



LINCOLN COUNTY PLANNING & INSPECTIONS DEPARTMENT
302 NORTH ACADEMY STREET, SUITE A, LINCOLNTON, NORTH CAROLINA 28092
704-736-8440 OFFICE 704-736-8434 INSPECTION REQUEST LINE 704-732-9010 FAX

To: Board of Commissioners
Planning Board

From: Randy Hawkins, Zoning Administrator

Date: March 17, 2017

Re: PD #2016-8
RHH Land Investors, LLC, applicant
Parcel ID# 34808, 34839, 34840 and 54084

The following information is for use by the Lincoln County Board of Commissioners and Planning Board at their joint meeting/public hearing on April 3, 2017.

REQUEST

The applicant is requesting the rezoning of 81.2 acres from R-T (Transitional Residential) to PD-R (Planned Development-Residential) to permit a subdivision with up to 170 lots for single-family detached homes. Under the Lincoln County Unified Development Ordinance, any proposed subdivision with 50 or more lots is subject to approval through the planned development process. The applicant is also proposing lots smaller in size than the minimum area permitted in the R-T district.

A concept plan and guidelines for the proposed development, Creek Park, have been submitted as part of the rezoning application and would serve as the master plan for the development if the rezoning request is approved. A traffic impact analysis has also been submitted. In addition, the applicant has provided minutes from a community involvement meeting that was held on October 12, 2016.

SITE AREA AND DESCRIPTION

The property is located on the west side of Little Egypt Road about 3,600 feet south of Optimist Club Road in Catawba Springs Township. It is adjoined by property zoned R-T, CU R-S (Conditional Use Residential Suburban) and R-SF (Residential Single-Family). The Windsor Forest subdivision borders this property on the southern side. Killian Creek runs along the western side. Water and sewer lines are located adjacent to this property. Land uses in the area are primarily residential and agricultural. This property is not located in a water-supply watershed. A portion of this property is located in a 100-year floodplain.

PLAN CONFORMANCE

This property is part of an area designated by the Lincoln County Land Use Plan as Suburban Residential, suitable for densities of upwards of 1-2 units per acre depending on the provision of utilities. The proposed subdivision would be served by county water and sewer. The proposed density is 2.1 homes per acre.

The county's greenway plan identifies Killian Creek as a possible connection to the Carolina Thread Trail. The master plan for this development includes a proposed easement for the possible connection.

UDO COMPLIANCE

The UDO requires that a planned development include a minimum of 12.5% recreation and open space. Approximately 20% of the acreage in Creek Park would be reserved as recreation and open space.

The proposed plan also complies with the UDO's subdivision standards for external access, internal connectivity, block length and cul-de-sac length.

STAFF'S RECOMMENDATION

Staff recommends that the rezoning request be approved. See staff's proposed statement of consistency and reasonableness for rationale.

PD 2016-8 (Creek Park) Capacity Statement

Public Schools

The proposed development of 170 single-family lots is in the Catawba Springs Elementary, East Lincoln Middle and East Lincoln High districts. Based on current student generation rates, the development is projected to produce approximately 55 students spread over the K-12 system. Per the county's Adequate Public Facilities Ordinance and its associated Memorandums of Understanding, the associated schools and the system in general have the capacity to handle the proposed development.

Water and Sewer

See applicant's PD-R Report, Item L.



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Zoning Amendment Staff's Proposed Statement of Consistency and Reasonableness

Case No. **PD #2016-8**

Applicant **RHH Land Investors, LLC**

Parcel ID# **34808, 34839, 34840 and 54084**

Location **west side of Little Egypt Road, 3,600 feet south of Optimist Club Road**

Proposed amendment **rezone from R-T to PD-R to permit a subdivision with up to 170 lots for single-family detached homes**

This proposed amendment **is consistent** with the Lincoln County Comprehensive Land Use Plan and other adopted plans in that:

This property is located in an area designated by the Land Use Plan as Suburban Residential, suitable for densities of upwards of 1-2 homes per acre depending on the provision of utilities. The proposed subdivision will be served by county water and sewer. The proposed density is 2.1 homes per acre. Killian Creek is identified on the county's greenway plan as a possible connection to the Carolina Thread Trail. The master plan for this development includes a proposed easement for the possible connection.

This proposed amendment **is reasonable and in the public interest** in that:

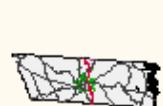
This property is located in an area that is primarily residential. The plans for this subdivision meet all of the requirements of the Unified Development Ordinance. Approximately 20% of the property will be set aside as recreation and open space. Amenities will be provided as part of the master plan. The plan includes a proposed easement for a potential future segment of the Carolina Thread Trail.



Lincoln County, NC

Office of the Tax Administrator, GIS Mapping Division

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Date: 3/15/2017 Scale: 1 Inch = 500 Feet

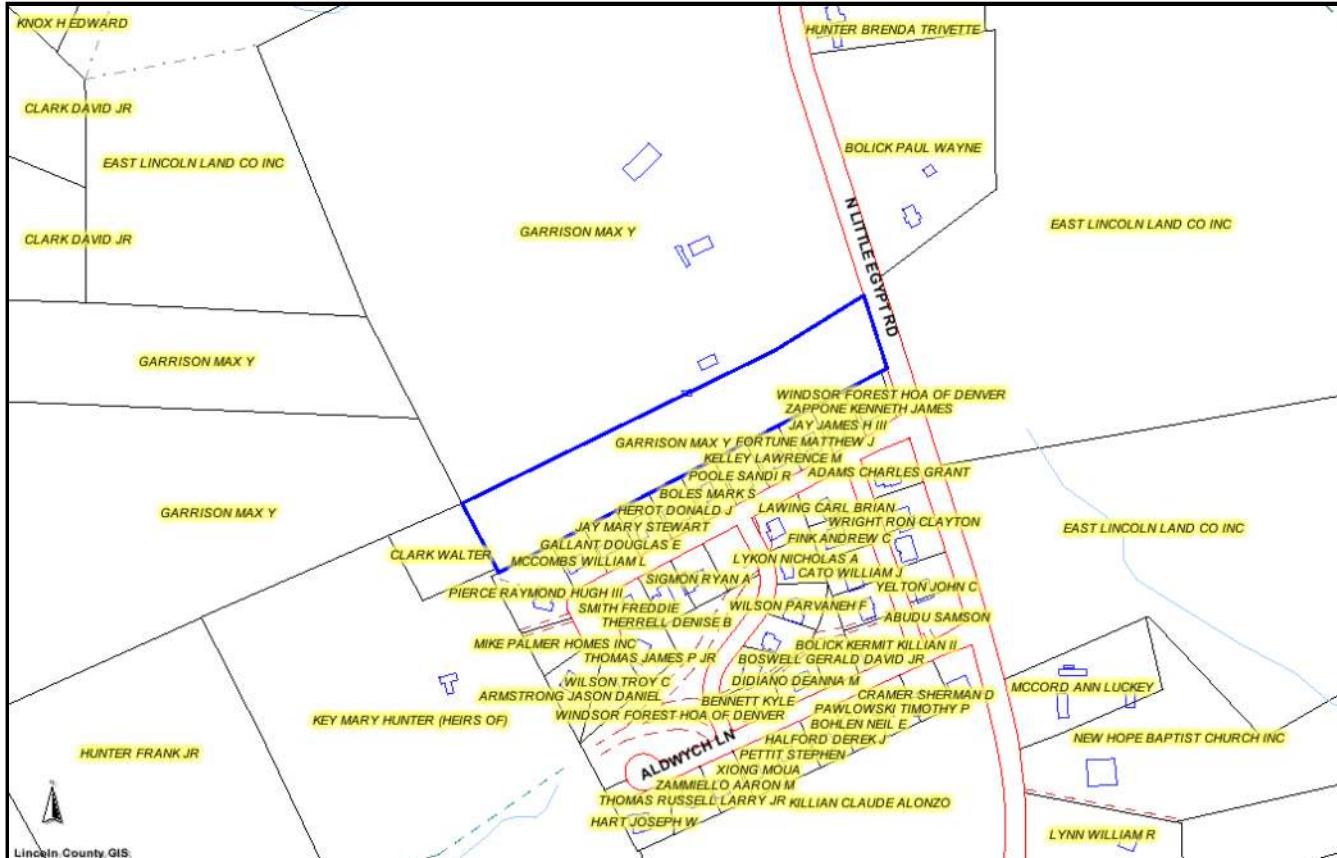


Photo Not Available

PHOTOS

PARCEL INFORMATION FOR 3693-60-9942

 	Parcel ID	34808	Owner	GARRISON MAX Y
	Map	3693-00	Mailing Address	433 AQUARIUS DRIVE
	Account	13324		WILMINGTON NC 28411
	Deed	89E-132	Recorded	3/9/2017
	Land Value	\$57,258	Total Value	\$57,258
	----- All values are for tax year 2016. -----			
	Description	CREST LD RD 1386	Tax/Fire District	
	Address	N LITTLE EGYPT RD		
	Township	CATAWBA SPRINGS		
	Improvement		No Improvements	
 	Zoning District	Calculated Acres	Voting Precinct	Calculated Acres
	R-T	5.56	TRIANGLE (TR30)	5.56
	Watershed Class		Sewer District	
	Not in a watershed	5.56	Not in the sewer district	5.56
	2000 Census County		Tract	
	37109		071100	1035
	Flood	Zone Description	Block	5.56
	X	NO FLOOD HAZARD	Panel	3710369300
				5.56



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Date: 3/15/2017 Scale: 1 Inch = 500 Feet



Lincoln County GIS.

