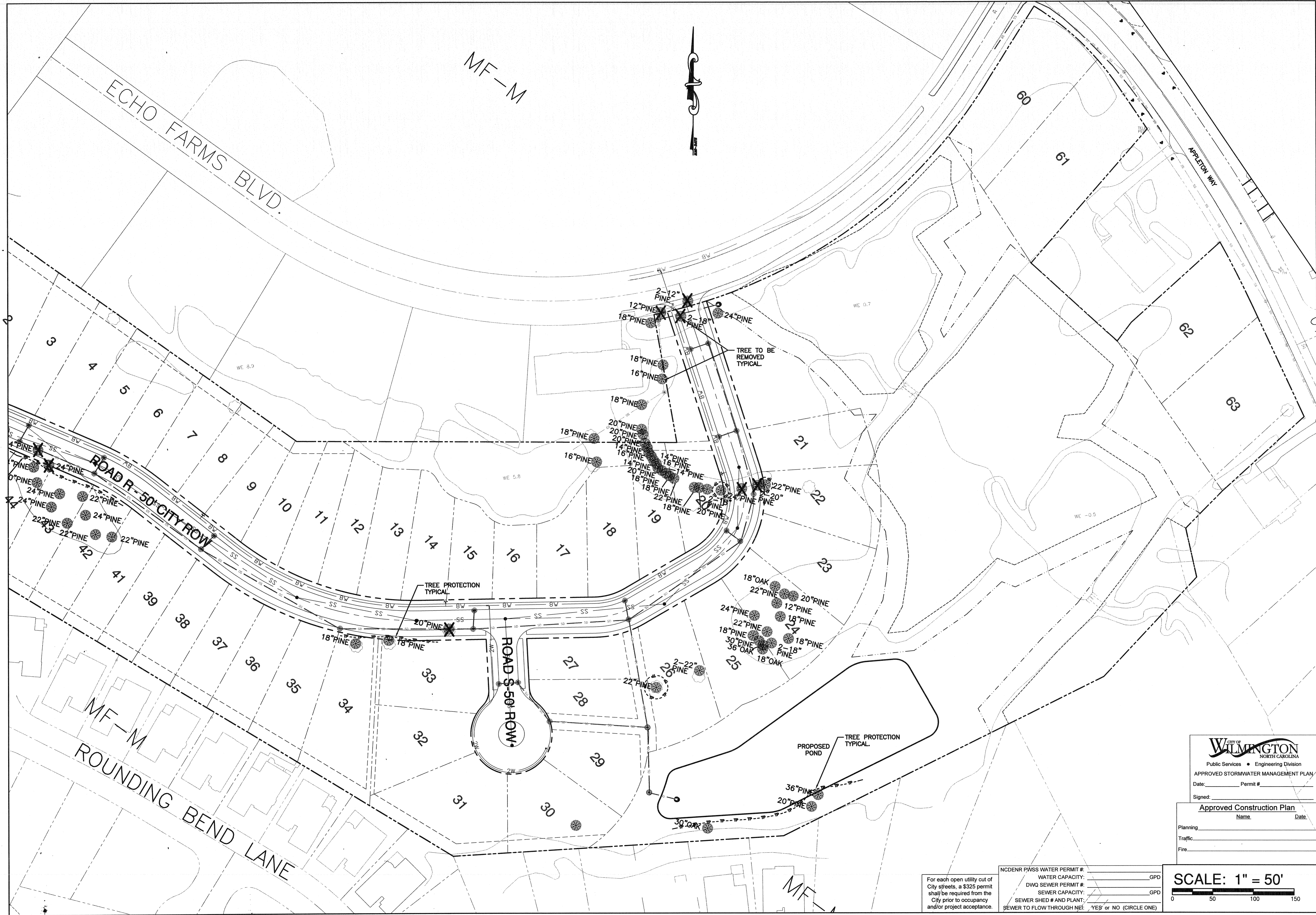
**NORRIS & TUNSTALL**  
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 PHONE (910) 343-9653  
 1429 ASH-LITTLE RIVER RD., NW  
 ASH, NC 28620  
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Licence #C-3641  
**16083**  
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 CRD. JPN  
 DRWN. NKS  
 DATE 12/2/16



**C3.4**





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**TREE PLAN**  
**WOODLANDS AT ECHO FARMS**  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

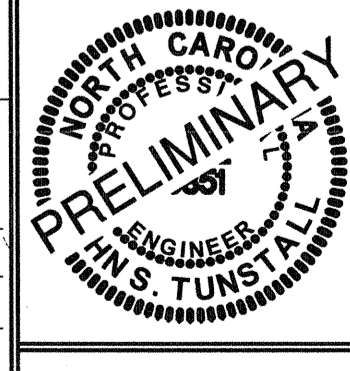
**LAND OWNER/APPLICANT**  
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 CRANFURY, NJ 08012  
 732-521-2900

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License #C-3641

16083

DES.	JST
CRD.	JPN
DRWL.	NKS
DATE	12/2/16



**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_

Signed: \_\_\_\_\_  
**Approved Construction Plan**  
 Name \_\_\_\_\_ Date \_\_\_\_\_  
 Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

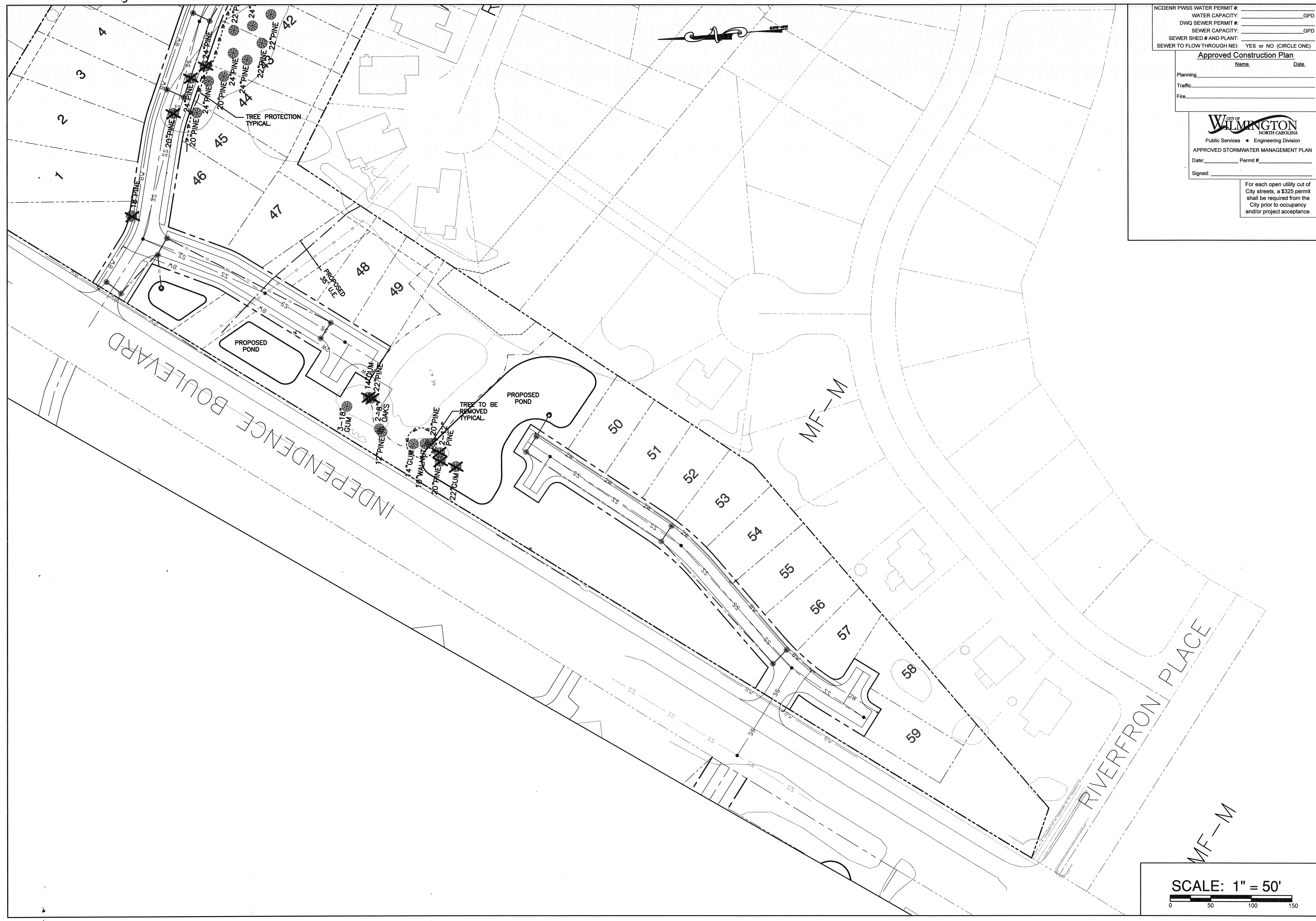
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WATER CAPACITY:	_____	GPD
DWQ SEWER PERMIT #:	_____	GPD
SEWER CAPACITY:	_____	GPD
SEWER SHED # AND PLANT:	_____	
SEWER TO FLOW THROUGH NET:	YES' or NO (CIRCLE ONE)	

