



12/30/2025

Attention: Mr. James Moore:

Reference:

Reconnaissance Soil Evaluation for on-site wastewater treatment and disposal systems for 3 tracts of land located off Mark Willett Road, in Chatham County, NC. These tracts have parcel numbers of 0072587, 0072586 and 0009370 and are listed as 63.7720-acres, 35.062-acres and 42.716-acres respectively.

Introduction:

The following Reconnaissance Soil Evaluation technical report is submitted to assist in the potential residential development of the lot located off Mark Willett Road, in Chatham County, NC.

Purpose:

The purpose of this report is to evaluate the potential suitability for on-site wastewater treatment and disposal systems for the future potential subdivision and development of 3 tracts of land located off Mark Willett Road, in Chatham County, NC.

Methodology:

The property was traversed, and soil borings were conducted with hand augers in suitable topographic areas. The topography and vegetation communities were considered to postulate any possible consistent soil patterns. The soil was evaluated for the following morphological characteristics: texture, structure, soil depth, depth and thickness of any restrictive horizon, soil wetness conditions, soil mineralogy, topography, and landscape position. With these factors considered the areas evaluated were judged based on the "North Carolina Laws and Rules for Sewage Treatment and Disposal Systems (15A NCAC 18E)".

A total of 146 soil auger borings were utilized on the 4 tracts of land. These borings were located based on information that consisted in conjunction with a review of topographic maps and visual inspections of the site. Areas of complex or unsuitable topography were avoided and only areas with suitable and consistent topography and appropriate setbacks from gullies, cuts, and bodies of water were followed in the evaluation.

The areas evaluated on these tracts of land contained soils that consisted of mostly unsuitable soil for all types of Subsurface Onsite wastewater septic systems. These unsuitable areas contained shallow soil conditions including expansive clay mineralogy, soil wetness conditions, saprolite and rock. Furthermore, based on soil work performed the three tracts of land contained some area/s of soil that could possibly support Conventional, Accepted, HPPBPS, Low Profile Chamber or Drip Irrigation systems. Please note, verification of these types of septic systems would require additional soil evaluation that a Reconnaissance soil evaluation cannot provide. This evaluation should include at least a Detailed soil evaluation to determine system type/s and combinations, potential number of gallons per day design flow, and number of potential lot/s suitable for development or additional subdivision. Additional septic system drainfield layouts may also be needed to help determine future lot development or subdivision potential.

See chart below for possible subsurface soil area breakdown for each tract of land:

Parcel #		Acres	Possible Soil Area for subsurface septic system	Ft ² of Possible Soil Area. Needs additional soil work for verification	Possible soil area notation on each parcel/ See map. Needs additional soil work for verification
007258 7		63.77 2	Yes	~20,000 Ft ²	D
007258 6		35.06 2	Yes	~70,600 Ft ² & 43,000 Ft ²	B & C
000937 0		42.71 6	Yes	~90,700 Ft ²	A

Soil boring depths and possible system match:

1. **Red Circles on Map**- 8 of the 146 borings (~ 5%) were $\geq 30''$ to an unsuitable or restrictive layer. These borings would be representative of soil depths suitable for **Conventional septic systems, Accepted Systems, Ultra-Shallow Conventional, Low-Profile Chamber, and horizontally placed PPBPS on-site wastewater treatment and disposal systems.** (see map).
2. **Pink Circles on Map**- 11 of the 146 borings (~ 8%) were suitable to depths of 24''- 29'', these borings could be considered suitable for **Ultra-shallow conventional or Ultra-Shallow Accepted** systems with some added additional cover and **Low-Profile Chamber Systems** (if at least 26'') with cover. (see map).
3. **Orange circles on Map** -10 of the 146 borings (~ 7%) indicates soils from 20'' to 23'' that could be suitable for a **Low-Profile Chamber** system with added cover. (see map).
4. **Green circles on Map** - 15 of the 146 borings (~ 10%) indicates soils from 18'' to 19'' that could be suitable for an Anaerobic Drip Irrigation system. (see map).
5. **Yellow Circles on Map**- 29 of the 146 borings (~ 20%) indicates soils from 13'' to 17'' that could be suitable for a **TS2 Pretreatment Drip Irrigation system** with a Special Case Soil Study verification. (see map).
6. **Blue circles on Map**- 73 of the 146 borings (~ 50%) indicates suitable soil less than 13'' that would be **unsuitable for all subsurface septic systems** (see map). **However, these soils could be considered for a Surface on site wastewater system with additional soil evaluation, additional testing (Saturated Hydraulic Conductivity testing) additional engineering, with additional cover dirt to be added and approval from the Division of Water Resources (DWR).**

Conclusion

The areas evaluated comprised of soils that consisted mostly of unsuitable soil for all types of Subsurface Onsite wastewater septic systems. Please note, on the **attached soil maps** that potential soil area's denoted as area **A, B, C and D** are the best soils available that we found on the four tracts of land and have potential for various subsurface On-Site Wastewater systems; including Conventional, Accepted, HPPBPS, Low Profile Chamber or Drip Irrigation systems. Please note, verification of these types of septic systems would require additional soil evaluation that a **Reconnaissance soil evaluation** cannot provide. This evaluation for verification should include at least a **Detailed soil evaluation** to determine system type/s and combinations, potential number of gallons per day design flow, and number of potential lot/s suitable for development or additional subdivision. Additional septic system drainfield layouts may also be needed to help determine future lot development or subdivision potential.

This additional soil work/testing in the field would be required to determine if a specific type of septic system is feasible, the potential system type and combinations of systems, potential number of Gallons per day and potential subdivision lot numbers and geometry. Furthermore, this determination will also not only include and depend on the additional soil evaluation, but also additional testing and design would most likely be necessary.

Furthermore, based on the soil work performed, possible septic systems also exist for **Pretreatment Surface or Spray Irrigation systems**. Please note these types of septic systems require additional more sophisticated testing (Saturated Hydraulic Conductivity testing), engineered design, monitoring by a Certified Operator, approval by (DWR) and are of significant cost.

It is also recommended that the land planner address the local zoning ordinances and watershed setbacks since this report does not address these issues.

However, more soil work should be performed to properly delineate the soils on the site or to cut out tracts of land for the purpose of subdividing. This report discusses the general areas of potentially useable areas for on-site wastewater disposal systems and, of course, does not guarantee the approval or permit as required by the local health department or (DWR). Furthermore, *D&K Soil Consultants, Inc.* is hired to give its professional opinion on these matters and due to the interpretation from county and state regulators and constantly evolving changes in the rules and regulations that govern on-site wastewater treatment and disposal systems, we cannot guarantee approval by the local health department or (DWR). *D&K* recommends that anyone making financial commitments on any plat of land be fully aware that an Improvement permit and a Construction authorization is required prior to

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any construction on any lot. Obtaining these two permits would be highly recommended prior to the purchase or sale of any tract of land.

Furthermore, septic permits will be required for any lot prior to the issuance of a building permit. The health department will perform a detailed evaluation of the lot which includes soil morphology, soil application rate, topography and slope, minimal set-back requirements, system size and layout, location of house, drive, wells (if applicable), buildings, and so forth.

Only after consideration of all these factors can the local health department determine system design and site utilization.

Sincerely,

D&K Soil Consultants, Inc.

A handwritten signature in dark ink, appearing to read 'David B. Ward', is written over the printed name.

David B. Ward, L.S.S.

Soil Scientist