PHOTOS



PARCEL INFORMATION FOR 3693-61-6618

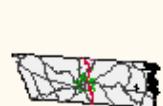
Parcel ID	34839	Owner	GARRISON MAX Y
Map	3693-00	Mailing Address	433 AQUARIUS DRIVE WILMINGTON NC 28411
Account	13324	Recorded	3/9/2017
Deed	89E-132	Total Value	\$594,535
Land Value	\$410,240	----- All values are for tax year 2016. -----	
Description	HOME & BLDGS ON 1386	Deed Acres	44.5
Address	695 N LITTLE EGYPT RD	Tax Acres	42.77
Township	CATAWBA SPRINGS	Tax/Fire District	EAST LINCOLN
Main Improvement	"A" FRAME		
Main Sq Feet	2032	Stories	1.75
Finished Basement	1161	Year Built	1975
Parcel ID	M9595	Owner	GARRISON MAX Y
Map	3693-00	Mailing Address	433 AQUARIUS DRIVE WILMINGTON NC 28411
Account	13324	Recorded	3/9/2017
Deed	-	Total Value	\$1,230
Land Value	\$0	----- All values are for tax year 2016. -----	
Description	1968 12 X 56	Deed Acres	0
Address	723 N LITTLE EGYPT RD	Tax Acres	0
Township	CATAWBA SPRINGS	Tax/Fire District	EAST LINCOLN
Main Improvement	MANUFACTURED HOME		
Main Sq Feet	672	Stories	1
		Year Built	1968
Zoning District	Calculated Acres	Voting Precinct	Calculated Acres
R-T	42.77	TRIANGLE (TR30)	42.77
Watershed Class		Sewer District	
Not in a watershed	42.77	Not in the sewer district	42.77
2000 Census County		Tract	Block
37109		071100	1035
Flood	Zone Description	Panel	
X	NO FLOOD HAZARD	3710369300	42.77



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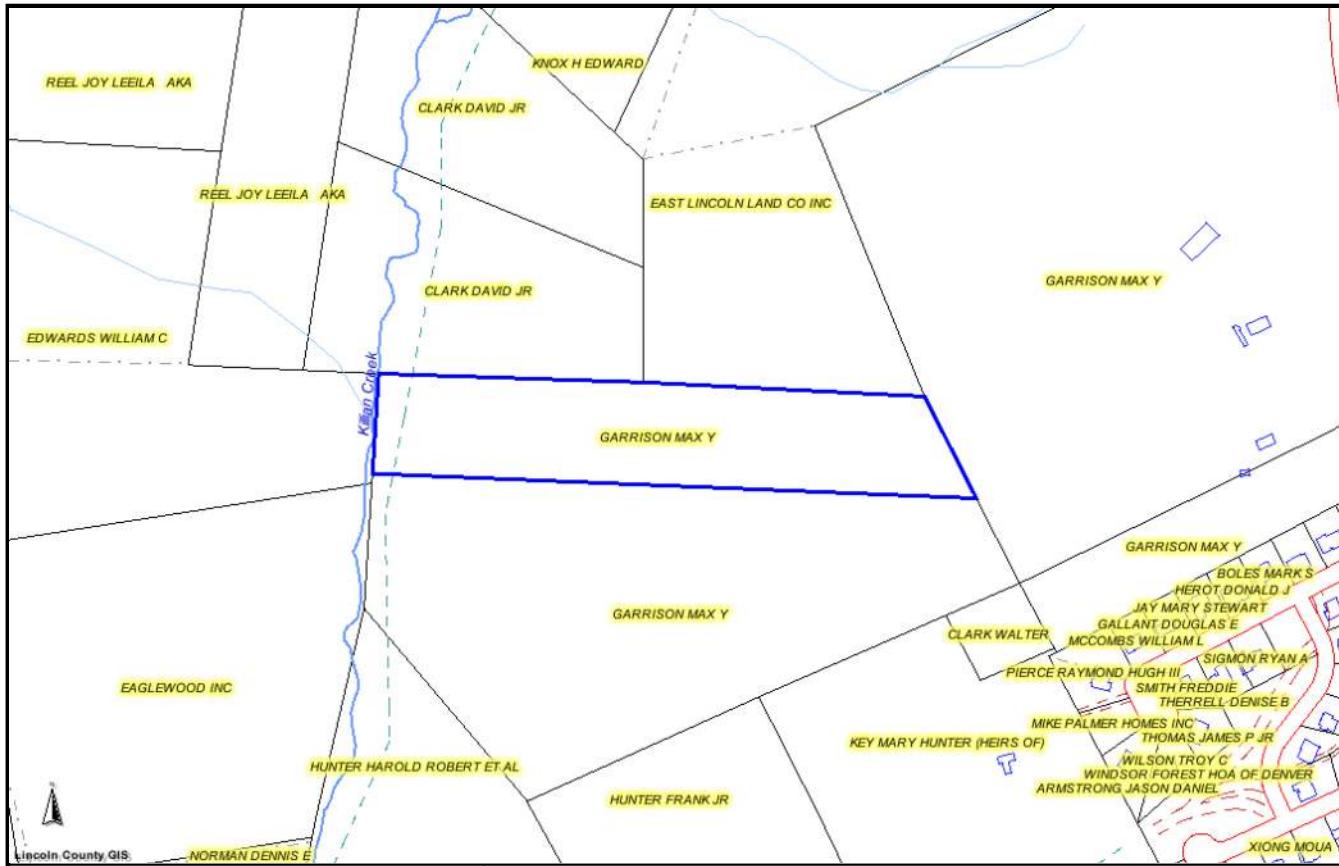


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PARCEL INFORMATION FOR 3693-51-2079

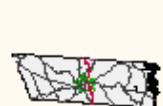
PHOTOS Photo Not Available	Parcel ID	34840	Owner	GARRISON MAX Y
	Map	3693-00	Mailing Address	433 AQUARIUS DRIVE
	Account	13324		WILMINGTON NC 28411
	Deed	89E-132	Recorded	3/9/2017
	Land Value	\$52,230	Total Value	\$52,230
	----- All values are for tax year 2016. -----			
	Description	SAUNDERS LD RD 1386	Tax/Fire District	
	Address	N LITTLE EGYPT RD		Deed Acres 9.99
	Township	CATAWBA SPRINGS		Tax Acres 9.95
	Improvement		EAST LINCOLN	
Zoning District R-T		Calculated Acres 9.95	Voting Precinct DENVER WEST (DW28) TRIANGLE (TR30)	Calculated Acres 0.17 9.78
Watershed Class Not in a watershed		9.95	Sewer District Not in the sewer district	9.95
2000 Census County 37109 37109			Tract 070900 071100	Block 3016 1035
FloodZone Description AE YEAR X		SPECIAL FLOOD HAZARD AREA BASE ELEVATION DETERMINED - 100 NO FLOOD HAZARD		Panel 37103693001.08 37103693008.87



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Date: 3/15/2017 Scale: 1 Inch = 500 Feet

