

HALLOWEN & ASSOCIATES, INC.

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18 October 2005

Mr. Oliver Tolksdorf
Harnett County Environmental Health
307 West Cornelius Harnett Blvd.
Lillington, NC 27546

Reference: Septic System Design
Lot 1, Myrtlewood Subdivision

Dear Mr. Tolksdorf,

A site investigation was conducted for the above referenced property on located on the western corner of subdivision roads Green Forest Circle and Timber Creek Lane off the east side of US 421, Grove Township, Harnett County, North Carolina. The purpose of the investigation was to determine the ability of this lot to support a subsurface sewage waste disposal system and 100 % repair area for a typical three-bedroom home. Public water supplies will be utilized for this lot. A foundation drain will not be possible. A gravity driven innovative septic system to two 150 foot drainlines is the proposed design for the initial septic system and a low pressure pipe distribution system using a zone valve for automatic alternation between two zones that each have 240 linear feet is the proposed design for the repair system. The house site has been altered from the previous submittal as it has been moved 5-ft toward Timber Creek Lane (see attached site plan).

Attached is the septic system layout and supporting information for this lot. I trust that this report provides all the information that you require at this time. If you have any questions or need additional information, please contact me at your convenience.

Sincerely,



Laura J. Fortner
Licensed Soil Scientist

Lot 1, Myrtlewood 3 Division

On-Site Wastewater Design Specifications

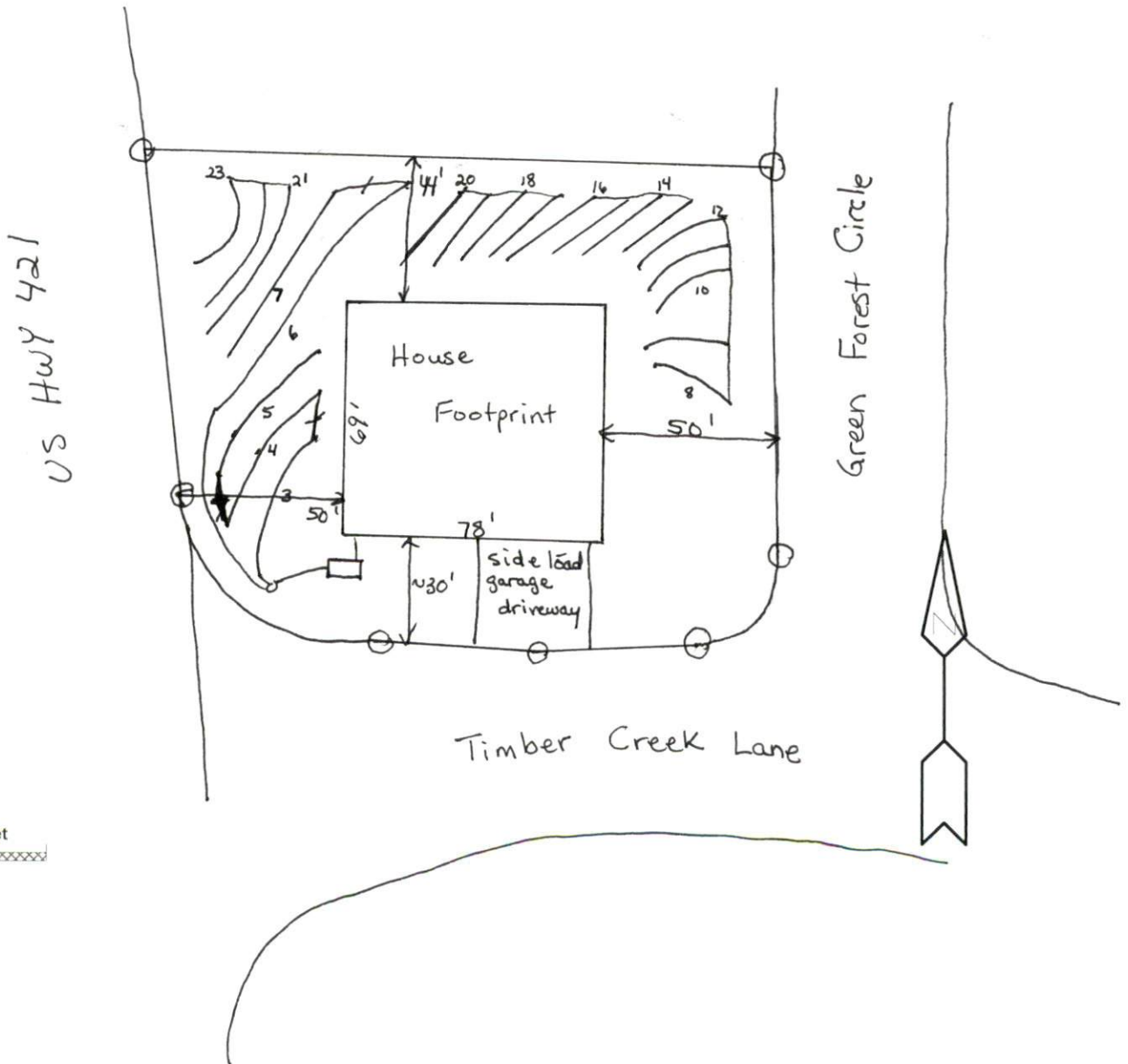
Prepared By: LJJ
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House Footprint: 69' x 78' (No Foundation Drain)
Bedrooms: 3 (Daily Flow 360 gallons)

Initial System: Gravity Innovative (2 x 150-ft)
on contour at: 18 inches
Soil LTAR: 0.3 gpd/sqft
Repair System: Low-Pressure Pipe (480-ft)
on contour at: 18 inches
System LTAR: 0.15 gpd/sqft

LEGEND

☆	EIP	□	Septic Tank
⊞	Step-down	■	Pump Tank
⊙	Proposed Well	⊕	D-Box
⊗	Existing Well	⊞	Pressure Manifold



Lot 1, Myrtlewood Subdivision

Lines 1-7, 20 and 21 flagged at site on 9-ft centers.

