S&EC

# Soil & Environmental Consultants, PA

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March 30, 2004
Project # 8592. S1

FILE

Collett and Associates
Attention: Bill Mitchener
1228 East Morehead Street
Suite 200
Charlotte, N.C. 28204

Re: Soil/Site Evaluation on the Walter's Property, a 3.5 acre tract at the intersection of US 15-501 and Mann's Chapel Road, Chatham county, N.C., for a proposed Eckerds Drug Store.

Dear Mr. Mitchener:

Soil & Environmental Consultants, PA (S&EC) performed a 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 wastewater disposal. Fieldwork was performed on March 29, 2004.

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 Pacolet and Vance soil series. The Pacolet 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 Vance soils have expansive mineralogy and are generally unsuitable for conventional subsurface septic systems. Refer to the attached soil/site evaluation form for additional information.

The accompanying AutoCAD map indicates the estimated areas with potential use for subsurface wastewater disposal. The hatched units indicate areas of soils which are at least 24 inches deep to prohibitive soil characteristics and these areas have potential for a low pressure pipe system (LPP) and/or ultra-shallow conventional (shallow placed lines with fill required over the disposal field) system. Unit "UN" on the attached map indicates areas of soils that are less than 24 inches to prohibitive soil characteristics and are generally unsuitable for the type of systems mentioned above. However, they may be suitable for more expensive alternative septic systems, i.e. pretreatment drip, etc. Such systems are expensive and, if requested, S&EC can provide additional information concerning these types of systems.

A septic system layout was done to determine if adequate space exists for the proposed Eckerds facility which will employ 15 people. The layout information is attached for a ultra-shallow pressure manifold system and repair.

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236 LePhillip Court, Suite C
Concord, NC 28025
Phone: (704) 720-9405
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3817-E Lawndale Drive
Greensboro, NC 27455
Phone: (336) 540-8234
Fax: (336) 540-8235

Hickory Office:
622 Coon Mountain Lane
Taylorsville, NC 28681
Phone: (828) 635-5820
Fax: (828) 635-5820

The site plan for this lot must ensure that adequate soil area for system and repair is unaffected by site elements (building placement, driveway, wells, parking lot, 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.
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 (15 gallons/full time employee/day), 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).

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 15 employee business is approximately 5,000 to 10,000 $ft^2$ (could be more depending on site features) or 832 linear feet of ultra-shallow conventional line (system and repair) or 1500 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 0.30 $gpd/ft^2$ for ultra-shallow conventional septic systems (.1956) and 0.10 $gpd/ft^2$ 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.

This report discusses the general location of potentially useable soils for on-site subsurface wastewater disposal and, of course, does not constitute or imply any approval or permit as needed by the client from the local heath department. 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 prior to obtaining a building permit. This will involve a detailed evaluation by the local health department to confirm our determination. 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,

4/2/04

LICENSED SOIL SCIENTIST
Richard A. Pontello
1232
STATE OF NORTH CAROLINA

Will Buetow
Soil Scientist In Training

Ricky Pontello
NC Licensed Soil Scientist

Encl: Attachment 1
Soil/Site Evaluation Form
Soil Suitability Map
Septic System Layout Information

## Attachment 1

.1950 Location of Sanitary Sewage Systems

(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) 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.

## Soil/Site Evaluation for On-Site Wastewater Systems

Job #_____8592. S1_____

Date Evaluated: _____3/29/04_____ Evaluated by: ____WB, MA_____

Water Supply: On-Site Well Comm. Well Municipal Water Supply

Evaluation Method: Auger

.1940 Slope: 15 to 30%(PS)

.1941: (1) Group IV (PS): sandy clay silty clay clay

(2) Structure: Block Like (PS)

(3) Clay Mineralogy: Slightly Expansive (PS)

.1942 Soil Wetness (Depth to 2 chroma colors due to wetness):
<36" (U) ____24"___

.1943 Soil Depth (to saprolite, rock or parent material):
<36" (U) _____24"_____

.1944 Restrictive Horizons (3" thick or more):
<36" (U) ___24"____

.1945 Available Space (complete only if a layout has been done):
System and repair available? Yes

.1947 Overall Site Suitability: PS

.1956 or .1957 Classification if Modification to Septic Tank System Proposed:

