ROLLANS *SOIL & ENVIRONMENTAL SERVICES*

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Attached is a proposed design for a 25% Reduction System with Pressure Manifold distribution for a 4 bedroom single family residence on Lot #11 Twin Creeks Subdivision phase 1, Iredell County, North Carolina.

Contents: **Page**

Information for the Installer---------- 1

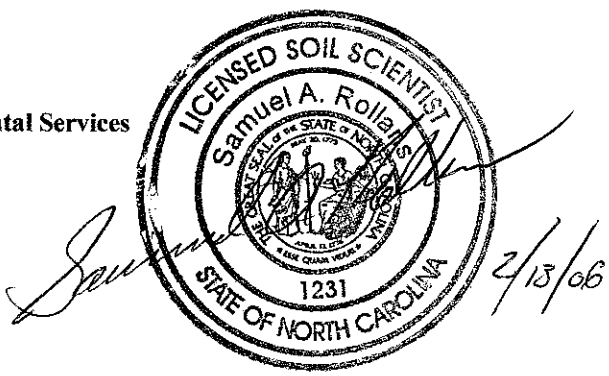
Design Information
- Design Specifications---------- 2-3
- Layout Specifications---------- 4
- System Tapsheet---------- 5
- Pressure Manifold Diagram---------- 6

Site Plan/System Plan---------- 7

Calculations---------- 8

Profile Descriptions---------- 9

January 19, 2006
Project #:
Design By: Rollans Soil and Environmental Services



2/13/06

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner: S&L HOMES

Address: 110 Charleston Dr. Suite 108
Mooresville, NC 28117
Phone: 704-662-8467
County: Iredell
Location: Twin Creeks Subdivision ph 1 Lot #11

Source of Wastewater Flow: 4 Bedroom Single Family Residence
Estimated Daily Wastewater Production: 480 gpd
System Flow: 28.44

Design Specifications

Drainfield Size: 480
Loading Rate: .25 gpd/ft²
Depth of Gravel in Trench: NA (25% reduction)
Gravel Size: NA (25% reduction)
Trench Depth: 36 in.
Trench Width: 36 in.
Septic Tank Size: 1000
Pump Tank Size: 1000

Estimated Supply Line Length: 145
Supply Line Diameter: 2 in. SCH 40 PVC
Supply Line Volume: 25.23
Dosing Volume: 219.41
Supply Manifold: 4 in. SCH 80 PVC
Supply Manifold Length: 4 ft. (minimum)
Supply Manifold Volume: N/A

Recommended Float Controls: SJE Sensor Float Control Switches as Required for Control Panel or County Approved Equivalents
Recommended Control Panel: SJE-Rhombus Model 112 (NEMA 4x) Control Panel or County Approved Control Panel.

Pressure Head: 2 ft.
Friction Head: 2.58
Elevation Head: 14.60
Total Dynamic Head: 22.06

Threaded Union: In Tank
Gate Valves: 1 in Tank
1 at Pressure Manifold
Check Valves: In Tank
Anti-Siphon Hole: NA
Additional Comments: Soil suitability was performed by Rollans Soil & Environmental Services.

TWIN CREEKS PH. 1 LOT #11
PRESSURE MANIFOLD DESIGN

DESIGN FLOW:	480	
SOIL APPLICATION RATE:	.25 gpd/ft²	
TOTAL AREA TRENCH BOTTOM:	1440	
TOTAL LATERAL LENGTH:	480	
NUMBER OF FIELDS:	1	
LATERAL LENGTH REQUIRED PER FIELD:	480	
SUPPLY LINE LENGTH:	145	
TOTAL DYNAMIC HEAD:	22.06	
MANIFOLD SIZE:	4 in.SCH 80 PVC	
DOSING VOLUME:	219.41	
PUMP TANK DRAW DOWN*:	10.4	
SEPTIC TANK SIZE:		1000
PUMP TANK SIZE:		1000

**Pump tank draw down based on a volume basis of 21 gallons per inch. Draw down may vary among pump tank manufacturers.*

TWIN CREEKS PH. 1 LOT #11

Project #:

LAYOUT FOR 4 BEDROOM HOME — January 19, 2006

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		13.2			100.00		
TANK		13.70	99.50				
HOUSE		13.50	99.70				
INSTR. 1			113.20				
1	BLUE			1.90	111.30	104	100
2	ORANGE			3.30	109.90	140	140
3	BLUE			4.50	108.70	140	150
4	***ORANGE***			***5.90***	***107.30***	***170***	***120***
5	***BLUE***			***7.50***	***105.70***	***180***	***120***
6	***ORANGE***			***9.10***	***104.10***	***190***	***120***
7	***BLUE***			***10.80***	***102.40***	***150***	***120***
					Total	**1074**	**870**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
**** System***	***480***	***0.25***	***ACCEPT.***	***0.25***	***ACCEPT.***	**PRESSURE MANIFOLD**
Repair	390	0.25	*MOD.*	0.25	MOD.	LOW PRESSURE

