Lystra Gardens

Chatham County, NC

Developed by

W.R. Henderson & Associates

Telephone (919) 845-0105
E-mail: Garon_Reeves@WRHenderson.com

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1. Introduction to Lystra Gardens Development

Lystra Gardens is conceived as a Conservation Subdivision designed and planned around natural open space. A Conservation Subdivision is a new approach in subdivision design that minimizes lot size and increases project open space. This design technique was used effectively on the Colvard Farms Subdivision in northeast Chatham County. Our proposed project is located on Lystra Road east of U.S. 15-501 in North Chatham County and currently zoned RA-40. It is in the Watershed 4 - Protected Area (WSIV-PA). This project will showcase many new techniques in land planning, sewage treatment, and stormwater management. Combining these technical elements with a strong amenities package of entry features, lush gardens, and an extensive trail system will help promote this project beyond a standard subdivision. This project proposes to set high standards in subdivision design, by the elements listed:

1. Conservation Subdivision/Cluster Development
2. Open Space Preservation & Vegetation Augmentation
3. On-Site Wastewater Treatment
4. Low Impact Stormwater Management

Conservation Subdivision design saves community open space. In a standard subdivision there are usually no areas of common open space, and normally the property is subdivided in its entirety into private ownership.

Lystra Gardens will strive to encompass the advantages that conservation design can provide which also includes more sustainable engineering and construction methods, improved land value, marketing and sale advantages. A subdivision at this level can create wildlife space along riparian woodlands creeks. This is possibly the best way to protect the interconnected wildlife ecosystem from standard development.

To continue to foster quality environmental protection in the development of this project, the design team will implement a (LID) or Low-Impact Development stormwater management program. This program will help minimize post-development stormwater impacts downstream of the project by using special design techniques that help infiltrate and detain runoff on a lot-by-lot basis. The stormwater & BMP are controlled in small, cost effective landscape features on each lot. This method is more attractive in managing stormwater at the source rather than expensive land-consuming impoundment structures located at the property outlets, although these may still be required on a much more limited basis.

The design team goals are to use the latest techniques and technologies to make this development state of the art and environmentally sensitive.

To continue in this pursuit, the project will use sewage treatment technologies in conjunction with the conservative design system. Conservation Subdivision allows for unique opportunities for environmentally- sound sewage treatment.

Based on the following statements from Randall & Arendt, land effectively treated for sewage can be treated by spray irrigation in the following manner:

"With spray irrigation, wastewater is heavily aerated in deep lagoons where it receives a "secondary" level of treatment, similar to that provided by conventional sewage plants. It is then applied to the land surface at rates consistent with the soil's natural absorption capacity. Nutrients in the treated wastewater are taken up by the vegetation (which may consist of forest trees, meadow grass, or ornamental outdoor garden vegetation), etc. This approach has a long and successful track record in twenty different states; those with the largest number of operating systems are Pennsylvania, Illinois, Florida, and Delaware."

The Lystra Gardens Subdivision benefits can be realized with only a small adjustment in the RA-40 zoning criteria. In order to accomplish this Conservation Subdivision design, the petitioner is requesting an adjustment in dimensional requirements in lot size, from 40,000 s.f. to 18,000 s.f., and a reduction of lot setbacks. This request to adjust lot size without increasing site density will help in allowing the creation of a Conservation Subdivision with its many benefits. The request is in keeping with land conservation and development policies as outlined in the visions of Chatham County. The rezoning being requested is RA-40 Conditional Use Permit for a planned residential development.

2. Development Professionals

Developer	W.R. Henderson & Associates Project Director: Garon Reeves
Project Management	W.R. Henderson & Associates Project Manager: Tom Goodwin, PE
Land Planning& Landscape Architecture	The John R. McAdams Company, Inc. Project Manager: Kevin Hamak, ASLA, RLA
Stormwater Engineering	The John R. McAdams Company, Inc. Project Manager: Amos Clark, PE
Civil Engineering	The John R. McAdams Company, Inc. Project Manager: Bill Derks, PE
Wastewater Engineering	The John R. McAdams Company, Inc. Project Manager: Mike Sanchez, PE
Soil Scientist	Soil & Environmental Consultants, Inc.
Survey	The John R. McAdams Company, Inc. Project Manager: Andy Heath, PLS

3. Application

3.1 Property Owners

(PIN# 9775-87-9938)
APPLICATION FOR
ZONING DISTRICTS
CONDITIONAL USE DISTRICTS
CONDITIONAL USE PERMITS

Chatham County Planning Department
P.O. Box 54
Pittsboro, NC 27312

Tel: 919/542-8204
Fax: 919/542-2698
Email: lynn.richardson@ncmail.net

(1) Applicant Information:

Name: Garon Reeves
Address: 8366 Six Forks Road, Suite 203
Raleigh, NC 27615

Phone No. (h) 919-2845-0105
(w) 919-349-7948
Email:
garon_reeves@wrhenderson.com

(2) Landowner Information (as shown on deed)

Name: Hallman Shannon P & Judith H
Address: 1078 Lystra Rd
Chapel Hill, NC 27514 7
Phone No. (h) 919-933-3931
(w) 919-933-3931
Email: hallmanp@email.unc.edu

(3) Property Identification:

911 Address: Vacant Property - Lystra Road - Parcel ID 0018856

S.R. Name: Lystra
S.R. Number: 1721
Township: Williams
Acreage: 4 ac portion of 11 ac tract
Flood map #: 3710977500J (7/16/1991)
Flood map #: 3710978400J (draft 2005)
Flood Zone: n/a

P.I.N #: 9775-87-9938
Parcel#: [redacted]

Deed Book: 308 Page: 0162
Plat Book: -- Page: --

Zoning District: RA-40

Watershed District: WS-TV

(4) Requested Zoning District, Conditional Use District, Conditional Use Permit:
RA-40 Conditional Use / PUD

(5) Directions to property: 15-501 - East on Lystra Road - 1 mile on the right

(6) Attach the following, if requesting a zoning map amendment:

☒ List of names and addresses or current adjoining property owners (see Adjacent Landowners form)
☒ Written legal description
☒ Map of the property at a scale of not less than 1 inch equals 200 feet
☒ Explanation of request addressing applicable portions of Section 17.3B and 18.2A of the Chatham County Zoning Ordinance

(7) Attach Submission Materials Checklist Information (see Submission Materials Checklist form)

I hereby certify that I am the owner or authorized agent of said property and that the information provided is complete and the statements given are true to the best of my knowledge.

Signature: Judith H. Halleman | Date: February 20, 2006

The owner must sign the following if someone other that the owner is making the application.

I hereby certify that ______________________________ is an authorized agent for said property and is permitted by me to file this application.

____

Signature | Date

Form revised 2/13/06

(PIN# 9775-97-4122)
APPLICATION FOR
ZONING DISTRICTS
CONDITIONAL USE DISTRICTS
CONDITIONAL USE PERMITS

Chatham County Planning Department
P.O. Box 54
Pittsboro, NC 27312

Tel: 919/542-8204
Fax: 919/542-2698
Email: lynn.richardson@ncmail.net

(1) Applicant Information:

Name: Garon Reeves
Address: 8366 Six Forks Road, Suite 203
Raleigh, NC 27615

Phone No. (h) 919-2845-0105
(w) 919-349-7948
Email:
garon_reeves@wrhenderson.com

(2) Landowner Information (as shown on deed)

Name: Thomas, Bradley A., Etals
Address: 780 3rd Avenue 44th
New York, New York 10017-7076
Phone No. (h) _____
(w) _____
Email: _____

(3) Property Identification:

911 Address: Vacant Property - Lystra Road - Parcel ID 0018856

S.R. Name: Lystra
S.R. Number: 1721
Township: Williams
Acreage: 140
Flood map #: 3710977500J (7/16/1991)
Flood map #: 3710978400J (draft 2005)
Flood Zone: n/a

P.I.N #: 9775-97-4122
Parcel#: 18756

Deed Book: 1151 Page: 241
Plat Book: -- Page: --

Zoning District: RA-40

Watershed District: WS-TV

(4) Requested Zoning District, Conditional Use District, Conditional Use Permit:
RA-40 Conditional Use / PUD

(5) Directions to property: 15-501 - East on Lystra Road - 1 mile on the right

(6) Attach the following, if requesting a zoning map amendment:

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I hereby certify that I am the owner or authorized agent of said property and that the information provided is complete and the statements given are true to the best of my knowledge.

Signature Date

The owner must sign the following if someone other that the owner is making the application.

I hereby certify that _____ is an authorized agent for said property and is permitted by me to file this application.

Signature Date

Form revised 2/13/06

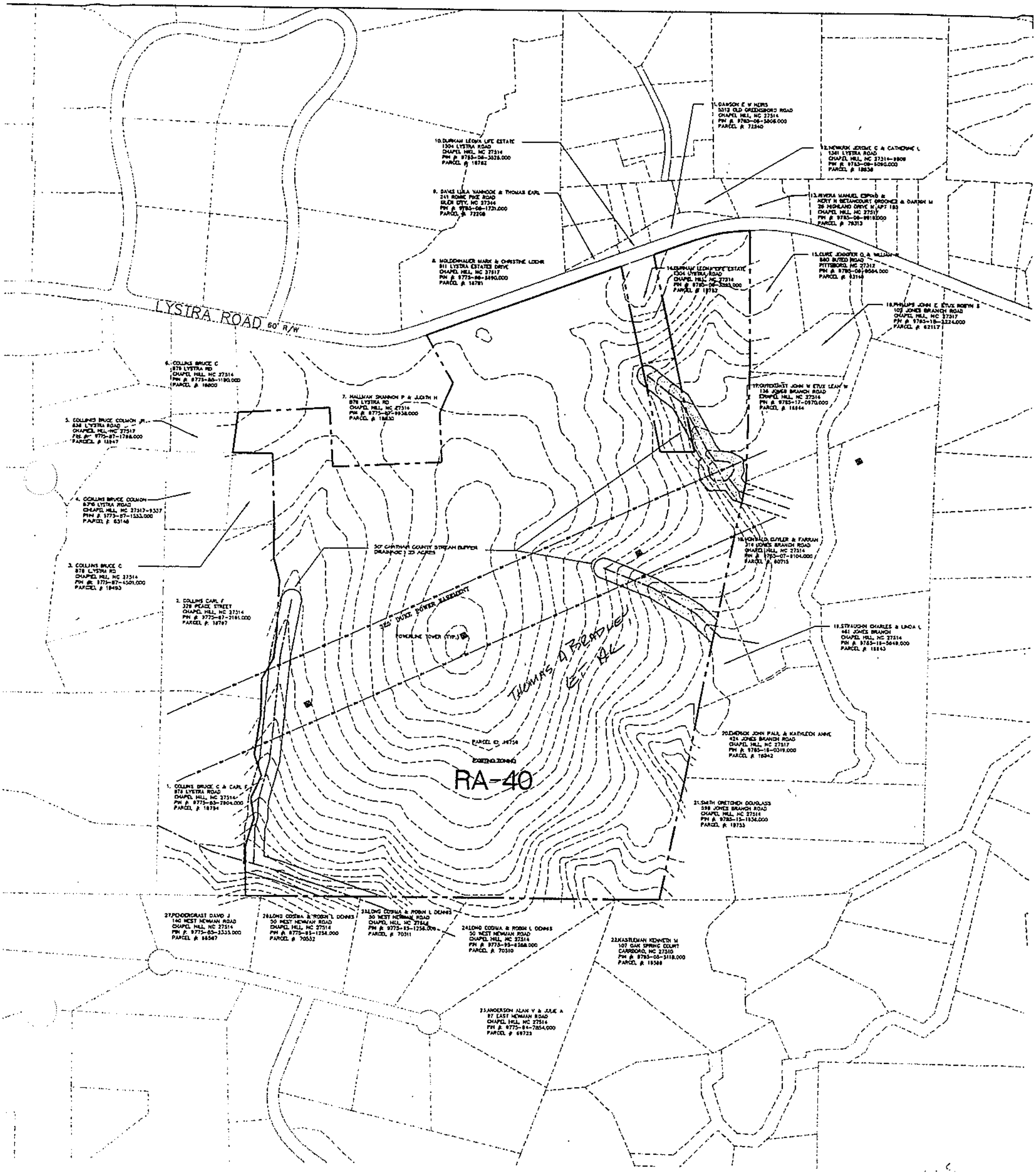
3.2 Adjacent Property Owners

3.2 Adjacent Property Owners

1. Bruce C. Collins & Carl F. 876 Lystra Road Chapel Hill, NC 27514 PIN#: 9775-85-2904 Parcel #: 18794		6. Bruce C. Collins 876 Lystra Road Chapel Hill, NC 27514 PIN#: 9775-88-1190 Parcel #: 18800
2. Carl F. Collins 328 Peace Street Chapel Hill, NC 27514 PIN#: 9775-87-2191 Parcel #: 18797		7. Shannon P. & Judith H. Hallman 876 Lystra Road Chapel Hill, NC 27514 PIN#: 9775-87-9938 Parcel #: 18930
3. Bruce C. Collins 876 Lystra Road Chapel Hill, NC 27514 PIN#: 9775-87-4501 Parcel #: 19493		8. Mark Moldenhauer & Christine Loehr 611 Lystra Estates Drive Chapel Hill, NC 27514 PIN#: 9775-98-5990 Parcel #: 18781
4. Bruce C. Collins 876 Lystra Road Chapel Hill, NC 27514 PIN#: 9775-87-1553 Parcel #: 65146		9. Lula V. Davis & Thomas Earl 241 Romie Pike Road Siler City, NC 27344 PIN#: 9785-08-1731 Parcel #: 72208
5. Bruce C. Collins, Jr. 838 Lystra Road Chapel Hill, NC 27517 PIN #: 9775-87-1768 Parcel #: 18947		10. Durham Leona Life Estate 1304 Lystra Road Chapel Hill, NC 27514 PIN#: 9785-08-3525 Parcel #: 18782

11. E.W. Dawson Heirs 5512 Old Greensboro Road Chapel Hill, NC 27514 PIN #: 9785-085808 Parcel #: 72540		16. John E. Phillips Etux Robyn S. 102 Jones Branch Road Chapel Hill, NC 27517 PIN #: 9785-18-2224 Parcel #: 62117
2. Jerome C.& Catherine L. Newkrik 131 Lystra Road Chapel Hill, NC 27514 PIN #: 9785-09-8090 Parcel #: 18938		17. John W. Guterunst Etux Leah W. 136 Joned Branch Road Chapel Hill, NC 27514 PIN #: 9785-17-0970 Parcel #: 18944
13. Manuel E. Rivera & Nery N. Beancourt Ordonez & Darwin M. 26 Highland Drive N apt. 185 Chapel Hill, NC 27517 PIN #: 9785-08-9919 Parcel #: 79313		18. Cuyler & Farrah Vonwald 314 Jones Branch Road Chapel Hill, NC 27514 PIN #: 9785-07-9104 Parcel #: 60715
14. Durham Leona Life Estate 1304 Lystra Road Chapel Hill, NC 27514 PIN #: 9785-08-3525 Parcel #: 18782		19. Charles & Linda L. Straughn 461 Jones Branch Road Chapel Hill, NC 27514 PIN #: 985-16-5849 Parcel #: 18943
15. Jennifer D. & William W. Cure 880 Buteo Road Pittsboro, NC 27312 PIN #: 9785-08-9584 Parcel #: 62146		20. John Paul & Katherine Anne Emerick 424 Jones Branch Road Chapel Hill, NC 27517 PIN #: 9875-16-0319 Parcel #: 18942

21. Gretchen D. Smith 598 Jones Branch Road Chapel Hill, NC 27514 PIN #: 9785-15-1936 Parcel #: 18755		
22. Kenneth M. Kastleman 107 Oak Spring Court Carrboro, NC 27510 PIN #: 9785-05-5118 Parcel #: 19566		26. Cosima Long & Robin L. Dennis 50 West Newman Road Chapel Hill, NC 27514 PIN #: 9775-95-1256 Parcel #: 70552
23. Alan V. & Julie A. Anderson 97 East Newman Road Chapel Hill, NC 27514 PIN #: 9775-94-7854 Parcel #: 69725		27. David J. Pendergrast 140 West Newman Road Chapel Hill, NC 27514 PIN #: 9775-85-2335 Parcel #: 66567
24. Cosima Long & Robin L. Dennis 50 West Newman Road Chapel Hill, NC 27514 PIN #: 9775-95-6288 Parcel #: 70510		
25. Cosima Long & Robin L. Dennis 50 West Newman Road Chapel Hill, NC 27514 PIN #: 9775-95-1256 Parcel #: 70511		