1) Shallow System (PS)
   Describe: _____

2) Drainage and Restrictive Horizons (PS)
   Describe: _____

3) Gravelless Trenches (PS)
   Describe: _____

4) Interceptor Drains (PS)
   Describe: _____

5) Steep Slopes (PS)
   Describe: _____

6) Saprolite (PS)
   Describe: _____

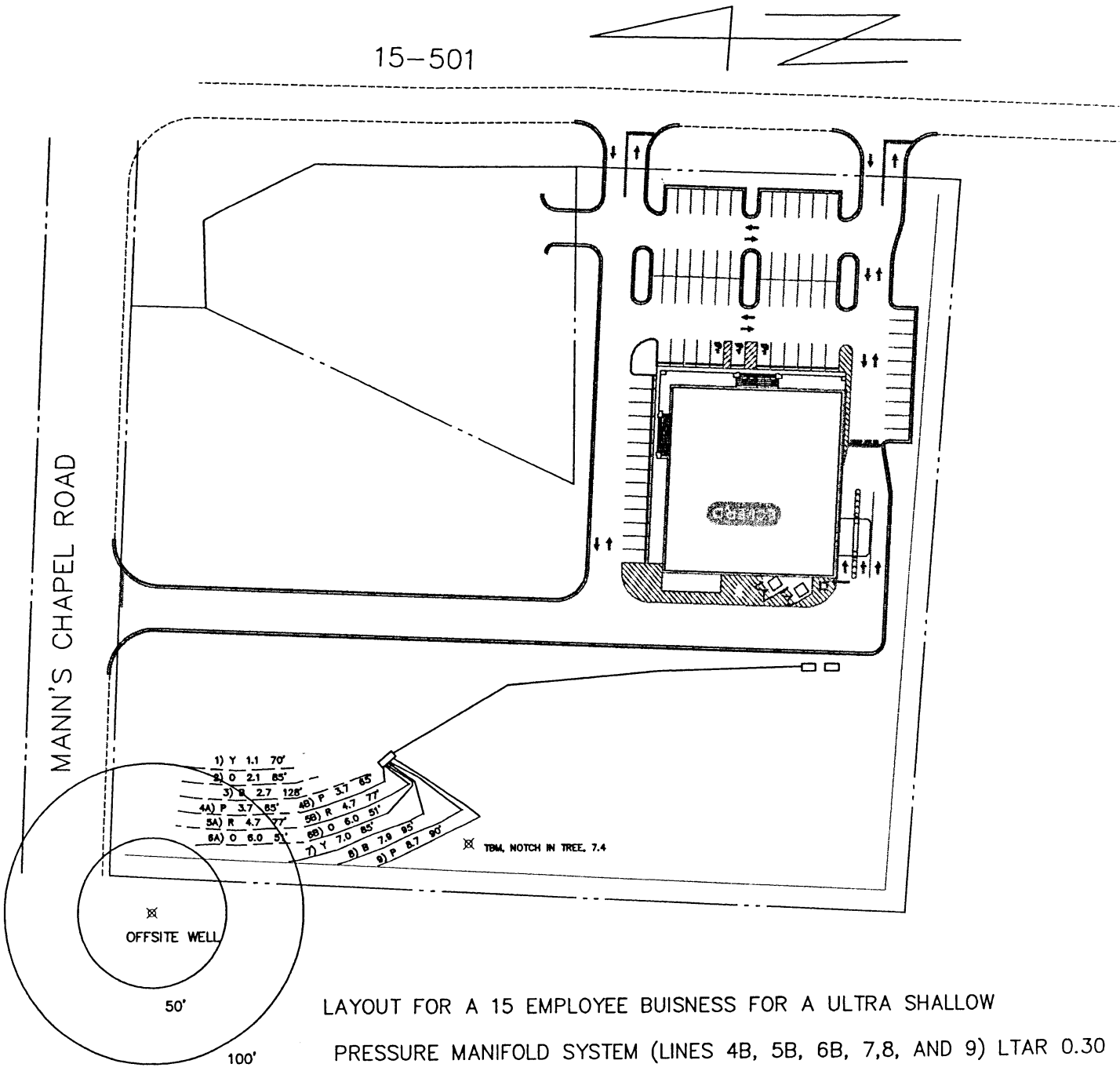
.1957: (a) LPP System (PS)
   Describe: _____

(b) Fill System (PS)
   Describe: _____

(c) ATU (PS)
   Describe: _____

.1969: Innovative System (PS)
Describe: _____

Recommended LTAR _____0.30_____ gpd/ft$^2$ trench bottom
or _____ gpd/ft$^2$ areal




LAYOUT FOR A 15 EMPLOYEE BUISNESS FOR A ULTRA SHALLOW PRESSURE MANIFOLD SYSTEM (LINES 4B, 5B, 6B, 7,8, AND 9) LTAR 0.30

LAYOUT FOR A 15 EMPLOYEE BUISNESS FOR AN ULTRA SHALLOW PRESSURE MANIFOLD REPAIR (LINES 1,2,3,4A, 5A AND 6A) LTAR 0.30

SYSTEM LINE
REPAIR LINE

100' 0 100'

| | | |
|---|---|---|
| PROJECT NO. 8592 | SCALE 1" = 100' | SHEET TITLE: SEPTIC SYSTEM LAYOUT |
| PROJECT MGR. RP | FIELD WORK WB, MA | PROJECT NAME: COLLETT AND ASSOCIATES 15-501/MANN'S CHAPEL RD. ECKERDS CHATHEMCOUNTY, NORTH CAROLINA MARCH 2004 |
| DRAWN BY WB | | |
| \\SEC\SECFILES\8592\LAYOUT.DWG | | |

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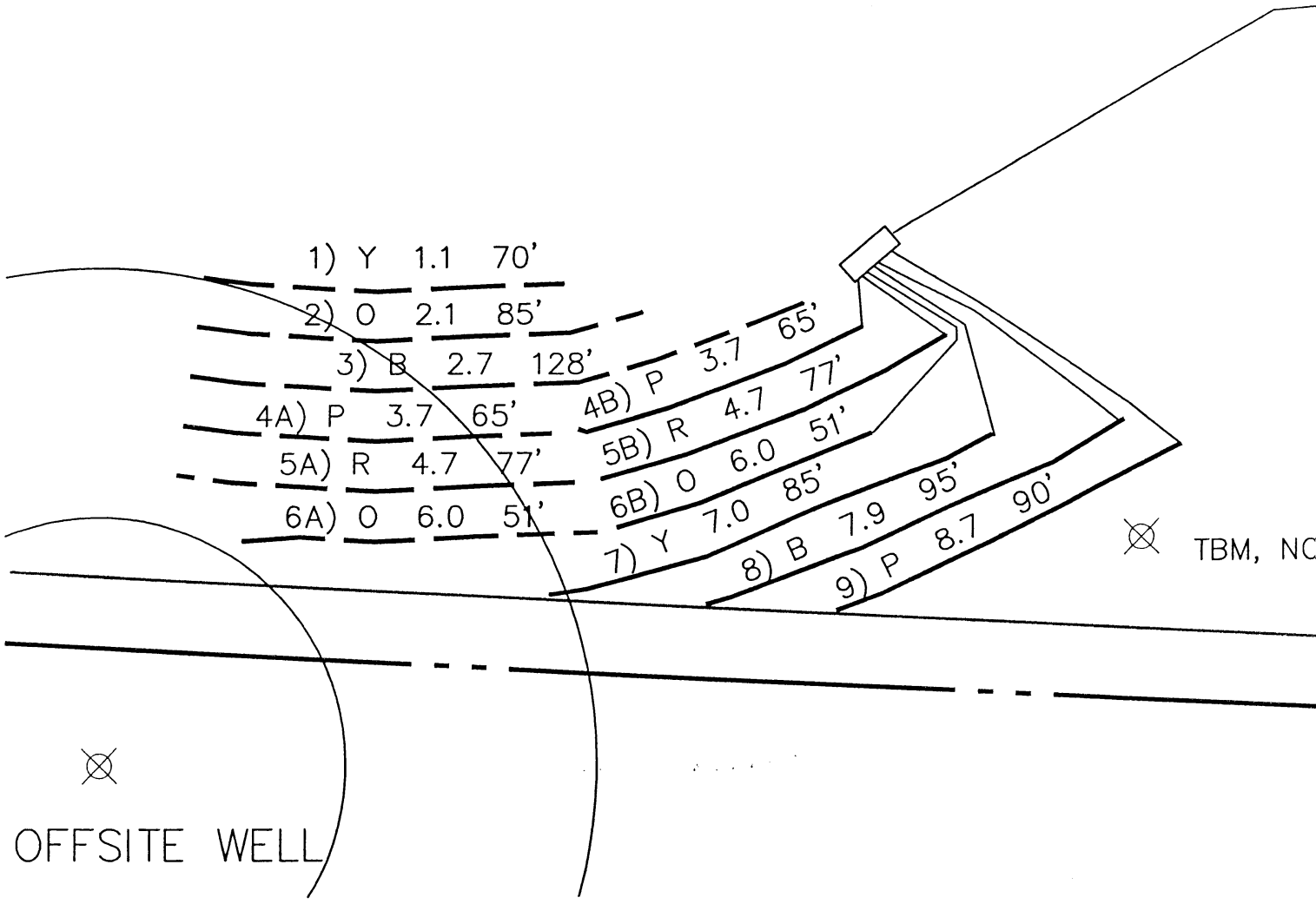