**SCALE: 1" = 50'**  
 0 50 100 150

**C3.5**





NCDENR PWSS WATER PERMIT # \_\_\_\_\_  
 WATER CAPACITY: \_\_\_\_\_ GPD  
 DWQ SEWER PERMIT # \_\_\_\_\_  
 SEWER CAPACITY: \_\_\_\_\_ GPD  
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**Approved Construction Plan**  
 Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Planning: \_\_\_\_\_  
 Traffic: \_\_\_\_\_  
 Fire: \_\_\_\_\_

Public Services • Engineering Division  
**APPROVED STORMWATER MANAGEMENT PLAN**  
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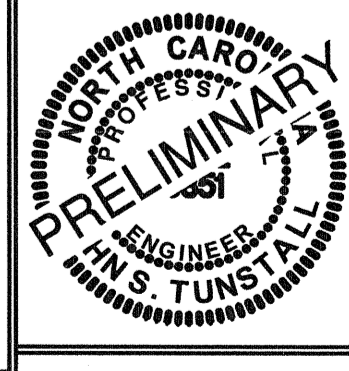
**TREE PLAN**  
**WOODLANDS AT ECHO FARMS**  
 4114 ECHO FARMS BLVD.  
 WILMINGTON, N. C.

**LAND OWNER/APPLICANT**  
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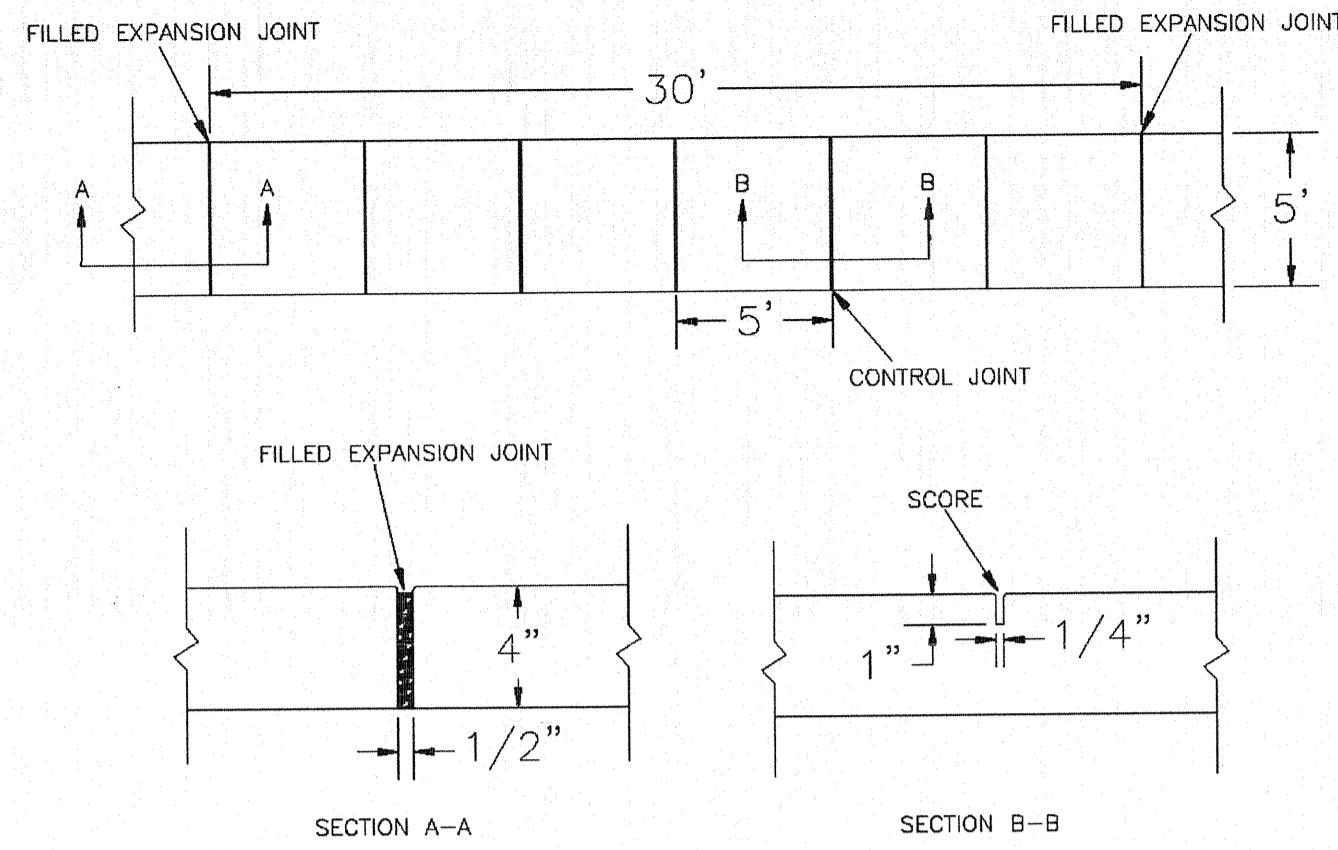
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 ORD. JPN  
 DRWN. NKS  
 DATE 12/2/16



