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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 #17 in Autumn Grove Subdivision, Iredell County, North Carolina.

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August 17, 2007
Project #: 01-1043
Design By: Rollans Soil & Environmental Services

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LP PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant:	Orchard Farms LLC
Address:	227 Hideaway Lane Mooresville, NC 28117
Phone:	704-201-6465
County:	Iredell
Location:	AUTUMN GROVE LOT 17
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow:	480
System Flow:	25.83

Design Specifications

Drainfield Size:	270
Loading Rate (gpd/ft.^{2}):	0.3
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:	27
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	4.70
Dosing Volume:	173.06
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:	0.48
Elevation Head:	8.30
Total Dynamic Head:	12.40
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

AUTUMN GROVE LOT 17
LP PPBPS

DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.3
TOTAL AREA TRENCH BOTTOM:	810
TOTAL LATERAL LENGTH:	270
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	266.6666667
SUPPLY LINE LENGTH:	27
TOTAL DYNAMIC HEAD:	12.40
MANIFOLD SIZE:	N/A
DOSING VOLUME:	173.06
PUMP TANK DRAW DOWN*:	8.2
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.*

AUTUMN GROVE LOT 17

Project #: 01-1043

LAYOUT FOR 4 BEDROOM HOME

August 17, 2007

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		1.7			100.00		
INSTR. 1			101.70				
HOUSE CNR				5.60	96.10		
P. TANK				5.50	96.20		
1	ORANGE			5.70	96.00	55	55
2	***PINK***			***6.40***	***95.30***	***90***	***90***
3	***RED***			***7.20***	***94.50***	***90***	***90***
4	***BLUE***			***8.90***	***92.80***	***90***	***90***
5	ORANGE			10.30	91.40	90	90
6	PINK			11.70	90.00	56	56
7	RED			12.80	88.90	31	31
8	ORANGE			11.70	90.00	42	42
9	RED			12.60	89.10	31	31
					Total	**575**	**575**

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION
**** System***	***270***	***0.3***	***MOD.***	***0.300***	***PPBPS***	***LOW PRESSURE***
Repair	305	0.3	MOD.	0.300	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 -AUTUMN GROVE LOT#17

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/hole	Trench Area	Number of Panels
2	***PINK***	95.3	***90***	0.156	**0.41**	270	21
3	***RED***	94.5	***90***	0.156	**0.41**	270	21
4	***BLUE***	92.8	***90***	0.156	**0.41**	270	21
							63
	total	**feet =**	**270**	**gal/min =**	**25.83**		
			Des. Flow	**480**			
			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	AUTUMN GROVE	
Project Number	01-1043	
Lot No:	Lot 17	
No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.300	$^{gal}/_{ft^2\,day}$
PPBPS? (YES OR NO)	YES	
Supply Line Length	27	ft.
Supply Line Volume	4.698	gal.
Required Feet of Line	266.6667	ft.
Amount of Line from Layout	270	ft.
Gallons per Minute	25.83	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Panel Volume	4.1	gal.
# of Panels	63	
Dosing Volume	173.06	gal.

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

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

Tank Draw Down	8.2	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	6.70	minutes
Elevation Head	8.3	ft.
Pressure Head	2	ft.
Friction Factor	1.78	ft./100 ft. *(From the interpolater.)*
Friction Head	0.48	ft.
Total Dynamic Head (+15%)	12.40	ft.