1) Y 1.1 70'
2) O 2.1 85'
3) B 2.7 128'
4A) P 3.7 65'
5A) R 4.7 77'
6A) O 6.0 51'
4B) P 3.7 65'
5B) R 4.7 77'
6B) O 6.0 51'
7) Y 7.0 85'
8) B 7.9 95'
9) P 8.7 90'
TBM, NC
OFFSITE WELL

# MANNS CHAPEL/ 15-501 ECKERDS

JOB #: 8592. S1

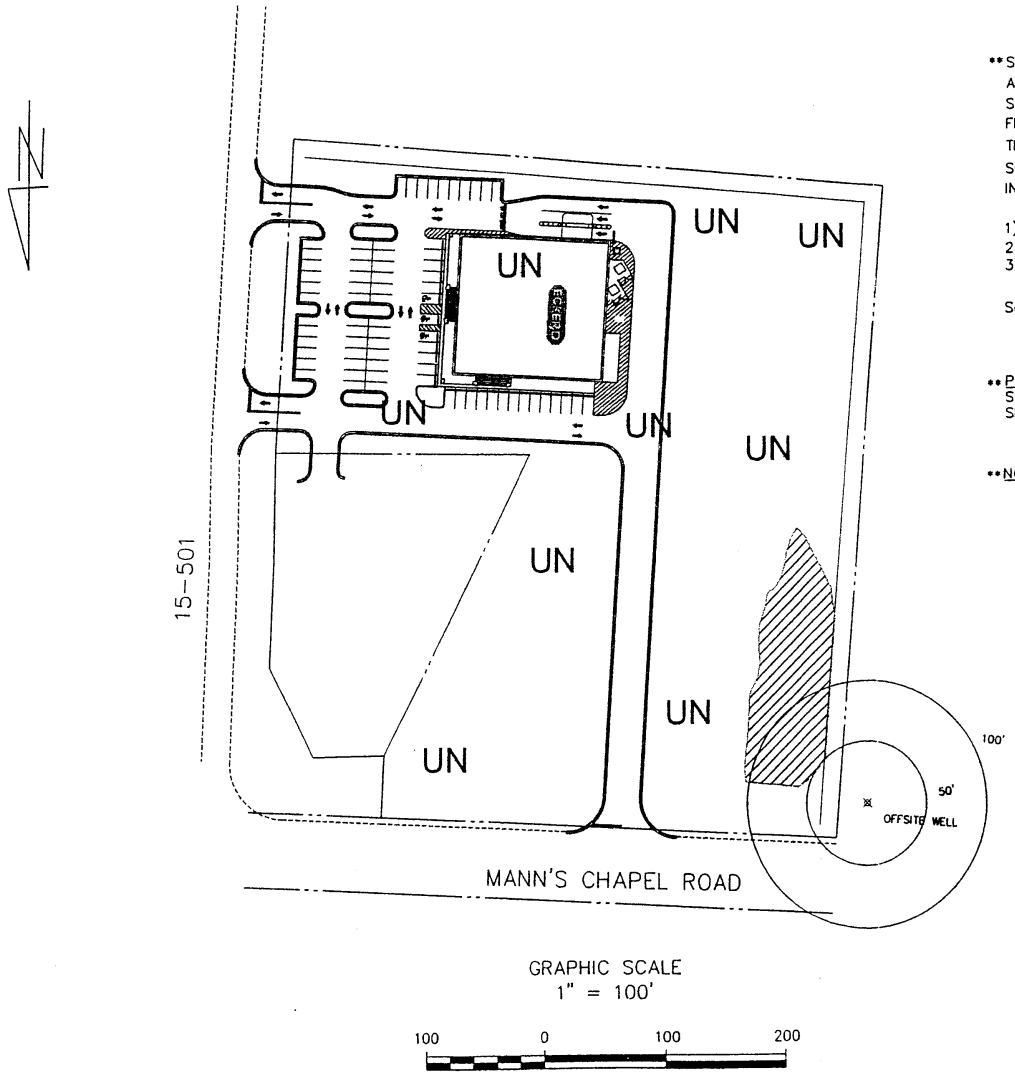
LAYOUT FOR 15 EMPLOYEE BUISNESS March-04