**C3.6**

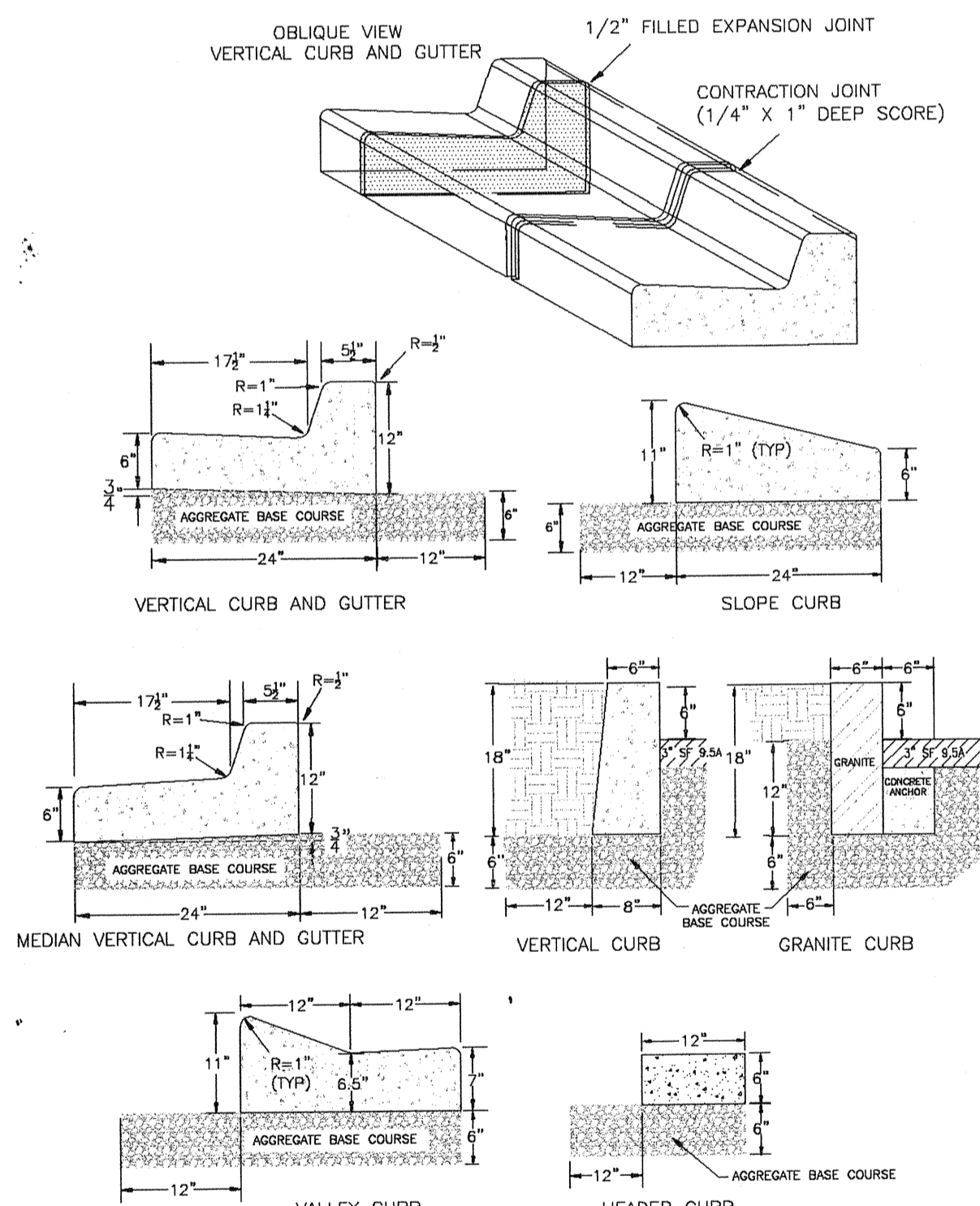
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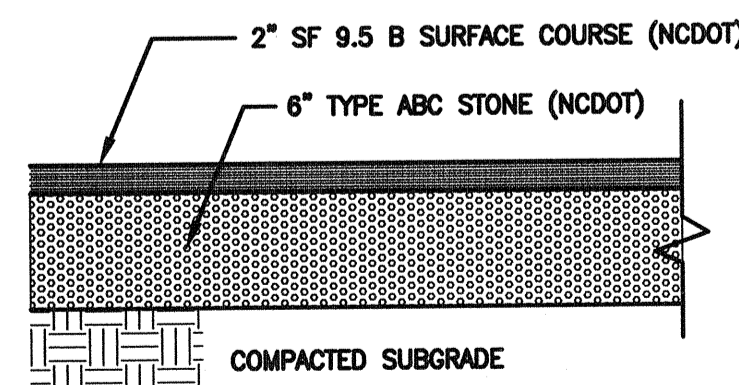
- NOTES:**
- JOINT MATERIAL TO COMPLY WITH CURRENT NCDOT STANDARDS.
  - SANITARY SEWER CLEAN-OUTS, WATER METERS, MANHOLES, AND VALVE LIDS TO BE LOCATED OUTSIDE SIDEWALK WHERE FEASIBLE.
  - MINIMUM SIDEWALK WIDTH TO BE 6' MINIMUM IF PLACED AT BACK OF CURB.
  - CONCRETE FOR ALL SIDEWALKS (EXCEPT ANY PORTION CONTAIN WITHIN A DRIVEWAY APRON) SHALL BE CLASS "A" - 3,000 PSI.
  - MINIMUM REPLACEMENT FOR REPAIRS IS A 5' X 5' PANEL.
  - 4" STONE BASE MAY BE REQUIRED FOR POOR SOIL CONDITIONS.
  - MINIMUM DEPTH FOR TUNNELING BELOW SIDEWALK IS 12"
  - MAX ADJACENT GROUND SLOPE WITHOUT RAILING IS 2:1
  - MIN GRADE FOR PROPER DRAINAGE IS 1% IN AT LEAST 1 DIRECTION. MAX CROSS SLOPE IS 2%. MAX LONGITUDINAL SLOPE IS 8.3%, 10% IF LIMITED BY EXISTING CONDITIONS, OR NO GREATER THAN THE SLOPE OF THE EXISTING ADJACENT ROAD.
- NOT TO SCALE**

**C.O.W. STANDARD SIDEWALK DETAIL**



- NOTES:**
- EXPANSION JOINT MATERIAL TO COMPLY WITH CURRENT NCDOT STANDARDS
  - 50' MAX EXPANSION JOINT SPACING, 10' MAX CONTRACTION JOINT SPACING
  - MINIMUM INSTALLATION LENGTH IS 5 FT.
  - CONCRETE TO BE 3000 PSI MIN
  - VERTICAL CURB AND GUTTER BASE CAN BE SLOPED 3/4" OR USE A FLAT BASE
- NOT TO SCALE**

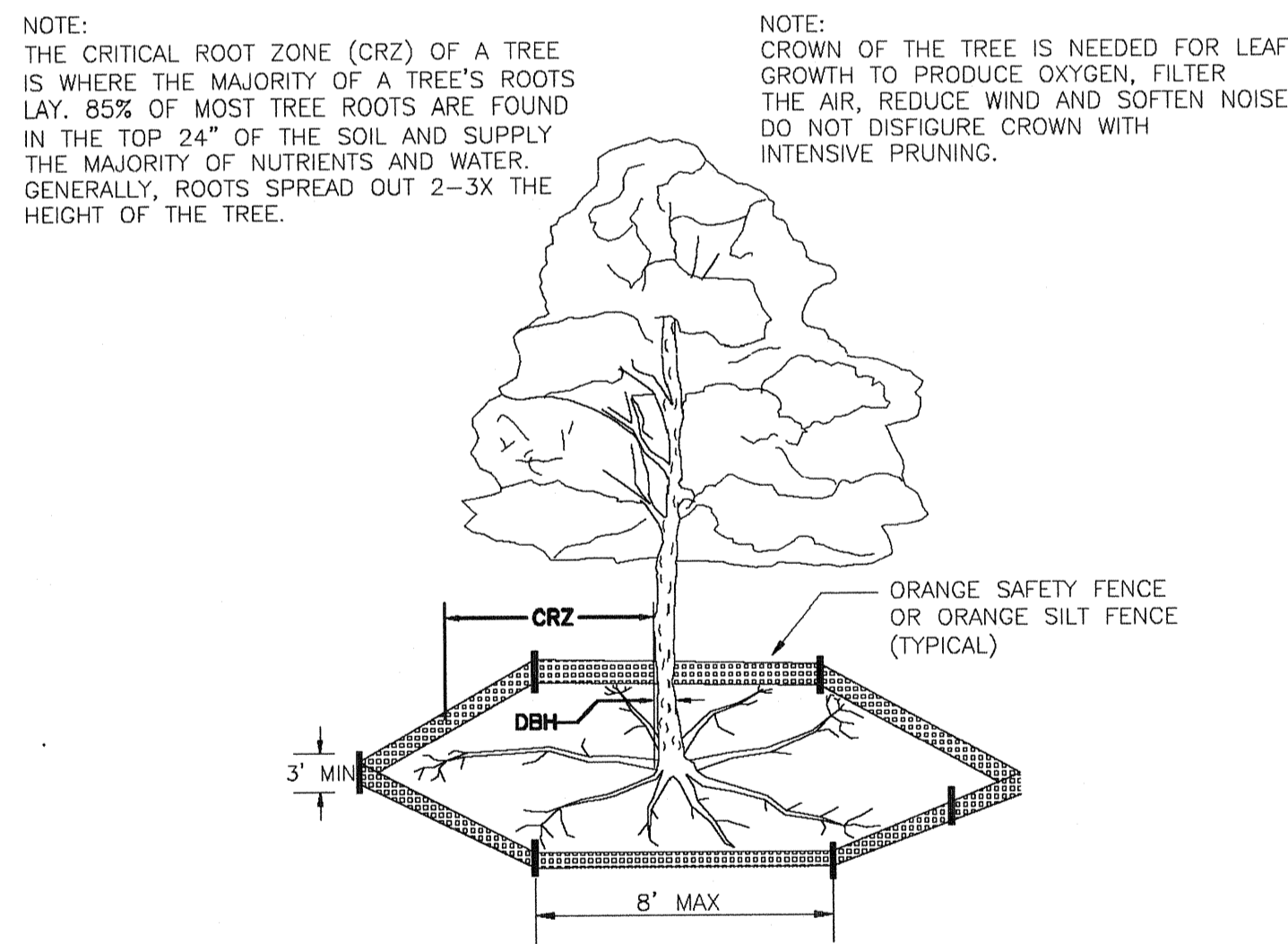
**C.O.W. STANDARD CURBING DETAIL**



**NOTE:** PAVEMENT SECTION MAY VARY DEPENDING UPON FIELD CONDITIONS. CONTRACTOR SHALL COORDINATE w/OWNER & GEOTECHNICAL ENGINEER TO DETERMINE ACTUAL PAVEMENT SECTION.

