SOIL & FORESTRY SERVICES
OF THE CAROLINAS, PA

A design for a 4 Bedroom Accepted Septic System using pressure manifold distribution at 172 Barber Loop

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May 2015
Design By: W. Overby

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
- 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.
- Elevations at pinflag locations should be checked by the installer prior to beginning
- 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 specified as 25% reduction type using p.manifold**
- **Repair specified as drip irrigation type**
- **System trench depth specified at 24"**
- **System trenches installed on 9' minimum; 3' wide trenches**
- **See Figure 1. Septic System Layout and House Plan**
- **Iredell County has authority to move tanks, wells, etc as needed.**

ACCEPTED PRESSURE DOSED SYSTEM
FOR WASTEWATER TREATMENT

Applicant:	Whitley Construction, LLC
Contact:	Bill Whitley
Phone:	704 658-9251
County:	Iredell
Location:	172 Barber Loop

Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Daily Wastewater Production:	480 gpd
System Flow:	34.51 gpm

Design Specifications

Drainfield Size:	480 lf
Loading Rate:	0.25 gpd/ft.^{2}
Depth of Gravel in Trench:	n/a
Gravel Size:	n/a
Trench Depth:	24 in
Trench Width:	36 in.
Septic Tank Size:	1000
Pump Tank Size:	1000
Estimated Supply Line Length:	202 lf
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	35.15 gal
Dosing Volume:	219.41 gal

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:	4.79 ft
Elevation Head:	14.10 ft
Total Dynamic Head:	21.61 ft
Threaded Union:	In Tank
Gate Valves:	1 in Tank 1 in Manifold Box
Check Valves:	In Tank
Anti-Siphon Hole:	n/a

172 Barber Loop
Accepted Design

DESIGN FLOW:	480	gpd
SOIL APPLICATION RATE:	0.25 gpd/ft.^{2}	
TOTAL AREA TRENCH BOTTOM:	1440	sf
TOTAL LATERAL LENGTH:	480	lf
NUMBER OF FIELDS:	1	
LATERAL LENGTH REQUIRED PER FIELD:	480	lf
SUPPLY LINE LENGTH:	202	lf
TOTAL DYNAMIC HEAD:	21.61	ft
DOSING VOLUME:	219.41	gal
PUMP TANK DRAW DOWN*:	10.4	in
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.*

172 Barber Loop

Layout for a 4 bedroom home May-15

LINE #	FLAG COLOR	BS	HI	FS	ELEV	FLAGGED LENGTH
TBM		0.5			100.0	
INSTR. 1			100.5			
HOUSE		8.2	92.3			
PUMP		11.2	89.3			
			SYSTEM			
1	Red			2.10	98.4	100
2	Blue			3.10	97.4	76
3	Orange			3.80	96.7	76
4	Pink			4.20	96.3	76
5	Dark Pink			4.80	95.7	76
6	Red			5.20	95.3	76
			REPAIR			
			>4800SF drip irrigation			

	LINE LENGTH	LTAR GPD/FT	SYSTEM TYPE	REDUCTION AMOUNT	TRENCH DEPTH
SYSTEM	480	0.250	ACCEPT	25%	24"
REPAIR	4800sf	0.100	DRIP	N/A	6"

