ROLLANS *Soil & Environmental Services, Inc.*

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Attached is a proposed design for an Accepted (25% reduction) Septic System with Gravity distribution for a 4 bedroom single family residence on Lot #45 Twin Creeks Subdivision, Iredell County, North Carolina.

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May 2, 2007
Project #: 01-1042
Design By: Rollans Soil and Environmental Services

INFORMATION FOR THE INSTALLER:

- The permit should be read very carefully prior to bidding. The following are details that must be considered along with all other considerations.
- Tanks shall be approved by DEHNR, and certification supplied by the manufacturer.
- Tanks shall be water tested prior to installation.
- The installer shall be responsible to the owner for placement of the tanks and to insure that final grades are returned to the original natural grade, with exception of added structural features.
- The supply trench shall be compacted to eliminate cavities left during initial fill placement.
- Installation of the system shall be during dry conditions in order to protect the soil structure.
- All fittings shall be pressure rated fittings.
- All joints shall be cleaned with PVC pipe cleaner and a heavy bodied glue applied to weld all joints.
- Trenches shall be carefully excavated so the bottom is within 2" from the highest to . the lowest points of elevation within the trench. If the bottom elevation needs adjusting after it has been trenched, it will be done by removing high points rather than filling low points. It is extremely important to insure that trenches are not over excavated during initial trenching. All fine grading within the trench will be hand done with a shovel. No loose material will be left in the trench
- All pipe openings in the tanks shall be properly grouted. This also applies to the joints around the riser.
- All tanks shall be properly back filled and compacted to prevent slump at a later date.
- Earth dams, constructed of relatively impervious material, shall be installed at the beginning and end of each lateral.
- No heavy equipment shall be used on the field during or after installation. The use of a small loader (i.e. Bobcat) or a trencher (i.e. Ditch Witch 2300/2310) may be used for installation.
- Elevations at pinflag locations should be checked by the installer prior to beginning trenches.
- Pumptank riser should be 6" above grade, control panel should be 12" above grade.
- Septic tank riser shall be a minimum of 6" above finished grade.
- Design precludes use of foundation drains on the residence.
- System is specified as an innovative 25% reduction installation.
- Repair is specified as a PPBPS low pressure installation.
- Rake trench walls, lime sidewalls, install trenches 36" wide and have no more than 1/4" fall in 10 feet.

Gravity 25% Reduction
FOR WASTEWATER TREATMENT

Owner: Twin Creeks

Address: 127B Promenade Dr.
Mooresville, NC 28117
Phone: 704 361 1084
County: Iredell
Location: TWIN CREEKS LOT 45

Source of Wastewater Flow: 4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow: 480
System Flow: NA

Design Specifications

Drainfield Size: 535
Loading Rate (gpd/ft.^{2}): 0.25
Depth of Gravel in Trench: NA (25% reduction)
Gravel Size: NA (25% reduction)
Trench Depth: ~~24~~ in. 19" *
Trench Width: 36 in.
Septic Tank Size: 1000
Pump Tank Size: N/A

Estimated Supply Line Length: 27
Supply Line Diameter: 3 in. SCH 40 PVC
Supply Line Volume: 4.70
Dosing Volume: NA
Supply Manifold: D-BOX
Supply Manifold Length: NA
Supply Manifold Volume: N/A

Recommended Float Controls: NA

Recommended Control Panel: NA

Pressure Head: NA
Friction Head: NA
Elevation Head: NA
Total Dynamic Head: NA

Threaded Union: NA
Gate Valves: NA
NA
Check Valves: NA
Anti-Siphon Hole: NA
Additional Comments: Soil suitability was performed by Rollans Soil & Environmental Services.

TWIN CREEKS LOT 45

Project #: 01-1042

LAYOUT FOR 4 BEDROOM HOME

May 2, 2007

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		NA			NA		
INSTR. 1			NA				
HOUSE CRN				NA	NA		
P. TANK				NA	NA		
1	BLUE			NA	NA	30	30
2	PINK			NA	NA	55	55
3	DARK PINK			NA	NA	110	110
4	ORANGE			NA	NA	45	45
5	BLUE			NA	NA	37	37
6	***ORANGE***			*NA*	*NA*	*32*	*30*
7	***PINK***			*NA*	*NA*	*112*	*110*
8	***BLUE***			*NA*	*NA*	*112*	*110*
9	***ORANGE***			*NA*	*NA*	*110*	*110*
10	***PINK***			*NA*	*NA*	*106*	*105*
11	***BLUE***			*NA*	*NA*	*74*	*70*
					Total	**823**	**812**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
** System*	*535*	*0.25*	*ACCEPT.*	*0.25*	*25% RED.*	**GRAVITY**
Repair	277	0.30	*MOD.*	0.30	PPBPS	**DISTRIBUTION** LOW PRESSURE

Notes:

** TBM Is Not Required.

**All measures in feet

**Nitrification lines are demonstrated on contour via colored pin flags

**BS, HI, and FS indicate rod readings

LEGEND

House Box.