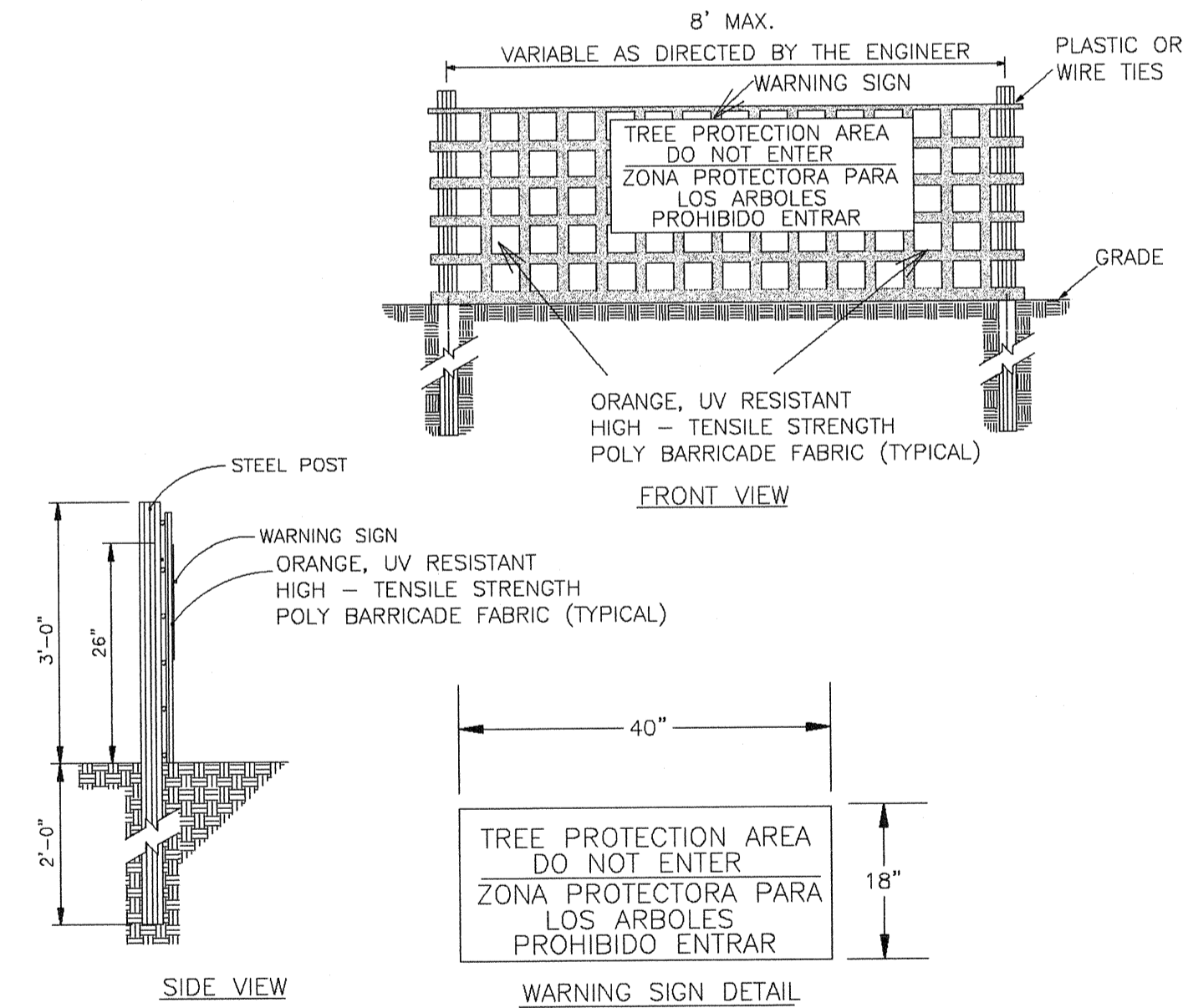
**ASPHALT PAVEMENT SECTION**

**NOT TO SCALE**



- NOTES:**
- PROTECT CRITICAL ROOT ZONE (CRZ) OF TREES PRIOR TO CONSTRUCTION. CLEARLY MARK THE TREES AND ERECT A PROTECTIVE BARRIER AT THE CRZ. BARRIER SHALL BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETE.
  - CRZ RADIUS IS 1 FT PER INCH OF TREE DIAMETER AT BREAST HEIGHT (DBH).
  - IF CONSTRUCTION OCCURS WITHIN THE CRZ, AT LEAST 12" OF MULCH AND/OR LOGGING MATS SHALL BE PLACED WHERE MACHINERY MANEUVERS TO REDUCE SOIL COMPACTION IN THIS ZONE.
  - WHERE SIDEWALKS AND PATHWAYS PASS WITHIN CRZ, EXTRA CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE ROOTS. ALTERNATE CONSTRUCTION METHODS, SUCH AS A REINFORCED SIDEWALK, SHALL BE IMPLEMENTED AS NECESSARY.
  - FOR ALL TREES, CUTTING OF LARGE STRUCTURAL ROOTS LOCATED NEAR THE BASE OF THE TRUNK IS PROHIBITED. DO NOT COMPACT SOIL BENEATH TREES. NO VEHICLE SHALL BE ALLOWED TO PARK UNDER TREES. NO MATERIALS OR EQUIPMENT SHALL BE STORED BENEATH TREES. DAMAGING THE BARK WITH LAWNMOWERS, CONSTRUCTION EQUIPMENT, OR ANYTHING ELSE IS PROHIBITED. CONTRACTOR SHALL REPAIR DAMAGE TO TREES.
  - FAILING TO INSTALL OR MAINTAIN PROTECTION MEASURES SHALL RESULT IN A STOP WORK ORDER AND FINE OF \$500/DAY. DISTURBANCE OTHER THAN THAT ALLOWED ON THE APPROVED PLAN WILL REQUIRE OWNER TO POST A LETTER OF CREDIT FOR 3 YRS FOR TREE MITIGATION.

**C.O.W. TREE PROTECTION DETAIL**



- NOTES:**
- THE TREE PROTECTION FENCING SHALL NOT BE VIOLATED FOR THE ENTIRE DURATION OF THE PROJECT WITHOUT APPROVAL FROM URBAN FORESTRY STAFF.
  - WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL. LETTERS TO BE 3" HIGH, MINIMUM, CLEARLY LEGIBLE AND SPACED AS DETAILED.
  - SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER. FOR TREE PROTECTION AREAS LESS THAN 100' IN PERIMETER, PROVIDE NO LESS THAN TWO SIGNS PER PROTECTION AREA.
  - ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC. MAINTAIN TREE PROTECTION FENCE AND SIGNS THROUGHOUT DURATION OF PROJECT.
  - TREE PROTECTION FENCING AND SIGNAGE SHALL BE REMOVED AFTER CONSTRUCTION.
  - ADDITIONAL SIGNS MAY BE REQUIRED BY CITY OF WILMINGTON, BASED ON ACTUAL FIELD CONDITIONS.

