ROLLANS Soil & Environmental Services

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Attached is a proposed design for a PPBPS Septic System with low pressure distribution for a 5 bedroom single family residence on Lot #94 in Anniston Subdivision, Iredell County, North Carolina.

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December 21, 2006
Project #: 01-1005
Design By: Rollans Soil & 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.
- Design precludes foundation drains.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as a PPBPS installation.
- Repair is specified as a PPBPS installation.
- Backfill 4 - 6" of material (County Approved) over panels, rake trench walls, lime side-walls, install trenches 36" wide and have no more than 1/4" fall in 10 feet.
- FRENCH DRAIN TO BE INSTALLED 48" DEEP ABOVE DRAINFIELD AND RAN OUT TO GRADE AS SHOWN ON PLAN.

LP PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant: Ridgeline Development

Address: 17824 Statesville Rd., Suite 112
Cornelius, NC 28031
Phone: 704 362 5007
County: Iredell
Location: Anniston Subdivision Lot #94

Source of Wastewater Flow: 5 Bedroom Single Family Residence
Estimated Daily Wastewater Production: 600 gpd
System Flow: 37.72

Design Specifications

Drainfield Size: 400
Loading Rate: 0.25 gpd/ft²
Depth of Gravel in Trench: NA (PPBPS)
Gravel Size: NA (PPBPS)
Trench Depth: 36 in.
Trench Width: 36 in.
Septic Tank Size: 1500 gal.
Pump Tank Size: 1500 gal.

Estimated Supply Line Length: 92
Supply Line Diameter: 2 in. SCH 40 PVC
Supply Line Volume: 16.01
Dosing Volume: 221.90
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: 2.79
Elevation Head: 9.70
Total Dynamic Head: 16.66

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

Anniston Subdivision Lot #94
LP PPBPS

DESIGN FLOW:	600
SOIL APPLICATION RATE:	0.25 gpd/ft²
TOTAL AREA TRENCH BOTTOM:	1200
TOTAL LATERAL LENGTH:	400
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	400
SUPPLY LINE LENGTH:	92
TOTAL DYNAMIC HEAD:	16.66
MANIFOLD SIZE:	N/A
DOSING VOLUME:	221.90
PUMP TANK DRAW DOWN*:	7.2
SEPTIC TANK SIZE:	1500 gal.
PUMP TANK SIZE:	1500 gal.

**Pump tank draw down based on a volume basis of 31 gallons per inch. Draw down may vary among pump tank manufacturers.*

Anniston PH3 Lot#94

Project #: 01-1005

LAYOUT FOR 5 BEDROOM HOME

December 21, 2006

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		3.2			100.00		
INSTR. 1			103.20				
HOUSE CNR				5.00	98.20		
P. TANK				9.00	94.20		
1	***PINK***			***4.30***	***98.90***	***100***	***100***
2	***ORANGE***			***5.60***	***97.60***	***100***	***100***
3	***BLUE***			***6.90***	***96.30***	***100***	***100***
4	***DARK PINK***			***8.10***	***95.10***	***100***	***100***
5	PINK			8.90	94.30	100	100
6	ORANGE			9.70	93.50	100	100
7	BLUE			10.60	92.60	100	100
8	DARK PINK			11.50	91.70	100	100
					Total	800	800

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR	TRENCH SYSTEM	DISTRIBUTION
****System***	***400***	***0.25***	***MOD.***	***0.250***	***PPBPS***	***LOW PRESSURE***
Repair	400	0.25	MOD.	0.250	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 -Anniston LOT 94

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/hole	Trench Area	Number of Panels
1	*PINK*	98.9	*100*	0.156	**0.41**	300	23
2	*ORANGE*	97.6	*100*	0.156	**0.41**	300	23
3	*BLUE*	96.3	*100*	0.156	**0.41**	300	23
4	*DARK PINK*	95.1	*100*	0.156	**0.41**	300	23
							92
	total	**feet =**	**400**	**gal/min =**	**37.72**		

Des. Flow	**600**
Pump Run=	**5.88**
soil LTAR	**0.25**
LTAR +5%	**0.2625**
LTAR with mod.	**0.5**
LTAR with mod.. + 5%	**0.525**

.156 equals 5/32 inch hole

CALCULATIONS

Location Anniston PH3

Project Number 01-1005

Lot No: Lot 94

No. of Bedrooms	5
Design Flow	600 $^{gal}/_{day}$
LTAR	0.25 $^{gal}/_{ft^2\ day}$
PPBPS? (YES OR NO)	YES
Supply Line Length	92 ft.
Supply Line Volume	16.008 gal.
Required Feet of Line	400 ft.
Amount of Line from Layout	400 ft.
Gallons per Minute	37.72 $^{gal}/_{min}$
Required Septic Tank Capacity	1500 gal.
Minimum Standard Tank Size	1500 gal.
Panel Volume	3.6 gal.
# of Panels	92
Dosing Volume	221.90 gal.

Note: Dosing Volume based on 67% of # of panels times 3.6 gal/panel

Tank Draw Down	7.2 *Generic Draw Down of 31 gal.per in.*
Pump Run Time	5.88 minutes
Elevation Head	9.7 ft.
Pressure Head	2 ft.
Friction Factor	3.03 ft./100 ft. *(From the interpolater.)*
Friction Head	2.79 ft.
Total Dynamic Head (+15%)	16.66 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