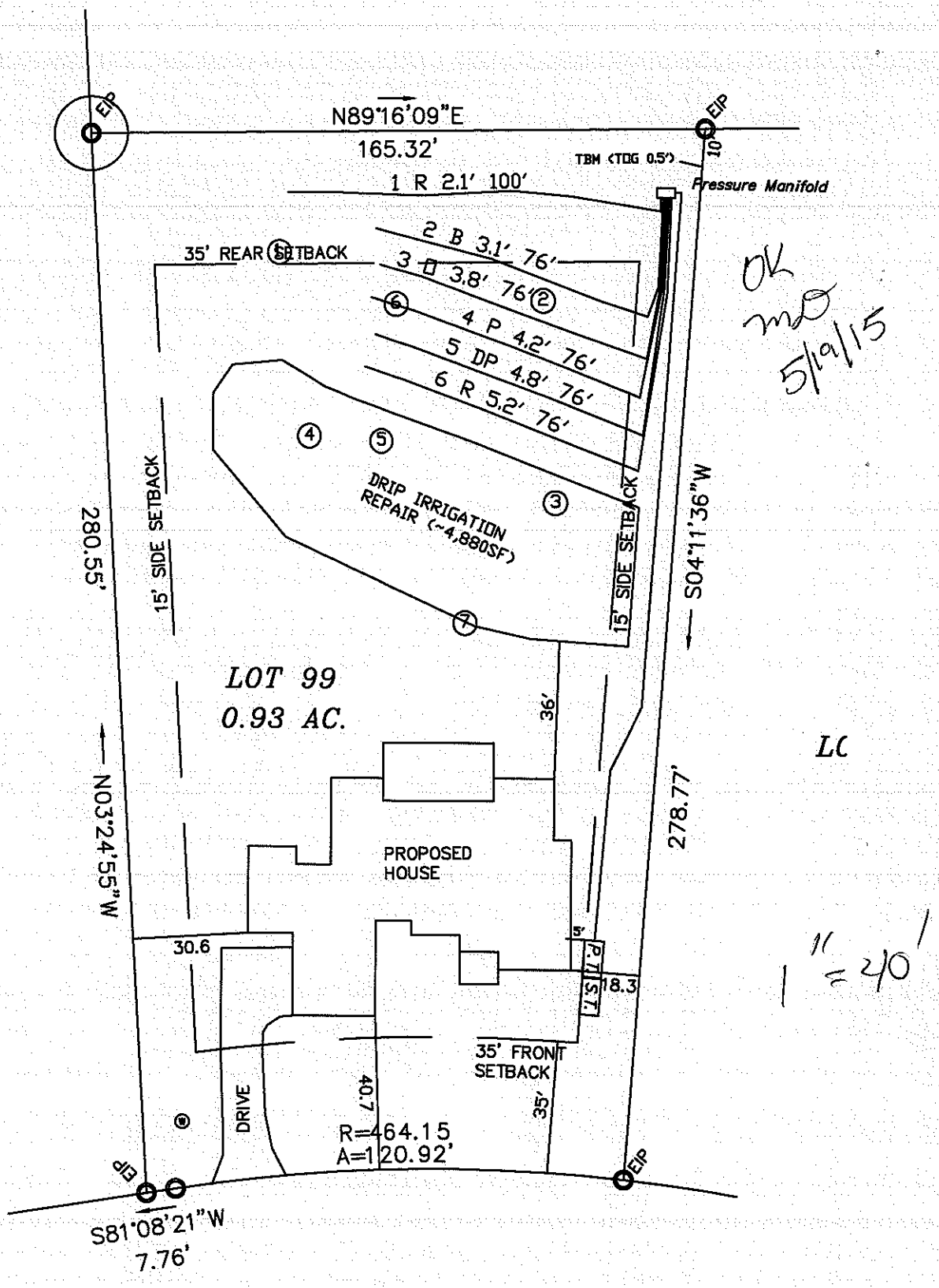
Notes:

**TBM is assumed to be 100': TBM back right house stake (10' off)

**All measures in feet

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

**BS and FS indicate rod readings


N89°16'09"E
165.32'
EIP
EIP
TBM (TOG 0.5')
Pressure Manifold
1 R 2.1' 100'
2 B 3.1' 76'
3 B 3.8' 76'
4 P 4.2' 76'
5 DP 4.8' 76'
6 R 5.2' 76'
35' REAR SETBACK
15' SIDE SETBACK
15' SIDE SETBACK
DRIP IRRIGATION REPAIR (~4,880SF)
280.55'
S04°11'36"W
278.77'
LOT 99
0.93 AC.
36'
N03°24'55"W
PROPOSED HOUSE
30.6
P.U.E.
18.3
35' FRONT SETBACK
35'
DRIVE
40.7
R=464.15
A=120.92'
EIP
EIP
S81°08'21"W
7.76'
OK
mD
5/9/15
LC
1" = 40'

BARBER LOOP

172 Barber Loop

SYSTEM FLOW

DESIGN SPECIFICATIONS

Line #	Color	Elev	Length	Hole Size	Flow/Tap	Line gpd	Line Trench Area	Flow/Line	Line LTAR
1	Red	98.4	100	SCH 40 1/2	7.11	45.22	300	**0.071**	**0.1507**
2	Blue	97.4	76	SCH 80 1/2	5.48	34.85	228	**0.072**	**0.1529**
3	Orange	96.7	76	SCH 80 1/2	5.48	34.85	228	**0.072**	**0.1529**
4	Pink	96.3	76	SCH 80 1/2	5.48	34.85	228	**0.072**	**0.1529**
5	Dpink	95.7	76	SCH 80 1/2	5.48	34.85	228	**0.072**	**0.1529**
6	Red	95.3	76	SCH 80 1/2	5.48	34.85	228	**0.072**	**0.1529**
	total	**feet =**	480	**gal/min =**	**34.51**				

Des. Flow	**480**
Pump run=	**6.36**
soil LTAR	**0.25**
Accepted LTAR	**0.35**

CALCULATIONS

Location 172 Barber Loop

Project Number 01-3004

Lot No:	99	
No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.25	$^{gal}/_{ft^2\ day}$
Accepted? (YES OR NO)	yes	
Supply Line Length	202	ft.
Supply Line Volume	35.148	gal.
Required Feet of Line	480	ft.
Amount of Line from Layout	480	ft.
Gallons per Minute	34.51	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	313.44	gal.
Dosing Volume	219.41	gal.

