ROLLANS *SOIL & ENVIRONMENTAL SERVICES*

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Attached is a proposed design for a PPBPS Septic System with low pressure distribution for a 4 bedroom single family residence on Lot #16 in THE ORCHARDS Subdivision, Iredell County, North Carolina.

Contents: **Page**

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

Design Information
- Design Specifications---------- 2-3
- Layout Specifications---------- 4
- System Tapsheet---------- 5

Site Plan/System Plan---------- 6

Calculations---------- 7

Profile Descriptions---------- 8

August 7, 2006
Project #: 01-1195
Design By: Rollans Soil & Environmental Services

LP PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant: THE ORCHARDS LLC

Address: 227 Hideaway Lane
Mooresville, NC 28117
Phone: 704-201-6465
County: Iredell
Location: THE ORCHARDS Subdivision Lot #16

Source of Wastewater Flow: 4 Bedroom Single Family Residence
Estimated Daily Wastewater Production: 480 gpd
System Flow: 28.38461538

Design Specifications

Drainfield Size: 300
Loading Rate: 0.3 gpd/ft.^{2}
Depth of Gravel in Trench: NA (PPBPS)
Gravel Size: NA (PPBPS)
Trench Depth: 36 in.
Trench Width: 36 in.
Septic Tank Size: 1000
Pump Tank Size: 1000

Estimated Supply Line Length: 167
Supply Line Diameter: 2 in. SCH 40 PVC
Supply Line Volume: 29.06
Dosing Volume: 166.98
Supply Manifold: N/A
Supply Manifold Length: N/A
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: 2.97
Elevation Head: 11.60
Total Dynamic Head: 19.06

Threaded Union: In Tank
Gate Valves: 1 in Tank
1 per lateral (4)
Check Valves: In Tank
Anti-Siphon Hole: NA
Additional Comments: Soil suitability was performed by Rollans Soil & Environmental Services

THE ORCHARDS Subdivision Lot #16
LP PPBPS

DESIGN FLOW:	480
SOIL APPLICATION RATE:	0.3 gpd/ft.2
TOTAL AREA TRENCH BOTTOM:	900
TOTAL LATERAL LENGTH:	300
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	266.6666667
SUPPLY LINE LENGTH:	167
TOTAL DYNAMIC HEAD:	19.06
MANIFOLD SIZE:	N/A
DOSING VOLUME:	166.98
PUMP TANK DRAW DOWN*:	8.0
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.*

THE ORCHARDS LOT 16

Project #: 01-1195

LAYOUT FOR 4 BEDROOM HOME

August 7, 2006

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		10.7			100.00		
INSTR. 1			110.70				
HOUSE CNR				7.50	103.20		
P. TANK				12.50	98.20		
1	ORANGE			4.90	105.80	40	40
2	BLUE			5.00	105.70	65	65
3	RED			5.10	105.60	94	94
4	ORANGE			5.60	105.10	128	128
5	***BLUE***			***5.90***	***104.80***	***132***	***100***
6	***PINK***			***6.50***	***104.20***	***108***	***100***
7	***RED***			***7.00***	***103.70***	***104***	***100***
					Total	671	627

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION
****System***	***300***	***0.3***	***MOD.***	***0.30***	***PPBPS***	***LOW PRESSURE***
Repair	327	0.25	MOD.	0.25	PPBPS	LOW PRESSURE

Notes:

** TBM located top of ground at EIP at 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

LP PPBPS TAPSHEET -THE ORCHARDS LOT 16

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/hole	Trench Area	Number of Panels
5	***BLUE***	104.8	***100***	0.156	**0.41**	300	23
6	***PINK***	104.2	***100***	0.156	**0.41**	300	23
7	***RED***	103.7	***100***	0.156	**0.41**	300	23

total	**feet =**	**300**	**gal/min =**	**28.384615**
		Des. Flow	**480**	
		Pump Run=	**5.88**	
		soil LTAR	**0.3**	
		LTAR +5%	**0.315**	
		LTAR with mod.	**0.27**	
		LTAR with mod.. + 5%	**0.2835**	

.156 equals 5/32 inch hole

CALCULATIONS

Location THE ORCHARDS

Project Number 01-1195

Lot No: Lot 16

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.3	gpd/ft2
PPBPS? (YES OR NO)	YES	
Supply Line Length	167	ft.
Supply Line Volume	29.058	gal.
Required Feet of Line	266.6667	ft.
Amount of Line from Layout	300	ft.
Gallons per Minute	28.38462	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Panel Volume	3.6	gal.
# of Panels	69	
Dosing Volume	166.98	gal.

Note: Dosing Volume based on 33% of # of panels times 3.6 gal/panel

Tank Draw Down	8.0	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	5.88	minutes
Elevation Head	11.6	ft.
Pressure Head	2	ft.
Friction Factor	1.78	ft./100 ft. *(From the interpolater.)*
Friction Head	2.97	ft.
Total Dynamic Head (+15%)	19.06	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