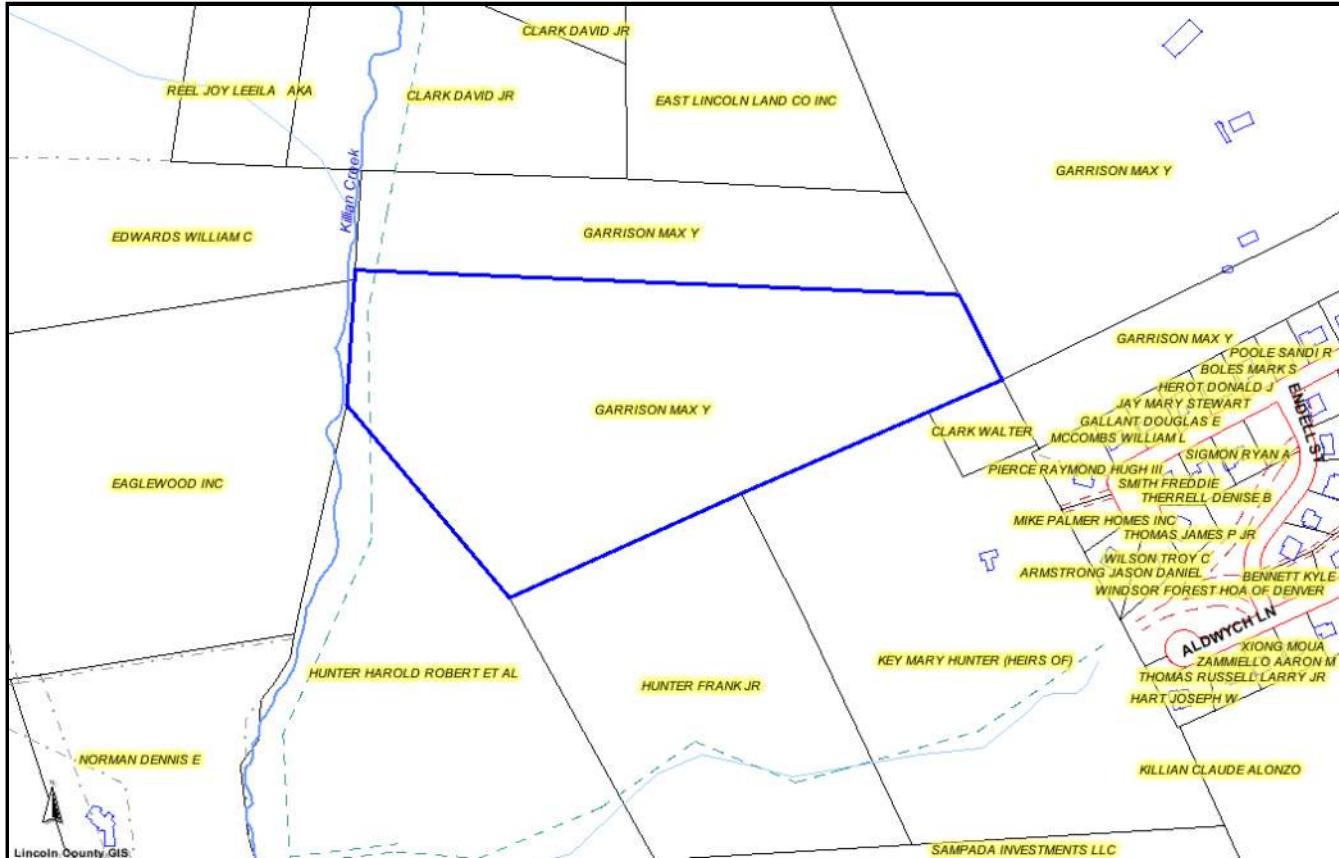


Photo Not Available

PARCEL INFORMATION FOR 3693-50-2678

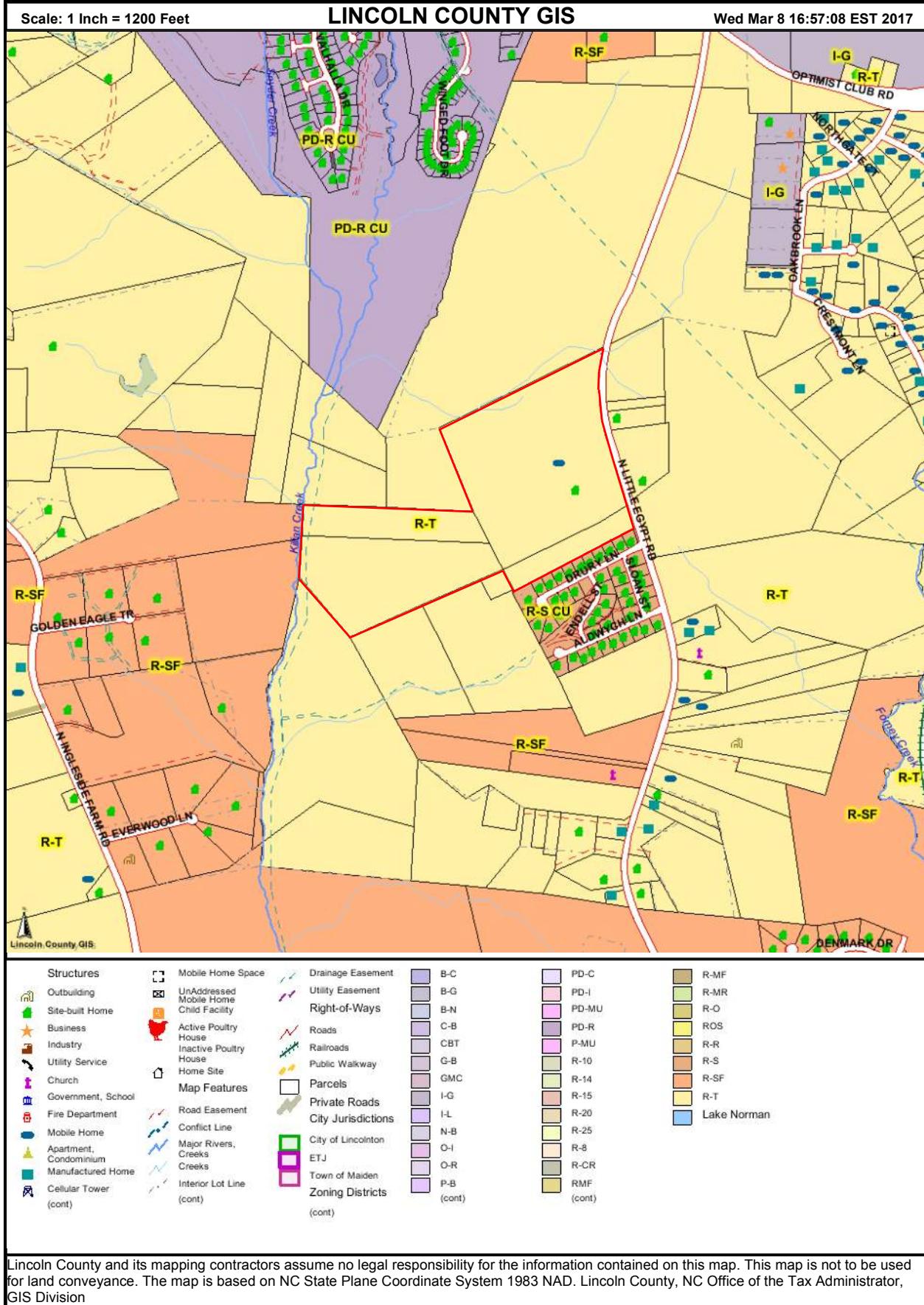
PHOTOS  Photo Not Available	Parcel ID	54084	Owner	GARRISON MAX Y
	Map	3693-00	Mailing Address	433 AQUARIUS DRIVE
	Account	13324		WILMINGTON NC 28411
	Deed	89E-132	Recorded	3/9/2017
	Land Value	\$113,361	Total Value	\$113,361
	----- All values are for tax year 2016. -----			
	Description	W HUNTER/OFF RD 1386	Deed Acres	23
	Address	N LITTLE EGYPT RD	Tax Acres	22.95
	Township	CATAWBA SPRINGS	Tax/Fire District	EAST LINCOLN
	Improvement	No Improvements		
Zoning District R-T Watershed Class Not in a watershed 2000 Census County 37109 37109 FloodZone Description AE SPECIAL FLOOD HAZARD AREA BASE ELEVATION DETERMINED - 100 YEAR X NO FLOOD HAZARD	Calculated Acres	22.96	Voting Precinct	Calculated Acres
			TRIANGLE (TR30)	22.96
		22.96	Sewer District	22.96
			Not in the sewer district	
			Tract	Block
			070900	3016
			071100	1035
				Panel
				3710369300 1.32
				371036930021.64

PD #2016-8
Subject property is outlined in red

Scale: 1 Inch = 1200 Feet

LINCOLN COUNTY GIS

Wed Mar 8 16:57:08 EST 2017



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Planned Development Rezoning Application

Lincoln County Planning and Inspections Department
Zoning Administrator
302 N. Academy St., Lincolnton, NC 28092
Phone: (704)736-8440 Fax: (704)732-9010

PART I

Applicant Name RHH Land Investors, LLC- Kerry Avant

Applicant Address 2919 Breezewood Ave, Suite 400, Fayetteville, NC 28303

Applicant Phone Number 338-345-0487

Property Owner Name: Mex Y. Gerrison

Property Owner Address 695 N. Little Egypt Road Denver, NC 28037

Property Owner Phone Number _____

PART II

Property Location Western section of Lincoln County off of Little Egypt Road north of Hwy. NC73.

Property ID (10 digits) 3693502678, 3693512079 Property size 84.0 acres
3693609942 & 36936116618

Parcel # (5 digits) 54084, 34840 Deed Book(s) 89E Page(s) 132
34808, 34839/M9595

PART III

Briefly describe how the property is being used and any existing structures.
The property consists of pastureland and woods with a single residence on the site and two outbuildings.

Briefly described the proposed planned development.
Little Egypt Subdivision is a proposed master planned single family residential community consisting of single family detached homes.

*SEE PLANNING DEPT. FOR PLANNED DEVELOPMENT FEES.

I hereby certify that all knowledge of the information provided for this application and attachments is true and correct to the best of my knowledge.

Henry J. Frank, Mgr 8/12/16
Applicant's Signature Date

**CREEK PARK
COMMUNITY INVOLVEMENT MEETING
October 12, 2016**

DATE, TIME AND LOCATION OF MEETING:

The Community Involvement Meeting (CIM) for Creek Park was held on Wednesday, October 12, 2016 at 7:00 p.m. at the East Lincoln Community Center located at 8160 Optimist Club Road, Denver, North Carolina. The purpose of the CIM was to provide information regarding the Creek Park Subdivision and to receive input from the community prior to a public hearing.

PERSONS IN ATTENDANCE AT MEETING (see attached copy of sign-in sheet):

Lincoln County mailed CIM notification letters on September 26, 2016 to surrounding property owners informing them of the upcoming meeting in accordance with the Lincoln County Unified Development Ordinance. The Neighborhood Meeting was attended by those individuals identified on the attached sign-in sheet.

INTRODUCTION:

Michael Kahre with ESP Associates provided a presentation of the Creek Park Subdivision project. Team members consisting of Kerry Avant, Bryant Spencer, Dan Brewer, Peter Tatge and Andrew Eagle assisted with answering questions from the audience. Kerry Avant discussed H&H Homes proposed development program as it relates to their interest in developing the project in phases with the lots near the back of the property consisting on age-targeted home sites and lots closer to Little Egypt Road w/ Traditional home sites. Michael Kahre described how the 12.5% common open space requirement would be exceeded by providing 20% common open space on the site through the clustering of residential lots.

RESPONSE TO CIM INPUT AND COMMENTS:

In response to comments provided during the CIM, the petitioner revised the Creek Park Subdivision submittal based upon the following items:

- Emergency access – The intersections and blocks were reconfigured within the Preliminary Development Concept Plan to provide additional points of egress for lots to the rear of the property.
- Stormwater – Additional language has been added to the PD-R report addressing stormwater.
- Perimeter buffer adjacent to Windsor Forest increased from a 20' buffer to a 40' buffer.
- Number of lots decreased from 230 to a total of 170 lots.
- Evaluated site grading and drainage adjacent to Windsor Forest.

QUESTIONS RAISED BY THE MEETING PARTICIPANTS:

- Will existing trees be preserved instead of being cleared and replanted?
Petitioner: Existing trees will remain where feasible. The proposed common open space percentage is higher than required in efforts to preserve more of the existing canopy and to reduce the amount of impact on site.
- If there is an accident at the intersection near the center of the development, how will the lots near the back portion of the development be accessed for emergency services?
Petitioner: Stub streets are proposed to help reduce the demand on individual roads.
- Little Egypt Road has steep topography and is typically a very dangerous road to travel. How will the speed of vehicles and the increase in traffic be managed by this development?
Petitioner: There will be a left turn lane constructed as part of the development which will help the flow of traffic along Little Egypt Road. NCDOT is currently reviewing the Traffic Impact Study, any improvements required by NCDOT will be installed by the developer.
- Will a light at Optimist Club Road be installed if this project is approved?
Petitioner: NCDOT is currently reviewing the Traffic Impact Study, any improvements required by NCDOT will be installed by the developer.
- What is the build out expectancy of this project?
Petitioner: The applicant plans on breaking ground next Spring, and begin construction in the fall (2016).
- Will the land be cleared in stages or all at once?
Petitioner: The land will be cleared all at one time to balance the dirt on the site.
- What is the separation between houses?
Petitioner: A minimum of a 10' aggregate separation between residential homes.
- How would this project impact the surrounding properties?
Petitioner: The ordinance requires a 20' landscaped buffer to be provided to adjacent parcels. The required rear setback of the proposed lots will provide additional separation from adjacent parcels.
- What about the wildlife?
Petitioner: The additional common open space acreage set aside should preserve some wildlife habitat and a natural corridor along Killian Creek.
- Will an architecture guideline be provided to guarantee the proposed materials and quality of the homes are upheld? What materials will be used to construct the homes?
Petitioner: The Development Standards within the PD-R report outlines the material that will be used for construction. Each home will vary and contain a combination of materials varying from brick, stucco, stone, architectural concrete, cement fiber board, vinyl siding, wood, or shakes.
- Is H&H currently constructing a development with homes similar to those being proposed?
Petitioner: Yes, H&H currently has some projects under construction in the general area. The closest to this project is Ashlynn Creek located in Mooresville which has similar plans to the single family homes proposed in Creek Park.
- Will an Amenity Area be provided?
Petitioner: Yes, there are plans to include an amenity area. The PD-R report outlines what will be included which consists of a swimming pool, cabana, landscape areas and natural trails.
- How will the traffic generated from surrounding new developments impact the traffic from this site?

Petitioner: Traffic from projects currently under construction is considered as part of the Traffic Impact Study. NCDOT is still reviewing the study and typically share results within 4-6 weeks.

- Will the existing sewer and water lines be able to treat this site or do they have to be improved as well?

Petitioner: There is an existing trunk sewer line along Killian Creek. The water pressure is more than capable to serve this development as well as the surrounding homes. The water and sewer lines were originally planned for future development.

- What about the site runoff? How will that impact Killian Creek?

Petitioner: There is an increased buffer separation from the closest back of lot to Killian Creek. As needed other stormwater controls may be included in the project during the construction document phase.

- There is currently an excess of water draining into a gulch along the South side of the plan. How will that be addressed?

Petitioner: Water from the site will be directed westerly through common open space areas which will serve as a natural buffer filtering proposed run off before it accesses the creek. There is also an existing ridgeline which can be cut into, in order to direct the water to flow Northwest instead of South.

**CREEK PARK SUBDIVISION
PD-R REPORT**

**LITTLE EGYPT ROAD
LINCOLN COUNTY, NC**

1. PROJECT INFORMATION

Creek Park Subdivision is a proposed single family residential community consisting of single family detached homes on an approximately 81.2 acre site on the west side of Little Egypt Road (see Preliminary Development Concept Plan). The project will include Parcel ID numbers 3693609942, 3693616618, 3693512079 & 3693502678. The current plan features a total of up to 170 single family lots with a density of up to 2.0 units per acre.

Access to the site will be from Little Egypt Road, as generally depicted on the Preliminary Development Concept Plan. Land uses surrounding the site consist of single family residential homes. The Preliminary Development Concept Plan with vicinity map is included for reference.

A key feature of the proposed community will be the ample open spaces, existing streams, and the community amenity area. Approximately +/- 20% of the site will be left undeveloped as natural buffer area and/or passive and active open space.

The property is currently zoned R-T. Proposed zoning will be PD-R. The property is not located in a regulated watershed, so density is not limited.

