6/27/2023

D&K
Soil Consultants, Inc.

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Attention: Mark Goodwin/Amy Powell

Reference: Preliminary Soil Evaluation for on-site wastewater treatment and disposal systems for a 75.43-acre tract of land (Parcel # 17926) in Chatham County, NC. The lot is located off Olive Chapel Road, in Chatham County, NC.

Introduction:

The following preliminary soil/site evaluation technical report is submitted to assist in the potential additional development and potential subdivision of the lot off Olive Chapel 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 an approximately 75.43-acre tract of land.

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 18A .1900)".

Soil Findings

A preliminary evaluation of the site was performed on 02/19/2022, 02/26/2022 and 03/11/2022 to determine possible areas of suitable or provisionally suitable soil for on-site wastewater treatment and disposal systems for residential use.

A total of 127 soil auger borings were utilized on the site. 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.

Most areas evaluated consisted of soils that consisted of unsuitable soil for most types of Subsurface Onsite wastewater septic systems. These unsuitable areas consisted of shallow soil conditions including, expansive clay mineralogy, soil wetness conditions, saprolite and rock. **However, some potential soil/septic areas were found especially in the Northwestern and Southwestern areas of the property. These potential soil/Septic areas could be considered for: Conventional, Ultra-Shallow Conventional, Accepted Systems, Ultra-Shallow Accepted Systems, Low-Profile Chamber, horizontally placed PPBPS, Anerobic Drip Irrigation, and Pretreatment Drip Irrigation on-site wastewater treatment and disposal systems. Please note:** Any potential soil areas would need additional refining with more soil work performed to determine potential septic system types and combinations, potential number of gallons per day design flow, and number of potential lots suitable for additional subdivision. Moreover, additional soil borings would also be needed to help determine future lot subdivision potential.

Soil boring depths and possible system match:

1. Red Circles on Map- 7 of the 127 borings (~ **6%**) were ≥30" to an unsuitable or restrictive layer. These borings would be representative of soil depths suitable for **Conventional septic systems, Accepted Systems, and horizontally placed PPBPS on-site wastewater treatment and disposal systems.** (see map).

2. Pink Circles on Map- 21 of the 127 borings (~ **17%**) 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 **horizontally placed PPBPS Systems** (if at least 26" of naturally occurring suitable exists) with additional cover to be added. (see map).

3. Orange Circles on Map - 14 of the 127 borings (~ **11%**) 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 - 24 of the 127 borings (~ **19%**) indicates soils from 18" to 19" that could be suitable for an **Anaerobic Drip Irrigation system**. (see map).

5. Yellow Circles on Map- 22 of the 127 borings (~ **17%**) 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- 39 of the 127 borings (~ **31%**) indicates soils less than 13" that would be **unsuitable for all subsurface septic systems** (see map).

Conclusion

Most areas evaluated consisted of soils that consisted of unsuitable soil for most types of Subsurface Onsite wastewater septic systems. However, some potential soil areas for Subsurface Onsite wastewater septic systems were found especially in the Northwestern and Southwestern areas of the property. Additional soil work in the field would be recommended to determine potential system type and combinations, potential number of Gallons per day and potential subdivision lot numbers and geometry.

It would be our suggestion to allocate at least 3,000 to 4,000 square feet of usable soil area per bedroom or 30ft² of soil area per gallon of wastewater flow, for the design and layout of residential septic system areas. It is also recommended that the land planner address the local zoning ordinances and watershed setbacks since this report does not address these issues. Furthermore, *D & K Soil Consultants*, is not responsible for other additional rules, regulations, laws and interpretations of these beyond the scope of common knowledge. We are also not responsible for any non-observed utilities, right of ways, wetland determinations, and any other potential physical or implied features that may adversely affect potential development or improvement of the property.

This preliminary soil 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. 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. *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 any construction on any lot. Obtaining these two permits would be highly recommended prior the purchase or sale of any tract or lot 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.

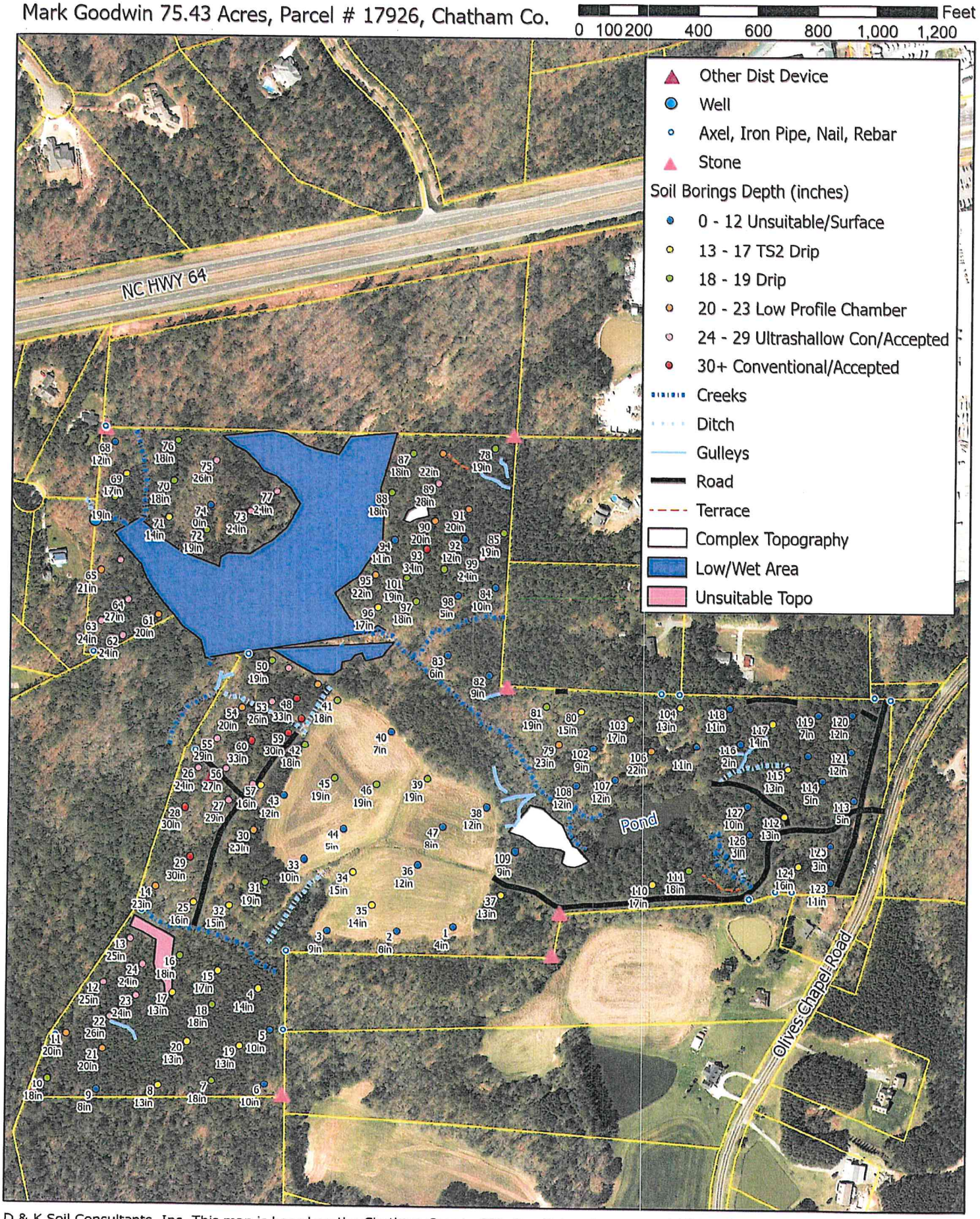
D&K Soil Consultants appreciates the opportunity to provide soil scientist services to you.

Sincerely,

D&K Soil Consultants, Inc.

David B. Ward, L.S.S.

Mark Goodwin 75.43 Acres, Parcel # 17926, Chatham Co.



D & K Soil Consultants, Inc. This map is based on the Chatham County GIS site. It is not a survey. Additional attributes were taken with a sub-meter GPS handheld device and has inherent errors. D & K Soil Consultants shall not assume liability for any errors, omissions, or inaccuracies in the information provided.