

# HAL OWEN & ASSOCIATES, INC.

SOIL & ENVIRONMENTAL SCIENTISTS

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8 April 2019

Gary J. McCabe  
1401 Aversboro Rd Ste 210  
Garner, NC 27529

Reference: Septic System Design For G & D Hauling  
Lot 10 Tri South Industrial Park: NC PIN 0654-78-1063

Dear Mr. McCabe,

A site investigation was conducted for the above referenced property, which is located on the northern side of Jarco Drive in 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 proposed business with a design daily flow of 400 gallons. Public water supplies will be utilized for this lot.

All ratings and determinations were made in accordance with "Laws and Rules for Sewage Treatment and Disposal Systems, 15A NCAC 18A .1900". This report represents my professional opinion but does not guarantee or represent permit approval for any lot by the local Health Department. The permit you receive from the Health Department may contain some modifications or amendments to our submitted design. Please carefully review your permit and adhere to all prescribed requirements.

## SOIL INVESTIGATION

The soils were evaluated under moist soil conditions through the advancing of auger borings. The designated septic area was observed to be underlain by soils rated as provisionally suitable for subsurface sewage waste disposal (Figure 1). These provisionally suitable soils were observed to be firm clays to greater than 30 inches and will support a long term acceptance rate of 0.3 gal/day/sqft.

## SEPTIC SYSTEM DESIGN

An initial septic system and repair system have been designed for a design daily flow of 400 gallons (Figure 2) utilizing a long term application rate of 0.3 gal/day/ft<sup>2</sup>. This design daily flow will allow up to 16 employees per the referenced regulations (25 gallons/employee). A minimum 1000 gallon septic tank is recommended. A pump tank of equal size is recommended and will be necessary to pump effluent uphill to the proposed drainfield. These tanks can be located such that the plumbing of the building will drain to them, but they need to be protected from vehicle traffic and in an accessible location for maintenance and pumping. The supply line from the pump tank to the drainfield can be located in a variety of locations, as best fits your needs. It cannot cross through the middle of the proposed repair area. In addition, special

provisions will need to be taken when the supply line crosses areas of vehicular traffic, whether this line is placed greater than 30 inches below surface or whether stronger pipe is utilized.

The initial septic system is proposed as a pump to 450 feet of conventional gravel drainlines. A pressure manifold will be used to distribute effluent to five variable length drainlines. The pressure manifold will be located partially above ground, and it is recommended that the manifold box be sited near the eastern property line above the first drainline (Line 1 on the sketch). This location will minimize the potential for the manifold box to be damaged by vehicular traffic. The drainlines should be installed on contour with trench bottom depths at 18 inches below surface.

The repair septic system is proposed as a pump to 450 feet of conventional gravel drainlines. A pressure manifold will be used to distribute effluent to five variable length drainlines. The drainlines should be installed on contour with trench bottom depths at 18 inches below surface.

Potential septic system drainlines have been demonstrated with various colored pin flags in the designated septic area. It is important that you do not disturb the septic system area. It is recommended that a staked line or protective fence be placed around the system prior to construction to eliminate any potential damage to the soil or the layout of the system.

#### SYSTEM MAINTENANCE

It is recommended that care be taken to preserve the life of your septic system. The septic tank, pump tank, and distribution boxes should be kept accessible for pumping and adjustment. Your septic system should be inspected periodically and the septic tank pumped out every 2 to 5 years by a professional contractor. Do not allow vehicles to park or drive across the septic disposal field.

This report and the attached septic system design information will need to be submitted to the Harnett County Health Department for review and the permitting process. I appreciate the opportunity to provide this service and hope to be allowed to assist you again in the future. If you have any questions or need additional information, please contact me at your convenience.



Sincerely,

*Krissina B. Newcomb*

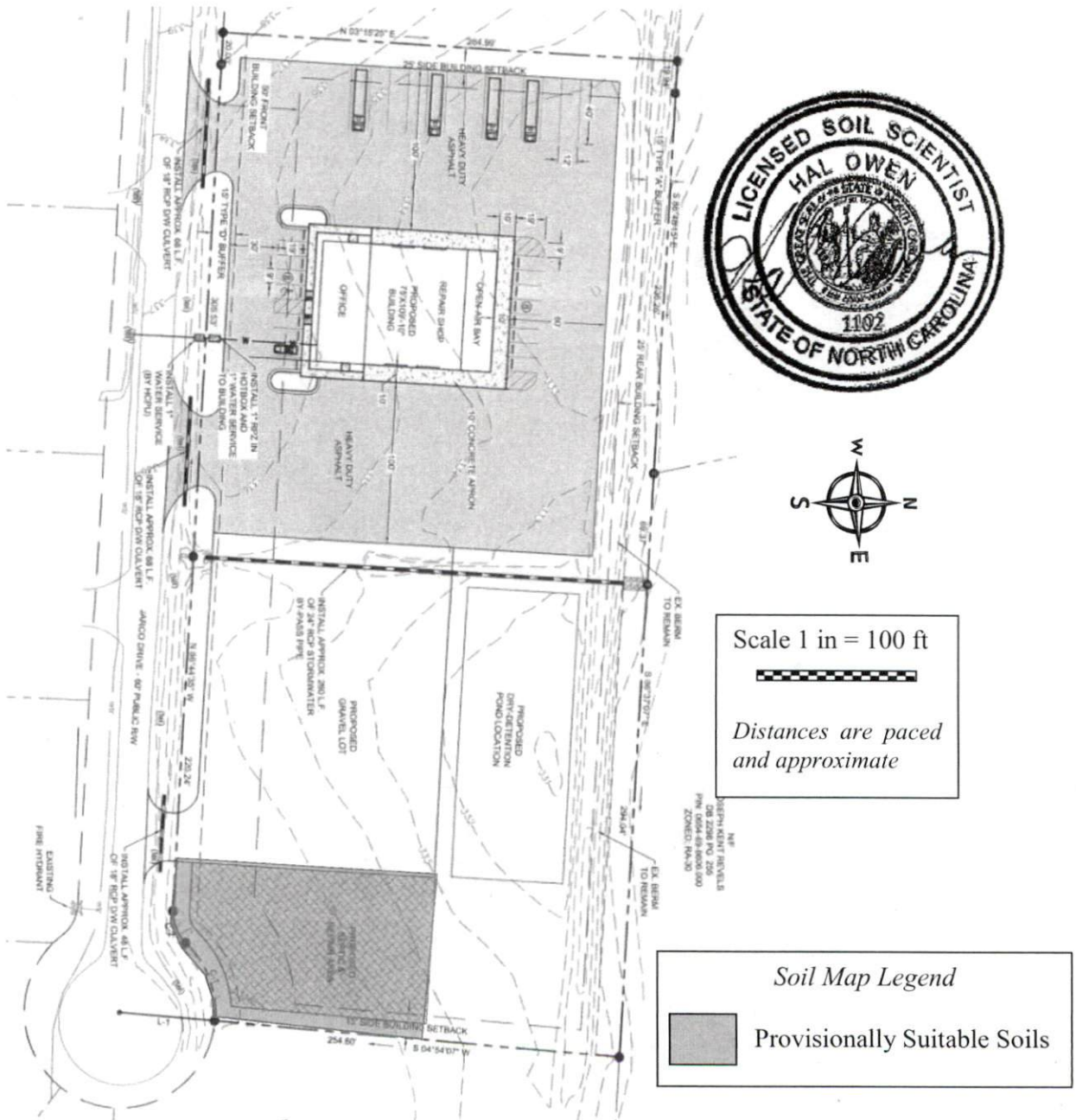
Krissina B. Newcomb

*Hal Owen*

Hal Owen  
Licensed Soil Scientist

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Figure 1. Soil Map showing Septic Suitability