2. GENERAL PROVISIONS

The Planned Development Concept Plan is intended to reflect a generalized arrangement of the site in terms of lot layout, street network, and open space areas. Final lot configuration, placement and size of the individual site elements, streets alignments, etc. may be altered or modified within the limits of the Lincoln County Unified Development Ordinance and the standards established within these conditional notes during the design development (platting) and construction documentation phases. The Petitioner reserves the right to make minor modifications and adjustments to the approved Planned Development Concept Plan, including minor reconfiguration of lots and street layout, subject to staff approval, provided that the total number of residential units does not exceed the maximum permitted. Any major modifications will require resubmittal to the Board of Commissioners per section 9.5.12 of the UDO.

3. DEVELOPMENT STANDARDS

Pursuant to Sections 2.4.9 and 9.5 of the Lincoln County Unified Development Ordinance entitled Planned Development Districts and Planned Development Review respectively; the Petitioner seeks to obtain approval of the use of the following Development Standards concurrently with the approval of the Rezoning Petition. These standards, as established both by the conditional notes as set out below and as depicted on the Planned Development Concept Plan shall be followed for the development of the property. Unless otherwise approved as part of these conditional notes, the Lincoln County Unified Development Ordinance shall prevail when developing the site.

Each home shall contain no less than 2 different materials on front elevations exclusive of trim. These materials may consist of brick, stucco, stone, architectural concrete, cement fiber board, vinyl siding, wood, or shakes.

A. PERMITTED USES

- 1) The project shall be limited to detached single family residential dwellings along with any incidental or accessory uses and amenity.
- 2) Uses on the Common Open Space (COS) may include pool, clubhouse, landscaping, fences, walls, berms, pedestrian trails, recreational uses, entry signage, monuments, and storm water BMPs (if required).

B. DENSITY

Gross residential density for the project will not exceed 2.8 units per acre with curb and gutter streets. Open space areas shall be included in the calculations for gross residential density.

C. LOT STANDARDS

The proposed development includes a Class 'B' buffer around the perimeter of the project per section 3.4.6 of the UDO. Existing vegetation will be used to meet the buffer requirements where possible. Residential lots will have the following minimum setbacks:

Front Minimum Setback:	10 feet
Garage Minimum Setback:	20 feet (from right of way)
Side Minimum Setback:	Aggregate 10 feet building separation
Side Corner Minimum Setback:	10 feet
Rear Minimum Setback:	20 feet

Building height shall be limited to 40 feet. Lot platting will meet Lincoln County subdivision regulations.

Overhanging roof, eave, gutter, chimneys, bay windows, cornice or other architectural feature and awnings may extend into required yards in conjunction with yard encroachments discussed in section 2.6.10.B in the UDO.

D. GENERAL SITE DESIGN

The following items are offered as part of this development:

- 1) Streets within the subdivision shall be designed per NCDOT standards. Roadways will be dedicated to NCDOT for maintenance once density requirements are met.
- 2) The project will contain the following amenity features. These proposed amenities will be installed no later than the third phase of the development.
 - a. Swimming Pool and Cabana with Bathrooms.
 - b. Landscape areas
 - c. Enhanced entry

- d. Natural pedestrian soft surface trails along Killian Creek. The developer will reserve an easement along Killian Creek on the western side of the property to accommodate for the future Carolina Thread Trail corridor.
- f. A signage plan shall be submitted at the time construction drawings are prepared for the first section of the development. Signage shall conform to standards of the Lincoln County Unified Development Ordinance. Signage shall be monumentation constructed of stone or brick material with integrated fencing or other similar mixture of materials at the petitioner's discretion, which complement the architectural characteristics of the neighborhood.

- 3) Canopy street trees, with a minimum of 1.5 inch caliper at time of planting, shall be placed at the rate of one canopy tree per lot or one canopy tree for every 40 linear feet (spaced a maximum of 50 feet apart) along both sides of the proposed streets. Driveway locations and street intersections may vary the placement of street trees.
- 4) Decorative lighting shall be used throughout the project.
- 5) Mailbox kiosks will be located and reviewed by the Postmaster.
- 6) Telephone, cable TV, electricity, and natural gas will be provided by local utility companies. Utilities within the community shall be placed underground. The main feed lines and transformers from the main road may be located above ground.
- 7) Garbage collection will be provided by a private service and included in homeowner association dues.
- 8) Open Space
 - a. The project will exceed the minimum 12.5% common open space requirement by offering a minimum of +/-20% common open space in the development. Common open space will be provided as generally depicted on the Planned Development Concept Plan. A portion of the open space will be active open space.
 - b. The project will offer a Class B perimeter buffers as required by the Lincoln County UDO.

E. STORMWATER COMPLIANCE

The development will be subject to Lincoln County's storm water management regulations in place at the time of preliminary plat submittal. Storm water BMPs are currently not proposed but will be used if required by 401/404 state permits. Stream buffers shall be provided along all jurisdictional streams in accordance with NCDENR and Lincoln County requirements.

The Petitioner will work with staff to provide a thorough explanation on how site stormwater will be managed on site in an effort to mitigate off site run off during peak storm events.

F. ESTABLISHMENT OF A HOME OWNERS ASSOCIATION

A Home Owners Association shall be established and will be responsible for maintaining all rights-of-way, landscaping, signs, amenity features, storm water BMPs (if required), trails and common open space areas. The documents covering the structure of the association shall be filed with the recorded final plat.

G. RESTRICTIVE COVENANTS

Restrictive Covenants will be created and recorded prior to final plat recordation, to establish, among other items, permitted uses and maintenance responsibility of the home owners association. Restrictive covenants will include language that ensures stream buffers, perimeter buffers, and setback areas are protected.

H. VEHICULAR ACCESS AND ROAD IMPROVEMENTS

Vehicular access: Access will be provided via two main entrances along Little Egypt Road as generally depicted on the Preliminary Development Concept Plan. The local residential streets will have a 50' right-of-way with a minimum of a five foot sidewalk and six foot planting median on one side of the street only as depicted on the Preliminary Development Concept Plan. Access locations depicted on the Preliminary Development Concept Plan are subject to NCDOT approval and may be modified as needed to meet NCDOT requirements.

Improvements to Existing Roads: A Traffic Impact Study (TIS) has been prepared for this project and is in the process of being reviewed by NCDOT. Improvements by developer required by NCDOT will be installed per their requirements. Improvements will be installed based on the timeline determined by NCDOT and the traffic engineer's phasing analysis. Below is a list of the improvements detailed in the TIS. Some of these improvements are recommended below to accommodate the site trips and mitigate existing and projected deficiencies in the future No Build Conditions. These improvements are necessitated by the collective impacts of the background traffic growth, off-site developments, and site trips. In the event that individual off-site developments are delayed or canceled, the roadway improvements may be reevaluated as the traffic demands may differ from those analyzed in this study.

North Little Egypt Road and Site Drive 1 (Southern Main Entrance Drive):

- Construct Site Drive 1 with one ingress lane and one shared egress lane (left-right).
- Construct a northbound left turn lane on North Little Egypt Road with 100 feet of storage and appropriate taper length.

North Little Egypt Road and Site Drive 2 (Northern Secondary Entrance Drive):

- Construct Site Drive 2 with one ingress lane and one shared egress lane (left-right).

I. PERMITTING

The Petitioner understands that all permits from Lincoln County and appropriate agencies must be obtained prior to grading or construction activities.

J. CONSTRUCTION SCHEDULE AND PHASING

This proposed residential community shall be constructed in four (4) phases, and phase lines are preliminarily identified on the Preliminary Development Concept Plan. Construction of infrastructure will begin in the last quarter of 2017. The subsequent second phase will be completed and recorded by 2021 given favorable market conditions.

K. MODEL HOMES / SALES OFFICES

Model homes may be constructed within residential areas. Mobile temporary sales offices shall be allowed at the developer's discretion and shall be subject to any special permits required by Lincoln County.

L. WATER AND SEWER AVAILABILITY

The Petitioner understands that water and sewer availability must be approved by Lincoln County prior to development. It is the Petitioner's responsibility to incur all permit fees, availability fees, infrastructure costs for providing the water and sewer throughout the project for all buildings.

Water is available along North Little Egypt Road. Relocation of the existing water line along the property frontage may be required due to lane widening for turn lanes. Any water line relocation will be coordinated with Lincoln County and NCDOT.

Gravity sewer is available along Killian Creek through an existing 15-inch diameter trunk line. Based on evaluation of existing as-built information, the existing gravity sewer line has sufficient capacity to handle the additional flow from this subdivision.

All utility installation will be performed in accordance with County standards.

M. APPLICABLE ORDINANCES & PLANS

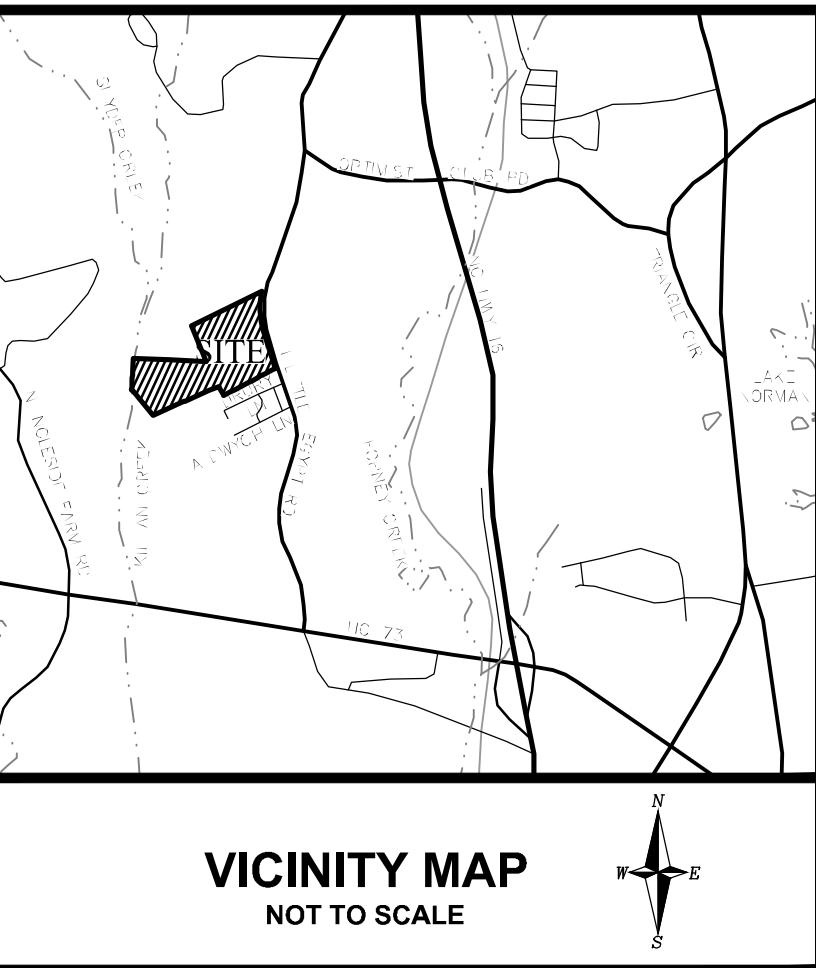
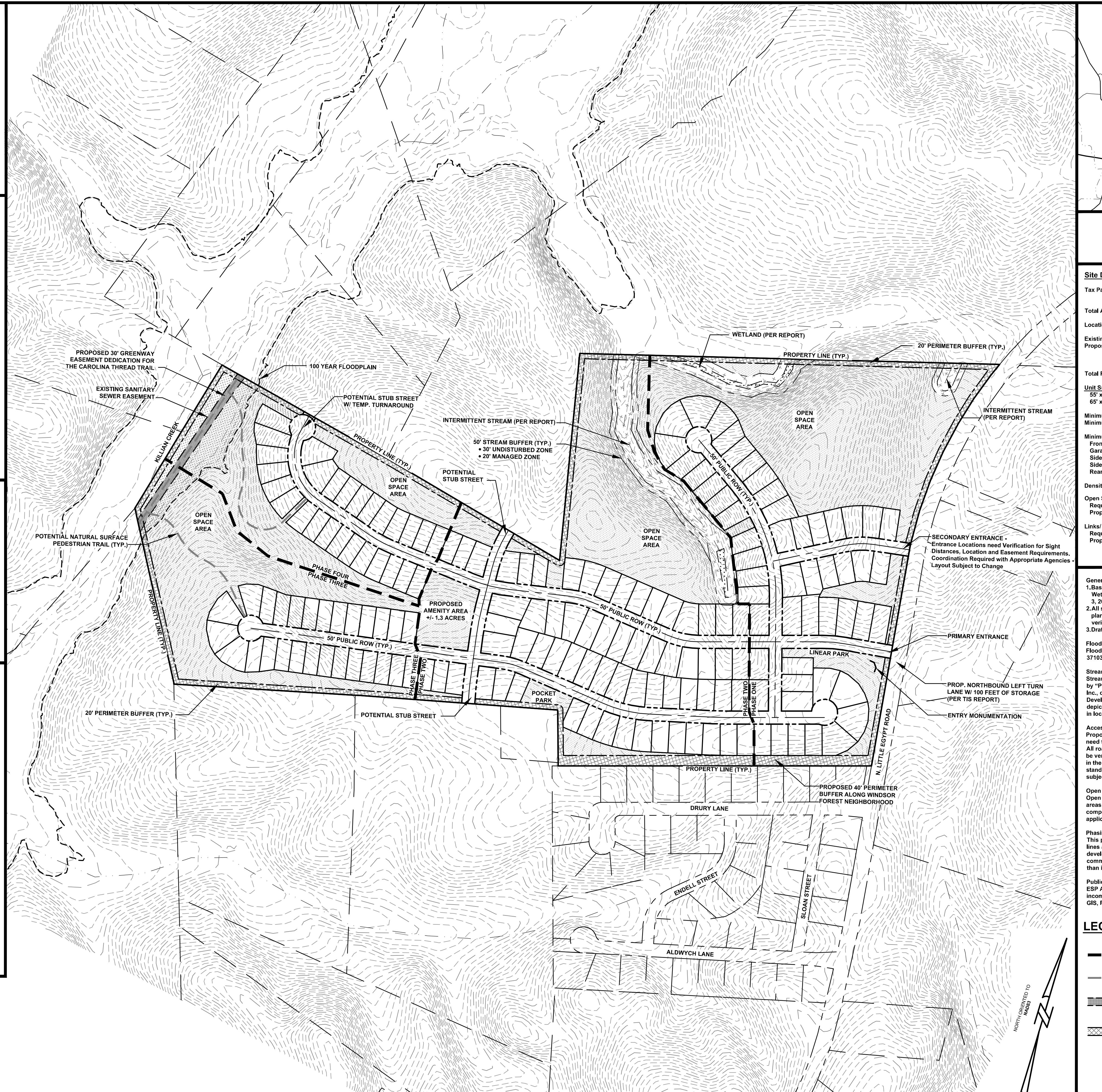
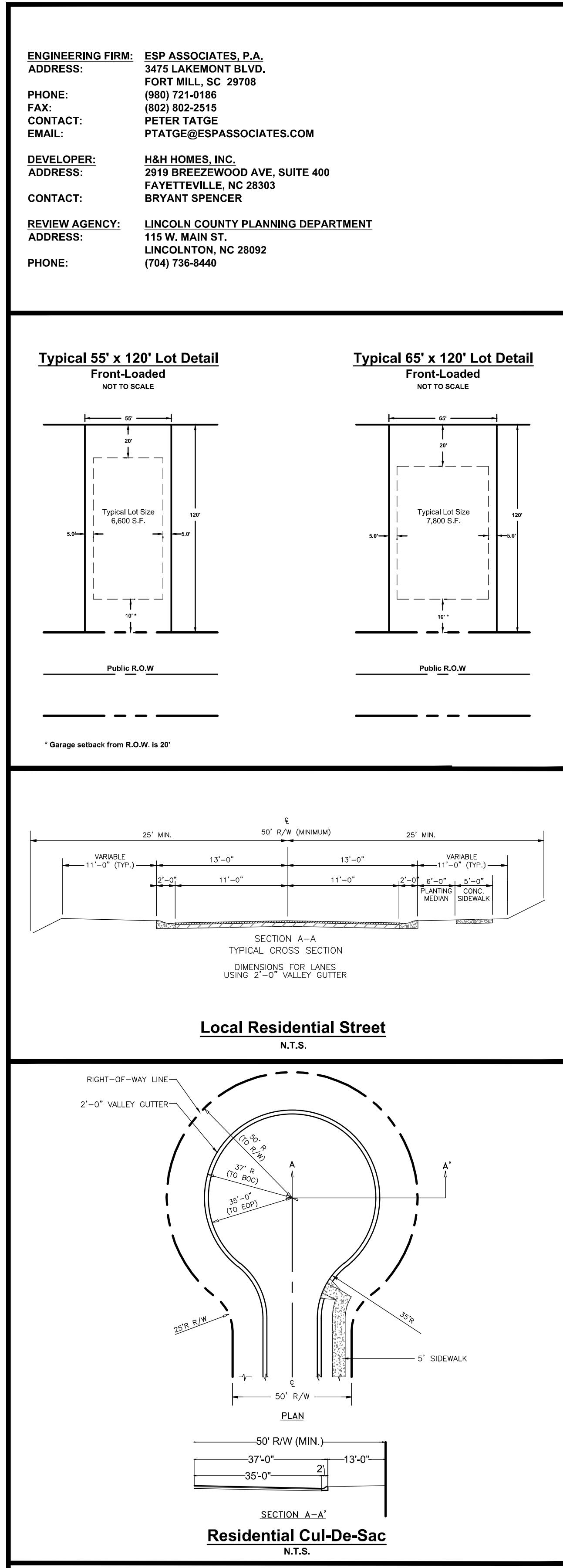
Development will be subject to the standards and requirements of the Lincoln County UDO in effect at the date of submission of the application for rezoning. The development is also subject to the Lincoln County Land Use Plan and recommendations thereof.

N. BINDING EFFECT

All conditions applicable to the development of the property approved with this rezoning, unless amended by the manner provided in the UDO, shall be binding to the Petitioner and subsequent owners of the site and their assignees.

O. AMENDMENTS TO THE APPROVED CONDITIONAL DISTRICT PLAN

It is understood that the owner of the property must apply for any future amendments to the Development Standards, Conditional Notes and in accordance to the provisions of the UDO.



PRELIMINARY NOT FOR CONSTRUCTION

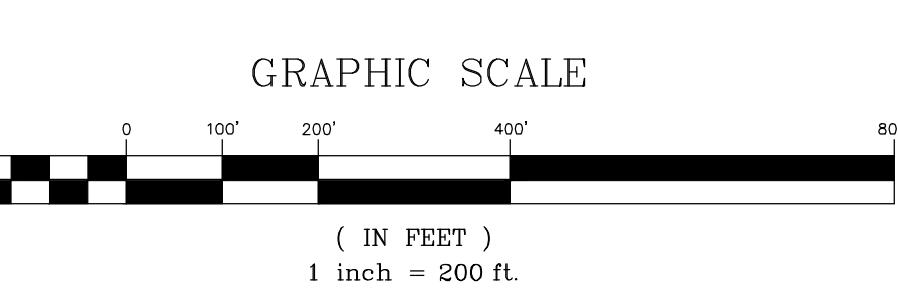
ESP Associates, P.A.
P.O. Box 7030
Charlotte, NC 28241
3475 Lakemont Blvd.
Fort Mill, SC 29708
704-532-1949 (SC)
803-202-2440 (SC)
www.espassociates.com

PRELIMINARY DEVELOPMENT CONCEPT PLAN

LINCOLN COUNTY, NORTH CAROLINA

PROJECT INFORMATION	
PROJECT MANAGER:	PT
DESIGNED BY:	MK
DRAWN BY:	MW
PROJECT NUMBER:	EO72
ORIGINAL DATE:	09/23/16
SHEET:	1 OF 1

Know what's below.
Call before you dig.



811
Call before you dig.

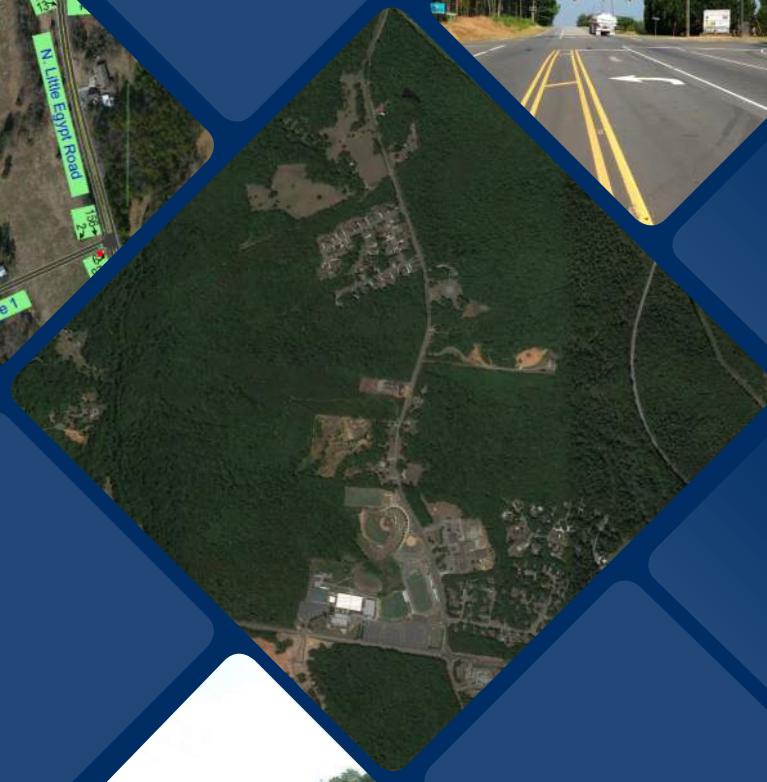
1 OF 1

Traffic Impact Study

Creek Park Subdivision

Denver, North Carolina

March 2017



**RAMEY KEMP
&
ASSOCIATES**
TRANSPORTATION ENGINEERS

TRAFFIC IMPACT STUDY

FOR

Creek Park

LOCATED
IN
DENVER, NORTH CAROLINA

Prepared For:
ESP Associates, P.A.
3475 Lakemont Blvd
Fort Mill, SC 29708

Prepared By:
Ramey Kemp & Associates, Inc.
8307 University Executive Park Drive, Suite 260
Charlotte, NC 28262
License #C-0910

