



**FRED D. SMITH SOIL CONSULTING.**

November 23, 2015

Michael Floyd  
[REDACTED]  
[REDACTED]

Subject: Preliminary Soil Evaluation for Subdivision  
3 Lots  
Countyline Rd  
Nash/Franklin County, NC

Dear Mr. Tate

This preliminary soil report concerns the soil evaluation to determine soil suitability for septic systems. You asked me to evaluate the soils and the site for conventional septic systems and provided me with a copy of the USDA Soil Survey mapping on an aerial photograph. You accompanied me during the evaluation.

**Site Evaluation**

The site that was evaluated is several agricultural fields divided by grassed waterways. The wooded portion of the tract was not evaluated. Property lines were not marked. The tract is split by the Nash and Franklin County line.

**Soil Evaluation**

The property was traversed to observe soil properties, surface features, landscapes, and site parameters. Hand auger borings were advanced to evaluate soil characteristics in accordance with 15A NCAC 18A 1900 (Laws and Rules for Sewage Treatment and Disposal Systems). Soil characteristics were documented and grouped into soil areas that can be permitted for conventional septic systems only.

Other areas of the site may be suitable for alternative or innovative type systems but were not the focus of this study.

This work was performed by pacing and estimating distances and reading landscape position to show where soil boundary lines change at the site. This is a preliminary soil and site evaluation that is intended for general planning purposes. Additional detailed soil evaluation or system design will be required prior to obtaining a permit from Nash or Franklin County for any septic system. Individual drainfield layout will be necessary before a permit can be obtained and some site clearing will be necessary.

The preliminary soil map is attached that shows these soil areas and boundaries.

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### Soil 1

These soils are found on slopes of 1% to 12% at the site. They have clayey subsoils that have SHWT or saprolite at a depth of 30 to 36 inches. This soil is the best soil on the tract for conventional septic systems.

They will be classified as suitable for shallow conventional septic systems with trench depths from 18 to 24 inches deep. The loading rate will range from 0.1 to 0.4 gallons per day per square foot (g/sq-ft/day) for conventional septic systems due to the clay texture of the subsoil.

Soil depth to saprolite and seasonal high groundwater table is at least 36 inches below the surface.

### Soil 2

These soils are found on slopes of 1% to 6% at the site. They have clayey subsoils that have color patterns at depths ranging from 24 to 29 inches below the surface. These soils are good for shallow or ultra-shallow septic designs but have some limitations.

These soils are also suitable for conventional trenches but at shallower depths. Therefore their drainfields will need to have a topsoil cap placed over the entire drainfield because the trench depths are only about 12 to 17 inches deep and on contour. Sufficient topsoil cover must be at least 6 inches over the top of the trenches.

### Soil 3

These soils are unsuitable for shallow conventional systems due to SHWT or saprolite or expansive clay at depths less than 24 inches below the surface. In addition, some of these areas may also be within stream or pond buffers (25 to 50 feet). Some of these areas may possibly be suitable for mound systems or pretreatment style systems but are not suitable for conventional systems without pretreatment.

### **Conclusions**

Each of these three lots as drawn on the attached aerial photo have sufficient space of provisionally suitable soils for shallow conventional systems (soil 1) for at least 4 bedroom homes (480 gallons per day).

For the purposes of this preliminary study in Soil 1 area, I used a loading rate of 0.25 gallons per day per square foot (gdpdq-ft) to determine estimates for the amount of trench bottom area. In addition, I used innovative trench designs (polystyrene aggregate or chambers) that allow for a 25% reduction in drainfield area over gravel type trench designs. Conventional trenches are 3 feet wide and are installed on 9 foot centers on contour. These soils will require about 480 linear feet of trench.

Soil 2 areas have clay textured subsoil and will also fall within the range of 0.1 to 0.4 g/sq-ft/day. But I suggest a slightly lower loading rate of 0.2 g/sq-ft/day. Therefore a 4-bedroom

house will require about 600 linear feet of 25% reduction type trench for initial and an equal amount for repair.

An initial septic system and repair area for a 4 bedroom home in Soil 1 and 2 will require about 3000 to 4500 square feet of area. Specific system area can not be determined precisely until the trenches are designed and flagged at each lot by the health department or a consultant.

Repair systems do not have to be conventional if available space is limited. Repair systems can be higher technology to reduce the footprint of the drainfield if space is a limitation. However on these large lots, space of suitable soils is available to permit conventional designs.