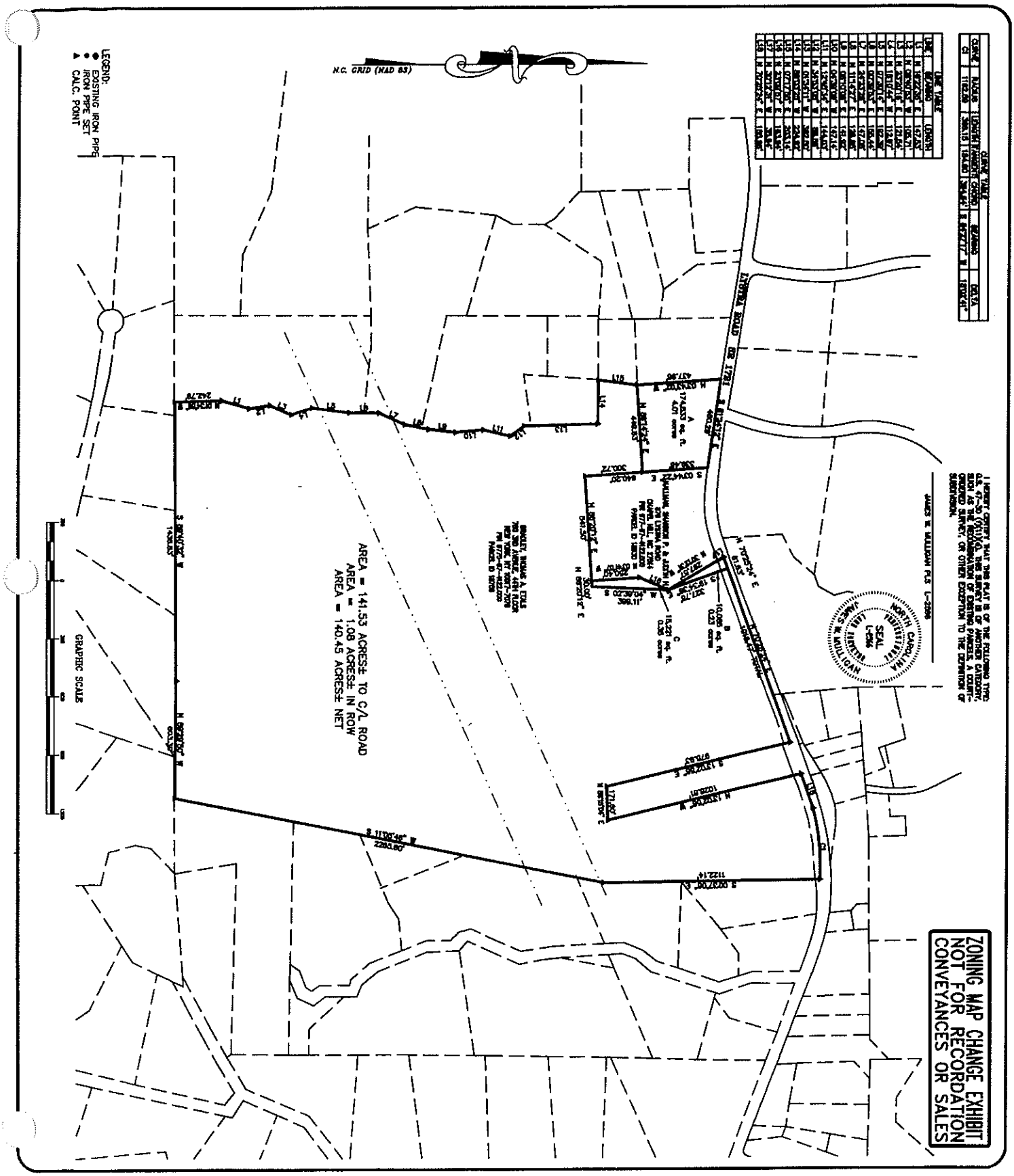

LYSTRA ROAD 60' R/W
10. DURHAM LEONA LIFE ESTATE
1304 LYSTRA ROAD
CHAPEL HILL, NC 27514
11. DAWSON E W HEIRS
5512 OLD GREENSBORO ROAD
CHAPEL HILL, NC 27514
12. NEWKIRK JEROME C & CATHERINE L
1341 LYSTRA ROAD
9. DAVIS LULA VANHOOK & THOMAS EARL
241 ROME PIKE ROAD
13. RIVERA MANUEL ESPINO &
8. MOLDENHAUER MARK & CHRISTINE LOCHR
811 LYSTRA ESTATES DRIVE
CHAPEL HILL, NC 27517
14. DURHAM LEONA LIFE ESTATE
1304 LYSTRA ROAD
CHAPEL HILL, NC 27514
15. CLARK JENNIFER D & WILLIAM W
PITTSBORO, NC 27312
16. PHILLIPS JOHN E ETUX ROBYN S
107 JONES BRANCH ROAD
CHAPEL HILL, NC 27517
6. COLLINS BRUCE C
879 LYSTRA RD
CHAPEL HILL, NC 27514
7. HALLMAN SHANNON P & JUDITH H
878 LYSTRA RD
CHAPEL HILL, NC 27514
17. OUTERBRIDGE JOHN W ETUX LEAH W
136 JONES BRANCH ROAD
CHAPEL HILL, NC 27514
5. COLLINS BRUCE COLMON JR.
CHAPEL HILL, NC 27517
4. COLLINS BRUCE COLMON
876 LYSTRA ROAD
CHAPEL HILL, NC 27517-9337
50' CHATHAM COUNTY STREAM BUFFER
3. COLLINS BRUCE C
878 LYSTRA RD
CHAPEL HILL, NC 27514
18. MCDONALD CUYLER & FARRAH
314 JONES BRANCH ROAD
CHAPEL HILL, NC 27514
2. COLLINS CARL F
329 PEACE STREET
CHAPEL HILL, NC 27514
385' DUKE POWER EASEMENT
POWERLINE TOWER (TYP.)
19. STRAUGHN CHARLES & LINDA L
461 JONES BRANCH
CHAPEL HILL, NC 27514
Thomas Q Bradley et al
20. EMERICK JOHN PAUL & KATHLEEN ANNE
424 JONES BRANCH ROAD
CHAPEL HILL, NC 27517
EXISTING ZONING
RA-40
1. COLLINS BRUCE C & CARL F
876 LYSTRA ROAD
CHAPEL HILL, NC 27514
21. SMITH GRETCHEN DOUGLASS
598 JONES BRANCH ROAD
CHAPEL HILL, NC 27514
27. PENDERGRAST DAVID J
140 WEST NEWMAN ROAD
CHAPEL HILL, NC 27514
26. LONG COSIMA & ROBIN L DENNIS
50 WEST NEWMAN ROAD
CHAPEL HILL, NC 27514
25. LONG COSIMA & ROBIN L DENNIS
50 WEST NEWMAN ROAD
CHAPEL HILL, NC 27514
24. LONG COSIMA & ROBIN L DENNIS
50 WEST NEWMAN ROAD
CHAPEL HILL, NC 27514
22. KASTLEMAN KENNETH M
107 OAK SPRING COURT
CARRBORO, NC 27510
23. ANDERSON ALAN V & JULIE A
87 EAST NEWMAN ROAD
CHAPEL HILL, NC 27514

3.3 Boundary Description

LYSTRA ROAD PROPERTY
SPEC-05280

Beginning at a point in the center of Lystra Road (SR 1721) at the northeastern most corner of the subject property, said point being the POINT OF BEGINNING thence South 00°37'06" East, a distance of 1,122.14 feet to a point; thence South 11°05'46" West, a distance of 2,265.60 feet to a point; thence North 89°29'50" West, a distance of 603.30 feet to a point; thence South 89°40'32" West, a distance of 1,436.83 feet to a point; thence North 01°34'56" West, a distance of 242.79 feet to a point; thence North 16°22'35" East, a distance of 147.53 feet to a point; thence North 08°40'53" West, a distance of 105.71 feet to a point; thence North 23°20'16" East, a distance of 121.54 feet to a point; thence North 18°10'44" West, a distance of 112.97 feet to a point; thence North 07°30'14" East, a distance of 192.39 feet to a point; thence North 00°39'53" East, a distance of 155.44 feet to a point; thence North 24°23'28" East, a distance of 147.08 feet to a point; thence North 11°14'27" East, a distance of 126.65 feet to a point; thence North 06°10'06" East, a distance of 141.92 feet to a point; thence North 04°39'09" West, a distance of 147.14 feet to a point; thence North 12°45'34" East, a distance of 144.03 feet to a point; thence North 34°53'05" West, a distance of 88.56 feet to a point; thence North 01°34'11" West, a distance of 382.50 feet to a point; thence North 89°03'25" West, a distance of 224.92 feet to a point; thence North 07°17'55" East, a distance of 203.14 feet to a point; thence North 86°14'24" East, a distance of 449.83 feet to a point; thence South 03°44'22" East, a distance of 300.72 feet to a point; thence North 86°20'12" East, a distance of 541.50 feet to a point; thence North 03°41'07" West, a distance of 250.40 feet to a point; thence North 23°09'57" East, a distance of 163.94 feet to a point; thence North 30°12'31" West, a distance of 297.57 feet to a point;; thence continue northwesterly along said line, a distance of 35.94 feet thence North 70°25'24" East, a distance of 1,016.47 feet to a point; thence South 13°02'58" East, a distance of 975.93 feet to a point; thence North 88°15'04" East, a distance of 171.60 feet to a point; thence North 13°02'58" West, a distance of 1,028.81 feet to a point; thence North 70°25'24" East, a distance of 185.96 feet to a point; thence along the arc of a non tangent curve to the right, which has a radius of 1,165.87 feet; an arc distance of 366.14 feet, and a chord of364.64 feet, bearing North 84°27'17" East, to a point to the POINT OF BEGINNING, containing 141.53 acres, more or less to the center of the road, except adding a 4.01 acre parcel (Tract A) described as follows beginning on the southern right-of-way of Lystra Road; thence along said right-of-way South 81°24'12" East, a distance of 460.29 feet to a point; thence leaving the Road South 03°44'22" East, a distance of 339.48 feet to a point; thence South 86°14'24" West, a distance of 449.83 feet to a point; thence North 03°43'02" West, a distance of 437.98 feet to the point of beginning and removing 0.58 acres (Tracts B and C) described as follows, beginning at a point on the southern right-of-way of Lystra Road; thence along said right-of-way North 70°25'24" East, a distance of 61.63 feet to a point; thence leaving the Road South 19°34'36" East, a distance of 327.78 feet to a point; thence South 02°39'04" West, a distance of 399.11 feet to a point; thence South 86°20'12" West, a distance of 30.00 feet to a point; thence North 03°41'07" West, a distance of 250.40 feet to a point; thence North 23°09'57" East, a distance of 163.94 feet to a point; thence North 30°12'31" West, a distance of 297.57 feet to a point on the southern right-of way of Lystra Road; thence North 30°12'31" West, a distance of 35.94 feet to the point of beginning, as shown in a rezoning exhibit map by The John R. McAdams Company, Inc. dated 10 February 2006, last revised 17 February 2006.

X:\Projects\SPEC\SPEC-05280\Survey\Plats\SPES05280-EX1.dwg, 2/20/2006 11:30:51 AM, mulligan, 1:669.889



I HEREBY CERTIFY THAT THIS PLAT IS OF THE FOLLOWING TYPE: G.S. 47-30 (f)(11)(c). THIS SURVEY IS OF ANOTHER CATEGORY, SUCH AS THE RECOMBINATION OF EXISTING PARCELS, A COURT-ORDERED SURVEY, OR OTHER EXCEPTION TO THE DEFINITION OF SUBDIVISION.

JAMES W. MULLIGAN PLS L-2566

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR SEAL L-2566 JAMES W. MULLIGAN

PROJECT NO.	SPEC-05280
FILE NAME	SPES05280-EX
DRAWN BY	JWM
SCALE	1" = 300'
DATE	10 FEBRUARY 2006

McADAMS

LYSTRA ROAD PROPERTY

WILLIAMS TOWNSHIP, CHATHAM COUNTY, NORTH CAROLINA

OWNER: THOMAS A. BRADLEY, ETALS
780 3RD AVENUE, 44TH FLOOR
NEW YORK, NY 10017-7076

SURVEYED BY: JAMES W. MULLIGAN L-2566

LYSTRA ROAD PROPERTY

SHEET 1 of 1

REVISIONS:
02/17/06 add Tracts A, B & C

THE JOHN R. McADAMS COMPANY, INC.
CIVIL ENGINEERING • LAND PLANNING • SURVEYING
PO BOX 14005 • RESEARCH TRIANGLE PARK, NC 27709
(919) 361-5000 • FAX (919) 361-2269
E-mail mulligan@johnrmcadams.com

4. Property Location

- The proposed development site is located approximately 2 miles east, at the northeast corner of US 15-501 and Lystra Road (SR 1721).

- The site is zoned RA-40 and encompasses approximately 140 acres of property.

- The site's watershed designation is WS-IV Protection Area, which allows for a maximum 24% impervious surface coverage within a curb and gutter development. Without a curb and gutter street system, impervious surface coverage shall not exceed 36%.

- The property does not abut any major wildlife areas, as identified in the *Inventory of the Natural Areas and Wildlife Habitats of Chatham County, North Carolina.*

- There are utility easements assigned to the site. A Duke Power line easement is 325'.

- The site encompasses one lot on which there are no residential buildings. Additionally there is included a request to recombine an additional 4-acre portion of an 11-acre property which does have residential buildings on the remaining 7 acres not a part of this Conditional Use request.

5. Description of Use

The site is under the planning and zoning jurisdiction of Chatham County. Lystra Gardens is a proposed Conservation Subdivision with a clustered design created through a Conditional Use /PUD under the existing RA-40 zoning designation.

If approved, the Subdivision will promote upscale single-family homes on lots with a minimum lot size of 18,000 s.f. Proposed setback reductions would promote building placement practices that are more responsive to the existing environmental conditions and allow the implementation of Low Impact Development practices.

PUD Dimensional Requirements

Minimum Requirement Lot Area – 18,000 square feet

Minimum Required Lot Area for Two-Family Dwelling except an accessory dwelling unit (#3) - 36,000 square feet

> Each unit of a two-family dwelling may be placed on a separate lot, provided that each lot consists of not less than 18,000 square feet, and provided that the common wall between the units is a fire wall as required by the building code.

Minimum Required Lot Width – 100 feet

Minimum Required Front Yard – 20 feet

Minimum Required Side Yard – 10 feet

Where a two-family dwelling is placed such that the units are on separate lots with a common fire wall, no side yard shall be required at the common wall.

Minimum Required Rear Yard – 25 feet

Maximum Building Height – 60 feet (#24)

Location of Accessory Buildings and structures

Accessory buildings and structures must conform to the minimum required setbacks for the district. Provided, however, well houses, satellite dishes, open carports and telephone booths may be located in the required yards provided they are at least 10 feet from any street or property line. Fences are permitted within the front, side and rear yards with no minimum setback requirement.

Density Calculation

Site Area (Including ROW)	141.53 Ac
Net Site Area	140.45 Ac
R/W Area	8.0 Ac
Stream Buffer Area	8.0 Ac
Additional Land	4.0 Ac
Net Buildable Area	128.45 Ac

128.45 Ac = 5595282 s.f.

5595282/40,0000 s.f. lots

Max No. Lots = 139

6. Site Plan Discussion

The following site drawings cover the existing conditions, proposed site plan showing lot layout or "sketch plan", a bubble diagram showing fundamental land use areas. The development will be constructed on-grade, which means that the site will not be leveled and graded to accommodate the buildings. Large sections of untouched areas will remain. These areas will be landscaped and under the care of the homeowner association.

The Subdivision will be planned with private streets, without curb and gutter and to allow for the implementation of Low Impact stormwater practices. The ditch lined street will help preserve a rural character. The street will be designed to minimize grading by responding to topography. Special features such as split entry, roundabouts, and eyebrows will be utilized to create pockets of landscaping and interests.

Lots of 18,000 s.f. size will line the streets. It is planned that no lot will back up to the rear of another lot without an area of tree save between the lots; therefore, creating the feeling of deep wooded lots with limited views of the rear of other lots; except occasionally through existing stands of wooded areas.

Aesthetics play an important role in the design of the project. Open space location, roadway location, and lot location are all organized to create a unified project that fits the site. With the unified project design, a theme for the project is further enhanced by entry landscaping, landscape open space gardens, and street landscape ornamentation.

These unity factors help to beautify and naturalize the Subdivision.

The project is planned to be aesthetically pleasing and technically advanced. The combination of these elements will help create a quality development.

7. Start and Completion Dates

Fall, 2006	Clearing and site preparation
Winter, 2006	Site grading begins
Fall, 2007	Subdivision complete

8. Reference to Existing County Plans

Lystra Gardens is on Lystra Road 1 mile east of the location of US 15-501 corridor north of Pittsboro. The area is cited in Chatham County's Land Use Development Plan as an area in which development is encouraged.

The citations and discussions that follow bolster this statement and elaborate on the goals and desires of the Land Use Development Plan. The sections that follow specifically address references in the Chatham County Land Use Development Plan.

8.1 Finding #1

"The use requested is among those listed as an eligible conditional use in the district in which the subject property is located or is to be located."

8.1 Validation of Use in Zoning Ordinance/ Land Use Development Plan Reference

Use requested from RA-40 Conditional Use Permit/ Planned Residential Development.

Section 10.3. B of the Zoning Ordinance specifies a Planned Residential Development and Clustered Development as a Conditional Use permit in an RA-40 Zone.

8.2 Finding #2

"The requested conditional use permit is either essential or desirable for the public convenience or welfare."

8.2.1 Need and Desirability

As directed in the land conservation development policies and goals, it is recommended that eastern Chatham County should supply a wide variety of housing options (categories, densities, locations and prices). W. R. Henderson and Associates is proposing a Clustered Conservation Subdivision that is a high-quality single-family residential development.

Providing for a full range of housing stocks within the County is also a preferred goal. This project will help housing stocks in the upper scale of home values ranging from $500,000 up. North Carolina ranks very high for business growth, with the majority of that growth occurring within the Research Triangle Park area; therefore, the demand for upscale, high-quality homes can outpace home supply. The Research Triangle Park area is also considered one of the best places to work and live; it has had this reputation for a number of years. The continued growth and demand for quality housing in Chatham County can be expected well into the future. The natural scenic beauty of Northeastern Chatham County will also draw people looking for quality housing to the area.

Based on the latest information from the state of North Carolina Demographics Center, the population continues to grow at a healthy rate (26.6 percent from 1990 to 2004). The State estimates that the population will grow 20.3 percent in the next decade.

Employment has also increased during the first 11 months of this year. Employees in the seven-county region that makes up the metropolitan areas encompassing Raleigh, Durham and Chapel Hill added 26,200 people to their payrolls. That is 5,510 more than during the same period in 2004. N. C. State University economist Michael L. Walden expects employment in the region to grow (Posted in Growth Trends website).

With the population growth, high-income levels and employment growth, the proper economy is present to support and absorb 139 luxury/quality homes in this area.

As this project is built out over the next 3-5 years, Lystra Gardens can easily contribute an estimated $500,000 in annual property taxes for Chatham County.

This project is deemed suitable and beneficial to Chatham County, based on the projects proper design to fit with site conditions, fit with the surrounding community and designed to satisfy local market needs.

Lystra Gardens is an innovative project promoting new concepts that are not provided on standard subdivisions, but will enhance the quality of life that community leaders expect.

Lystra Gardens will be a high-end residential development of approximately 139 units. Given the rapid growth of Chatham County, and particularly the northeast corner in the Chapel Hill sub-market and the Jordan Lake area, there is clear market demand for additional homes. Lystra Gardens is near the south entrance of Governor's Club, a major subdivision which has completed development and has only a small percentage of the original homesites remaining for sale.

The accessibility to both the Chapel Hill and Pittsboro communities via the expanded U.S. Hwy 15-501 corridor makes the Lystra Road location ideal for a modest-sized residential development. Also, the commercial development already in place nearby and the additional

commercial sites under construction or approved by the County at the intersection of Lystra Road and U.S. Hwy 15-501 means these residences will compliment the area nicely.

8.2.2 Survey of Similar Uses

Lystra Gardens Subdivision is part of a new class of developments that provide their own infrastructure where sewer, water open space, and stormwater management are all contained within the project. Comparable projects are Colvard Farms and Briar Chapel.

Lystra Gardens is also part of this class of projects where it provides environmental preservation, Low Impact stormwater management, open space recreation, and on-site sewer treatment. This will be the first project using LID in Chatham County.

There are obviously a number of other residential homesites available, but there is continued high demand due to growth of Chatham County. The County's own growth projections show accelerated need for housing throughout the county. Lystra Gardens will not only meet the residential housing need, but through careful planning will preserve open space and woods. The unique garden theme will be achieved by planting extensive gardens and creating a park-like atmosphere to enhance the natural beauty of the area. This will be one of the few developments where lot size will be deliberately reduced to preserve the most beautiful areas of the property. This unique garden development will be in keeping with the other high-end developments in the area, such as Governor's Club.

8.2.3 Public Provided Improvements

Lystra Gardens Subdivision will have minimal demands for public services. The Subdivision will not be part of a public sewer system. The wastewater treatment system will be installed and maintained by the developer. The developer has applied for water service from Chatham County

and has reserved capacity for this project. The proposed Subdivision street system will be installed and maintained by the developer.

The Lystra Gardens Subdivision, with a proposed 139 lots, will yield additional students that will need to be accommodated within the County school system. The North Carolina Department of Public Instruction estimates that there will be approximately 1.5 students per household. Over the next 3-5 years during project build-out, 210 new students can be anticipated; therefore, additional space and transportation will be needed in the public school system.

8.2.4 Tax Considerations

The anticipated tax revenue generated from the Lystra Gardens Subdivision is estimated to be approximately $523,000 per fiscal year. This revenue is based on calculating the current tax rate of $0.85 per $100 of value to an average home value of $450,000. Each home is designed to accommodate up to two automobiles at an assessed value of $30,000 per household. The taxes on these automobiles will produce an annual tax value of $27,000. The County has a one-time impact fee for schools of $1,500 per building. This fee can generate $210,000 for school building in the area.