March, 2017

RKA Project #16140



TABLE OF CONTENTS

1.	EXECUTIVE SUMMARY	1
2.	INTRODUCTION	3
2.1.	Purpose of Report	3
2.2.	Study Objectives	3
3.	AREA CONDITIONS	3
3.1.	Transportation Network Study Area.....	3
3.1.1.	Area Roadway System.....	3
3.1.1.1.	Existing Roadway Conditions	4
3.1.1.2.	Future Roadway Conditions	4
3.1.2.	Study Area and Existing Traffic Volumes.....	4
3.2.	Study Area - Adjacent Land Use	5
3.2.1.	Existing Land Uses	5
3.2.2.	Anticipated or Approved Future Development.....	5
4.	PROJECTED TRAFFIC	5
4.1.	Site Traffic	5
4.1.1.	Trip Generation.....	6
4.1.2.	Trip Distribution and Assignment	6
5.	TRAFFIC ANALYSIS	6
5.1.	Traffic Analysis Scenarios.....	6
5.2.	Traffic Analysis Procedure	7
5.3.	Mitigation Requirements	9
5.4.	Capacity and Level of Service at Study Intersections	10
5.4.1.	NC 73 and North Little Egypt Road	10
5.4.2.	Optimist Club Road and North Little Egypt	11
5.4.3.	Optimist Club Road and NC 16 Bypass	12
5.4.4.	North Little Egypt Road and Site Drive 1	13
5.4.5.	North Little Egypt Road and Site Drive 2	14
6.	CONCLUSIONS	15
6.1.	Summary of Recommended Improvements	15

LIST OF TABLES

Table 1	Study Area Roads.....	4
Table 2	Proposed Site Trip Generation	6
Table 3	Highway Capacity Manual - Levels of Service and Delay	8
Table 4	Analysis Summary of NC 73 and North Little Egypt Road.....	10
Table 5	Analysis Summary of Optimist Club Road and North Little Egypt Road	11
Table 6	Analysis Summary of Optimist Club Road and NC 16 Bypass	12
Table 7	Analysis Summary of North Little Egypt Road and Site Drive 1	13
Table 8	Analysis Summary of North Little Egypt Road and Site Drive 2	14

LIST OF FIGURES

Figure 1	Site Location Map.....	Appendix A
Figure 2	Preliminary Site Plan.....	Appendix A
Figure 3	2016 Existing Lane Configurations.....	Appendix A
Figure 4	2016 Existing Peak Hour Traffic Volumes	Appendix A
Figure 5	Carolina Ridge Development Trip Assignment	Appendix A
Figure 6	Proposed Site Trip Distribution Percentages.....	Appendix A
Figure 7	Proposed Site Trip Assignment.....	Appendix A
Figure 8	2019 Projected Peak Hour Traffic Volumes	Appendix A
Figure 9	2019 No-Build Peak Hour Traffic Volumes	Appendix A
Figure 10	2019 Build Peak Hour Traffic Volumes.....	Appendix A
Figure 11	Recommended Lane Configurations	Appendix A

TECHNICAL APPENDIX

- Appendix A Figures
- Appendix B Traffic Count Data
- Appendix C Signal Timing Data
- Appendix D NC 73 and North Little Egypt Road – Synchro Reports
- Appendix E Optimist Club Road and North Little Egypt Road – Synchro Reports and Turn Lane Warrants
- Appendix F Optimist Club Road and NC 16 Bypass – Synchro Reports
- Appendix G North Little Egypt Road and Site Drive 1 – Synchro Reports and Turn Lane Warrants
- Appendix H North Little Egypt Road and Site Drive 2 – Synchro Reports and Turn Lane Warrants
- Appendix I SimTraffic Reports

TRAFFIC IMPACT STUDY

CREEK PARK

DENVER, NORTH CAROLINA

1. EXECUTIVE SUMMARY

This report summarizes the findings of the Traffic Impact Study (TIS) that was performed for the proposed Creek Park subdivision to be located along the west side of North Little Egypt Road, north of Drury Lane in Denver, North Carolina. The purpose of this study is to determine the potential impact to the surrounding transportation system caused by the traffic generated by the development.

The site is proposed to consist of up to 170 single-family homes. Two full access driveways are proposed on North Little Egypt Road. The site is expected to be fully built by the year 2019.

The study area for the TIS was determined through coordination with NCDOT and Lincoln County and consists of the following intersections:

1. NC 73 and North Little Egypt Road
2. Optimist Club Road and North Little Egypt Road
3. Optimist Club Road and NC 16 Bypass
4. North Little Egypt Road and Site Drive 1
5. North Little Egypt Road and Site Drive 2

Based on coordination with NCDOT and Lincoln County, one offsite development was determined to have an impact on the project study area. No approved roadway projects are expected to be constructed that would have an impact on the project study area.

Several scenarios were analyzed using traffic analysis software. Traffic operations during the weekday AM and PM peak hours were modeled for each scenario. The results of each scenario were compared in order to determine impacts from background traffic growth and the proposed development. The following scenarios were modeled:

- 2016 Existing
- 2019 No-Build

- 2019 Build
- 2019 Build with Improvements

The following improvements have been identified to be constructed by the developer:

North Little Egypt Road and Site Drive 1

- Construct Site Drive 1 with one ingress lane and one shared egress lane (left-right).
- Construct a northbound left turn lane on North Little Egypt Road with 100 feet of storage and appropriate taper length.

North Little Egypt Road and Site Drive 2

- Construct Site Drive 2 with one ingress lane and one shared egress lane (left-right).

2. INTRODUCTION

2.1. Purpose of Report

This report summarizes the findings of the Traffic Impact Study (TIS) that was performed for the proposed Creek Park subdivision to be located along the west side of North Little Egypt Road, north of Drury Lane in Denver, North Carolina. The purpose of this study is to determine the potential impact to the surrounding transportation system caused by the traffic generated by the development.

2.2. Study Objectives

The site is proposed to consist of up to 170 single-family homes. Two full access driveways are proposed on North Little Egypt Road. The site is expected to be fully built by the year 2019.

Refer to Figure 1 in Appendix A for an illustration of the site location. Refer to Figure 2 for the preliminary site plan. The objective of this report is to determine what geometric improvements are necessary to mitigate traffic conditions on the transportation network surrounding the site with the proposed development fully built out.

3. AREA CONDITIONS

3.1. Transportation Network Study Area

3.1.1. Area Roadway System

The project study area for this TIS was determined through coordination with the North Carolina Department of Transportation (NCDOT) and Lincoln County. Table 1 summarizes the characteristics of the roadways within the study area. The NCDOT Functional Class map was used to determine the classification of each road. Traffic Volume maps from NCDOT were used to find the average daily traffic (ADT) volumes in vehicles per day (vpd) for the roadways. A field visit was conducted to verify the existing cross-sections and speed limits in mph.

TABLE 1
STUDY AREA ROADS

ROADWAY	CLASSIFICATION	CROSS-SECTION	ADT (vpd)	SPEED LIMIT (mph)
NC 73	Principal Arterial	Two-Lane	11,000	45
North Little Egypt Road	Local	Two-Lane	3,400	45
Optimist Club Road	Local	Two-Lane	No Data	45
NC 16 Bypass	Principal Arterial	Four-Lane	22,000	60

3.1.1.1. Existing Roadway Conditions

Existing lane configurations (number of traffic lanes on the intersection approach), storage capacities, and other intersection and roadway information within the study area was collected through field reconnaissance by Ramey Kemp and Associates, Inc. (RKA). Refer to Figure 3 for the existing lane configurations and traffic control at study intersections.

3.1.1.2. Future Roadway Conditions

Based on coordination with NCDOT and Lincoln County, no approved roadway projects are expected to be constructed that would have an impact on the project study area.

3.1.2. Study Area and Existing Traffic Volumes

The study area for the TIS was determined through coordination with NCDOT and Lincoln County and consists of the following intersections:

1. NC 73 and North Little Egypt Road
2. Optimist Club Road and North Little Egypt Road
3. Optimist Club Road and NC 16 Bypass
4. North Little Egypt Road and Site Drive 1
5. North Little Egypt Road and Site Drive 2

Existing traffic volumes were determined through traffic counts conducted during the AM peak period (7:00-9:00 AM) and the PM peak period (4:00-6:00 PM). Through volumes at the proposed site drives were determined from traffic counts taken at the intersection of North Little

Egypt Road and Drury Lane. Traffic counts on North Little Egypt Road at NC 73 and Drury Lane were performed in June 2016. The intersection of Optimist Club Road and North Little Egypt Road was counted in February 2017. NCDOT provided traffic counts at the intersection of Optimist Club Road and NC 16 Bypass. These counts were performed in September 2016. All traffic counts were performed while schools were in session. A copy of the traffic count data can be found in Appendix B of this report. The peak hour traffic volumes were not balanced between Drury Lane and NC 73 on North Little Egypt Road due to the locations of school driveways on North Little Egypt Road. Refer to Figure 4 for an illustration of the existing peak hour traffic volumes.

3.2. Study Area – Adjacent Land Use

3.2.1. Existing Land Uses

The existing site is undeveloped. The surrounding land is primarily undeveloped, residential, and institutional.

3.2.2. Anticipated or Approved Future Development

Based on coordination with NCDOT and Lincoln County, one offsite development was determined to have an impact on the project study area. Carolina Ridge Development is a residential housing development located south of NC 73. The development consists of 1,350 age-restricted homes and 300 single-family homes. Offsite development traffic from the Carolina Ridge Development is shown in Figure 5.

4. PROJECTED TRAFFIC

4.1. Site Traffic

In order to determine the future traffic conditions after the proposed development is completed, an estimate of traffic projected to travel to / from the proposed development is required. The average weekday daily, AM peak hour, and PM peak hour site trips for this study were calculated based on the ITE *Trip Generation Manual, 9th Edition*.

4.1.1. Trip Generation

The site is proposed to consist of approximately 170 single-family homes. Table 2 presents a summary of the trip generation calculations for the proposed development.

TABLE 2
PROPOSED SITE TRIP GENERATION

LAND USE	SIZE	DAILY TRIPS (VPD)	PEAK HOUR TRIPS (VPH)			
			AM		PM	
			ENTER	EXIT	ENTER	EXIT
Single-Family Detached Housing (210)	170 DU	1,620	32	96	107	63

4.1.2. Trip Distribution and Assignment

The trip distribution percentages were developed based on existing traffic patterns, location of employment centers, and engineering judgment. Figure 6 illustrates the site trip distribution percentages. These trip distribution percentages were applied to the total new trip generation data to calculate the site trip assignments shown in Figure 7.