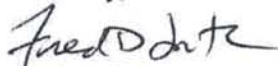
Pump stations for septic systems might be required depending on building and tank placement in relation to the elevation of the proposed drainfield.

Please contact me if any site conditions change so that I can reevaluate the impact on septic system permitting.

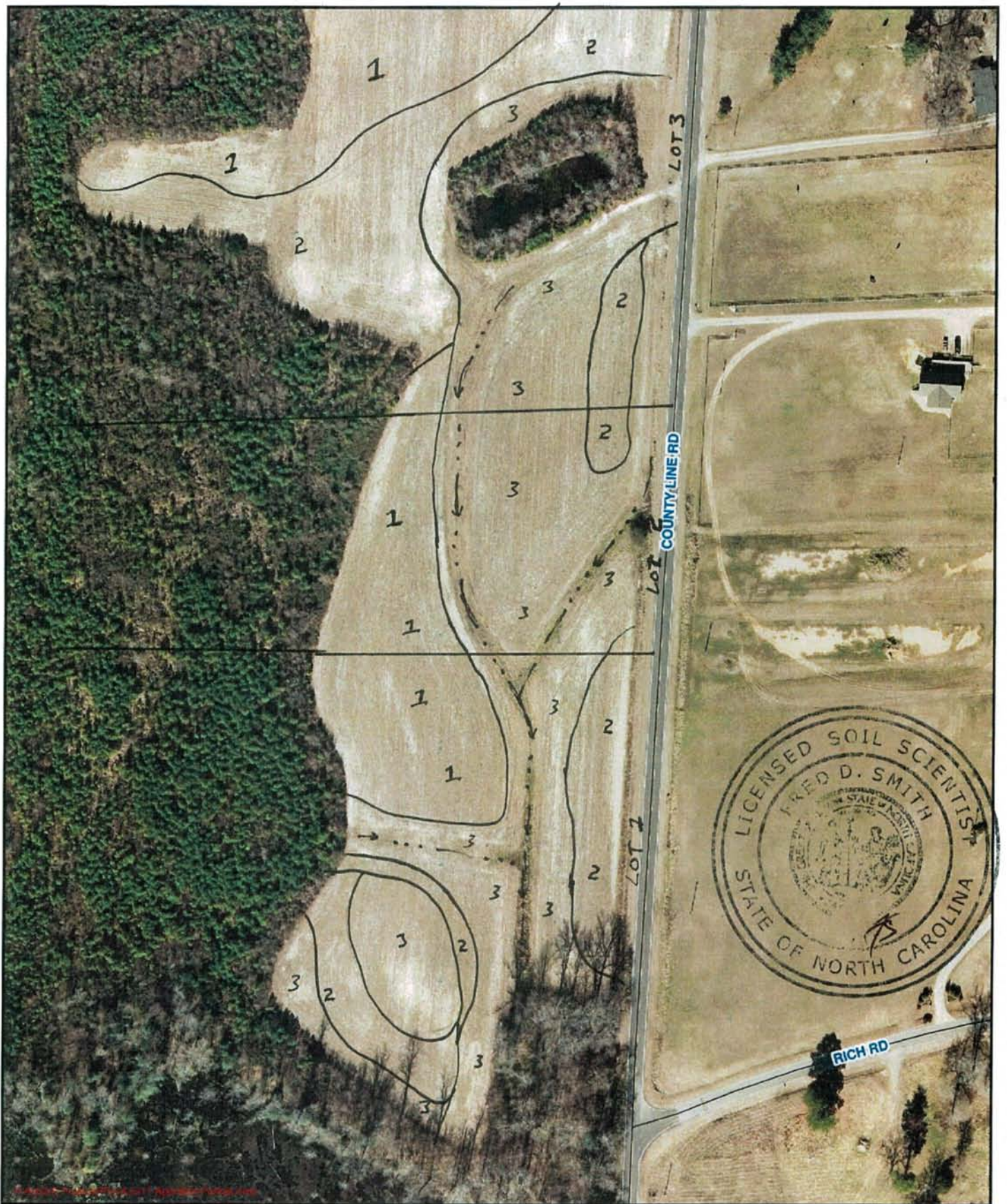
The County may require a more detailed study that shows actual drain field areas on each lot prior to recordation of the subdivision. To provide this level of study, each lot will have to be surveyed and marked.

Please call me if you have questions or if I can provide additional assistance.

Sincerely,

  
Fred D. Smith  
Licensed Soil Scientist





Nash County  
Tax Department / Mapping Division

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Date: **November 24, 2015**



1 inch = 150 feet



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