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This report concerns the soils and site investigations for septic system suitability on 21 tracts (each 10 ac.+ ) and the proposed area for road front lots in the proposed division of the Renuart (222 ac.) and Roese (16.82 ac.) tracts located on the north side of Cannady Mill Road about one mile north of the intersection with NC Highway 96 near Wilton. The current proposed subdivision lines are shown in red on the attached sketch map and the tract numbers are in magenta. The investigations were conducted to verify the presence of at least one sewage disposal site on each of the tracts or lots in the proposed subdivision.

The attached sketch map shows the locations of various soils areas and stream features identified from field investigations as well as the proposed subdivision lot lines for road front lots and 10 acre tracts. This map was prepared using property information and aerial photography obtained from the Granville County GIS web site. The topographic contours were obtained from the NC DOT GIS web site. The USDA soils maps and USGS topographic maps were also consulted as to the general nature of the soils, landforms and streams.

The soils areas as shown were estimated from hand auger borings and from field observations or soil related landforms and vegetation. The locations of the individual soil borings and certain topographic features were estimated using a Trimble mapping grade GPS receiver. This information can be used for discussions regarding the development of individual lots and tracts using septic systems for on-site sewage disposal. Additional follow-up investigations will be required before the feasibility for use of some of these sites can be confirmed due to the overall marginal suitability and complexity of the soils. Additional investigations and field layouts of drain field trench systems will be required before any permits for sewage disposal can be issued.

## SOILS GENERAL

The soils on these properties are mapped in the Cecil (CaB & CeC2 ), Pacolet (PaE), Enon (EnB), Georgeville (GeC) and Wedowee (WeB) soils mapping units by the Soil Survey of Granville County (USDA 1997). A copy of the USDA soils map obtained from the county GIS web site is attached with this report. Under the USDA system the Cecil, Georgeville and Wedowee soils will classify as having moderate limitations for septic system drain fields. The main potential limitations to use are the clayey subsoils, the depth to weathered rock (saprolite) and the slopes. These soil types are commonly permitted for septic system drain fields in Granville County. The main concern for use of the soils maps for planning is the probability for the existence of "inclusions" of contrasting soils that will affect

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intended use. Under the USDA system the **Enon and Pacolet** soils (as mapped) will classify as having severe limitations for septic system drain fields. The presence of expansive clays in the subsoils and the steepness of slopes are the main limiting factors for use of these soils. These soil types are not normally permitted for septic drain fields in Granville County due to the severity of the limitations.

#### **SOIL SUITABILITY**

The suitability classifications of the soils areas based on North Carolina State On-site Sewage Disposal Regulations (15A NCAC 18A .1900) are as follows:

**SOILS AREA 1:** These soils will dominantly classify provisionally suitable for conventional or modified conventional septic system drain fields. These soils typically have dark brown and light brown sandy loam surface layers 8 to 10 inches thick overlying friable red to yellowish red clay subsoils that exhibit soil structure and are free of seasonal wetness indicators within the upper 30 to more than 40 inches of the soil profiles. The slopes are generally less than 6 percent in these areas. These soils have potential for conventional septic system drain fields. At some locations the shallow placement of trenches may be required. The sewage loading rates are estimated to range from 0.25 to 0.30 gal./sq. ft. of trench bottom for conventional or modified conventional drain field trenches.

**SOILS AREA 2:** These soils will classify provisionally suitable to unsuitable to unsuitable for conventional septic system drain fields. These soils have dark brown and light brown surface layers 8 to 10 inches thick overlying yellowish brown to yellowish red clay to clay loam subsoils that exhibit soil structure and are free of seasonal wetness indicators within the upper 22 to 30 inches or more of the soil profiles. These soils have potential for on-site sewage disposal. The unsuitable soils can be re-classified to provisionally suitable by using modifications for conventional drain fields as described in the regulations. For the most part they have potential for modified convention septic drain fields. The modifications may involve shallow placement of trenches, the use of ultra-shallow (at grade) installations or the use of proprietary measures (low profile infiltrator chambers) in ultra-shallow trenches. The sewage loading rates (LTAR) are estimated to range from 0.25 to 0.30 gal./sq. ft. of trench bottom. At some locations the topography is complex, which will necessitate additional space for drain fields above normal.

**SOILS AREA 3a:** These soils will dominantly classify unsuitable for conventional septic system drain fields. These soils have dark grayish brown and pale brown sandy loam to loam surface layers overlying yellowish brown clay loam subsoils that are mottled with gray or have poor structure at depths ranging from 15 to 24 inches from the soil surface. Some of these soils have potential for alternative septic systems , such as the anaerobic drip irrigation system subject to additional detailed investigations. This area may have some sites with potential for trenches using the low profile infiltrator chambers subject to further investigations.

**AREAS NOT INVESTIGATED:** A substantial percentage of the property was not investigated. The soils in these areas range from provisionally suitable to unsuitable for conventional septic drain fields. It is likely that the soils occur in complex patterns relative to the criteria for septic drain field suitability based on