5. TRAFFIC ANALYSIS

5.1. Traffic Analysis Scenarios

Several scenarios were analyzed using traffic analysis software, Synchro 9.1. Traffic operations during the AM and PM peak hours were modeled for each scenario. The results of each scenario were compared in order to determine impacts from background traffic growth and the proposed development. The following scenarios were modeled:

- 2016 Existing
- 2019 No-Build
- 2019 Build

The 2016 Existing scenario included the traffic characteristics that currently exist in the study area. Existing peak hour traffic volumes were used from the intersection counts (Figure 4). Existing signal timing data was obtained from NCDOT and referenced in all traffic models. Refer to Appendix C for the signal timing data. Congestion Management guidelines recommend a

minimum cycle length of 120 seconds for signals with four or more phases. The cycle length for the intersection of NC 73 and North Little Egypt Road was set to 120 seconds for all scenarios and the splits were optimized. No changes to the existing lane configurations were made. Congestion Management guidelines recommend prohibiting right turns during a red traffic signal phase. Right turns on red were allowed on the northbound and southbound approaches at the intersection of NC 73 and North Little Egypt Road. These right turn movements are currently operated under yield control. Right turns on red were prohibited on the remaining approaches. It should be noted that during the AM peak hour, the speed limit on the southbound, westbound, and eastbound approaches of NC 73 and North Little Egypt Road is reduced to 35mph to account for traffic from the neighboring schools. All AM peak hour scenarios account for the school zone by using a 35mph speed limit on these legs of the intersection.

The 2019 No-Build scenario was analyzed to determine the expected future traffic operations. Existing peak hour traffic counts were projected to the year 2019 using a compounded growth rate of 2% per year. Refer to Figure 8 for the 2019 projected peak hour traffic volumes. The 2019 projected volumes were added to the traffic from the Carolina Ridge Development (Figure 5) to determine the 2019 No-Build peak hour volumes. The 2019 No-Build peak hour traffic volumes are illustrated in Figure 9. The existing signal timing data was used. The splits at the signalized intersection were optimized. No changes to the existing lane configurations were made.

The 2019 Build scenario was compared to the 2019 No-Build scenario to determine expected impacts caused by the proposed site. This scenario included the same assumptions as the 2019 No-Build scenario. The trips expected to be generated by the proposed site (Figure 7) were added to the 2019 No-Build peak hour volumes (Figure 9) to determine the 2019 Build peak hour traffic volumes. Refer to Figure 10 for the 2019 Build peak hour traffic volumes. The existing signal timing data was used. The splits at the signalized intersection were optimized. Site drives were added to existing lane configurations.

5.2. Traffic Analysis Procedure

All study intersections (both unsignalized and signalized) were analyzed using the methodology outlined in the Highway Capacity Manual (HCM) published by the Transportation Research

Board. A computer software package, Synchro and SimTraffic (Version 9.1), was used to complete the analyses for all of the study area intersections. Synchro was developed by Trafficware Corporation and allows the user to input data into the Synchro software and calculate the output based on methodologies in the HCM. SimTraffic creates a traffic simulation model from the Synchro inputs. SimTraffic was used in this study to determine expected queue lengths.

Analysis results for signalized intersections provide delay and level of service (LOS) for all movements and approaches. The overall intersection delay and LOS is also provided. The capacity analysis for an unsignalized intersection does not provide an overall LOS for the intersection, rather a LOS for movements and/or approaches that have a conflicting movement.

The HCM defines capacity as “the maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions”. LOS is a term used to represent different driving conditions, and is defined as a “qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers”. LOS varies from Level “A” representing free flow, to Level “F” where greater vehicle delays are evident.

Refer to Table 3 for HCM levels of service and related average control delay per vehicle for both signalized and unsignalized intersections. Control delay as defined by the HCM includes “initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay”. As shown in Table 3, an average control delay of 40 seconds at a signalized intersection results in a LOS D.

TABLE 3
HIGHWAY CAPACITY MANUAL - LEVELS OF SERVICE AND DELAY

UNSIGNALIZED INTERSECTION		SIGNALIZED INTERSECTION	
LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)	LEVEL OF SERVICE	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

5.3. Mitigation Requirements

NCDOT has guidelines for determining when improvements are needed by the developer. The District Engineer is responsible for the final determination of the improvements. NCDOT typically requires mitigation to be identified when developments are expected to impact the traffic operations as described below:

- Overall intersection or intersection approach delay increases by 25% or more.
- LOS degrades by at least one level
- LOS is F
- Synchro 95th or SimTraffic maximum queue results are greater than the existing turn lane storage length

5.4. Capacity and Level of Service at Study Intersections

5.4.1. NC 73 and North Little Egypt Road

The intersection of NC 73 and North Little Egypt Road was analyzed as a four-leg signalized intersection with existing lane configurations. Table 4 summarizes the capacity analysis results. Refer to Appendix D for the Synchro reports for this intersection. All SimTraffic reports can be found in Appendix I.

Analysis indicates that the intersection will operate at an acceptable LOS in the 2019 Build scenario. The addition of site traffic is expected to have a minor effect on the operation of the intersection. One level of service impact is expected on the westbound approach during the AM peak hour. However, minimal increases in delay and queues are expected. SimTraffic results show similar queues between the 2019 No-Build and 2019 Build scenarios. No turn lanes are expected to queue past the existing storage lengths. No improvements are recommended.

TABLE 4
ANALYSIS SUMMARY OF
NC 73 AND NORTH LITTLE EGYPT ROAD

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2016 Existing	EB	1 LT, 1 TH-RT	C (26.6)	C (24.4)	B (17.4)	B (17.9)
	WB	1 LT, 1 TH, 1 RT	B (17.3)		B (16.9)	
	NB	1 LT-TH, 1 RT	C (34.3)		B (15.2)	
	SB	1 LT, 1 TH-RT	C (32.2)		C (31.7)	
2019 No-Build	EB	1 LT, 1 TH-RT	D (35.3)	C (30.2)	C (24.8)	C (24.9)
	WB	1 LT, 1 TH, 1 RT	B (18.8)		C (24.0)	
	NB	1 LT-TH, 1 RT	C (33.4)		C (23.2)	
	SB	1 LT, 1 TH-RT	D (42.7)		D (35.6)	
2019 Build	EB	1 LT, 1 TH-RT	D (38.1)	C (33.5)	C (23.0)	C (23.9)
	WB	1 LT, 1 TH, 1 RT	C (20.0)		C (22.4)	
	NB	1 LT-TH, 1 RT	C (34.2)		C (23.5)	
	SB	1 LT, 1 TH-RT	D (50.8)		D (38.8)	

5.4.2. Optimist Club Road and North Little Egypt Road

The intersection of Optimist Club Road and North Little Egypt Road was analyzed as a three-leg unsignalized intersection with existing lane configurations. Table 5 summarizes the capacity analysis results. Refer to Appendix E for the Synchro reports and turn lane warrants for this intersection. All SimTraffic reports can be found in Appendix I.

Analysis indicates that the intersection will operate at an acceptable LOS in the 2019 Build scenario. The addition of site traffic is expected to have a minor effect on the operation of the intersection. One level of service impact is expected on the westbound approach during the AM peak hour. However, minimal increases in delay and queues are expected. SimTraffic results show no queuing issues at the intersection.

After reviewing NCDOT warrants for left and right turn lanes, No-Build and Build scenarios both qualify for a southbound left turn lane. This is mainly due to school traffic during the AM peak hour. However, no left turn lane is recommended due to the minimal queueing and delay. No right turn lane is warranted. The turn lane warrants can be found in Appendix E. No improvements are recommended.

TABLE 5
ANALYSIS SUMMARY OF
OPTIMIST CLUB ROAD AND NORTH LITTLE EGYPT ROAD

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2016 Existing	WB ² NB SB ¹	1 LT-RT 1 TH-RT 1 LT-TH	B (13.0) - A (5.8)	NA ³	A (9.8) - A (4.1)	NA ³
2019 No-Build	WB ² NB SB ¹	1 LT-RT 1 TH-RT 1 LT-TH	B (14.1) - A (5.8)	NA ³	B (10.0) - A (3.8)	NA ³
2019 Build	WB ² NB SB ¹	1 LT-RT 1 TH-RT 1 LT-TH	C (15.2) - A (5.9)	NA ³	B (10.6) - A (3.4)	NA ³

1. Major street left-turn movement for unsignalized intersection.

2. Stop controlled approach for unsignalized intersection.

3. Overall intersection LOS is not provided for unsignalized intersections

5.4.3. Optimist Club Road and NC 16 Bypass

The intersection of Optimist Club Road and NC 16 Bypass was analyzed as a four-leg unsignalized directional crossover intersection with existing lane configurations. Table 6 summarizes the capacity analysis results. Refer to Appendix F for the Synchro reports for this intersection. All SimTraffic reports can be found in Appendix I.

Analysis indicates that the intersection will operate at an acceptable LOS in the 2019 Build scenario. The addition of site traffic is expected to have a minor effect on the operation of the intersection. Minimal increases in delay and queues are expected. SimTraffic results show no queuing issues at the intersection. No improvements are recommended.

TABLE 6
ANALYSIS SUMMARY OF
OPTIMIST CLUB ROAD AND NC 16 BYPASS

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2016 Existing	EB ² WB ² NB ¹ SB ¹	1 RT 1 RT 1 LT, 2 TH, 1 RT 1 LT, 2 TH, 1 RT	D (30.9) C (19.3) C (15.1) B (13.8)	NA ³	B (13.0) E (35.8) B (11.6) C (24.2)	NA ³
2019 No-Build	EB ² WB ² NB ¹ SB ¹	1 RT 1 RT 1 LT, 2 TH, 1 RT 1 LT, 2 TH, 1 RT	E (40.3) C (22.3) C (16.4) C (15.1)	NA ³	B (13.6) E (48.7) B (12.2) D (29.3)	NA ³
2019 Build	EB ² WB ² NB ¹ SB ¹	1 RT 1 RT 1 LT, 2 TH, 1 RT 1 LT, 2 TH, 1 RT	E (45.1) C (22.5) C (16.6) C (15.2)	NA ³	B (13.8) E (49.1) B (12.4) D (29.4)	NA ³

1. Major street left-turn movement for unsignalized intersection.

2. Stop controlled approach for unsignalized intersection.

3. Overall intersection LOS is not provided for unsignalized intersections

5.4.4. North Little Egypt Road and Site Drive 1

The intersection of North Little Egypt Road and Site Drive 1 was analyzed as a three-leg unsignalized intersection with full access. Table 7 summarizes the capacity analysis results. Refer to Appendix G for the Synchro reports and turn lane warrants for this intersection. All SimTraffic reports can be found in Appendix I.

Analysis indicates that the intersection will operate at an acceptable LOS in the 2019 Build scenario. SimTraffic results show no queuing issues at the intersection. After a preliminary review of the sight distances at the intersection, it was determined that each approach has adequate horizontal sight distance. The vertical sight distance at the site drive will need to be verified.

After reviewing NCDOT warrants for left and right turn lanes, a northbound left turn lane with 100 feet of storage and appropriate taper on North Little Egypt Road at the intersection is recommended. The turn lane warrants can be found in Appendix G. It is recommended that Site Drive 1 be constructed with one ingress lane and one shared left / right egress lane.