**C.O.W. TREE PROTECTION DETAIL**

**CITY OF WILMINGTON STANDARD NOTES**

- CONTACT THE NORTH CAROLINA ONE CALL CENTER PRIOR TO DOING ANY DIGGING AT 1-800-632-4949.
- PRIOR TO ANY CLEARING, GRADING OR CONSTRUCTION ACTIVITY, TREE PROTECTION FENCING WILL BE INSTALLED AROUND PROTECTED TREES OR GROVES OF TREES AND NO CONSTRUCTION WORKERS, TOOLS, MATERIALS, OR VEHICLES ARE PERMITTED WITHIN THE TREE PROTECTION FENCING.
- ALL PAVEMENT MARKINGS IN PUBLIC RIGHTS-OF-WAY AND FOR DRIVEWAYS ARE TO BE THERMOPLASTIC AND MEET CITY AND/OR NCDOT STANDARDS.
- ALL PARKING STALL MARKINGS AND LANE ARROWS WITHIN THE PARKING AREAS SHALL BE WHITE.
- INSTALL REFLECTORS PER CITY AND NCDOT STANDARDS. TRAFFIC ENGINEERING MUST APPROVE OF PAVEMENT MARKING LAYOUT PRIOR TO ACTUAL STRIPING.
- ALL TRAFFIC CONTROL SIGNS AND MARKINGS OFF THE RIGHT-OF-WAY ARE TO BE MAINTAINED BY THE PROPERTY OWNER IN ACCORDANCE WITH MUTCD STANDARDS.
- TRAFFIC CONTROL DEVICES (INCLUDING SIGNS AND PAVEMENT MARKINGS) IN AREAS OPEN TO PUBLIC TRAFFIC ARE TO MEET MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) STANDARDS.
- IT SHALL BE THE RESPONSIBILITY OF THE SUBDIVIDER TO ERECT OFFICIAL STREET NAME SIGNS AT ALL INTERSECTIONS ASSOCIATED WITH THE SUBMISSION IN ACCORDANCE WITH THE TECHNICAL STANDARDS AND SPECIFICATIONS MANUAL. THE SUBDIVIDER MAY ACQUIRE AND ERECT OFFICIAL STREET NAME SIGNS OR MAY CHOOSE TO CONTRACT WITH THE CITY TO INSTALL THE STREET SIGNS AND THE SUBDIVIDER SHALL PAY THE COST OF SUCH INSTALLATION. CONTACT TRAFFIC ENGINEERING AT 341-7888 TO DISCUSS INSTALLATION OF TRAFFIC AND STREET NAME SIGNS. POSTED STREET NAMES MUST BE APPROVED PRIOR TO INSTALLATION OF STREET NAME SIGNS.
- CONTACT TRAFFIC ENGINEERING AT 341-7888 FORTY-EIGHT HOURS PRIOR TO ANY EXCAVATION IN THE RIGHT-OF-WAY.
- A UTILITY CUT PERMIT IS REQUIRED FOR EACH OPEN CUT OF A CITY STREET. CONTACT 341-5888 FOR MORE DETAILS. IN CERTAIN CASES AN ENTIRE RESURFACING OF THE AREA BEING OPEN CUT MAY BE REQUIRED.
- ANY BROKEN OR MISSING SIDEWALK PANELS, DRIVEWAY PANELS, AND CURBING WILL BE REPLACED.
- CONTACT KAREN DIXON AT 341-7888 TO DISCUSS STREET LIGHTING OPTIONS.
- PROJECT SHALL COMPLY WITH CFPWA CROSS CONNECTION CONTROL REQUIREMENTS. WATER METER(S) CANNOT BE RELEASED UNTIL ALL REQUIREMENTS ARE MET AND THE STATE HAS GIVEN THEIR FINAL APPROVAL. CALL 343-3910 FOR INFORMATION.
- IF THE CONTRACTOR DESIRES CFPWA WATER FOR CONSTRUCTION HE SHALL APPLY IN ADVANCE FOR THIS SERVICE AND MUST PROVIDE A REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTION DEVICE ON THE DEVELOPER'S SIDE OF THE WATER METER BOX.
- ANY IRRIGATION SYSTEM SUPPLIED BY CFPWA WATER SHALL COMPLY WITH CFPWA CROSS CONNECTION CONTROL REGULATIONS. CALL 332-6558 FOR INFORMATION.
- ANY BACKFLOW PREVENTION DEVICES REQUIRED BY CFPWA WILL NEED TO BE ON THE LIST OF APPROVED DEVICES BY USOFCCOHR OR ASSE.
- WHEN PVC WATER MAINS AND/OR POLYETHYLENE SERVICES ARE PROPOSED, THE PIPES ARE TO BE MARKED WITH NO. 10 INSULATED SINGLE STRAND COPPER WIRE INSTALLED THE LENGTH AND SECURED TO ALL VALVES. THIS WIRE IS TO BE ACCESSIBLE AT ALL FIRE HYDRANTS AND WATER METER BOXES TO AID IN FUTURE LOCATION OF FACILITIES.
- THE NUMBER AND SPACING OF DRIVEWAYS FOR ALL INTERCONNECTED SITES WILL BE DETERMINED BY THE COMBINED FRONTAGE OF THE INTERCONNECTED PROPERTIES.
- UNDERGROUND FIRE LINE MUST BE PERMITTED AND INSPECTED BY THE WILMINGTON FIRE DEPARTMENT FROM THE PUBLIC ROW TO THE BUILDING. CONTACT THE WILMINGTON FIRE DEPARTMENT DIVISION OF FIRE AND LIFE SAFETY AT 910-343-0686 FOR ADDITIONAL INFORMATION.
- A LANDSCAPE PLAN INDICATING THE LOCATION OF REQUIRED STREET TREES SHALL BE SUBMITTED TO THE CITY OF WILMINGTON TRAFFIC ENGINEERING DIVISION AND PARKS AND RECREATION DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO THE RECORDING OF THE FINAL PLAN.

**SITE WORK NOTES:**

- THE CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH FIELD CONSTRUCTION CONDITIONS.
- CONTRACTOR SHALL COORDINATE WORK WITHIN NCDOT AND LOCAL RIGHT OF WAYS WITH PROPER AUTHORITIES AND SHALL MEET ANY REQUIREMENTS AS TO TRAFFIC CONTROL AND CONNECTION TO EXISTING STREETS.
- CLEARING AND GRUBBING: REMOVE ALL TREES AS REQUIRED UNLESS OTHERWISE NOTED TO REMAIN. STUMPS, ROOTS, SHRUBBERY, ASPHALT CONCRETE, STRUCTURES, BURIED UTILITIES, STORAGE TANKS, ETC. WITHIN LIMITS OF CONSTRUCTION.
- STRIPPING: BEFORE EXCAVATING OR FILLING, REMOVE ALL TOPSOIL, WOOD, LEAVES, AND ANY OTHER UNSUITABLE MATERIAL.
- MUCKING: REMOVE ANY SOFT, ORGANIC SILT MATERIALS AND EXISTING BURIED CONSTRUCTION DEBRIS AS REQUIRED AND FILL TO SUBGRADE ELEVATIONS WITH A CLEAN SELECT-FILL COMPACTED AS SPECIFIED.
- DISPOSAL: CLEARED, GRUBBED, STRIPPED OR EXCAVATED SPOIL SHALL BE REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE CODES.
- BORROW MATERIAL: THE CONTRACTOR SHALL FURNISH BORROW MATERIAL REQUIRED FROM OFF SITE AND OBTAIN ALL REQUIRED PERMITS ASSOCIATED WITH BORROW OPERATIONS.
- FILL AND COMPACTION: SEE SPECIFICATIONS.
- LAYOUT: THE CONTRACTOR SHALL PROVIDE ALL LAYOUT REQUIRED TO CONSTRUCT HIS WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF EXISTING UTILITIES DURING CONSTRUCTION.
- EXISTING BOUNDARY AND TOPOGRAPHIC INFORMATION FROM SURVEY BY MICHAEL UNDERWOOD AND ASSOCIATES, PA AND PROVIDED BY OWNER.
- THE CONTRACTOR SHALL VERIFY DIMENSIONS AT JOBSITE.
- THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF RELOCATION OR DISCONNECTION OF ALL EXISTING UTILITIES WITH APPLICABLE AGENCIES AND AUTHORITIES.
- ALL PAVEMENT AND BASE MATERIALS AND WORKMANSHIP SHALL CONFORM TO NCDOT STANDARDS.
- WATER AND SEWER SERVICES SHALL BE INSTALLED TO MEET LOCAL AND STATE PLUMBING CODES. METER AND TAPS SHALL MEET ALL LOCAL REQUIREMENTS.
- ALL AREAS SHALL BE GRADED FOR POSITIVE DRAINAGE.
- SEE SOILS REPORT FOR ADDITIONAL REQUIREMENTS.
- CONTRACTOR SHALL NOTE THAT EARTHWORK QUANTITIES ARE HIS RESPONSIBILITY. PLANS DO NOT REPRESENT A BALANCED EARTHWORK CONDITION.
- REINF. CONC. PIPE SHALL BE CLASS III W/RUBBER GASKETED JOINT OR "RAM NECK". INSTALL PER MANUFACTURER'S REQUIREMENTS.
- USE WHITE LANE MARKING PAINT FOR ALL PAVEMENT MARKINGS. PAINT SHALL BE A CHLORINATED RUBBER ALKYD, FS TT-P-115, TYPE III, FACTORY MIXED, QUICK DRYING, NON-BLEEDING.
- REFER TO THE PLUMBING DRAWINGS FOR LOCATION AND INVERTS OF NEW WASTE, WATER AND ROOF DRAIN LINES.

**UTILITY NOTES FOR FIRE HYDRANTS**

- FIRE HYDRANTS MUST BE WITHIN 150' OF THE FIRE DEPARTMENT CONNECTION.
- THE FIRE DEPARTMENT CONNECTION MUST BE WITHIN 40' OF FIRE APPARATUS PLACEMENT.
- LANDSCAPING AND PARKING CANNOT BLOCK OR IMPEDE THE FIRE DEPARTMENT CONNECTIONS OR FIRE HYDRANTS. A 3' CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF THE FIRE HYDRANT CONNECTION AND THE FIRE HYDRANT.
- FIRE HYDRANTS MUST BE LOCATED WITHIN 8' OF THE CURB.
- NEW HYDRANTS MUST BE AVAILABLE FOR USE PRIOR TO CONSTRUCTION OF THE BUILDINGS.
- NEW HYDRANTS MUST BE BROUGHT INTO SERVICE PRIOR TO COMBUSTIBLE MATERIALS BEING DELIVERED TO THE JOB SITE.
- THE CONTRACTOR SHALL MAINTAIN ALL WEATHER ACCESS FOR EMERGENCY VEHICLES AT ALL TIMES DURING CONSTRUCTION.
- TEMPORARY STREET SIGNS SHALL BE INSTALLED AT EACH STREET INTERSECTION WHEN CONSTRUCTION OF NEW ROADWAYS ALLOWS PASSAGE BY VEHICLES.
- UNDERGROUND FIRE LINE AND PRIVATE WATER MAINS MUST BE PERMITTED AND INSPECTED BY THE WILMINGTON FIRE DEPARTMENT FROM THE PUBLIC RIGHT-OF-WAY TO THE BUILDING. CONTACT THE WILMINGTON FIRE DEPARTMENT DIVISION OF FIRE AND LIFE SAFETY AT 910-343-0686 FOR ADDITIONAL INFORMATION.
- A MINIMUM OF 5' SHALL SEPARATE UNDERGROUND FIRE LINES OR PRIVATE WATER MAINS FROM OTHER UNDERGROUND UTILITIES.
- HYDRANTS SHALL BE OF SUFFICIENT NUMBERS TO ACCOMMODATE BASE FIRE FLOW REQUIREMENTS OF THE STRUCTURE.
- BUILDING CONSTRUCTION TYPE: APARTMENTS V-B

**NOTES AND DETAILS**  
**WOODLANDS AT ECHO FARMS**  
**4114 ECHO FARMS BLVD.**  
**WILMINGTON, N. C.**

**LAND OWNER/APPLICANT**  
**ECHO FARMS, LLC**  
**MATHEW DEVELOPMENT GROUP**  
**14400 FOSGATE DRIVE**  
**CHAMBURY, NJ 08012**  
**732-521-2500**

**NORRIS & TUNSTALL**  
**CONSULTING ENGINEERS P.C.**  
 1429 ASH-LITTLE RIVER RD. NW  
 ASH, NC 28420  
 903 MARKET STREET  
 WILMINGTON, NC 28401  
 PHONE (910) 343-9653  
 PHONE (910) 287-5900

Licence #C-3641

16083

DES. JST  
 DRW. JPN  
 NKS

DATE 12/2/16



C4

Approved Construction Plan  
 Name \_\_\_\_\_ Date \_\_\_\_\_

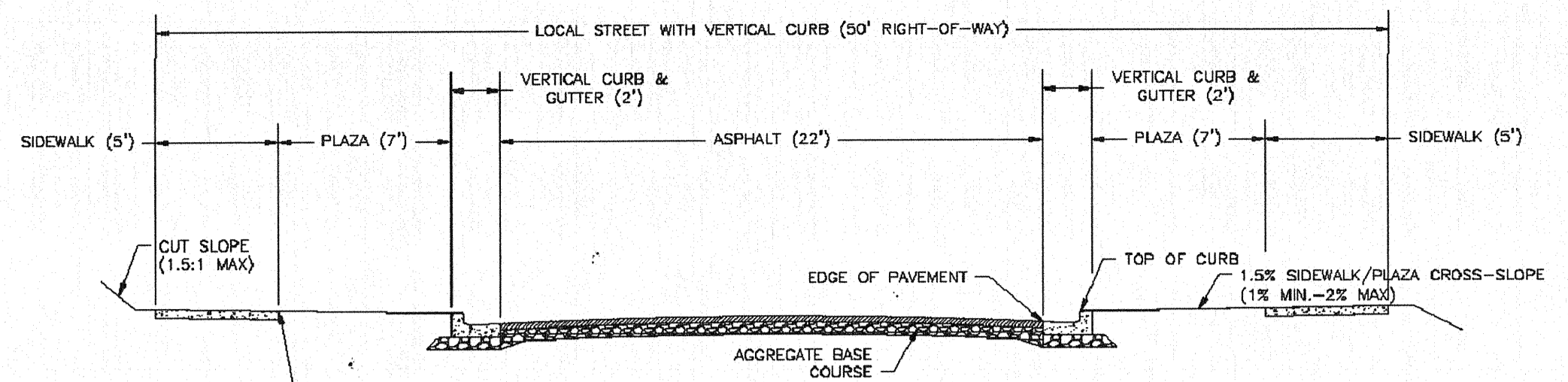
Planning \_\_\_\_\_  
 Traffic \_\_\_\_\_  
 Fire \_\_\_\_\_

**CITY OF WILMINGTON**  
 NORTH CAROLINA  
 Public Services • Engineering Division  
 APPROVED STORMWATER MANAGEMENT PLAN  
 Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
 Signed: \_\_\_\_\_

For each open utility cut of City streets, a \$25 permit shall be required from the City prior to occupancy and/or project acceptance.