Note: Dosing Volume based on 70% of the lateral line volume.

FRICTION FACTOR INTERPOLATER
2" SCH 40 PVC

GPM	*f*
20	0.84
23	1.10
25	1.27
29.5	1.73
30	1.78
32	2.02
35	2.37
37	2.63
40	3.03
42.4	3.39
45	3.77
46.51	4.01
50	4.58
57.11	5.89
60	6.42

Tank Draw Down	10.4	in.

Generic Draw Down of 21 gal.per in.

Pump Run Time	6.36	minutes
Elevation Head	14.1	ft.
Pressure Head	2	ft.
Friction Factor	2.37	ft./100 ft. *(From the interpolater.)*
Friction Head	4.79	ft.
Friction Head (+15%)	5.50551	
Total Dynamic Head	21.61	ft.

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

OK MD 5/19/15

PROPERTY ID #: 4628112298
COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: Walter & Lilian Bonomo
ADDRESS: 118 Colster Ln. Mooresville NC 28117
PROPOSED FACILITY: 4BR
PROPOSED DESIGN FLOW (.1949): 480gpd
LOCATION OF SITE: 172 Barber Lp Mooresville NC 28117
WATER SUPPLY: ☐ Private ☐ Public ☑ Well ☐ Spring ☐ Other
EVALUATION METHOD: ☑ Auger Boring ☐ Pit ☐ Cut
TYPE OF WASTEWATER: ☑ Sewage ☐ Industrial Process ☐ Mixed

APPLICATION DATE 5/7/15
DATE EVALUATED: 4/24/15
PROPERTY SIZE:
PROPERTY RECORDED:

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	SOIL MORPHOLOGY (.1941) .1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
1	L/5% ✓	0-8	BRCL wmsbk	Fr SSSP	Few Fe Depl Ch.R 2's @ 38"-42"				PS .25
		8-28	RBC wmsbk	Fr SSSP SEXP					
		28-48	RC wmsbk/Absk	Fr SSSP					
2	L/4% ✓	0-10	DBL wfsbk	Fr SSSP					PS .3
		10-28	RBC wmsbk	Fr SS SP					
		28-48	RC wmsbk	Fr SSSP					
3	L/3% ✓	0-12	BCL wfsbk	Fr SSSP	Few Fe Depl				PS .25-.275
		12-25	RBC wfsbk	Fr SSSP					
		25-48	RC wfsbk/Absk	Fr SSSP					
4	L/4% Verified MD 5/15/15	0-5	BCL wfsbk	Fr SSSP	Ch.R 2's @ 24"				UN
		5-48	Ch.R 2's @ 24"						

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	PS	PS
System Type(s)	Accepted	DRIP Infiltrator Innovative
Site LTAR	0.25	0.1

OTHER FACTORS (.1946):
SITE CLASSIFICATION (.1948): PS
EVALUATED BY: S. Ashley Rollins
OTHER(S) PRESENT: Wendell Overby, Chad Warner

COMMENTS:

SOIL/SITE EVALUATION

(Continuation Sheet-Complete all field in full)

Sheet 2 of 2

DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH

OK MP 5/19/15

PROPERTY ID #: 462621229B
DATE OF EVALUATION: 5/7/15
COUNTY: Iredell

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	SOIL MORPHOLOGY (.1941) .1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
B5	4/5% Vertical 5/19/15 MP	0-12	BRc-c l wmsbk	Fr ss p SExP					PS-30% 0.25
		12-26	RB C wmsbk/ALK	Fr ss P SExP	-C Fe depl.				
		26-42	Rc wmAbk/sbk	FSS P SExP	-C Fe depl. 26"-36" Chr 2's 30-36"	48	—	—	
		42-48	Rc l wfsbk	Fr sss f SExP	-f s-p				
B6	4/5% ✓	0-9	BRc l wmsbk	Fr sss p SExP					PS 0.25
		9-24	BRC wmsbk	Fr ss P SExP					
		24-40	RBc wmAbk/sbk	F ss P SExP	-f-c Fe depl.	48	—	—	
		40-48	RBC wmsbk	Fr ss P SExP	-f s-p				
B7	4/5% ✓	0-4	B c l wmsbk	Fr sss p SExP					PS-27% 0.1 drift 0.225 conv.
		4-12	BRC wmsbk	" " " "					
		12-30	RBc wmAbk/sbk	F ss P SExP	-c [Fe] depl. Chr 2's @ 27" f [Fe] conc.	35	—	—	
		30-35	Rc wmsbk	Fr ss P SExP	-f-c [Fe] depl. Chr 2's				

COMMENTS: