

# HAL OWEN & ASSOCIATES, INC.

SOIL & ENVIRONMENTAL SCIENTISTS

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Phone (910) 893-8743 / Fax (910) 893-3594

www.halowensoil.com

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16 August 2022

Mitchell Davis  
307 S Magnolia Ave  
Dunn, NC 28334

Reference: Soil Investigation and Septic System Design  
5443 Fairground Road; PIN 1518-53-4769

Dear Mr. Davis,

A site investigation was conducted on 28 July 2022 for the above referenced property, which is located on the eastern side of Fairground Road (SR 1705) 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 typical four-bedroom home. Public water supplies will be utilized for this lot. At the time of investigation, the property boundaries were not well marked. This will likely be required in order to receive the permit and properly install the septic system. The house footprint that was marked at the site did not appear to meet regulatory setbacks and needs to be re-staked in accordance with the attached plan. A second option is provided for the house site, please decide which you prefer and it needs to be staked at the site. If you need our assistance, please let us know.

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 Local 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. A portion of this lot 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 sandy clay loams to greater than 33 inches and will support long term acceptance rates of 0.4 gal/day/sqft. The unsuitable soil area is so rated due to inadequate soil depth to excessive soil wetness conditions.

## SEPTIC SYSTEM DESIGN

The proposed single family residential home will contain four bedrooms and generate a design flow of 480 gallons per day (Figure 2). A 1000 gallon (minimum) septic tank is required with an approved effluent filter. The addition of a 1000-gallon pump tank will be necessary to pump effluent uphill to the proposed drainfield.

The initial septic system is proposed as a pump driven system to 300 linear feet of accepted status drainlines utilizing a 25% reduction in total drainline length (Figure 2). A long-term application rate of 0.4 gal/day/ft<sup>2</sup> was used to design both the drainfields. A distribution box will be used to deliver effluent in parallel distribution to three 100-ft long drainlines. The drainlines should be installed on contour with maximum trench bottom depths at 18 inches below surface.

The repair septic system is also proposed as a pump driven system to 300 linear feet of accepted status drainlines utilizing a 25% reduction in total drainline length. A distribution box will deliver the effluent in serial distribution to four unequal length drainlines. The drainlines may need to be installed slightly off contour, to a maximum of 4 inches with maximum trench bottom depths at 12 inches below surface. Due to the ultra-shallow trench depth, it will be necessary to add native backfill over the nitrification field to provide at least six inches of cover over the drainlines.

All regulatory setbacks for a septic system shall be maintained. Drainlines must be installed at least 9 feet apart on center. The septic system (including tanks) must be at least 10 feet from a property line, 5 feet from a home, 50 feet from a surface water, and 100 feet from an individual well (50ft for repair systems).

Potential septic system drainlines have been demonstrated with various colored pin flags that are located on the lot. It is important to protect the areas designated for installation of the septic system or repair area from all land disturbing activities. 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.

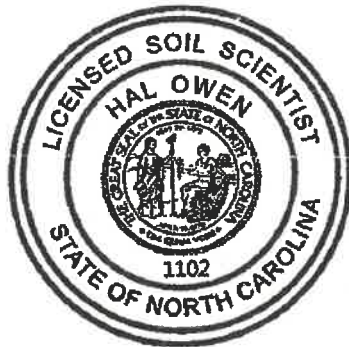
## SYSTEM MAINTENANCE

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. Practicing water conservation in the home, such as promptly repairing leaky fixtures and running washing machines and dishwashers only when full, will help to avoid overloading the septic system. Also, disposal of oils, fats, and grease into the septic system should be avoided because they could clog drainlines and conveyance pipes. A list of other useful suggestions can be found at <https://content.ces.ncsu.edu/septic-system-owners-guide>

It is required that the nitrification field and repair area be protected from vehicular traffic or other unauthorized access. Vehicular traffic can damage soils, pipes, and valve boxes. Damage to the nitrification field or repair area could result in the septic permit being revoked.

## CONCLUSION

This report and the attached septic system design information will need to be submitted to the Local 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.



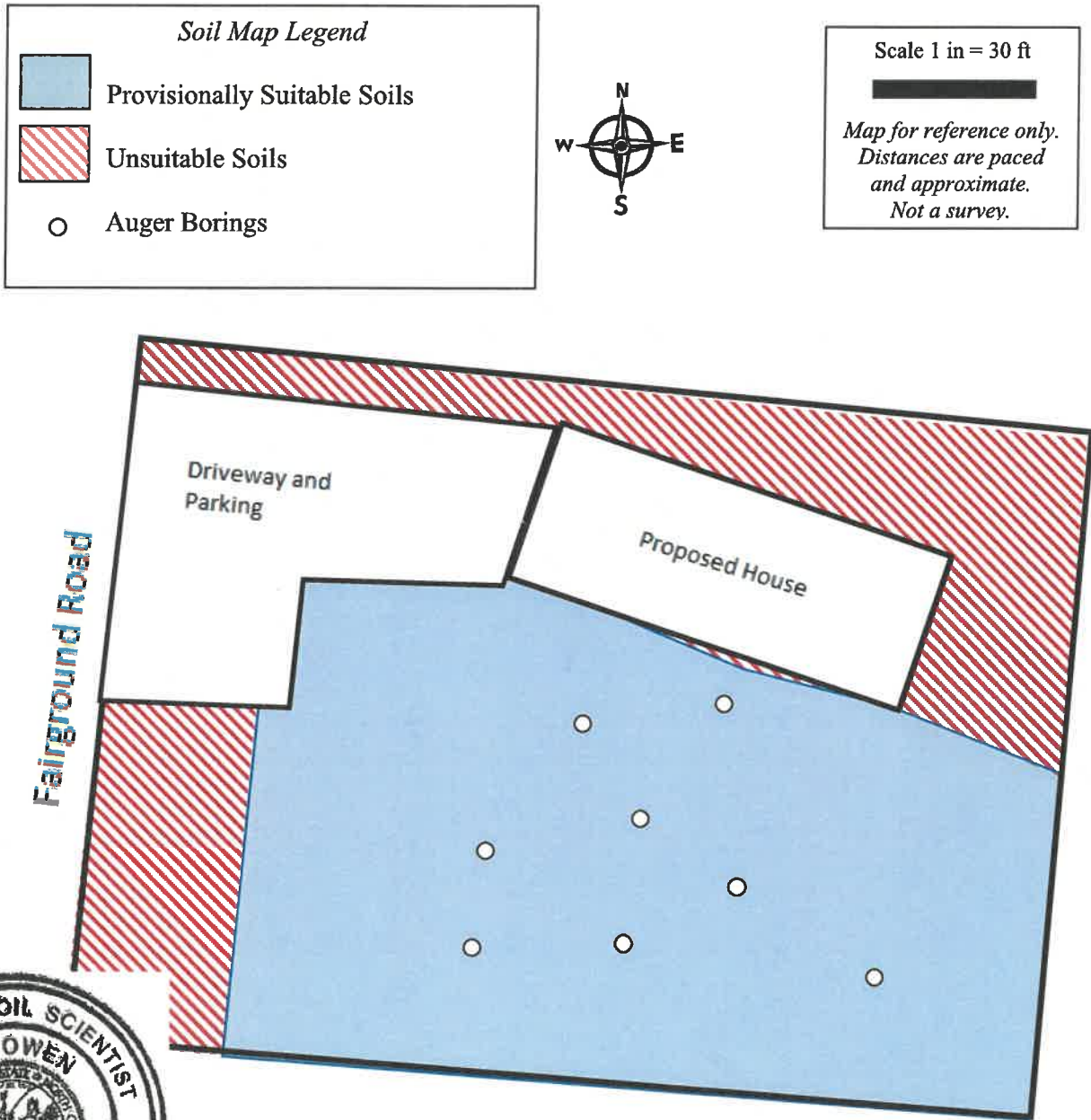
Sincerely,

A handwritten signature in black ink that reads "Hal Owen". The signature is written in a cursive, flowing style.

Hal Owen  
Licensed Soil Scientist

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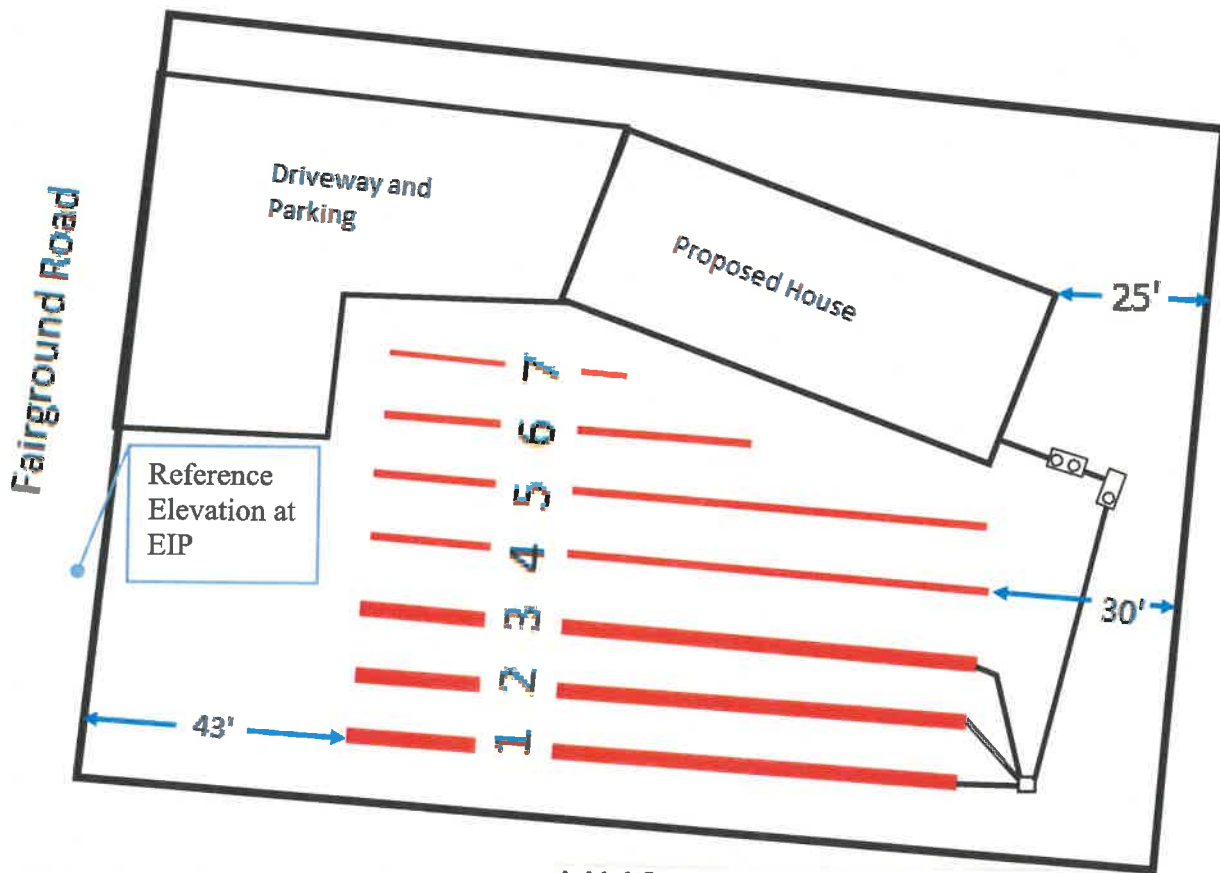
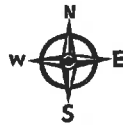
Figure 1. Soil Map showing Septic Suitability



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Scale 1 in = 30 ft  
 Map for reference only.  
 Distances are paced  
 and approximate.  
 Not a survey.

Figure 2. Septic System Layout (Option 1)



Lines flagged at site on 9-ft centers.

Line #	Color	Relative Elevation (ft)	Drainline Length(ft)
1	R	98.61	100
2	B	98.95	100
3	W	98.10	100
4	Y	98.15	100
5	B	98.50	100
6	R	98.16	60
7	W	97.82	40
<b>Septic Tank:</b>		98.16	
<b>Pump Tank:</b>		98.16	
<b>Reference Ele</b>		<b>100.00</b>	

**Initial System**

Pump to 3 X 100 ft (X 3ft)  
 Accepted status drainlines (Lines 1-3)  
 Installed on contour, MTD 18-21 inches  
 LTAR 0.4 gpd/sf

**Repair System**

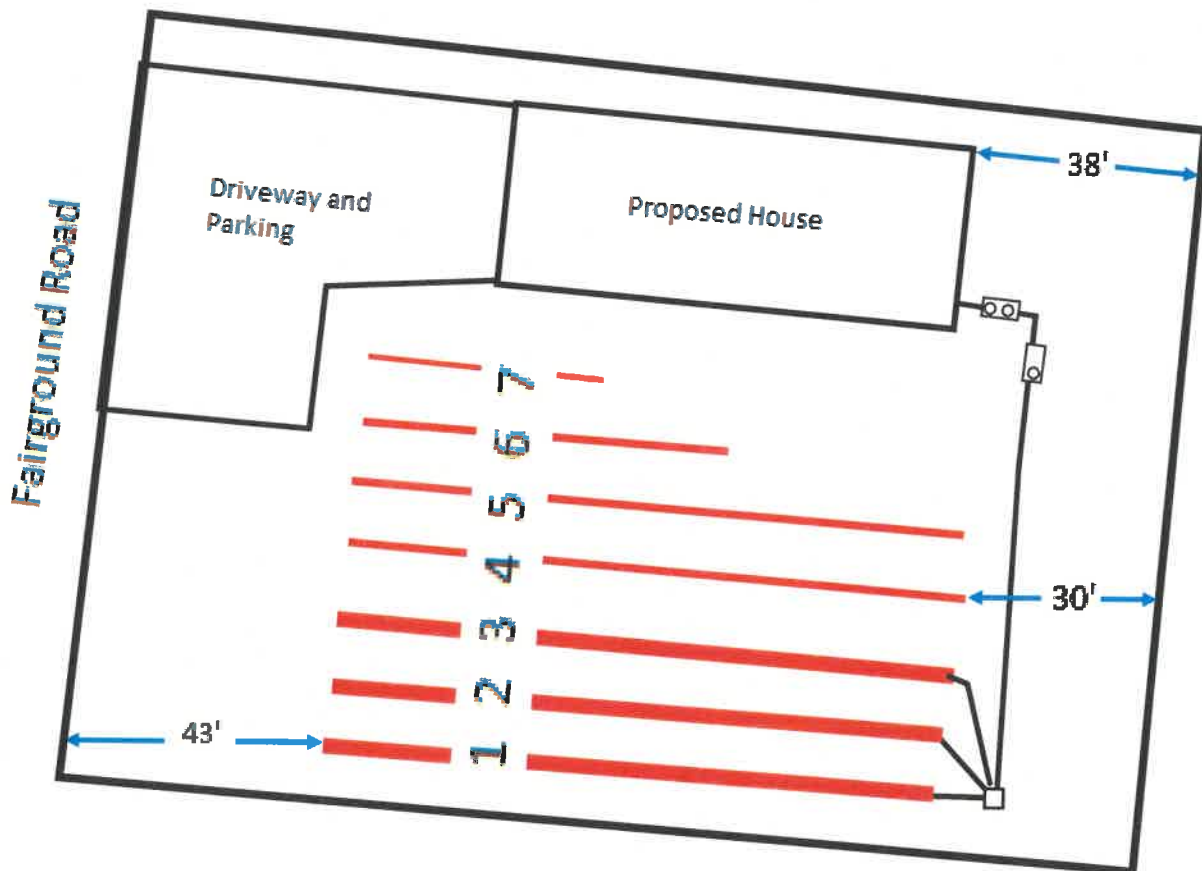
Pump to 1 X 300 ft (X3ft)  
 Accepted status drainlines (Lines 4-7)  
 Installed off contour, MTD 12 inches  
 LTAR 0.4 gpd/sf

\*drainlines must be at least 9ft on center,  
 10ft from property line, 5ft from home,  
 50ft from wells, 10ft from a water line,

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Figure 2. Septic System Layout (Option 2)



Lines flagged at site on 9-ft centers.

Line #	Color	Relative Elevation (ft)	Drainline Length(ft)
1	R	98.61	100
2	B	98.95	100
3	W	98.10	100
4	Y	98.15	100
5	B	98.50	100
6	R	98.16	60
7	W	97.82	40
<b>Septic Tank:</b>		96.77	
<b>Pump Tank:</b>		96.77	
<b>Reference Ele:</b>		100.00	

### Initial System

Pump to 3 X 100 ft (X 3ft)  
 Accepted status drainlines (Lines 1-3)  
 Installed on contour, MTD 18-21 inches  
 LTAR 0.4 gpd/sf

### Repair System

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20 scale

Mitchel Davis  
5443 Fairground Rd  
Dunn NC

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