NCDENR PWSS WATER PERMIT #: \_\_\_\_\_  
 WATER CAPACITY: \_\_\_\_\_ GPD  
 DWQ SEWER PERMIT #: \_\_\_\_\_  
 SEWER CAPACITY: \_\_\_\_\_ GPD  
 SEWER SHED # AND PLANT: \_\_\_\_\_  
 SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

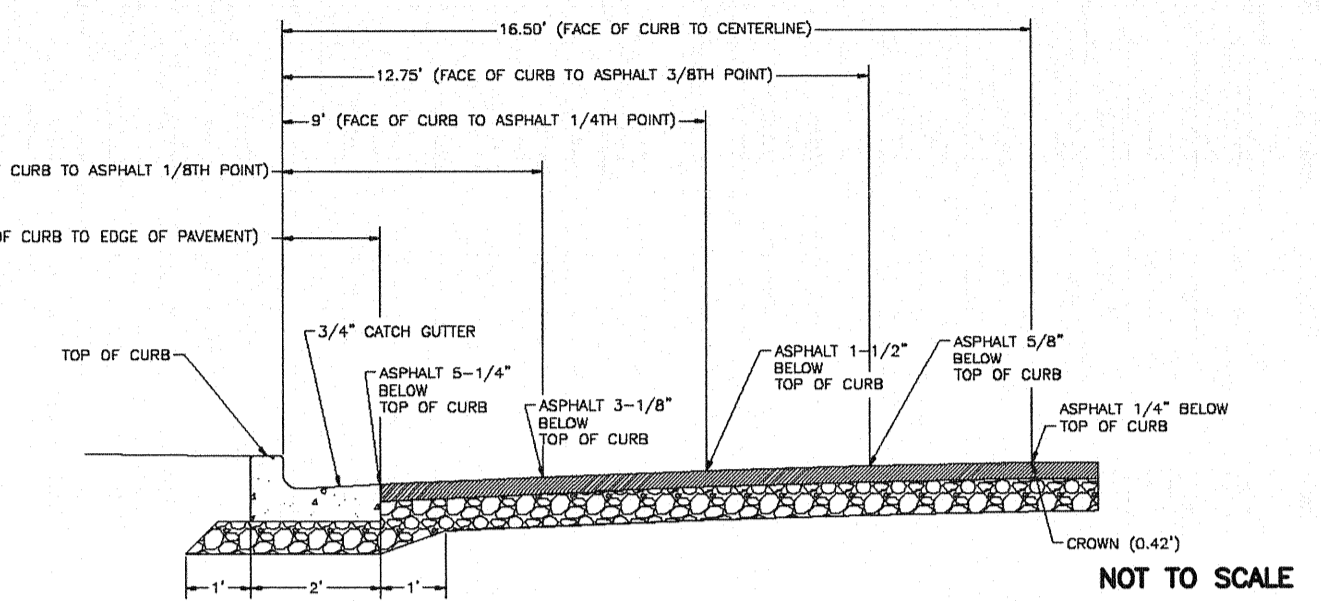
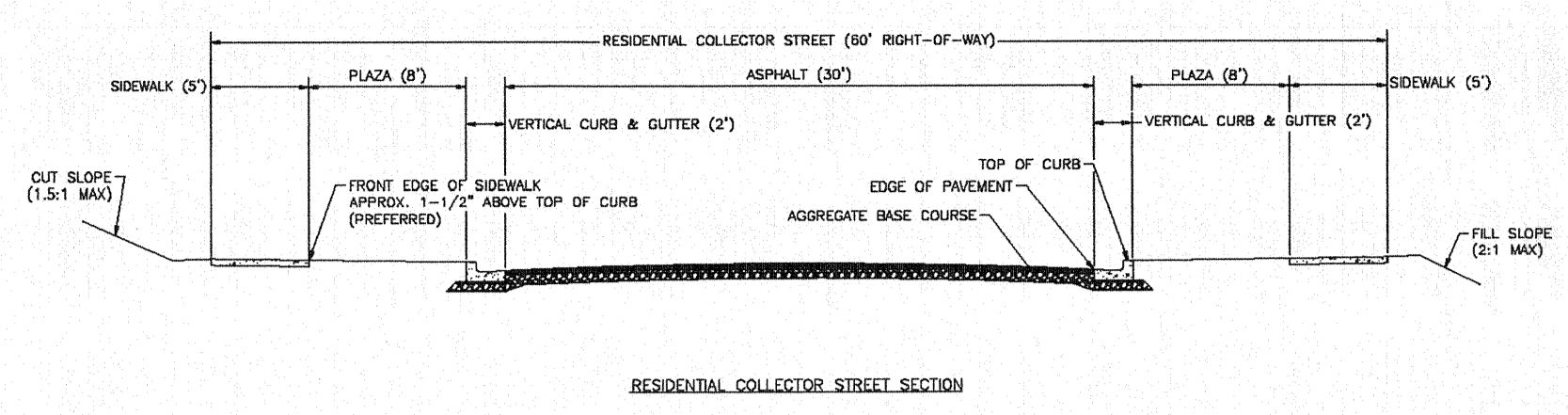




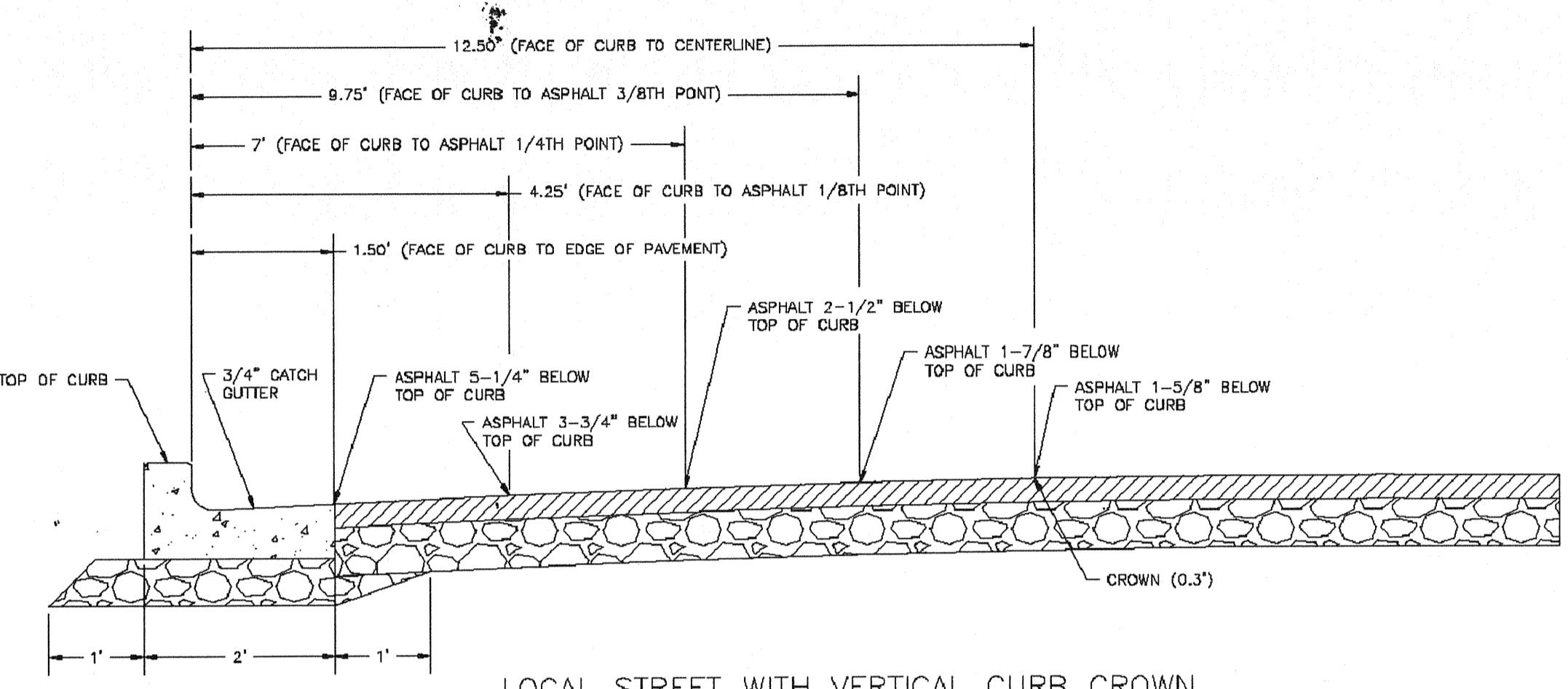
NOTE:  
A 10' NON-MUNICIPAL UTILITY EASEMENT SHALL  
EXIST ALONG ALL PUBLIC RIGHTS-OF-WAY.