Revising this Subdivision design to a standard subdivision of 40,000 s.f. lots would result in the loss of the permanent open space, a 30-40 lot reduction, and loss of potential tax revenues. The County would lose $152,000 in potential revenues and the loss of 40 lots.

8.2.5 Employment

The proposed Lystra Gardens Subdivision will have ongoing services requiring local contractors. These would include landscaping, managing and operating the wastewater facility, managing the community water system, and removing solid wastes.

8.3. Finding #3

"The requested permit will not impair the integrity or character of the surrounding and adjoining districts, and will not be detrimental to the health, safety, or welfare of the community."

8.3.1 Emergency Services

The plan designed for Lystra Gardens will meet fire protection requirements, such as hydrant placement and emergency vehicle access. Law enforcement and Rescue 911 have been consulted and will comment as to requirements after Site Plans have been submitted.

8.3.2 Traffic Analysis

The proposal development currently consists of 139 single-family residential units and is expected to generate 104 p.m. peak hour trips with a 24-hour two-way volume of 1,370 vehicles per day (VPD). Based on 2003 NCDOT traffic counts, Lystra Road has an average daily traffic (ADT) of 2,900 VPD near the intersection of US 15-501. NCDOT calculates capacity at 12,000 VPD for a facility of this type; therefore, with the addition of proposed development traffic, the capacity along Lystra Road will remain well within acceptable limits. Site traffic will mainly consist of residential passenger car traffic with the peak traffic volumes occurring between 7-9 a.m. and 4-6 p.m. during the weekday. With the addition of the proposed development, changes to the existing speed limit will not be necessary. Given the available roadway capacity on Lystra Road, no roadway improvements will be necessary from a capacity standpoint.

8.3.3 Impact to Surrounding Land Values

The proposed Lystra Gardens Subdivision will not have any negative impacts on surrounding land values. The proposed high quality homes that are planned for this project fit in value with the adjacent developments, such as the Governor's Club. The surrounding land values will be enhanced by this proposed subdivision.

8.3.4 Visual Impact and Screening

Lystra Gardens is implementing conservation subdivision design. The proposed planning approach promotes forest conservation and aesthetic orientation of housing. The project design will require pastoral and garden open space. These design philosophies together will produce an attractive development. Tree conservation will encompass the perimeter of the site through the use of buffers and/or building setbacks to maintain the rural character of the development area.

8.3.5 Lighting

All lighting at Lystra Gardens will meet the requirements and specifications outlined in the Chatham County Lighting Ordinance (Draft 9-2-03) and approved by the Chatham County Appearance Commission.

8.3.6 Noise Considerations

We anticipate that the changes in the lot size will not create adverse noise as the overall density will remain the same as allowed under the current RA-40 zoning. The only significant noise from this development will be generated during the construction phase. The proposed Subdivision with 139 single family homes will not produce disturbing noise and not register with the adjacent property owners because of open space, existing vegetation, and an internalized street system.

8.3.7 Chemical, Biological and Radioactive Agents

The project is planned to be consumer-safe. The use of lawn and garden chemicals, such as lawn fertilizers and insecticides are appropriate to use in this location. In addition, this residential community is designed for spray sewage treatment. The treatment facility will be planned by certified professionals, so no bio-contamination will be anticipated. No radioactive materials will be used at the site.

8.3.8 Signs

The Owners of Lystra Gardens are planning extensive site and entry amenities. Included in these amenities will be signage of high quality. The signs will meet local governmental requirements. These signs will be located on Lystra Road.

Lystra Gardens will have a modest sign for identification at the primary entrance of the subdivision. The exact design has not been finalized, but it will be at ground level, within the applicable height restrictions, and in keeping with the elegant garden theme of the development. The sign will be lighted at night for easy identification.

8.4 Finding #4

"The requested permit will be consistent with the objectives of the Land Conservation and Development Plan."

8.4.1 Land Development Plan

Land Conservation and Development planned vision will compliment Chatham County'sdesire to cooperatively control its own destiny to assure the state of well-being desired by all of our people, while proudly preserving diverse cultural heritage and the county's rural character.

8.4.2 Land Conservation and Development Plan Reference

Preserve both the form and function of rural character: The landscape, Agriculture, and Home-Based business.

The Conservation Subdivision design for this project will protect the rural character of the natural environment. The preservation of open space and the clustering of lots will minimize the environmental degradation. Also, the Subdivision is being developed on wooded property; therefore, it does not displace agricultural property.

Encourage Compact Communities

The development is planned in the pro-growth corridor along U.S. Hwy. 15-501. This development growth is focused at major intersections along this highway. The intersection of Lystra Road and U.S. Hwy. 15-501 is identified as a major commercial/residential development area. The Lystra Gardens Subdivision is within a mile of this intersection. The development will add to economic opportunity at this location by helping to support local businesses. Lystra Gardens is part of the county growth corridor along north U. S. Hwy. 15-501.

The Subdivision is located in a school district that is expanding with new facilities. The district has an existing elementary school on Lystra Road and plans for a new High School on Jack Bennett Road.

Designate Economic Development Center in order to promote a diversified, sustainable business community

The development will use 'green technologies' that will need annual maintenance and repair. This is not an economic center, but the project will showcase new technologies.

Develop an integrated approach to protecting and promoting high-quality ope nspace, recreation, historic and tourism locations.

The cornerstone of this development proposal is preservation and augmentation of open space. The internal open space includes walks and paths through lushly planted landscape. Approximately 30 acres will be devoted to open space. The project internal pathway systems are connected to Lystra Road right-of-way and then potentially to the local elementary school site. This project can help initiate a street walkway system through the community to the school. The proposed project pathways in their present location can be easily be linked to adjacent properties and any future greenways.

Ensure the long-term quality and availability of groundwater and surface water resources.

Lystra Gardens is a proposed low density single-family development with planned open space, stream buffers and a Low Impact storm water management program. All of these design elements will contribute to improved water quality. In particular, a Low Impact stormwater management program will enhance water quality substantially when compared with standard stormwater management practices. The objectives of this system include reducing

imperviousness, conserving natural resources and ecosystems, maintaining natural drainage courses, reducing use of pipes, and minimizing clearing and grading. The system will provide runoff storage measures dispersed uniformly throughout the site's landscape with the use of a variety of specialized detention, retention, and runoff practices. These measures are proven in improving stormwater quality above normal standards.

Lystra Gardens provides infrastructure in ways that support the land use, economic development and environmental objectives, water supply, wastewater treatment, transportation and schools.

Land conservation & development in Chatham County will reflect balanced growth.

Benefits and burden of growth are shared as much as possible in this proposed plan. The Lystra Garden project will supply quality housing in an area of Chatham County that is designated for growth. The proposed project will not burden the community for public sewer hookups or intensive sewer line installation. The sewer system will be handled on site through a package plant. The low density nature of the project will not make demands on the public roadway system and will not require substantial roadway improvements or overload the area roadway system during peak traffic times. The Low Impact Development is not anticipated to be a burden to the commuter.

Growth consists of a mix of different types of developments

Even though the project is not mixed use development, the small size of the property and the zoning of the land precludes a well-planned mixed-use residential community. The project is a Clustered Development and a Conservation Subdivision showing a mixture of residential lots and open space.

Developments are guided to suitable locations and are designed appropriately

The design of the development location is suitable because it matches the density at the existing site zoning. The development is consistent with the RA-40 zoning except for reduction in lot area. The reduction in lot area is balanced by the designation of open space. The clustering of this development into smaller lot sizes is beneficial to the county and beneficial to the surrounding community by preserving vegetation and local rural character.

The Land Use Development Plan presents an approach that the county will be pro-active when there are issues of land change.

The developer of this project has taken the initiative to involve neighbors and local citizen groups in the development of this project. As a result, the Lystra Gardens development plan addresses concerns that have been revised by the public and plans to further respond to concerns by adopting numerous suggestions offered by individuals and community groups. Input from the public has been a welcome addition to the process.

8.4.3 Watershed and Flood Considerations

a. Per the preliminary FIRM Map 3710977500J, July 13, 2005, the Site is not located within a studied FEMA Flood Plain and thus is not subject to Flood Damage Prevention requirements.

b. The project is meeting the future Phase 2 NADES Requirements and this meets the Watershed Protection Requirements.

8.5 FINDING #5

8.5.1 Water Source and Requirements

The Lystra Gardens Community will be served by public water provided by Chatham County and will be designed in accordance with the Chatham County Public Works Water System Specifications and Details. Adequate water from the Chatham County Department of Public Works is available to serve the build out needs of this project (please see attached letter from Mr. Will Baker, Chatham County Utilities Director). According to Mr. Baker, the design basis for estimating the anticipated water demand is 5,000 gallons / lot / month. Using that design basis, the total water demand for Lystra Gardens is estimated to be less than 25,000 gpd.

Currently, there is a 12-inch water main that exists along Lystra Road fronting the Lystra Gardens property. That 12-inch water main connects to a 16-inch main along US 15-501. Detailed water modeling and design will be performed for design of the water supply system within the Lystra Gardens development so as to ensure that the system can meet usage and fire flow demand per County requirements that are based National Fire Protection Association (NFPA) standards.

8.5.2 Wastewater Managment

The wastewater management system will consist of a collection system, an on-site reclamation facility with a holding pond, and an on-site spray irrigation system that includes a reclaimed water storage pond. In general, the wastewater generated by each dwelling will be collected and conveyed to the on-site reclamation facility where it will be treated to meet State reuse water standards. The reclaimed water will be conveyed from the treatment system to a storage pond that has been designed to meet wet weather storage requirements. An irrigation pump station adjacent to the storage pond will be capable of delivering irrigation supply to the sprayable acreage on site.

8.5.2.2 Reclamation Facility

The on-site reclamation facility will consist of an aerobic package treatment system that is constructed in concrete modules. The reclamation facility will utilize DWQ required components to achieve a level of treatment necessary for "reclaimed water system" spray irrigation. As required by 15A NCAC 2H.0200, the facility will produce a tertiary effluent.

8.5.2.3 Spray Irrigation System

Spray irrigation is a proven and acceptable means of disposing of reclaimed water in North Carolina. These systems have been approved for a number of communities in North Carolina including several in the Piedmont region. The storage and spray irrigation system will be

designed with considerable redundancy and ease of operation in order to ensure successful utilization of these facilities.

8.5.2.4 Wastewater Calculations

The Lystra Gardens site consists of a mixture of rolling hills and flatter areas. This feature makes Lystra Gardens well suited for a wastewater collection system consisting of both gravity sewer and low-pressure sewer. Gravity sewer systems are the traditional system of choice for areas where the topography allows such collection and are commonly approved by the State of North Carolina. However, for areas in hilly terrain and in areas with considerable topographical undulation that would result in segments of deep gravity sewer, a low-pressure sewer system will be considered. Low-pressure sewer systems are not only an approved collection alternative in North Carolina but also offer a number of advantages over conventional systems.

8.5.2.5 Soils Evaluation

While preliminary soils evaluations performed by Soil and Environmental Consultants, Inc. (S&EC) indicate that ample land is available for spray irrigation, S&EC is currently completing a more in-depth soil evaluation to confirm those results. In addition, Eagle Resources, has been contracted to prepare a preliminary hydrogeological evaluation of the site that will address water balance, spray loading rates, and storage requirements.

8.5.2.6 DWQ Permitting

An application for a Non-Discharge permit has not yet been filed with DWQ but will be in the near future.

8.5.2.7 Water / Sewer Impact Statement

Water will be provided by Chatham County and the amount anticipated at build out, which is less than 25,000 gpd, will be available based on preliminary discussions with Mr. Will Baker, Utilities Director. The wastewater treatment system is an on-site reuse system and does not impact Chatham County Utilities.

8.5.2.8 Anticipated Sewage Generation Rate

The anticipated design load for the proposed Lystra Gardens development is less than 60,000 gpd. This rate is based on design guidelines from the North Carolina Department of Environment and Natural Resources Division of Water Quality (DWQ) per 15A NCAC 02H.0219(λ)(3). This regulation specifies that the volume of sewage from dwelling units should be based on 120 gallons / bedroom / day. With 140 units planned for the Lystra Gardens community and each unit having an average of 3-1/2 bedrooms, the total sewage generation anticipated is 58,800 gpd. This sewage estimation methodology highly overestimates the sewage

generation anticipated relative to the County design basis for water demand as discussed above. In actuality, the anticipated sewage flow will likely be considerably less, since the DWQ design basis requirements do not account for the following components that are planned for Lystra Gardens:

- The community will utilize state-of-the-art water-conserving fixtures, such as faucet aerators with flow rates of one gallon per minute or less and showerheads with flow rates of two gallons per minute or less.
- A portion of the community wastewater collection system may consist of individual grinder pumps on each lot that flow into a common low pressure force main. Low pressure systems are considerably less vulnerable to infiltration/inflow problems than an all-gravity system.

8.5.4 Stormwater Runoff

Low Impact Development Approach to Stormwater Management

The Lystra Gardens development proposes to use an alternative approach to control stormwater runoff from impervious surfaces. Conventional practices, such as wet and dry detention ponds, inlet structures, and other conveyance systems, are expensive and land-consuming. Detention ponds are often an eyesore, derided as 'mosquito pools', and can be a safety and liability concern. The alternative approach of Low Impact Development (LID) on the other hand, decentralizes stormwater control. By using various planning and design technologies to simultaneously conserve and protect natural resources and reduce infrastructure costs, LID allows land to be developed in a cost-effective manner that helps mitigate potential environmental impacts. In short, the basic premise behind LID is to reduce stormwater runoff volume and decentralize stormwater flow. LID is an important component of 'green development' practices that are increasingly favored by local, state, and federal regulatory agencies, as well as an environmentally-conscious public.

Lystra Gardens will employ several proven, small-scale structural and nonstructural methods to treat stormwater runoff at its source, lot by lot, thus eliminating the need for large, centralized ponds. (If topography or other constraints make the use of holding ponds necessary, they will be greatly downsized from a traditional wet or dry pond.)

Best Management Practices (BMPs)

Lystra Gardens will use numerous BMPs to control stormwater runoff through LID techniques:

Infiltration systems Instead of piping the water to a central location, these alternatives treat the water at its source by infiltrating it into the ground. Infiltration systems encourage the downward movement of water to reduce the total quantity of overland runoff and pollutants from impervious surfaces. Techniques include trenches, drain fields, drywells, bio-retention systems, and level spreaders.

Bio-retention is the most recognized infiltration technique. Bio-retention areas are shallow, topographic depressions filled with engineered soils and vegetation that retain, treat, and infiltrate water. These techniques more closely mimic the natural hydrolic cycle, allowing soils and plants to filter pollutants from stormwater and permitting the processed of infiltration, evaporation, and transpiration to occur. The systems can also create wildlife habitat, minimize erosion, and recharge local groundwater supplies. Bio-retention areas can be integrated into a subdivision's landscape design scheme, creating attractive, natural amenities. Lystra Gardens would create bio-retention areas on both private lots and common areas maintained by the homeowners association.

Filtering systems use soils and vegetation to remove pollutants from stormwater. These measures include filter strips, dry swales, and constructed wetlands.

Alternative conveyance and detention systems such as vegetated channels or grassed swales slow stormwater runoff velocity and filter sediment. Rain barrels are low-cost detention devices that are placed at roof downspouts to store water for lawn or garden irrigation during dry periods. Cisterns are placed underground near downspouts, and serve the same function as rain barrels.

Lot Layout and Road Design Lystra Gardens will maximize road design and lot placement to minimize directly connected impervious areas and increase drainage flow paths to infiltration systems. Vegetated cul-de-sacs and traffic islands will serve as traffic-calming measures as well as bio-retention areas. Roads will be lined by grassed swales or flush-mounted curbs, and shared driveways will be utilized to reduce impervious surface whenever possible. Alternative pavements for streets and driveways, such as pervious concrete, porous asphalt, and stone or concrete pavers can decrease runoff velocity, increase infiltration, and add visual appeal. These will be utilized to the extent possible and when they are most cost-effective to implement.

9. Environmental Impact Assessment

The Lystra Gardens Subdivision in northeastern Chatham County will have minimal impact on the air, water, and overall land quality. The conservation design process identified quality hardwoods, which will be left untouched. Native trees, shrubs and ornamental plants will be planted to enhance open space spray areas. In addition, residents will plant specialized plants in conjunction with low impact stormwater management on their own lots.

Vegetative buffers will protect water quality of the local tributaries to Jordan Lake. Fertilizer, herbicide, and pesticide use may increase slightly. This development is located on an existing wooded lot on which fertilizers, pesticides, herbicides, and possibly EDB (ethylene dibromide) were used. Runoff of lawn and garden chemicals to adjacent streams and wetlands will be controlled by planned vegetative buffers and low impact stormwater structures. Stormwater runoff rates may increase slightly; however, impervious surfaces will account for less than 8% when Lystra Gardens is complete (within a three- to five-year timeframe).

Public water will be used to supply residents with water. Wastewater reuse technologies and a non-discharge wastewater treatment facility, with spray irrigation, are being considered. Such a facility produces effluent that meets water quality standards for swimming.

A sediment and erosion control plan will be in effect before grading begins. Stormwater detention measures will be used in the overall plan. With conservation subdivision design, the additional buffers and permanent open space will help to further minimize the impact from sediment and erosion, as well as stormwater runoff.

The overall land quality will not be adversely affected. A minimal amount of trees will be removed to make space for home sites and side roads. Every effort will be made to design around

large, quality hardwoods where they exist. The majority of home sites are located in areas that have already been logged.

Other than minimal clearing for roads, utilities and homes in the short term, we do not expect any significant adverse environmental impacts resulting from this proposed development. No irreversible or irretrievable environmental changes are involved. If roads, houses and infrastructure were removed, the land would return to its current state. The long term productivity of the environment will be further enhanced through over 30 acres of permanent open space and buffers totaling 35% of the site.

Preliminary Wetland Evaluation

S&EC

Soil & Environmental Consultants, PA

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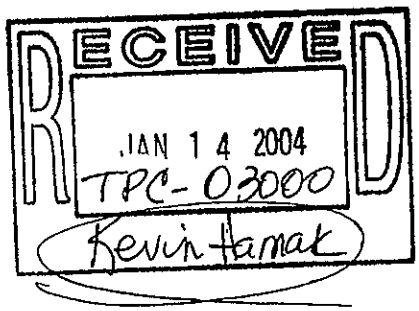


January 8, 2004
S&EC Project # 03-8330

John R. McAdams Company, Inc.
Attn: Kevin Hamak
PO Box 14005
Research Triangle Park, NC 27709

Re: Preliminary Wetland & Cape Fear River Basin Riparian Buffer Evaluation
Lystra Road (±140 Acre – Chatham County Site)
Farrington, Chatham County, NC

Dear Mr. Hamak:

On December 9 and 16, 2003, S&EC personnel conducted a preliminary wetland delineation and stream buffer evaluation on the Lystra Road property (±140 acre – Chatham County Site). The subject property is located south of Lystra Road (S.R. 1721), approximately 2,000 feet east of Lystra Church. Lystra Road borders the property to the north. Figure 1 shows the location of the site on the USGS topographic quadrangle.

EXECUTIVE SUMMARY

We have determined that wetlands and jurisdictional waters (i.e., streams, ponds, or lakes) exist on the site. The attached wetland sketch map depicts the approximate location of wetlands and jurisdictional waters identified during our evaluation. Please refer to the sketch map and the results and recommendations section below for more detailed information.

SCOPE OF WORK

The preliminary wetland delineation consisted of pedestrian reconnaissance of the property to examine areas for the presence of soils, vegetation, and hydrology that meet the criteria for jurisdictional wetlands by the procedures described in the Corps of Engineers Wetlands Delineation Manual (January 1987 – Final Report). Areas on the site with positive indicators of

hydric soils and evidence of wetland hydrology and hydrophytic vegetation were identified and sketched on the attached site map. Proof of wetland hydrology would be the existence of hydric soils with oxidized root channels in the upper 12 inches of the soil profile, water borne deposits, drift lines, scour marks, drainage patterns, regional indicators of soil saturation, etc. Surface waters such as intermittent and perennial stream channels, ponds, and lakes, which are also subject to regulation by the US Army Corps of Engineers (USACE) as waters of the US, were also identified. These surface waters may also be referred to as jurisdictional waters to indicate that they are within the jurisdiction of the USACE. It is important to note that wetlands are also classified as waters of the US and regulated by the USACE.

If enacted, the proposed Cape Fear River Basin Riparian Buffer rules will likely apply 50-foot wide riparian buffers directly adjacent to surface waters in the Cape Fear River Basin (intermittent streams, perennial streams, lakes, ponds, and estuaries), excluding wetlands. The rule would likely define surface waters as features approximately shown on either the most recent version of the soil survey map prepared by the Natural Resource Conservation Service (NRCS) of the US Department of Agriculture (USDA) or the 7.5-minute quadrangle topographic maps prepared by the US Geologic Survey (USGS). Surface waters that appear on these maps would not be subject only if an on-site determination by the NC Division of Water Quality (NC-DWQ) shows that they fall into one of the following categories:

1) Ditches and manmade conveyances other than modified natural streams;
2) Manmade ponds and lakes that are located outside natural drainage ways; or
3) Ephemeral (stormwater) streams.

S&EC's site evaluation relating to the proposed Cape Fear River Basin Riparian Buffer Rules was conducted by examining each feature on the site that is shown on the most recent version of the relevant topographic map or soil survey using NC-DWQ stream evaluation techniques. Figure 2 shows the location of the site on the appropriate Chatham County Soil Survey map.

RESULTS & RECOMMENDATIONS

The results of the preliminary delineation of jurisdictional wetlands and other waters of the US and the evaluation of surface waters on the site subject or potentially subject to the Cape Fear River Basin/Chatham County riparian buffer rules are discussed below.

Wetlands and Jurisdictional Waters:

We have determined that wetlands and jurisdictional waters (i.e., streams, ponds, or lakes) exist on the site. The wetland sketch map depicts the approximate location of wetlands and jurisdictional waters identified within the evaluated area. Seven (7) linear wetland features are present on the site. These features are depicted on the wetland sketch map along the west, east and south property lines. Six (6) jurisdictional channels (features A through F) were identified within the site boundaries. The stream origin start points are indicated on the map. We believe

that features C and E (between flags J-03 and J-04) are intermittent/unimportant channels, and that features A, B, D, and E (below flag J-04) will be considered perennial/important stream channels. Please be advised that a site meeting with the USACE and NC-DWQ may be necessary to confirm our stream determinations. The surface water features on this site drain into Herndon Creek (or Hendon Creek), which has been classified in NC-DWQ's "Classification and Water Quality Standards Applicable to Surface Waters and Wetlands of North Carolina" as WS-IV NSW (see water supply waters rules below). No other wetlands or jurisdictional waters were found within the project boundaries.

It is important to note that the preliminary sketch map is intended to provide only an approximate size and location of the wetlands on-site. The actual size and location of wetlands may differ slightly from those depicted on the sketch map. If the final site plan proposes impacting any of these areas, then a detailed delineation should be performed and the flags surveyed to provide an accurate map.

If you choose to have us conduct a detailed delineation we will hang flags to demarcate the wetland boundaries. All S&EC flags comprising the wetland and other jurisdictional waters delineation should then be surveyed and a Wetland Delineation Map generated for use in obtaining USACE approval and permitting.

Proposed Cape Fear River / Chatham County Buffer Rules:

The surface waters (i.e., intermittent streams, perennial streams, lakes, ponds or estuaries) potentially subject to the proposed Cape Fear River Riparian Buffer Rules consist of features A, B, and E. These features are depicted on either the Chatham County Soil Survey and/or the corresponding USGS Quadrangle map. No other surface waters are indicated on either the USGS topographic or Chatham County Soil Survey maps. S&EC believes that feature A (below flag 121), feature B (throughout its extent on the property), and feature E (below flag J-02) would be subject to the Cape Fear Buffer rules if enacted. **Please note that Chatham County has recently adopted riparian buffer rules. Buffer widths may vary between 50 and 150 feet, depending upon whether the stream is classified as perennial or intermittent and the density of development.**

REGULATIONS

Regulations that apply to wetlands and other jurisdictional waters present on the site are discussed below.

Proposed Cape Fear River Riparian Buffer Rules

The Environmental Management Commission decided that temporary Cape Fear River Basin Rules would not be enacted prior to adopting permanent rules. S&EC believes that the permanent Cape Fear River Basin Buffer Rules will not be implemented in the near future. It is important to note that the decision to not adopt temporary rules can be changed at any time. The buffer rules will protect up to 50 feet from the edge of existing "surface waters" (i.e., intermittent streams, perennial streams, ponds, lakes and estuaries) found within the Cape Fear River Basin. The 50-

foot buffer consists of two zones. The first zone is measured 30 feet landward from the top bank of streams and is intended to contain an undisturbed forested area. The second zone extends 20 feet landward from the edge of the first zone and is intended to contain a vegetated buffer. Grading with re-vegetating is permissible in Zone 2 (the outer 20 feet of the 50 foot buffer). Mitigation for road crossings is mandatory for impacts greater than 150 feet in width and utility lines running parallel and within Zone 1. Please call if you would like to discuss the uses/allowances within buffered areas. **In order for a project not to be subject to these buffer rules, an approved site specific plan for proposed impacts to wetlands and other waters of the US would have to be obtained from the USACE and the NC-DWQ prior to enactment of the rules.**

Wetland Permitting

Wetland impact permits are issued on a per-project basis as determined by the USACE. The USACE has determined that impacts on parcels sub-divided from larger tracts are sometimes considered to be cumulative to existing impacts for the large tract. If this is the case, then thresholds as discussed below may not apply and impacts to wetlands must be considered in light of existing permits.

Preconstruction notification to the USACE and the NC-DWQ is not required for wetland impacts less than 1/10 acre. Preconstruction notification and approval by the USACE is required for wetland impacts that exceed 1/10 of an acre and /or any stream channel impacts. **Preconstruction notification and approval by the NC-DWQ is required for wetland impacts that exceed 1/10 of an acre if the property is west of I-95 or 1/3 of an acre if the project is east of I-95. Preconstruction notification and approval by the NC-DWQ is required for any stream channel impacts within buffered basins (i.e the Neuse, Tar-Pamlico, Randleman, and portions of the Catawba Basins) or for cumulative stream impacts that exceed 150 linear feet in non-buffered basins.** If development impacts exceed the thresholds for notification and proposed impervious area for the project exceeds 30%, then stormwater treatment to meet the pollutant removal design standard of 85% removal of total suspended solids (i.e., wet detention basins, stormwater wetlands, bioretention areas, etc.) will likely be required by the NC-DWQ. The maximum permanent impact allowed per project under the nationwide permits is 1/2 acre of wetland and/or 300 linear feet of USACE important stream channel. Nationwide Permit 39 limits above-grade fills within 100-year floodplains specifically prohibiting above-grade fill within the floodway. Additionally, Nationwide Permit 39 limits stream channelization and relocation to streams with an average annual flow of less than 1cfs.

Per project impacts to vegetated wetlands in excess of 1 acre or impacts to streams that contain "significant aquatic function" in excess of 150 linear feet will most likely require mitigation by the NC-DWQ. The USACE may require mitigation for any wetland/jurisdictional waters impacts. Actual mitigation requirements are typically determined on a case by case basis. Wetland mitigation is a complex process that requires planning and monitoring. S&EC will discuss mitigation issues with you if we believe your project may require mitigation.

Impacts to channels containing "significant aquatic function" in excess of the notification thresholds may require mitigation. Channel mitigation is typically intended to replace lost significant aquatic functions and values. Relocating channels is considered to be an adverse impact and typically results in mitigation within the new channel. Therefore, this type of mitigation usually requires that meanders be created within constructed channels. Side-slopes and beds be vegetated; rip-rap is discouraged.

A complete NC-DWQ 401 Water Quality Certification application for a Nationwide Permit has a maximum 60-day processing period. A complete USACE Nationwide Permit application has a 45-day processing period, while Individual Permit applications submitted to the USACE have no maximum processing periods. **The USACE requires that all impacts to wetlands or Waters of the US, less than 1/10 acre, be reported to the USACE within 30 days of the completion of construction.**

Nationwide Permits can potentially be utilized if the project is designed to impact up to 1/2 acre of jurisdictional wetlands or waters of the US including a maximum of 300 linear feet of important stream channel impact under NWP 39. Cumulative impacts per project over these nationwide thresholds will

require an individual permit. Individual Permits require an analysis to determine that the proposed impact is the least environmentally damaging practical alternative, typically require compensatory mitigation, notification to adjacent property owners, a public notice, and may require a public hearing. All impacts greater than 1/10 acre require written justification.

ADDITIONAL SERVICES

If you choose to have us perform additional work, the following is a listing of additional services: (1) Request that the USACE verify our delineation, and (2) Notification to the USACE and NC-DWQ regarding impacts to jurisdictional areas and riparian buffers and permitting issues, if required. This additional work can be completed at our hourly rates or a proposal can be generated. Please advise.

Please call Todd Preuninger if you need further explanation of the information provided.

Sincerely,

Jason Payne
Wetland Scientist/
Soil Scientist in Training

Todd Preuninger
Biologist/
Project Manager

Attachments: USGS topographic quadrangle
Chatham County Soil Survey map
Wetland Sketch map

Soil/Site Evaluation

Soil & Environmental Consultants, PA

11010 Raven Ridge Road • Raleigh, North Carolina 27614 • Phone: (919) 846-5900 • Fax: (919) 846-9467
www.SandEC.com

January 6, 2004
Project #8330.S1

John R. McAdams Company, Inc.
Attn: Mr. Kevin Hamak
2905 Meridian Parkway
RTP, NC 27713

Re: Soil/Site Evaluation on Bradley Tract, 140- Acre Site on Lystra Road, Chatham County, NC

Dear Mr. Hamak:

Soil & Environmental Consultants, PA (S&EC) performed a "Loose" preliminary soil and site evaluation on the above referenced tract. This was performed at your request as part of the preliminary planning process in order to determine areas of soil that have potential for subsurface and/or surface wastewater disposal. Fieldwork was performed in December, 2003.

S&EC traversed the property and observed landforms (slope, drainage patterns, past use, etc.) as well as soil conditions (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) through the use of hand auger borings. The site was evaluated during moist soil conditions. From these observations, an evaluation of the site, relative to subsurface disposal of wastewater, was developed. Soil areas were estimated in the field. The soil/site evaluation criteria used is that contained in 15 A NCAC 18A .1900 "Laws and Rules for Sewage Treatment and Disposal Systems".

FINDINGS

This site is located in the Piedmont region of Chatham County. The upland soils on this tract are similar to the Wedowee/Rion and Helena soil series. The Wedowee soil series has a sandy loam surface material over a clay subsoil. These soils are at least 24 inches deep to prohibitive soil characteristics and are generally useable for subsurface septic systems. The Helena soils have an expansive clay subsoil and soil wetness before 24 inches and are generally unsuitable for conventional subsurface septic systems. However, some areas of the Helena soils may be useable for surface application systems such as surface drip and spray.

The accompanying AutoCAD sketch map indicates the estimated areas with potential use for subsurface wastewater disposal. The "CONV." units indicate areas of soils which are at least 24 to 30 inches deep to prohibitive soil characteristics and these areas have potential for a conventional septic system, a modified conventional (shallow placed lines with no fill required over the disposal area) or a low pressure pipe system (LPP) and/or ultra-shallow conventional (shallow placed lines with fill required over the disposal field) system. Unit "PSS" on the attached map indicates areas of soils that are 12 to 24 inches to prohibitive soil characteristics and may have potential for surface system application such as the spray and surface drip systems. Unit "UN" on the attached map indicates areas of soils that are less than 12 inches to prohibitive soil characteristics and are generally unsuitable for the type of systems mentioned above. Such systems as the spray irrigation or pretreatment drip are expensive and, if requested, S&EC can provide additional information concerning these types of systems.

The site plan for each lot must ensure that adequate soil area for system and repair is unaffected by site elements (house placement, driveway, wells, patios, decks, etc.) on that or adjacent lots. The area ultimately designated by the health department on the site plan for the septic system and repair must remain undisturbed (no mechanical clearing, excavation, heavy traffic or other significant site disturbing activities) until authorized by the health department. A lot with initially adequate useable soil area may be rendered unusable as a result of improper site planning and/or disturbance. A field layout of the proposed septic systems may be required as part of the individual lot development process.

Additional fieldwork may be necessary for any subdivision plan. This additional fieldwork may include flagging the boundary between the useable and unusable soils and locating that boundary either by GPS or a survey. That additional fieldwork will provide an accurate base map for a subdivision plan, especially where maximum lot yield is desired. Upon completion of a subdivision plan, S&EC recommends reviewing the plan before recording the subdivision lots.

It is important to note that any preliminary certification that a subdivision plan meets does not represent approval or a permit for any site work, nor does it guarantee issuance of an improvement permit for any lot. Final site approval for issuance of improvements is based on regulations in force at the time of permitting and is dependent on satisfactory completion of individual site evaluations following application for an improvement permit detailing a specific use and sitting.

GENERAL WASTEWATER CONSIDERATIONS

Once potentially useable areas are located through vertical borings, the next consideration is the horizontal extent of those areas. The size and configuration of the useable soil area dictate the utility of that area. The size of a subsurface disposal field is determined by: 1) the design flow from the source (120 gallons/bedroom/day in residences), and 2) the long term acceptance rate (LTAR) of the soil (based on the hydraulic conductivity of the soil, a function of the soil's texture, mineralogy, structure, porosity, etc.). The configuration must be such that an efficient layout of disposal lines (on contour) is possible. An additional consideration is the required setbacks for the system from various elements such as wells (100'), streams and ponds (50') or more (depending on watershed regulations), property lines (10'), top of embankment (15'), watershed buffers, etc. (see Attachment 1). Surface systems (spray and drip) require different set backs than subsurface systems; wells, streams, ponds (100'), property lines (50 to 150'), dwellings off site (200 to 400'), etc..

The utility of a potential useable soil area for a subsurface system is most accurately determined by an on-ground layout of the proposed system. The total area needed for system and repair areas will depend upon the system type, the layout of that system and the total design flow (factors mentioned above). A typical area needed for a four bedroom residence is approximately 12,000 to 16,000 ft^2 (could be more depending on site features) or 800 to 1,068 linear feet of conventional line (system and repair) or 1,920 linear feet of LPP line (system and repair). These estimates reference Laws and Rules for Sewage Treatment and Disposal Systems for North Carolina and use a LTAR of 0.3gpd/ft^2 for conventional septic systems (.1955), a LTAR of 0.3gpd/ft^2 for modified conventional (.1956) and o.1gpd/ft^2 for LPP septic systems (.1957a). The health department will determine the ultimate LTAR after their lot evaluation. S&EC will be glad to assist in any system layout or sizing calculations, if requested. Surface application systems require more detail soil and site evaluation to determine the application rate and the wetted area.

This report discusses the general location of potentially useable soils for on-site subsurface and/or surface wastewater disposal and, of course, does not constitute or imply any approval or permit as needed by the client from the local heath department and NCDWQ. S&EC is a professional consulting firm that specializes in the delineation of soil areas for wastewater disposal and the layout and design of wastewater treatment systems. As a professional consulting firm, S&EC is hired for its professional opinion in these matters. The rules governing wastewater treatment (interpreted and governed by local and state agencies) are evolving constantly, and in many cases, affected by the opinions of individuals employed by these governing agencies. Because of this, S&EC cannot guarantee that areas delineated and/or systems designed will be permitted by the governing agencies. As always, S&EC recommends that anyone making financial commitments on a tract be fully aware of individual permit requirements on that tract prior to final action.

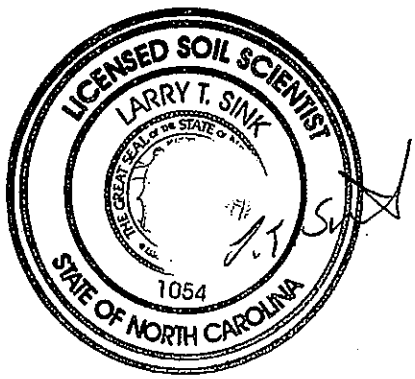
An individual septic system permit will be required for each lot prior to obtaining a building permit. This will involve a detailed evaluation by the local health department to determine, among other things, system size and layout, well, drive and house location. Only after developing this information can a final determination be made concerning specifics of system design and site utilization.

Soil & Environmental Consultants, PA is pleased to be of service in this matter and we look forward to assisting in any site analysis needs you may have in the future. Please feel free to call with any questions or comments.

Sincerely,

Larry T. Sink
NC Licensed Soil Scientist #1054

Encl: Attachment 1
Soil Suitability Map



Attachment 1

.1950 Location of Sanitary Sewage Systems

(c) (c) Every sanitary sewage treatment and disposal system shall be located at least the minimum horizontal distance from the following:

(1)	any private water supply source including a well or spring	100 feet
(2)	any public water supply source	100 feet
(3)	streams classified as WS-I	100 feet
(4)	water classified as S.A.	100 feet from mean high water mark
(5)	Other coastal waters	50 feet from mean high water mark
(6)	any other stream, canal, marsh, or other surface waters	50 feet
(7)	any Class I or Class II reservoir	100 feet from normal pool elevation
(8)	any permanent storm water retention pond	50 feet from flood pool elevation
(9)	any other lake or pond	50 feet from normal pool elevation
(10)	any building foundation	5 feet
(11)	any basement	15 feet
(12)	any property line	10 feet
(13)	top of slope of embankments or cuts of 2 feet or more vertical height	15 feet
(14)	any water line	10 feet
(15)	drainage systems:	
	(A) Interceptor drains, foundation drains and storm water diversions	
	(i) upslope	10 feet
	(ii) sideslope	15 feet
	(iii) downslope	25 feet
	(B) Groundwater lowering ditched and devices	25 feet
(16)	any swimming pool	15 feet
(17)	any other nitrification field (except repair area)	20 feet

(b) Ground absorption, sewage treatment and disposal systems may be located closer than 100 feet from a private well supply, except springs and uncased wells located downslope and used as a source of drinking water, repairs, space limitations and other site-planning considerations but shall be located the maximum feasible distance and, in no case, less than 50 feet.

(c) (c) Nitrification fields and repair areas shall not be located under paved areas or areas subject to vehicular traffic. If effluent is to be conveyed under areas subject to vehicular traffic, ductile iron or its equivalent pipe shall be used. However, pipe specified in Rule .1955 (e) may be used if a minimum of 30 inches of compacted cover is provided over the pipe.

Note: Systems over 3000 GPD or an individual nitrification fields with a capacity of 1500 GPD or more have more restrictive setback requirements, see .1950 (a) (17) (d) for specifics.