ROLLANS *Soil & Environmental Services, PA.*

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Attached is a proposed Intermediate Relayout Design for a PPBPS Septic System with low pressure distribution for a 4 bedroom single family residence on Lot #10 in Harbor View Subdivision (160 Hideaway Lane), Iredell County, NC.

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2/15/16

February 15, 2016
Project #: 01-3111
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 DENR, 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.
- Where required by the county health department, post installation inspections by the designer must be scheduled 5 week days in advance.
- 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.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as a PPBPS installation.
- Repair is specified as a subsurface drip irrigation with TS-II Pretreatment installation.
- Backfill 4 - 6" of material (County Approved) over panels, rake trench walls, lime side-walls, install trenches 24" wide and have no more than 1/4" fall in 10 feet.

LP PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant: Vicki Perkins

Address: 2304 Trace Creek Dr.
Waxhaw, NC 28173-9812
Phone: 704.843.0822
County: Iredell
Location: Harbor View Subdivision Lot #10
160 Hideaway Lane, Mooresville, NC 28117
Source of Wastewater Flow: 4 Bedroom Single Family Residence
Estimated Daily Wastewater Production: 480 gpd
System Flow: 25.26

Approved
MPD
3/2/16

Design Specifications

Drainfield Size: 267
Loading Rate: 0.3 gpd/ft.^{2}
Depth of Gravel in Trench: NA (PPBPS)
Gravel Size: NA (PPBPS)
Trench Depth: 30 in.
Trench Width: 24 in.
Septic Tank Size: 1000
Pump Tank Size: 1000

Estimated Supply Line Length: 213
Supply Line Diameter: 2 in. SCH 40 PVC
Supply Line Volume: 37.06
Dosing Volume: 148.62
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: 3.79
Elevation Head: 26.00
Total Dynamic Head: 36.56

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

Harbor View Subdivision Lot #10
LP PPBPS

DESIGN FLOW:	480
SOIL APPLICATION RATE:	0.3 gpd/ft.2
TOTAL AREA TRENCH BOTTOM:	534
TOTAL LATERAL LENGTH:	267
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	266.6666667
SUPPLY LINE LENGTH:	213
TOTAL DYNAMIC HEAD:	36.56
MANIFOLD SIZE:	N/A
DOSING VOLUME:	148.62
PUMP TANK DRAW DOWN*:	7.1
SEPTIC TANK SIZE:	1000
PUMP TANK SIZE:	1000

Approved
3/2/16
MD

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

Approved 3/2/16 MD

HARBOR VIEW LOT 10

Project #: 01-3111

LAYOUT FOR 4 BEDROOM HOME

February 15, 2016

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		1.0			100.00		
INSTR. 1			101.00				
HOUSE CNR				23.00	78.00		
P. TANK				23.00	78.00		
1	***RED***			***2.40***	***98.60***	***35***	***35***
2	***BLUE***			***2.90***	***98.10***	***39***	***39***
3	***PINK***			***3.80***	***97.20***	***61***	***61***
4	***YELLOW***			***4.30***	***96.70***	***73***	***73***
5	***ORANGE***			***5.10***	***95.90***	***59***	***59***
					Total	267	267

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION
** System*	*267*	*0.3*	*MOD.*	*0.30*	*PPBPS*	*LOW PRESSURE*
Repair	6590 SF	0.1	INNOV.	0.10	DRIP IRRIG. (TS-II)	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 -HARBOR VIEW LOT 10

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/hole	Trench Area	# of Panels
1	***RED***	***98.60***	***35***	0.156	**0.41**	105	8
2	***BLUE***	***98.10***	***39***	0.156	**0.41**	117	9
3	***PINK***	***97.20***	***61***	0.156	**0.41**	183	14
4	***YELLOW***	***96.70***	***73***	0.156	**0.41**	219	17
5	***ORANGE***	***95.90***	***59***	0.156	**0.41**	177	14
	total	**feet =**	**267**	**gal/min =**	**25.262308**		**62**
			Des. Flow	**480**			
			Pump Run=	**5.88**			
			soil LTAR	**0.3**			
			LTAR +5%	**0.315**			