NOTES:  
LOCAL STREETS SERVE A MAXIMUM OF 50 RESIDENTIAL DWELLING UNITS

LOCAL STREET WITH VERTICAL CURB SECTION

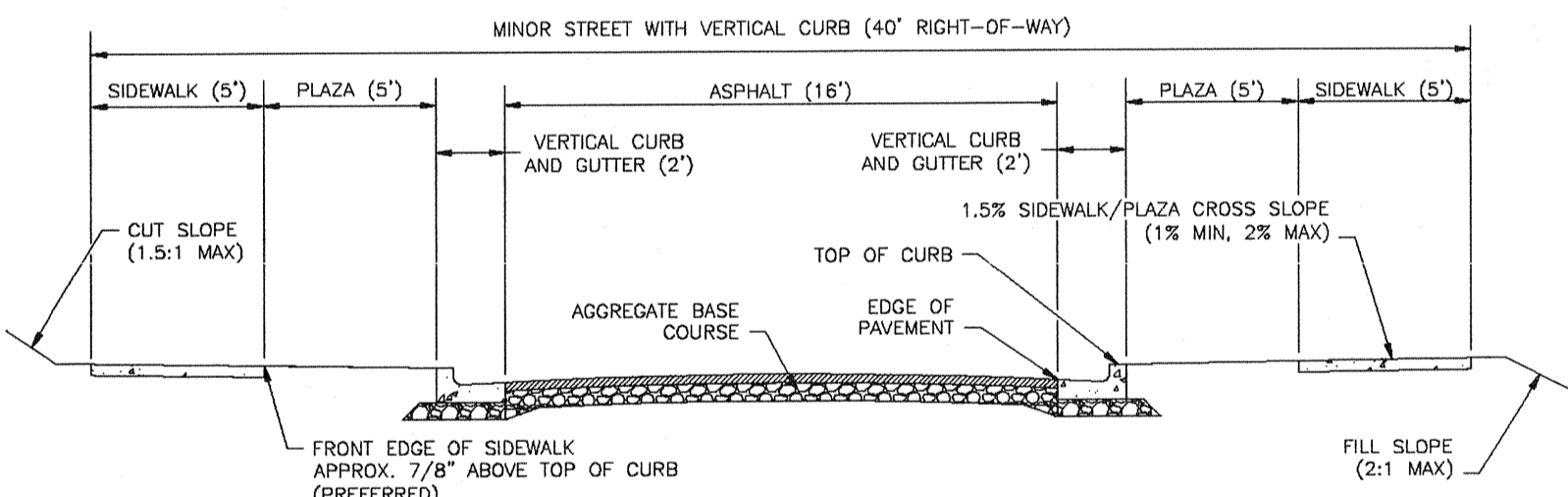


C.O.W. RESIDENTIAL COLLECTOR STREET  
WITH VERTICAL CURB DETAIL



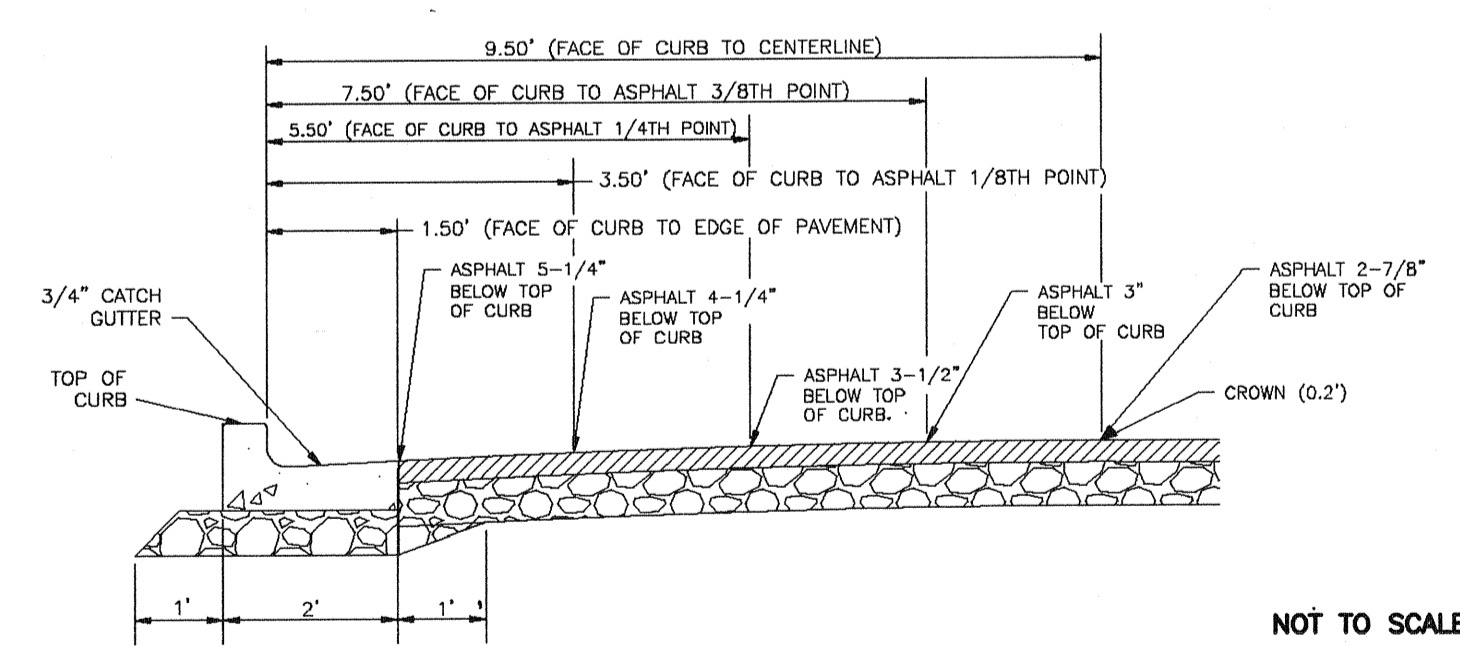
NOT TO SCALE

C.O.W. LOCAL STREET WITH VERTICAL CURB DETAIL



NOTE:  
MINOR STREETS SERVE A MAXIMUM OF 15 RESIDENTIAL DWELLING UNITS

MINOR STREET WITH VERTICAL CURB (SECTION)



NOT TO SCALE

C.O.W. MINOR STREET WITH VERTICAL CURB DETAIL

DATE: 10-28-11	STANDARD DETAIL	<p>CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, N.C. 28402 (910) 341-7807</p>	SD 3-05
DRAWN: PB/JSR	TURNAROUNDS		
CHECKED: DEC			
SCALE: NOT TO SCALE			

DATE: 4/9/14	STANDARD DETAIL	<p>CITY OF WILMINGTON ENGINEERING PO BOX 1810 WILMINGTON, N.C. 28402 (910) 341-7807</p>	SD 3-04
DRAWN: PB/JSR	RESIDENTIAL CUL-DE-SACS		
CHECKED: DEC			
SCALE: NOT TO SCALE			

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

NCDENR PWSS WATER PERMIT #: \_\_\_\_\_ GPD  
WATER CAPACITY: \_\_\_\_\_ GPD  
DWQ SEWER PERMIT #: \_\_\_\_\_ GPD  
SEWER CAPACITY: \_\_\_\_\_ GPD  
SEWER SHED # AND PLANT: \_\_\_\_\_  
SEWER TO FLOW THROUGH NEI: YES or NO (CIRCLE ONE)

Approved Construction Plan  
Name \_\_\_\_\_ Date \_\_\_\_\_  
Planning \_\_\_\_\_  
Traffic \_\_\_\_\_  
Fire \_\_\_\_\_

Public Services • Engineering Division  
APPROVED STORMWATER MANAGEMENT PLAN  
Date: \_\_\_\_\_ Permit # \_\_\_\_\_  
Signed: \_\_\_\_\_

NOTES AND DETAILS  
WOODLANDS AT ECHO FARMS  
4114 ECHO FARMS BLVD.  
WILMINGTON, N. C.

LAND OWNER/APPLICANT  
ECHO FARMS, LLC  
MATRIX DEVELOPMENT GROUP  
CN4000 FORSGATE DRIVE  
CRANFURY, NJ 080512  
732-921-2900

**NORRIS & TUNSTALL**  
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1429 ASH-LITTLE RIVER RD., NW  
WILMINGTON, NC 28401  
PHONE (910) 343-3635

Licence #C-3641  
16083  
DES. JST  
CHK. JPN  
DRWL. NKS  
DATE 12/2/16



C4.1