| LINE # | FLAG COLOR | BS | HI | FS | ELEVATION | LINE LENGTH |
|---|---|---|---|---|---|---|
| TBM | | 7.4 | | | 100.0 | |
| INSTR. 1 | | | 107.4 | | | |
| 1 | YELLOW | | | 1.10 | 106.3 | 70 |
| 2 | ORANGE | | | 2.10 | 105.3 | 85 |
| 3 | BLUE | | | 2.70 | 104.7 | 128 |
| 4A | PINK | | | 3.70 | 103.7 | 65 |
| *4B** | *PINK* | | | *3.70* | *103.7* | *65* |
| 5A | RED | | | 4.70 | 102.7 | 77 |
| *5B** | *RED* | | | *4.70* | *102.7* | *77* |
| 6A | ORANGE | | | 6.00 | 101.4 | 51 |
| *6B** | *ORANGE* | | | *6.00* | *101.4* | *51* |
| *7** | *YELLOW* | | | *7.00* | *100.4* | *85* |
| *8** | *BLUE* | | | *7.90* | *99.5* | *95* |
| *9** | *PINK* | | | *8.70* | *98.7* | *90* |
| | | | | | **Total** | **939** |

| | LINE LENGTH | LTAR GPD/FT$^2$ | SYSTEM TYPE | PROPOSED LTAR GPD/FT$^2$ | TRENCH TYPE | DISTRIBUTION |
|---|---|---|---|---|---|---|
| ** System* | *463'* | *0.30* | | *0.27* | *GRAVEL* | **PRESSURE MANIFOLD** |
| REPAIR | 475' | 0.30 | | 0.26 | GRAVEL | PRESSURE MANIFOLD |

**Notes:**

** TBM located on top of notch in tree
**TBM is assumed to be 100'
**All measures in feet
**Nitrification lines are demonstrated on contour via colored pin flags
** Building and driveway location illustrated on the attached map
**BS and FS indicate rod readings
**Lines flagged in field may be longer than lengths shown.
**Install at lengths shown on this sheet.**




**SUITABLE FOR PRELIMINARY PLANNING PURPOSES ONLY. THIS LOT WILL REQUIRE APPROVAL BY THE COUNTY HEALTH DEPARTMENT . THIS MAP SHOULD BY USED AS A GENERAL GUIDE, SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND TOPOGRAPHIC IRREGULARITIES.
THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC TANK SYSTEMS. SOME OTHER CONSIDERATIONS THAT AFFECT SITE SUITABILITY THAT SHOULD BE CONSIDERED IN DEVELOPMENT DESIGN ARE:

1) 10' SETBACK FROM PROPERTY LINE
2) 100' SETBACK FROM ANY WELL
3) 50' SETBACK FROM STREAMS, PONDS OR LAKES.

See accompanying S&EC report.

**PRELIMINARY SOIL/SITE EVALUATION.
SOIL LINES WERE DELINEATED IN THE FIELD BY S&EC PERSONNEL. THE SOIL LINES WERE SKETCHED ONTO THE MAP BASED ON TOPOGRAPHY AND OTHER SITE FEATURES.

**NOT A SURVEY.


LEGEND

Areas contain soils with at least 24 inches of useable material and have the potential for LPP (Low Pressure Pipe) and ultra-shallow conventional septic systems.

UN Unsuitable areas.

JOB NO. 8592
PROJECT MGR. RP
DRAWN WB
FIELD WORK WB, MA
SCALE 1" = 100'
FILE \\SEC\SECFILES\SOIL\

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PROJECT NAME: COLLETT AND ASSOC. MANN'S CHAPEL RD./15-501 CHATHAM COUNTY, NORTH CAROLINA MARCH 30, 2004

SHEET TITLE: PRELIMINARY SOILS EVALUATION

SHEET 1 OF 1