.156 equals 5/32 inch hole

Approved
3/2/14
MD

CALCULATIONS

Location HARBOR VIEW

Project Number #01-3111

Lot No: Lot 10

Approved
3/2/16

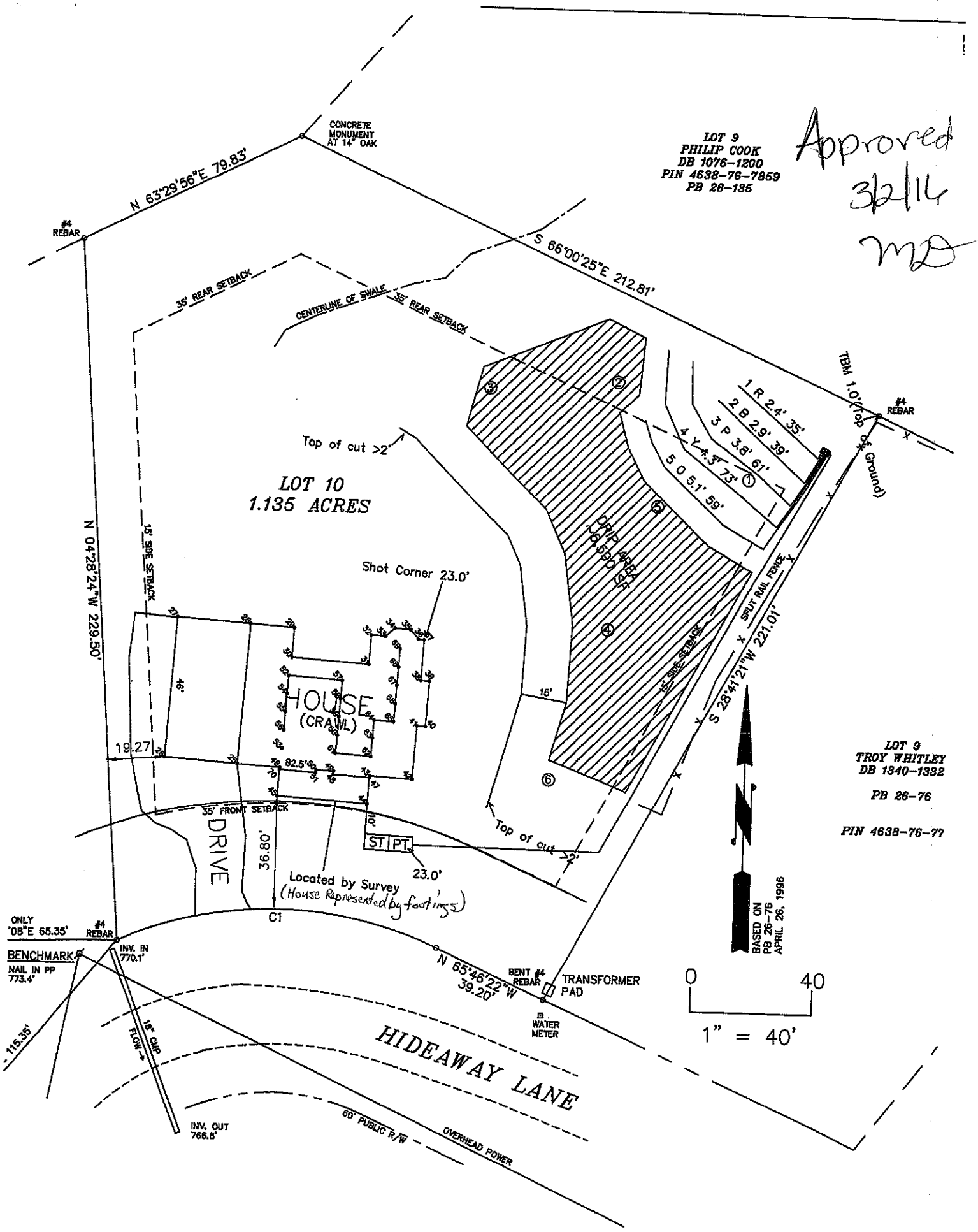
No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.3	gpd/ft2
PPBPS? (YES OR NO)	YES	
Supply Line Length	213	ft.
Supply Line Volume	37.062	gal.
Required Feet of Line	266.6667	ft.
Amount of Line from Layout	267	ft.
Gallons per Minute	25.26	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Panel Volume	3.6	gal.
# of Panels	62	
Dosing Volume	148.62	gal.

Note: Dosing Volume based on 67% 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
25.26	1.30
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	7.1	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	5.88	minutes
Elevation Head	26	ft.
Pressure Head	2	ft.
Friction Factor	1.78	ft./100 ft. *(From the interpolater.)*
Friction Head	3.79	ft.
Friction Factor +15%	2.047	
Total Dynamic Head	36.56	ft.


LOT 9
PHILIP COOK
DB 1076-1200
PIN 4638-76-7859
PB 28-135
Approved
3/2/16
MD
CONCRETE MONUMENT AT 14" OAK
N 63°29'56"E 79.83'
#4 REBAR
S 66°00'25"E 212.81'
35' REAR SETBACK
CENTERLINE OF SWALE
35' REAR SETBACK
TBM 1.0'(Top of Ground)
#4 REBAR
1 R 2.4' 35'
2 B 2.9' 39'
3 P 3.8' 61'
4 V 4.3' 73'
5 O 5.1' 59'
Top of cut >2'
LOT 10
1.135 ACRES
N 04°28'24"W 229.50'
15' SIDE SETBACK
DRIVEWAY AREA 1,765.00 SQ FT
Shot Corner 23.0'
HOUSE
(CRAWL)
46'
19.27
82.5'
15'
15' SIDE SETBACK
SPLIT RAIL FENCE
S 28°41'21"W 221.01'
LOT 9
TROY WHITLEY
DB 1340-1332
PB 26-76
PIN 4638-76-77
35' FRONT SETBACK
DRIVE
36.80'
ST PT
23.0'
Top of cut >2'
Located by Survey
(House Represented by footings)
C1
ONLY
'08"E 65.35'
#4 REBAR
BENCHMARK
NAIL IN PP
773.4'
INV. IN
770.1'
N 65°46'22"W
39.20'
BENT #4 REBAR
TRANSFORMER PAD
WATER METER
BASED ON PB 26-76 APRIL 26, 1996
0
40
1" = 40'
115.35'
18" CMP
FLOW
INV. OUT
766.8'
HIDEAWAY LANE
60' PUBLIC R/W
OVERHEAD POWER