Fred D. Smith Soil Scientist

January 31, 2023

Mr. Dan Dyer
1184 Russert Ln
Apex, NC 27523

Subject: Preliminary Soil Evaluation for Septic System Suitability
Two lots
125 and 127 Nakoma Dr
Lake Royale, Franklin County, NC

Dear Mr. Dyer,

This preliminary soil report concerns the soil evaluation to determine soil suitability for septic systems on two adjacent lots at the above-mentioned location. You authorized me to evaluate the soils for conventional septic systems.

The subdivision lots were evaluated 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).

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 and to assist you with obtaining a septic system permit from Franklin County. Additional detailed soil evaluation and system design will be required prior to obtaining a permit from Franklin County for any septic system. Individual drainfield layout will be necessary before a permit can be obtained.

Site and Soils

The two lots are wooded with deep, wide gullies near the road frontage. Some isolated pockets of water are present in the bottom of the gullies. The topography near the gully/stream is flat (0-2% slope). The middle to rear of the lot has steeper slopes of about 6 to 10 percent. The stream-gully will probably require a 50-foot setback from the septic system since it discharges into the Lake.

The soils in the flat area have clay loam surface soil layer that is about 6 inches thick. Below the topsoil is red clay that has slightly expansive clay mineralogy and blocky soil structure to a depth of about 18 inches below the surface where a layer of gravel was encountered. This layer caused auger refusal. However, we suspect that if backhoe trenches were available for excavating pits to observe the soils below the gravel, these soils would have sufficient depth for shallow conventional septic designs.

The soils on the steeper sloping areas of the lots have about 6 inches of clay loam surface soil over red clay subsoils. The layer of gravel in in these soils was encountered at about 18 inches but did not cause auger refusal. Below the thin gravel layer, we found red clay soil to a depth of at least 36 inches below the surface. These soils are Provisionally Suitable for shallow conventional septic designs.

Conclusions

The soils are suitable for shallow placement of conventional trenches on either lot except for the areas of required setbacks.

Based on information provided to us by the county tax office, they say the lots were changed by a survey in 2007. Based on that information, the each lot will require a repair area and normal setbacks for septic systems

PHONE 252-908-4369 –1004 ROUNDTABLE CT-KNIGHTDALE, NC 27545---EMAIL FDS4444@REAGAN.COM

.

The required setbacks for each lot are:

Property line-10 feet
Stream -50 feet
Well-50 feet
Water supply pipe-10 feet
House foundation (slab or crawl space) – 5 feet
Basement wall-15 feet

I suggest a loading rate (LTAR) for the shallow conventional septic system of 0.2 to 0.3. For a 3 bedroom home, I calculate the amount of trench needed for the range of loading to be between 300 linear feet and 450 linear feet of trench using 25% reduction trench technology materials (not gravel). An equal amount of trench space will be required for the repair.

We do not believe that sufficient available space is present on one lot for an initial drainfield and a repair drainfield with a normal footprint of a 3-bedroom one-story home. However, that assessment can change once the lot is cleared of trees and we flag out the trenches for each drainfield.

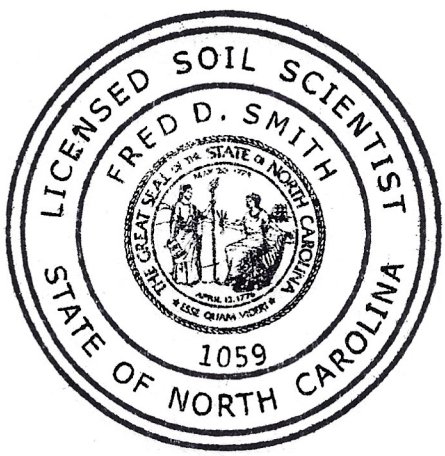
We have other types of waste treatment technology that can be utilized to reduce the amount of drainfield areas available. The higher technology type systems provide addition amounts of system reduction in size, but is also much more expensive.

Of course, you can also recombine the two lots to make one larger lot with more area of suitable soils and probably build a 4-bedroom home using conventional trenches.

I appreciate your selection of me to perform these soil science services. Please call me if you have any questions.

Sincerely,

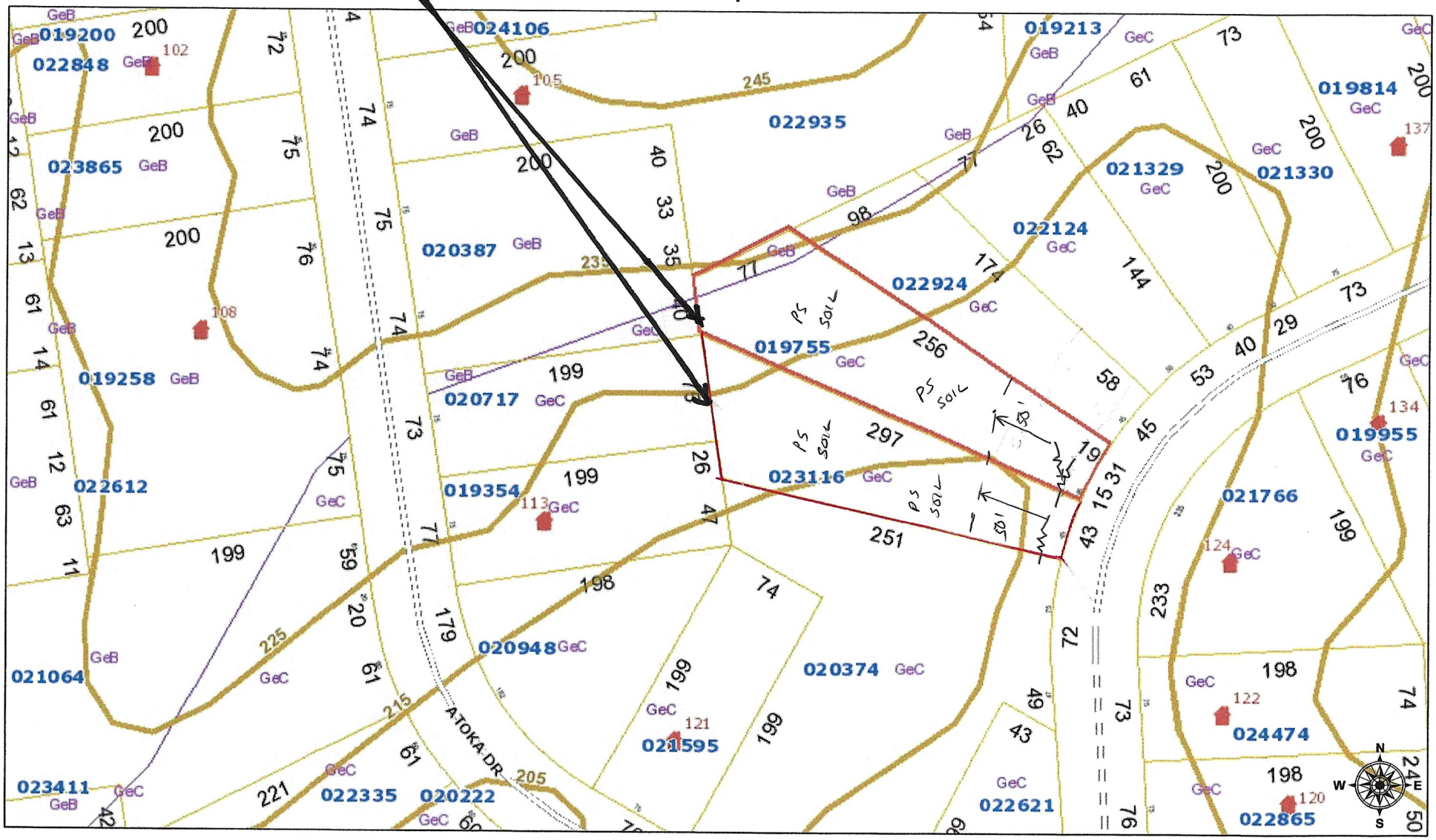
Fred D. Smith



PHONE 252-908-4369 –1004 ROUNDTABLE CT-KNIGHTDALE, NC 27545---EMAIL FDS4444@REAGAN.COM

SUBJECT LOTS

GoMaps



January 31, 2023

Roads
Contours
Streams
Wetlands
Soils

GULLY

SETBACK FROM STREAM/GULLY

1:1,377

0 62.5 125 250 ft

0 15 30 60 m

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

SCALE ABOUT 1" = 125'

2023