TABLE 7
ANALYSIS SUMMARY OF
NORTH LITTLE EGYPT ROAD AND SITE DRIVE 1

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2019 Build	EB ² NB ¹ SB	1 LT-RT 1 LT, 1 TH 1 TH-RT	B (10.2) A (7.7) -	N/A ³	A (9.8) A (7.6) -	N/A ³

1. Major street left-turn movement for unsignalized intersection.

2. Stop controlled approach for unsignalized intersection.

3. Overall intersection LOS is not provided for unsignalized intersections

Bold denotes improvement on approach.

5.4.5. North Little Egypt Road and Site Drive 2

The intersection of North Little Egypt Road and Site Drive 2 was analyzed as a three-leg unsignalized intersection with full access. Table 8 summarizes the capacity analysis results. Refer to Appendix H for the Synchro reports and turn lane warrants for this intersection. All SimTraffic reports can be found in Appendix I.

Analysis indicates that the intersection will operate at an acceptable LOS in the 2019 Build scenario. SimTraffic results show no queuing issues at the intersection. A preliminary review of sight distances revealed no issues.

After reviewing NCDOT warrants for left and right turn lanes, no turn lanes on North Little Egypt Road at the intersection are recommended. The turn lane warrants can be found in Appendix H. It is recommended that Site Drive 2 be constructed with one ingress lane and one shared left / right egress lane.

TABLE 8
ANALYSIS SUMMARY OF
NORTH LITTLE EGYPT ROAD AND SITE DRIVE 2

ANALYSIS SCENARIO	A P P R O A C H	LANE CONFIGURATIONS	AM PEAK HOUR		PM PEAK HOUR	
			Approach LOS (Delay)	Overall LOS (Delay)	Approach LOS (Delay)	Overall LOS (Delay)
2019 Build	EB ² NB ¹ SB	1 LT-RT 1 LT-TH 1 TH-RT	B (10.1) A (0.2) -	N/A ³	A (9.5) A (1.0) -	N/A ³

1. Major street left-turn movement for unsignalized intersection.

2. Stop controlled approach for unsignalized intersection.

3. Overall intersection LOS is not provided for unsignalized intersections

6. CONCLUSIONS

This report summarizes the findings of the Traffic Impact Study (TIS) that was performed for the proposed Creek Park subdivision to be located along the west side of North Little Egypt Road, north of Drury Lane in Denver, North Carolina. The purpose of this study is to determine the potential impact to the surrounding transportation system caused by the traffic generated by the development.

The site is proposed to consist of up to 170 single-family homes. Two full access driveways are proposed along North Little Egypt Road. The site is expected to be fully built by the year 2019.

6.1. Summary of Recommended Improvements

Based on the analysis results, some impacts are expected by the proposed development. Figure 11 illustrates the improvements recommended to be done by the developer. The following recommendations and improvements should be made by the developer:

North Little Egypt Road and Site Drive 1

- Construct Site Drive 1 with one ingress lane and one shared egress lane (left-right).
- Construct a northbound left turn lane on North Little Egypt Road with 100 feet of storage and appropriate taper length.

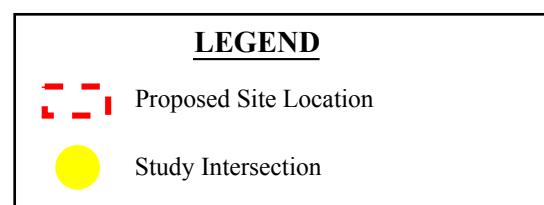
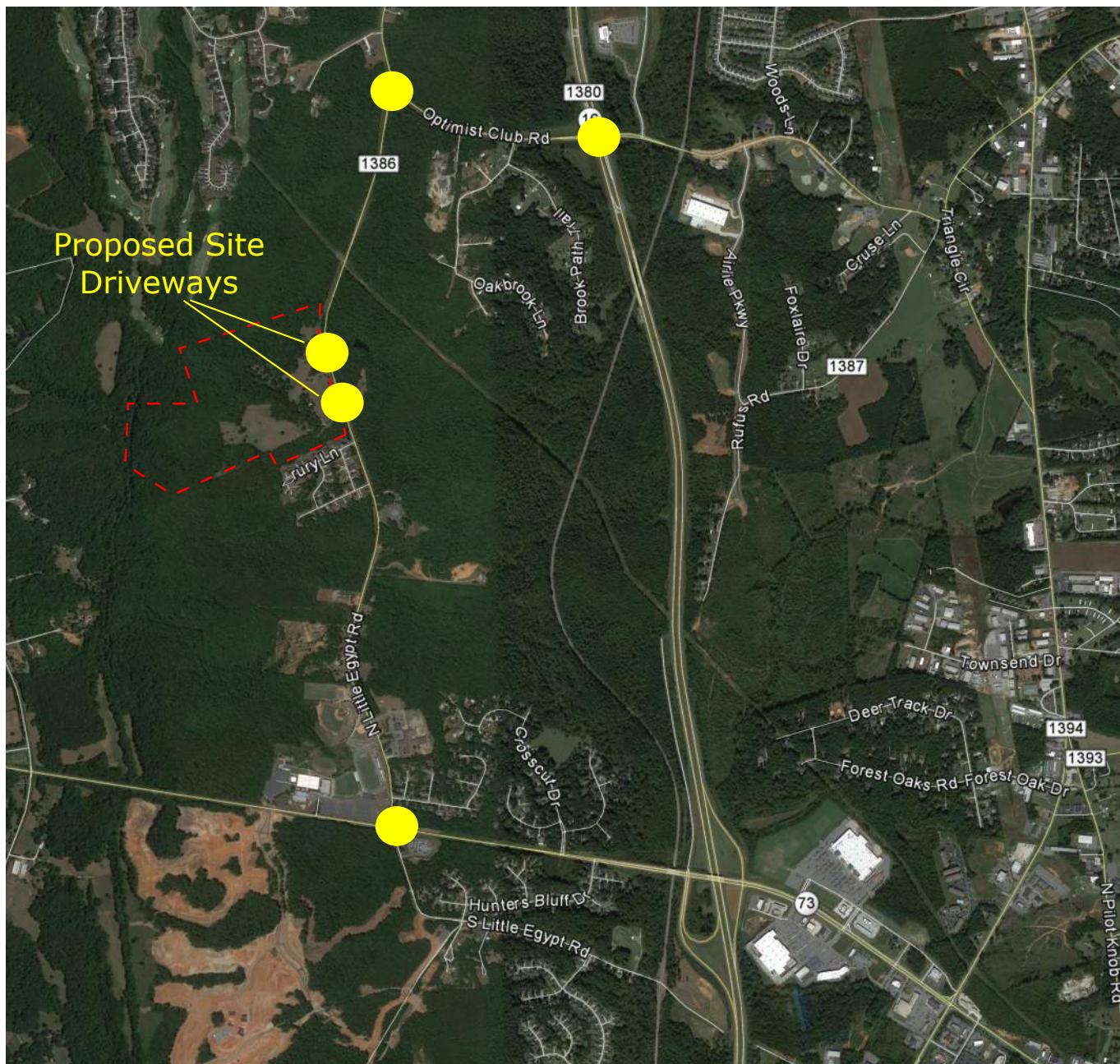
North Little Egypt Road and Site Drive 2

- Construct Site Drive 2 with one ingress lane and one shared egress lane (left-right).

TECHNICAL APPENDIX

APPENDIX A

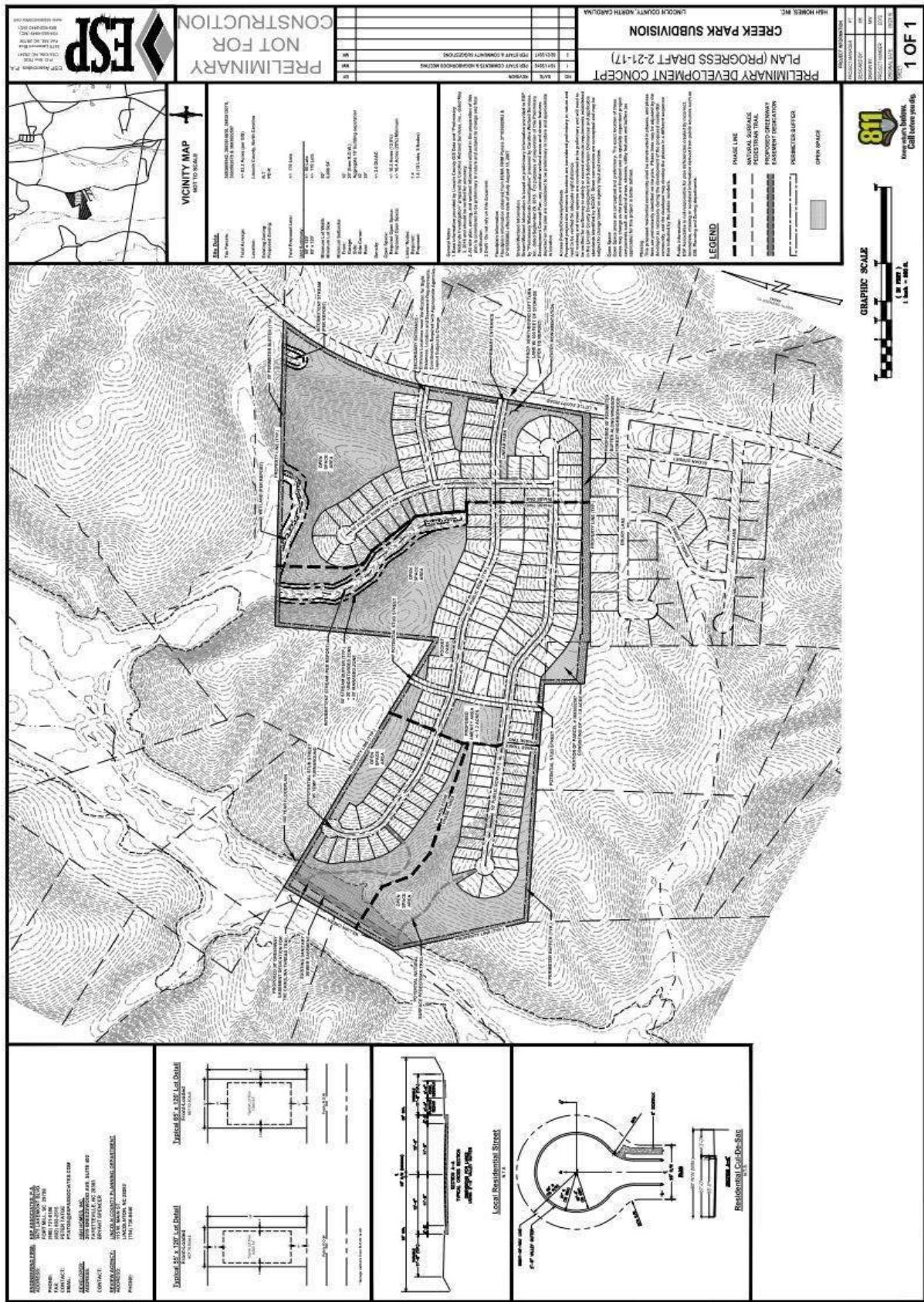
FIGURES



Creek Park
Denver, NC

Site Location Map

Scale: Not to Scale Figure 1



Creek Park Denver, NC

Preliminary Site Plan

Scale: Not to Scale