Lines 8-20 and Lines 21-23 flagged at site on 5-ft centers.

Initial/Repair	Line #	Color	Drainline Length(ft)	Measured Field Line Length (ft)	Relative Elevation (ft)
N/A	1	B	0	29	99.29
N/A	2	Y	0	41	98.90
Initial	3	W	50	51	98.55
Initial	4	R	50	50	98.11
Initial	5	Y	50	50	97.78
Initial	6	W	90	94	97.38
Initial	7	R	60	68	96.82
Repair	8	W	25	25	100.73
Repair	9	Y	25	25	100.57
Repair	10	R	25	26	100.32
Repair	11	W	27	27	100.12
Repair	12	Y	28	30	100.06
Repair	13	B	25	25	99.91
Repair	14	R	28	28	99.71
Repair	15	W	26	26	99.41
Repair	16	Y	31	31	99.21
Repair	17	B	28	31	98.96
Repair	18	R	28	29	98.55
Repair	19	Y	28	30	98.23
Repair	20	B	28	34	97.95
Repair	21	Y	50	53	96.29
Repair	22	R	43	47	96.16
Repair	23	B	35	35	95.89
		Total:	780	885	EIP = 100

Repair System

Low Pressure Pipe Distribution Flow Sheet

Subfields	Line #	Line Color	Line Length	Relative Elev(ft)	Elevation Change	Pressure Head(ft)	Hole Size	Flow/Hole	Flow/Lateral	gpm/ft	# Holes	Hole Spacing	First/Last Holes
1	8	W	25	100.7	0.0	4.0	5/32	0.5757	3.45	0.1382	6	3	5.00
	9	Y	25	100.6	0.1	4.1	9/64	0.4721	3.30	0.1322	7	3	3.50
	10	R	25	100.3	0.4	4.4	5/32	0.6038	3.02	0.1208	5	3	6.50
	11	W	27	100.1	0.6	4.6	5/32	0.6174	3.09	0.1143	5	5	3.50
	12	Y	28	100.1	0.6	4.6	5/32	0.6174	3.09	0.1103	5	4	6.00
2	13	B	25	99.9	0.0	4.0	9/64	0.4663	2.80	0.1119	6	3	5.00
	14	R	28	99.7	0.2	4.2	5/32	0.5899	2.95	0.1053	5	4	6.00
	15	W	26	99.4	0.5	4.5	3/16	0.8793	2.64	0.1015	3	5	8.00
	16	Y	31	99.2	0.7	4.7	9/64	0.5055	3.03	0.0978	6	4	5.50
Subtotal=			240					Flow=	27.37	29.23	% Decr.gpm/ft from top-bottom line		
3	17	B	28	99.0	0.0	4.0	5/32	0.5757	3.45	0.1234	6	4	4.00
	18	R	28	98.6	0.4	4.4	9/64	0.4891	3.42	0.1223	7	3	5.00
	19	Y	28	98.2	0.8	4.8	5/32	0.6306	3.15	0.1126	5	5	4.00
	20	B	28	98.0	1.0	5.0	9/64	0.5213	3.13	0.1117	6	3	6.50
4	21	Y	50	96.3	0.0	4.0	5/32	0.5757	5.76	0.1151	10	4	7.00
	22	R	43	96.2	0.1	4.1	5/32	0.5828	4.66	0.1084	8	5	4.00
	23	B	35	95.9	0.4	4.4	5/32	0.6038	3.62	0.1035	6	4	7.50
Subtotal=			240					Flow=	27.20	16.13	% Decr.gpm/ft from top-bottom line		
Grand Total=			480							25.11	% Decr.gpm/ft from top-bottom line		

Calculations:

Flow/Hole = $11.79 d^2 h^{1/2}$ Flow/Lateral = (flow/hole) x #holes
 gpm/ft = (flow /hole) x # Holes / Line Length
 Sup (d)Volume = Supply Line Length /100 x Pipe Size & Volume Table
 Lateral Ln Vol (1&1/4) =Total linear footage /100 x Pipe Size & Volume Table
 Manifold Vol. = Manifold Length x Pipe Volume /100
 Dose Vol = Supply Line Vol. + Manifold Vol. + 5(Lateral Line Vol.)
 Run Time = Dose Volume /Total Flow
 Draw Down = Dose Vol /Pump Tank Vol x liquid depth of tank(inches)
 Elev Head = Manifold Elevation - (Pump Tank Elevation - 5ft)

Design Specifications

Supply Line (d)Vol=	
Lateral Line (d)Vol=	
Manifold (d)Vol=	
Dose Vol Range=	
Dose Vol=	@ x

Total Flow =	54.57
LTAR=	0.15
Run Time =	
Draw Down=	

Pressure Head (ft)=	4
Elevation Head (ft)=	
Friction Head (ft)=	
TDH (ft)=	

Friction Head = $[0.00113 \times (\text{Supply Line Length(ft)} + 70\text{ft for fittings in pump tank}) \times \text{Flow(gpm)}^{1.85}] / \text{Pipe Inside Diameter(in)}^{4.87}$ Computed by the Hazen Williams Formula

TDH = Pressure Head + Elevation Head + Friction Head