System lines.

Repair lines.

House Corner Shot.

T.B.M.

GRAPHIC SCALE
1" = 40'

40 0 40 80

FOR PRELIMINARY PLANNING PURPOSES ONLY. ALL LOTS WILL REQUIRE FINAL APPROVAL BY THE COUNTY HEALTH DEPARTMENT ON A LOT BY LOT BASIS. THIS MAP SHOULD BY USED AS A GENERAL GUIDE, SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND COMPLEX TOPOGRAPHIC FEATURES. THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC TANK SYSTEMS.

PLEASE REFER TO ATTACHED SOIL REPORT FOR ADDITIONAL SITE SPECIFIC INFORMATION

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MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME:

LOCATION/DATE: REDELL CO...., ...N CAROLINA FEBRUARY 2007

JOB # : 01-1042
FILE: C:\JOBS\01-1042
PROJECT MGR.: C.B.F.
FIELD WORK: C.B.F. & A.L.P.
DRAWN BY: C.B.F.

CALCULATIONS

Location Twin Creeks

Project Number 01-1042

Lot No: Lot 45

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.25	$^{gal}/_{ft^2\,day}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	27	ft.
Supply Line Volume	4.698	gal.
Required Feet of Line	533	ft.
Amount of Line from Layout	535	ft.
Gallons per Minute	NA	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	349.355	gal.
Dosing Volume	NA	gal.

Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down	NA	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	NA	minutes
Elevation Head	NA	ft.
Pressure Head	NA	ft.
Friction Factor	NA	ft./100 ft. *(From the interpolater.)*
Friction Head	NA	ft.
Total Dynamic Head (+15%)	NA	ft.

FRICTION FACTOR INTERPOLATER
2" SCH 40 PVC

GPM	*f*
20	0.84
	-0.88
25	1.27
	-1.28
30	1.78
	-1.76
35	2.37
	-2.25
40	3.03
43.07	3.48
45	3.77
48.14	4.28
50	4.58
57.11	5.89
60	6.42

36-12-5 = 19" TR
40-17-5 = 23" TR

SOIL/SITE EVALUATION

(Continuation Sheet)

Sheet ___ of ___

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

PROPERTY ID #: _____
DATE OF EVALUATION: _____
COUNTY: _____

Twin Creeks Lot 45

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	SOIL MORPHOLOGY (.1941) .1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
B	HS	0-8	B SCL WFSBK	SS,SP,FR SEXP	Chr 2 >36"	48"	—	36"	PS
1	8-12%	8-24	RC WFSBK	SS,SP,FR SEXP	common YB				
		24-48	YR SC WFSBK	SS,SP,FR SEXP	many YB, few 3/4, few Chr 2 >36"				.2-.225 to 36"
B	SS	0-6	B SCL GR	SS,SP,FR SEXP	Chr 2 >40"	48"	—	40"	PS
2	5-10%	6-30	RC MFABK/SBK	SS,SP,FR SEXP	few YB				
		30-48	YRC WFABK/SBK	SS,SP,FR SEXP	common YB few 7/4 Chr 2 >40"				.25 to 40"
B	SS	0-4	B SCL GR	SS,SP,FR SEXP	—	48"	—	—	PS
3	0-5%	4-30	RC MFSBK/MABK	SS,SP,FR SEXP					
		30-48	RCL WFSBK	SS,SP,FR SEXP	common SAP				.3
B	SS	0-6	BSCL WK	FRSSSPSMP					
4	0-5%	6-28	RC MASM	FR SSSPSMP	—	48"	—	—	PS
		28-48	RCL WSBK	FRSSSPSMP					.3
5	LOAM LOAM PERFORMED 12-1147 WHEN REPAIR HAD TO BE REDESIGNED	0-6	SCL WK GR	FRSMPSCP		48"			PS .3
		6-36	LMCLSBK	FSSPSCP					
		36-48	SCLWKSBK	FSSPSCP					

COMMENTS: _____