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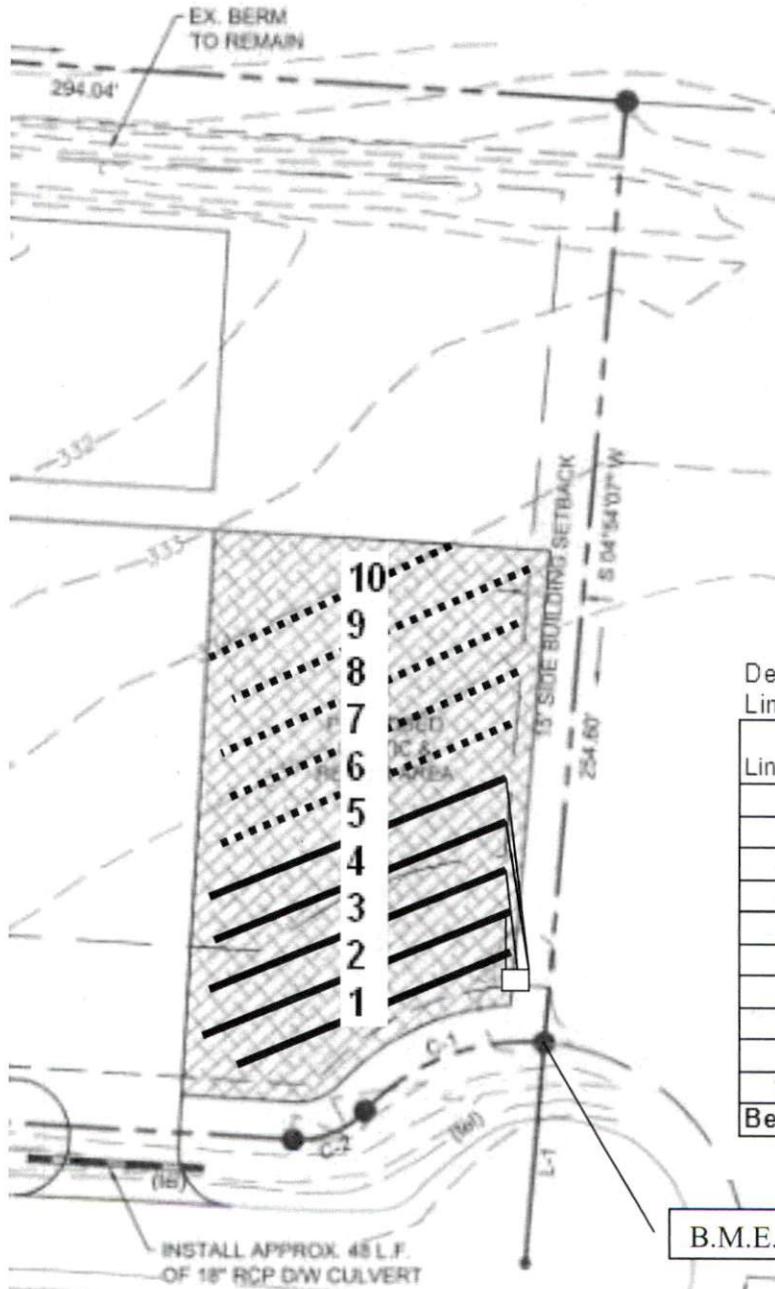
Figure 2. Septic System Layout



Scale 1 in = 50 ft



Distances are paced  
and approximate



**Initial System**

Pressure manifold to 450 ft (X 3ft)  
 Conventional drainlines (Lines 1-5)  
 Installed on contour at 18 inches  
 LTAR 0.3 gal/day/sqft

**Repair System**

Pressure manifold to 450 ft (X 3ft)  
 Conventional drainlines (Lines 6-10)  
 Installed on contour at 18 inches  
 LTAR 0.3 gal/day/sqft

Design Flow (gal/day) = 400  
 Lines flagged at site on 9-ft centers.

Line #	Color	Relative Elevation (ft)	Drainline Length(ft)
1	W	100.19	70
2	B	100.13	95
3	R	100.03	95
4	W	99.96	95
5	Y	99.84	95
6	B	99.70	95
7	W	99.43	95
8	Y	99.30	95
9	B	98.84	95
10	W	98.51	70
<b>Benchmark</b>		<b>100.00</b>	

Scale 1 in = 50 ft



Distances are paced  
and approximate

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Pressure Manifold Design Criteria

**Initial System**

Line Number	Line Color	Elevation	Drainline Length(ft)	Tap Size/Schedule	Flow/tap (gpm)	gpd/ft	LTAR (gpd/sqft)
1	W	100.19	70	1/2"sch 80	5.48	0.923	0.308
2	B	100.13	95	1/2"sch 40	7.11	0.883	0.294
3	R	100.03	95	1/2"sch 40	7.11	0.883	0.294
4	W	99.96	95	1/2"sch 40	7.11	0.883	0.294
5	Y	99.84	95	1/2"sch 40	7.11	0.883	0.294

Total Drainline= 450 Total Flow= 33.92  
 Pressure Head (ft)= 2 Target LTAR (gpd/sf)= 0.3 LTAR + 5% 0.315  
 Daily Flow= 400 Total Flow (gpm)= 33.92 Daily PRT(min)= 11.79  
 Dose Vol= 220.39 gallons w/ Pipe Vol @% 75 Dose PRT (min)= 6.50

**Repair System**

Line Number	Line Color	Elevation	Drainline Length(ft)	Tap Size/Schedule	Flow/tap (gpm)	gpd/ft	LTAR (gpd/sqft)
6	B	99.70	95	1/2"sch 40	7.11	0.883	0.294
7	W	99.43	95	1/2"sch 40	7.11	0.883	0.294
8	Y	99.30	95	1/2"sch 40	7.11	0.883	0.294
9	B	98.84	95	1/2"sch 40	7.11	0.883	0.294
10	W	98.51	70	1/2"sch 80	5.48	0.923	0.308

Total Drainline= 450 Total Flow= 33.92  
 Pressure Head (ft)= 2 Target LTAR\* (gpd/sf)= 0.3 LTAR + 5% 0.315  
 Daily Flow= 400 Total Flow (gpm)= 33.92 Daily PRT(min)= 11.79  
 Dose Vol= 220.39 gallons w/ Pipe Vol @% 75 Dose PRT (min)= 6.50