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Attached is a proposed design for an Accepted (25% reduction) Septic System with Pressure Manifold distribution for a 3 bedroom single family residence on Lot #19 in Shepherds Bluff Subdivision, Iredell County, North Carolina.

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May 24, 2007
Project #: 01-1064
Design By: Rollans Soil and Environmental Services

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner: Shepherds Bluff, LLC

Address: 111-B Raceway Dr
Mooresville, NC 28117
Phone: 704-664-7029
County: Iredell
Location: Shepherds Bluff Lot 19

Source of Wastewater Flow: 3 Bedroom Single Family Residence
Estimated Gallons Per Day Flow: 360
System Flow: 21.92

Design Specifications

Drainfield Size: 276
Loading Rate (gpd/ft.^{2}): 0.35
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: 92
Supply Line Diameter: 2 in. SCH 40 PVC
Supply Line Volume: 16.01
Dosing Volume: 126.16
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: 1.17
Elevation Head: 6.70
Total Dynamic Head: 11.35

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.

Shepherds Bluff Lot 19
PRESSURE MANIFOLD DESIGN

DESIGN FLOW (gpd):	360
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.35
TOTAL AREA TRENCH BOTTOM:	828
TOTAL LATERAL LENGTH:	276
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	257.1428571
SUPPLY LINE LENGTH:	92
TOTAL DYNAMIC HEAD:	11.35
MANIFOLD SIZE:	4 in.SCH 80 PVC
DOSING VOLUME:	126.16
PUMP TANK DRAW DOWN*:	6.0
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.*

Shepherds Bluff Lot 19

Project #: 01-1064

LAYOUT FOR 3 BEDROOM HOME — May 24, 2007

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM					200.00		
INSTR. 1					200.00		
HOUSE CNR					199.50		
P. TANK					200.50		
1	ORANGE				202.80	16	16
2	***PINK***				***202.20***	***69***	***69***
3	***WHITE***				***201.60***	***69***	***69***
4	***ORANGE***				***200.00***	***69***	***69***
5	***PINK***				***201.00***	***69***	***69***
6	WHITE				200.40	69	69
7	ORANGE				199.60	70	70
8	PINK				199.70	73	73
9	WHITE				198.00	35	35
					Total	**539**	**539**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
** System*	*276*	*0.35*	*ACCEPT.*	*0.35*	*25% RED.*	**PRESSURE**
Repair	263	0.35	*MOD.*	0.35	PPBPS	**MANIFOLD** LOW PRESSURE

Notes:

**Elevations Obtained by Don Allen & Associates Surveying

**All measures in feet

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

**BS, HI, and FS indicate rod readings

PRESSURE MANIFOLD TAPSHEET - Shepherds Bluff Lot 19

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area
2	*PINK*	*202.20*	*69*	SCH 80 1/2	5.48	207
3	*WHITE*	*201.60*	*69*	SCH 80 1/2	5.48	207
4	*ORANGE*	*200.00*	*69*	SCH 80 1/2	5.48	207
5	*PINK*	*201.00*	*69*	SCH 80 1/2	5.48	207
	total	**feet =**	**276**	**gal/min =**	**21.92**	
			Des. Flow	**360**		
			Pump Run=	**5.76**		
			soil LTAR	**0.35**		
			LTAR +5%	**0.3675**		
		LTAR with ACCEPTED		**0.466666667**		
		LTAR with ACCEPTED + 5%		**0.49**		

CALCULATIONS

Location	Shepherds Bluff	
Project Number	01-1064	
Lot No:	Lot 19	
No. of Bedrooms	3	
Design Flow	360	$^{gal}/_{day}$
LTAR	0.35	$^{gpd/ft^2}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	92	ft.
Supply Line Volume	16.008	gal.
Required Feet of Line	257.1429	ft.
Amount of Line from Layout	276	ft.
Gallons per Minute	21.92	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	180.228	gal.
Dosing Volume	126.16	gal.

Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down	6.0	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	5.76	minutes
Elevation Head	6.7	ft.
Pressure Head	2	ft.
Friction Factor	1.27	ft./100 ft. *(From the interpolater.)*
Friction Head	1.17	ft.
Total Dynamic Head (+15%)	11.35	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