Notes:

** TBM located on corner of lot. (see site plan)
**TBM is assumed to be 100'
**All measures in feet
**Nitrification lines are demonstrated on contour via colored pin flags
**BS, HI, and FS indicate rod readings

PRESSURE MANIFOLD TAPSHEET - TWIN CREEKS LOT #11

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area
4	***ORANGE***	107.3	**120**	SCH 40 1/2	**7.11**	360
5	***BLUE***	105.7	**120**	SCH 40 1/2	**7.11**	360
6	***ORANGE***	104.1	**120**	SCH 40 1/2	**7.11**	360
7	***BLUE***	102.4	**120**	SCH 40 1/2	**7.11**	360
	total	**feet =**	**480**	**gal/min =**	**28.44**	
			Des. Flow	**480**		
			Pump Run=	**7.71**		
			soil LTAR	**0.25**		
			LTAR +5%	**0.2625**		
			LTAR with ACCEPTED	**0.275625**		
			LTAR with ACCEPTED + 5%	**0.28940625**		

CALCULATIONS

Location TWIN CREEKS SUBDIVISION

Project Number

Lot No: Lot 13

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	.25	gpd/ft²
25% RED.? (YES OR NO)	YES	
Supply Line Length	145	ft.
Supply Line Volume	25.23	gal.
Required Feet of Line	480	ft.
Amount of Line from Layout	480	ft.
Gallons per Minute	28.44	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	313.44	gal.
Dosing Volume	219.41	gal.

Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down	10.4	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	7.71	minutes
Elevation Head	14.6	ft.
Pressure Head	2	ft.
Friction Factor	1.78	ft./100 ft. *(From the interpolater.)*
Friction Head	2.58	ft.
Total Dynamic Head (+15%)	22.06	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

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

PROPERTY ID #: _____
COUNTY: _____

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: S&L Homes Inc APPLICATION DATE 1/06
ADDRESS: 110 Charleston Dr Suite 108 Mooresville, NC 28117 DATE EVALUATED: _____
PROPOSED FACILITY: RES PROPOSED DESIGN FLOW (.1949): 480 PROPERTY SIZE: 3.04
LOCATION OF SITE: Twin Creeks Ph 1Lot 11 PROPERTY RECORDED: Y
WATER SUPPLY: ☐ Private X Public ☐ Well ☐ Spring ☐ Other _____
EVALUATION METHOD: X Auger Boring X Pit ☐ Cut TYPE OF WASTEWATER: X Sewage ☐ Industrial Process ☐ Mixed

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941)		OTHER PROFILE FACTORS				PROFILE CLASS & LTAR
			.1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	.1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	
AH1	LINEAR 18%	0-12	B SCL GR	FRI, SS, SP, SEXP	NA	48"	NA	NA	PS
		12-38	R C SBK	FRI, S, P, SEXP					
		38-48	R CL MWSBK	FRI, SS, SP, SEXP					.25
48A	LINEAR 18%	0-8	B SCL GR	FRI, SS, SP, SEXP	NA	48"	NA	NA	PS
		8-48	R C ABK	FI, S, P, SEXP					
				Few YB's					.25
48B	LINEAR 18%	0-8	B SCL GR	FRI, SS, SP, SEXP	NA	54"	NA	NA	PS
		8-33	R C SBK/ABK	FRI, SS, SP, SEXP					
		33-54	R CL MFSBK	FRI, SS, SP, SEXP					.25
				FEW YB's					
48C	LINEAR 18%	0-4	B SCL GR	FRI, SS, SP, SEXP	NA FEW RELICS	47"	PS	NA	PS
		4-37	R C SBK	FRI, SS, SP, SEXP					
		37-47	R CL MFSBK	FRI, SS, SP, SEXP					.3
		47-59	L SAP MASS	FRI, SS, SP, SEXP					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	1440 sqft	1170 sqft
System Type(s)	accepted	PPBPS
Site LTAR	.25	.25

OTHER FACTORS (.1946): NA
SITE CLASSIFICATION (.1948): PS

EVALUATED BY: Rollans Soil & Environmental Services
OTHER(S) PRESENT: NA

COMMENTS:

SOIL/SITE EVALUATION

(Continuation Sheet)

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

PROPERTY ID #:
DATE OF EVALUATION:
COUNTY:

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941)		OTHER PROFILE FACTORS				PROFILE CLASS & LTAR
			.1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	.1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	
48D	LINEAR 18%	0-22	B SCL WSBK	FRI, SS, SP, SEXP	NA	47”	PS	NA	PS
		22-47	R C MFSBK	FRI, SS, SP, SEXP					
		47-56	SL SAP MASS	FRI, SS, SP, SEXP					.275-.3
				Few CL inclusions					

COMMENTS: