

Neal C. Floyd & Associates, Inc.

Brantley Powell
% Smith & Smith Surveyors

3/13/06

RE: Preliminary soils report & lot evaluation for
Legend Oaks - 15-501 -

Dear Mr Powell,

Enclosed is the soils map, soil characterization sheets, base layout information and report on Legend Oaks. The tract occurs on a moderately steep, rolling topography in the Piedmont physiographic province. The geology is acid crystalline with surface outcroppings and areas of surface boulders. The rounded boulders do not signify solid rock or shallow soils, but may cause some difficulty with system installations. The site is wooded with about half being "cut-over" about 5 years ago. Based on road cuts, pits, and numerous auger borings the C (saprolite) / CB appears useable. Generally the profile is a continuum of provisionally suitable soil, A-B-BC-C into the saprolite.

AREA 1 is characterized as having a 12 to 18" Ap/E/A₁ sandy loam surface underlain by a red to reddish yellow Bt. The Bt ranges from a clay to sandy clay loam to a depth of 28-36". The Bt transitions

into a BC that has weaker structure and lower clay content. Overall soil depth is $\geq 30''$ with the potential use of saporlite allowing deeper trenches and larger areas for onsite use. The LTAR ranges from $0.275 - 0.3 \text{ gpd/ft}^2$ for conventional systems. Trench depth will vary from 18 to 36'' depending on the soil and or soil/saporlite interface.

AREA 2 occurs on the same landscapes as Area 1 but tends to be less steep. The slope ranges from 5 to 18% across the landscape. Overall soil depth is less with useable soil soil being 24 to 30''. At 30'' of depth, the soil has a great deal of variability ranging from useable C, to unsuitable with respect to evidence of a seasonal water table or restrictive horizons. The LTAR will be lowered to $0.25 - 0.275$ and trench depths shallower (12 to 20''). The use of "At grade" conventionals, LDP, and low pressure pipe will be the systems needed. The review of saporlite with pits is still recommended in this area since the overall geology has not changed dramatically.

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Based on the amount of ≥ 30 " soil that is available, the design of the current lots is to maximize conventional systems including "Atgrade" and LDP. Lots that appeared to have less than 10,000 SF of conventional depth soil had "offsite areas" or lot shapes to provide conventional system areas. Secondly the lot design attempts to give the greatest chance to allow 4 & 5 bedroom areas. Overall house placement is set for the houses to have minimum road set backs and STS's in the rear. A majority of the systems will need effluent pumps but this allows a greater design opportunity and potentially larger drainfields.

The lot by lot evaluation with the CCHD will begin shortly and I will work with the staff for approval. Once these evaluations are ongoing lot adjustments or additional offsiteing may be required for approval of 4⁺ bedroom systems or improved house locations. Extra area is available in the offsite areas as well as on certain lots to provide the adjustments. Furthermore, the areas of surface rock may need some "fine tuning"

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to aid in the system installation. The use of back hoe pits will also be needed especially if saprolite evaluation is called for. Lots in Area 1 & 2 could contain useable saprolite.

Most of the lots and offsite areas will require system layouts to demonstrate the area, especially for 4 & 5 bedroom systems. Once the LTAR has been established with the CCHD the layouts can be done. Some clearing or cutting may be needed to finish the layouts but we can call if needed. If you have any further questions please call me.

Sincerely
Neal C. Floyd
Neal C. Floyd
Soil Scientist



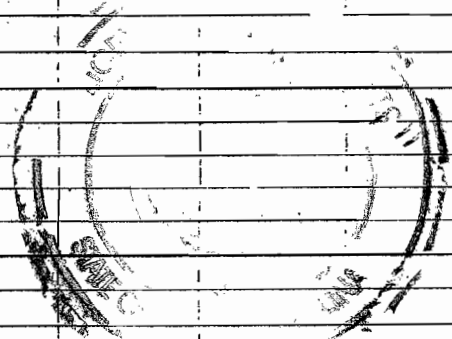
AREA 2

TM# _____

SOIL AND SITE EVALUATION for
ON-SITE WASTEWATER SYSTEM

APPLICANT: _____ OWNER: _____ AGENT: _____ PHONE: _____ APPLICATION DATE: _____
 ADDRESS: _____ PROPOSED FACILITY: _____
 WATER SUPPLY: ON-SITE WELL: _____ COMM.: _____ PUBLIC: _____ OTHER: _____ EVAL. METHOD: AUGER: PIT: CU
 LOCATION OF SITE: _____

FACTORS	PROFILE 1	PROFILE 2	PROFILE 3	PROFILE 4	PROFILE 5	PROFILE 6	PROFILE 7	PROFILE 8
SLOPE (%)	8-12	12-20						
HORIZON 1 DEPTH <i>A/A</i>	10-16	10-16						
TEXTURE GROUP	sl	sl						
CONSISTENCE	vfr	vfr						
STRUCTURE	sg	sg						
MINERALOGY								
HORIZON 2 DEPTH <i>BA/E</i>	12-22	12-22						
TEXTURE GROUP	sl-scl	sl-scl						
CONSISTENCE	fr	fr						
STRUCTURE	sg	sg						
MINERALOGY	NEC	NEC						
HORIZON 3 DEPTH <i>BT</i>	22-30	22-30						
TEXTURE GROUP	cl-c	cl-c						
CONSISTENCE	fr-fi	fr-fi						
STRUCTURE	m sbl	m sbl						
MINERALOGY	NEC	NEC						
HORIZON 4 DEPTH <i>BC</i>	>30	>30						
TEXTURE GROUP	sl-scl	sl-scl						
CONSISTENCE	fr-f	fr-f						
STRUCTURE	sg-sbl	sg-sbl						
MINERALOGY	NEC	NEC						
SOIL WETNESS	>30	>30						
RESTRICTIVE HORIZON								
SAPROLITE DEPTH	224	224						
CLASSIFICATION	Prov. S	Prov. S						
LTAR	0.275	0.275						



AVAILABLE SPACE (1945): _____ OTHER FACTORS (1946): _____ SITE CLASSIFICATION (1948): _____
 SYSTEM TYPE: _____ LONG TERM ACCEPTANCE RATE: _____
 EVALUATED BY: _____ OTHERS PRESENT: _____
 LAY OUT: _____

COMMENTS: *overall soil depth less; evidence saprolite is useable
 spatial variability high with respect to depth*

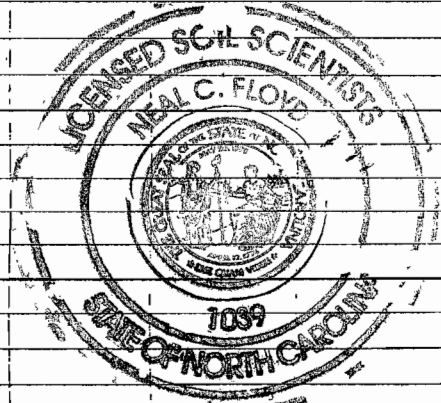
LANDSCAPE POSITION	TEXTURE	CONSISTENCE	STRUCTURE	MINERALOGY
R- Ridge	s- sand	moist	sg- single grain	NEC-
S- Shoulder slope	ls- loamy sand	vfr- very friable	m- massive	non-expansiv
L- Linear slope	sl- sandy loam	fr- friable	cr- crumb	
FS- Foot slope	l- loam	fi- firm	gr- granular	EC-
N- Nose slope	si- silt	vfi- very firm	sbk- subangular blocky	expansive cl:
h- Head slope	sil- silt loam	efi- extremely firm	abk- angular blocky	
Cc- Concave slope	sicl- silty clay loam		pl- platy	
Cv- Convex slope	cl- clay loam		pr- prismatic	
T- Terrace	scl- sandy clay loam			
FP- Flood plain	sc- sandy clay			
	sic- silty clay			
	c- clay			

AREA 1

SOIL AND SITE EVALUATION for
ON-SITE WASTEWATER SYSTEM

APPLICANT: _____ OWNER: _____ AGENT: _____ PHONE: _____ APPLICATION DATE: _____
 ADDRESS: Legend Oaks PROPOSED FACILITY: _____
 WATER SUPPLY: ON-SITE WELL: _____ COMM.: _____ PUBLIC: OTHER: _____ EVAL. METHOD: AUGER: PIT: CU
 LOCATION OF SITE: 15-501-

FACTORS	PROFILE 1	PROFILE 2	PROFILE 3	PROFILE 4	PROFILE 5	PROFILE 6	PROFILE 7	PROFILE 8
SLOPE (%)	8-12	12-20	8-12					
HORIZON 1 DEPTH <u>Ap/A1</u>	12-18	12-18	12-18					
TEXTURE GROUP	sl	sl	sl					
CONSISTENCE	vfr	vfr	vfr					
STRUCTURE	sq	sq	sq					
MINERALOGY								
HORIZON 2 DEPTH <u>Bt2</u>	12-24	12-24	12-30					
TEXTURE GROUP	c-scl	c-scl	c-scl					
CONSISTENCE	fr	fr	fr					
STRUCTURE	w/m sbk	w/m sbk	m sbk					
MINERALOGY	NEC	NEC	NEC					
HORIZON 3 DEPTH <u>BC</u>	24-36	24-36	24-36					
TEXTURE GROUP	cl-scl	cl-scl	cl-scl					
CONSISTENCE	fr	fr	fr					
STRUCTURE	wsbk	wsbk	wsbk					
MINERALOGY	NEC	NEC	NEC					
HORIZON 4 DEPTH <u>C</u>	36+	36+	40+					
TEXTURE GROUP	sl	sl	sl					
CONSISTENCE	vfr	vfr	vfr					
STRUCTURE	sq	sq	sq					
MINERALOGY	NEC	NEC	NEC					
SOIL WETNESS	>40	>40	>40					
RESTRICTIVE HORIZON								
SAPROLITE DEPTH	Z 36	Z 36	Z 36					
CLASSIFICATION	P.S.	P.S.	P.S.					
LTAR	0.3	0.3	0.3					



AVAILABLE SPACE (1945): _____ OTHER FACTORS (1946): _____ SITE CLASSIFICATION (1948): _____
 SYSTEM TYPE: _____ LONG TERM ACCEPTANCE RATE: _____
 EVALUATED BY: _____ OTHERS PRESENT: _____
 LAY OUT: _____

COMMENTS: Dsaprite appears to be useable. Some gullies exist; spatial probability moderate for depth.

LANDSCAPE POSITION	TEXTURE	CONSISTENCE	STRUCTURE	MINERALOGY
R- Ridge	s- sand	moist	sg- single grain	NEC-
S- Shoulder slope	ls- loamy sand	vfr- very friable	m- massive	non-expansiv
L- Linear slope	sl- sandy loam	fr- friable	cr- crumb	
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Cv- Convex slope	cl- clay loam		Sp- slightly plastic	
T- Terrace	scl- sandy clay loam		P- plastic	
FP- Flood plain	sc- sandy clay		Vp- very plastic	
	sic- silty clay			
	c- clay			