



Central Carolina Soil Consulting, PLLC
6325-9 Falls of Neuse Rd., PMB#341
Raleigh, NC 27615-6809
919-784-9449

April 6, 2005
Job # 52

Mac Development Company
Attention: Chuck Lewis
124 Hidden Oaks Drive
Chapel Hill, NC 27517

RE: Preliminary soil/site evaluation on ~80-acres in Chatham County, NC adjacent to Cedar Grove Subdivision

Dear Mr. Lewis:

Central Carolina Soil Consulting, PLLC conducted a preliminary soil evaluation on the parcels listed above to determine the areas of soils that are suitable for subsurface wastewater disposal systems. The soil/site evaluation was performed using hand auger borings, under moist soil conditions, based on the criteria found in the State Subsurface Rules, 15ANCAC 18A .1900 "Laws and Rules for Sewage Treatment and Disposal Systems". From this evaluation, CCSC sketched the boundary between the suitable soils and unsuitable soils onto an aerial and topographic map of the property.

The above referenced parcel is located north of Lamont Norwood Road and southeast of Jones Ferry Road in northern Chatham County. This area lies in the mixed mafic and felsic crystalline geologic unit, where soils have formed from residual parent material such as gneiss, schist and diorites. The soils that have formed on this parcel are similar to the Pacolet, Appling, Wedowee, Helena, Louisburg and Chewacla soil series. The attached soils map indicates the areas of suitable vs. unsuitable soils. The Appling, Wedowee and Pacolet soil series are generally suitable for subsurface wastewater systems. That is, the morphology of the soils contain suitable characteristics that would support subsurface septic systems such as clay to sandy clay textured subsoils that are not considered expansive, blocky structure and no indicators of restrictive characteristics within 24 inches of the soil surface. The remaining soil series are considered unsuitable in regards to subsurface wastewater disposal systems. The Helena soils contain expansive clays and indicators of a perched water table, while the areas of Louisburg soils are shallow to bedrock. The Chewacla soils are located in drainage ways and floodplains.

The attached soils map indicates the areas of soils which are suitable for subsurface wastewater systems. The "hatched soil units" on the attached map indicates the areas of soils that have 24 to 30+ inches or more of suitable soil material. These areas have potential for conventional, modified conventional, LPP or ultra-shallow conventional septic systems. Unit "UN" on the attached map indicates areas of unsuitable soils that are located in unsuitable soils or topography and cannot be used for the systems mentioned above. Unit "RK" on the

attached map indicates unsuitable soil areas due to exposed rock. Some of these areas may be evaluated with the use of backhoe pits to expand the areas of suitable soils. Unit "NE" on the attached map indicates areas of soils that were not evaluated.

Future Subdivision Considerations

Several factors should be considered before a final subdivision plan is created for any property. One consideration is that each proposed lot shall contain an adequate amount of suitable soils, which can support a primary septic system along with a repair septic system. The suitable soil areas cannot be affected by future homes, driveways, patios, excavation or filling activities and if an on-site well is used then a 100' setback is required around the well head. An exact square footage of suitable soils required per lot to obtain a permit cannot be given due to soil variability and topographic characteristics on each lot. The amount of suitable soils required to support a 3-bedroom residence will range between 12,000 ft² - 16,000 ft² (could be more or less) per lot. These soil area estimates are based upon soil application rates for a clay to a sandy clay textured subsoil with a range of 0.27 gallons per day/square foot and 0.32 gallons per day/square foot for conventional type systems 0.1 gallons per/day/square foot for low pressure pipe septic systems. The ultimate application rate will be assigned by the Chatham County Health Department based on a detailed evaluation.

Due to the limited areas of suitable soils for subsurface septic systems on these parcels you may want to consider maximizing the areas of suitable soils for septic system easements. This would allow you to maximize the total number of lots the two parcels can support for subsurface wastewater disposal. A detailed soils evaluation would need to be completed before a final plan is developed.

During the road construction process of a subdivision it is important not to impact any suitable soil areas with such activities as excavating or filling. Only the actual roadways and required drainage ditches and/or sediment basins should be constructed during this process. If the contractor requires a staging area to place fill from the construction process, then areas of unsuitable soils on the property should be utilized as long as they are not state/county buffers, jurisdiction wetlands or other areas protected by local zoning regulations. If this is not possible, then the disturbed areas should be minimized as much as possible. The same precautions should be taken when the individual lots are cleared for home sites. Only the vegetation should be removed in the areas of the proposed drain fields on lots to prevent any disturbance of the naturally occurring soil. A lot with adequate areas of suitable soils can be deemed unsuitable due to poor planning or site disturbance. Central Carolina Soil Consulting recommends that all lot clearing activities are delayed until a permit is issued by the local health department, with the exception of clearing thick vegetation to access the lot.

This report discusses the location of suitable soils for subsurface wastewater disposal systems and does not guarantee any permits or approval required by the local health department. Central Carolina Soil Consulting, PLLC is a professional consulting firm specializing in soil delineations and design for on-site wastewater disposal systems. The rules governing on-site wastewater disposal systems are complex and the interpretation of the rules are based upon the opinions of regulators (state and county level). Due to the subjective nature of the permitting process, CCSC cannot guarantee that areas delineated as suitable for on-site wastewater disposal systems will be permitted by the governing agencies. These permitting

considerations should be taken into account before a financial commitment is made on a tract of land.

If you have any questions regarding the findings on the attached map or in this report, please feel free contact me at anytime. Thank you allowing Central Carolina Soil Consulting to perform this site evaluation for you.

Sincerely,

Jason Hall
NC Licensed Soil Scientist #1248

Encl: Soil Map

Mac Development Group
Cedar Grove Subdivision, lot 24
 3-Bedroom Home (360 gal./day)

<u>LINE #</u>	<u>COLOR</u>	<u>BS</u>	<u>HI</u>	<u>FS</u>	<u>ELEVATION</u>	<u>LINE LENGTH</u>	<u>Design Length</u>
TBM		0.0		100.0		<u>in field</u>	<u>installation</u>
INST. 1			100.0				
1	Blue			4.3	95.7	45	45
2	Yellow			5.1	94.9	75	75
3	Orange			5.7	94.3	90	90
4	Red			6.3	93.7	102	100
5	<i>Pink</i>			6.7	93.3	100	100
6	<i>Blue</i>			7.7	92.3	105	105
7	<i>Yellow</i>			8.6	91.4	65	65
8	<i>Orange</i>			9.8	90.2	100	100

Total 682 680

System Type	<u>System</u>	<u>Repair</u>
	Lines 5-8	Lines 1-4
	Accepted Status System	Accepted Status System
Suggested Soil LTAR (gal/day/ft ²)	0.30	0.3
System Installation LTAR	0.25	0.29
Total Line Length	365'	310'
Square Footage	1095	930
Proposed Trench Bottom	24"	24"
Distribution Method	Pressure Manifold	Pressure Manifold

Backhoe pits will be required to evaluate coarse saprolite

Mac Development Group
Cedar Grove Subdivision, Lot 27
 3-Bedroom Home (360 gal./day)

<u>LINE #</u>	<u>COLOR</u>	<u>BS</u>	<u>HI</u>	<u>FS</u>	<u>ELEVATION</u>	<u>LINE LENGTH</u>	<u>Design Length</u>
TBM		0.0		100.0		<u>in field</u>	<u>installation</u>
INST. 1			100.0				
1	Blue			4.3	95.7	85	85
2	Pink			5.4	94.6	90	90
3	Yellow			6.9	93.1	75	75
4	Orange			8.2	91.8	61	60
5	Red			9.6	90.4	35	35
6	Blue			15.3	84.7	25	25
7	Pink			17.8	82.2	50	50
8	Yellow			19.1	80.9	65	65
9	Orange			21.0	79	65	65
10	Red			22.7	77.3	70	70
Total						621	620

System Type	<u>System</u> Lines 1-4 Accepted Status System	<u>Repair</u> Lines 5-10 Accepted Status System
Suggested Soil LTAR (gal/day/ft ²)	0.30	0.3
System Installation LTAR	0.29	0.29
Total Line Length	310'	310'
Square Footage	930	930
Proposed Trench Bottom	22"	22"
Distribution Method	Pressure Manifold	Pressure Manifold

Mac Development Group
Cedar Grove Subdivision, Lot 23
 3-Bedroom Home (360 gal./day)

<u>LINE #</u>	<u>COLOR</u>	<u>BS</u>	<u>HI</u>	<u>FS</u>	<u>ELEVATION</u>	<u>LINE LENGTH</u>	<u>Design Length</u>
TBM		0.0		100.0		<u>in field</u>	<u>installation</u>
INST. 1			100.0				
1	<i>Pink</i>			3.0	97	70	70
2	<i>Yellow</i>			3.8	96.2	80	80
3	<i>Red</i>			5.4	94.6	80	80
4	<i>Blue</i>			7.1	92.9	85	85

Total 315 315

System

Lines 1-4

Repair

Repair area not laid out due to thick veg.

System Type

Accepted Status System

Accepted Status System
will fit on designated area

Suggested Soil LTAR
(gal/day/ft²)

0.33

0.33

System Installation LTAR

0.28

Total Line Length

315'

Square Footage

945

Proposed Trench Bottom

24"

22"

Distribution Method

Pressure Manifold

Pressure Manifold

Mac Development Group
Cedar Grove Subdivision, Lot 23
 3-Bedroom Home (360 gal./day)

<u>LINE #</u>	<u>COLOR</u>	<u>BS</u>	<u>HI</u>	<u>FS</u>	<u>ELEVATION</u>	<u>LINE LENGTH</u>	<u>Design Length</u>
TBM		0.0		100.0		<u>in field</u>	<u>installation</u>
INST. 1			100.0				
1	Pink			3.0	97	70	70
2	Yellow			3.8	96.2	80	80
3	Red			5.4	94.6	80	80
4	Blue			7.1	92.9	85	85

Total 315 315

System Type	<u>System</u> Lines 1-4 Accepted Status System	<u>Repair</u> Repair area not laid out due to thick veg. Accepted Status System will fit on designated area
Suggested Soil LTAR (gal/day/ft ²)	0.33	0.33
System Installation LTAR	0.28	
Total Line Length	315'	
Square Footage	945	
Proposed Trench Bottom	24"	22"
Distribution Method	Pressure Manifold	Pressure Manifold

Mac Development Group
Cedar Grove Subdivision, lot 26
 3-Bedroom Home (360 gal./day)

<u>LINE #</u>	<u>COLOR</u>	<u>BS</u>	<u>HI</u>	<u>FS</u>	<u>ELEVATION</u>	<u>LINE LENGTH</u>	<u>Design Length</u>
TBM		0.0		100.0		<u>in field</u>	<u>installation</u>
INST. 1			100.0				
1	Red			5.4	94.6	45	45
2	Pink			6.2	93.8	125	125
3	Yellow			7.1	92.9	135	135
4	<i>Blue</i>			<i>8.1</i>	<i>91.9</i>	<i>150</i>	<i>150</i>
5	<i>Orange</i>			<i>9.1</i>	<i>90.9</i>	<i>65</i>	<i>60</i>
6	<i>Red</i>			<i>8.8</i>	<i>91.2</i>	<i>60</i>	<i>60</i>
7	<i>Pink</i>			<i>10.0</i>	<i>90</i>	<i>60</i>	<i>60</i>

Total 640 635

System
Lines 4-7

Repair
Lines 1-4

System Type

Accepted Status System

Accepted Status System

Suggested Soil LTAR
(gal/day/ft²)

0.30

0.3

System Installation LTAR

0.27

0.29

Total Line Length

330'

305'

Square Footage

990

915

Proposed Trench Bottom

24"

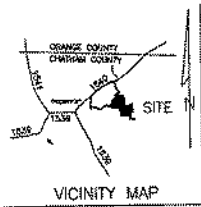
24"

Distribution Method

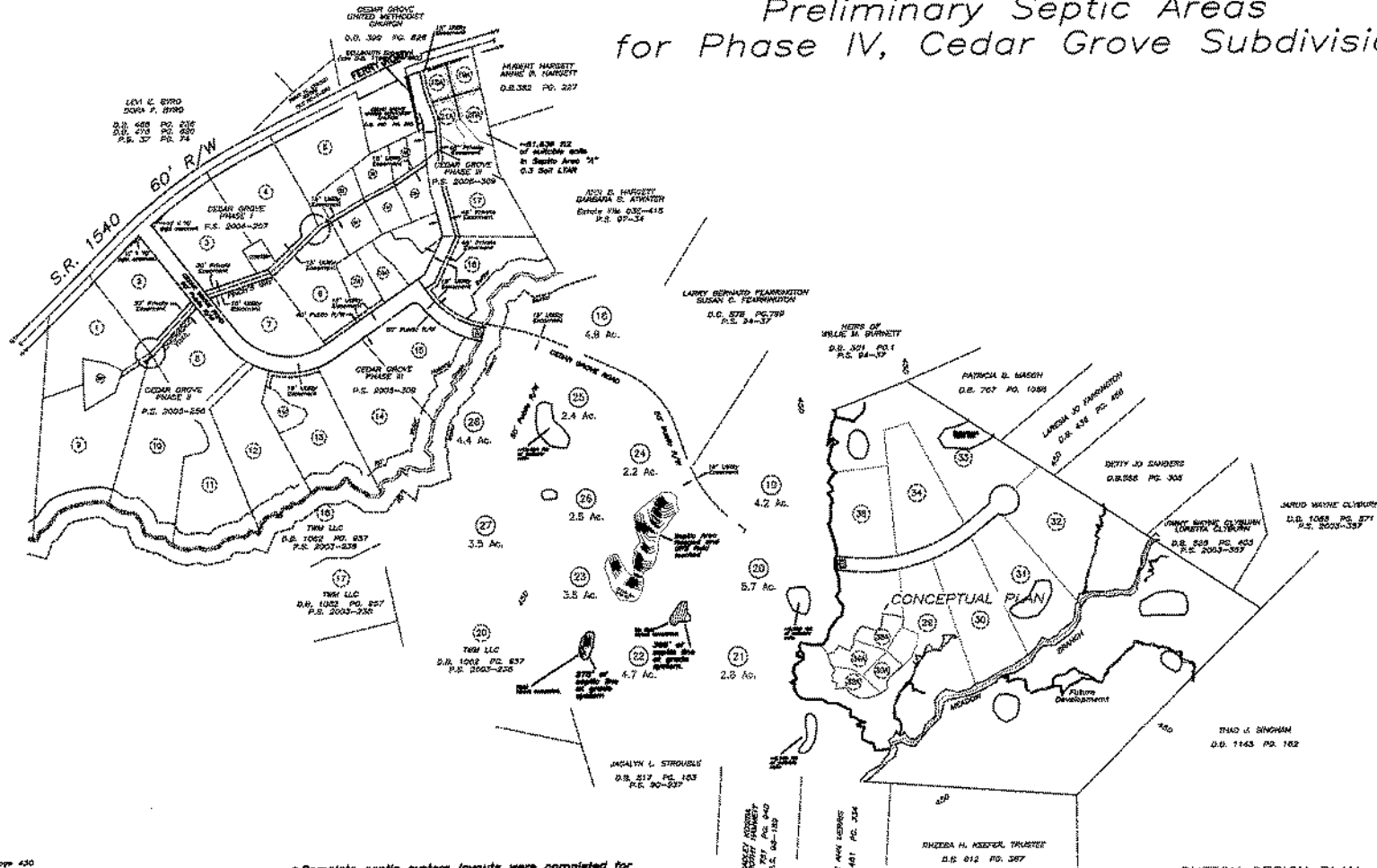
Pressure Manifold

Pressure Manifold

Backhoe pits will be required to evaluate coarse saprolite



Preliminary Septic Areas for Phase IV, Cedar Grove Subdivision



NOTES

1. REFERENCE: David Book 1098, Page 430
 Plat Date 2003-149
 P.L.N. 8748-25-2551 P.L.N. 8748-25-2048
 P.L.N. 8748-25-0784 P.L.N. 8748-25-0525
 Parcel # 80485 Parcel # 80486
 Parcel # 80487 Parcel # 80488
2. Approximate Acreage to be subdivided: 43.1 Ac.
3. Approximate Road feet of proposed road: 1025' (A to W)
4. A public water system is not presently available in this subdivision.
5. All lots to have individual well and septic systems.
6. All lots to be used for single family residential.
7. Average lot size: 3.71 Acres ±
8. Town obtained from Chatham County GIS.
9. Zoning: RM-40
10. All setbacks and acreage shown are approximate.
11. The Water Hazard Buffer shows what is a 30 foot setback from the town of the house. Residential structures or septic systems shall not be located within this area.
12. Owner: JRM Development, LLC
 124 Hedden Drive
 Chatham County, GA 29517
13. Septic Areas for lots 18, 21, and 22 are served by Lot A.

- Complete septic system layouts were completed for lots 23, 24, 26 & 27. See attached design information.
- A Partial layout was completed for lot 22.
- Septic area #1 contains ~51,639 sq ft of conventional soil area. This area is proposed for four 3-bedroom system and repair septic areas. Septic system field layouts will be completed at a later date to ensure there is enough suitable soils to maintain required setbacks for the four septic areas.
- The proposed septic easement area will support lots 18, 19, 21 & 22.
- Lots 20 and 25 will have septic system layouts completed this fall to ensure there is enough suitable soils to support 3-bedroom system and repair areas on each lot.
- This preliminary map does not guarantee a permit on the proposed lots. Additional work is required on several of the proposed lots to demonstrate adequate area of suitable soils.

SKETCH DESIGN PLAN
CEDAR GROVE
 PHASE IV

BALDWIN TOWNSHIP CHATHAM COUNTY N. C.
 SCALE: 1" = 200' DATE: OCTOBER 5, 2005

VAN R. FINCH - LAND SURVEYS, P. A.
 PITTSBORO, N. C. 27312
 (919)-542-2503