



## Soil & Environmental Consultants, PA

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Moore Family Partnership  
Attn: Marilyn Koenig & Jane Nash  
293 Fearington Post 293 Stoneview  
Pittsboro, NC 27312

June 12, 2023  
S&EC Project #15635.S1

Re: Soil/Site Evaluation on the Moore Family Partnership Properties on  
Hamlets Chapel Rd & Moore Mountain Rd, Approx. 181-Acre Site, Chatham Co., NC

Soil & Environmental Consultants, PA (S&EC) performed a preliminary soil and site evaluation on the above referenced tract. This was performed at your request as part of the preliminary planning process in order to determine areas of soil that have potential for subsurface wastewater disposal. Fieldwork was performed in June 2023.

S&EC traversed the property and observed landforms (slope, drainage patterns, past use, etc.) as well as soil conditions (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) through the use of hand auger borings. The site was evaluated during dry soil conditions. From these observations, an evaluation of the site was developed, relative to subsurface disposal of wastewater. Soil areas were estimated in the field. The soil/site evaluation criteria used is that contained in 15 A NCAC 18A .1900 "Laws and Rules for Sewage Treatment and Disposal Systems".

### **FINDINGS**

This site is located in the acid crystalline piedmont region of Chatham County. The upland soils on this tract are similar to the Wedowee, Appling, Pacolet, Vance, and Helena soil series. The Wedowee, Appling, and Pacolet soils have a sandy loam surface material over a clay subsoil. These soils are at least 24 inches deep to prohibitive soil characteristics and are generally useable for subsurface septic systems. The Vance and Helena soils have unsuitable soil characteristics less than 24 inches and are generally unsuitable for conventional type septic systems. This property has areas with significant surface and shallow rock areas that will need backhoe pit evaluations. This property also contains areas of thick vegetation that will need clearing in order to fully evaluate the property for septic feasibility.

The accompanying preliminary AutoCAD sketch map indicates the estimated areas with potential use for subsurface wastewater disposal. The red cross hatched units indicate areas of soils which are at least 24 to 36+ inches deep to prohibitive soil characteristics and these areas have potential for a conventional septic system, a modified conventional (shallow placed lines with no fill required over the disposal area), ultra-shallow conventional (shallow placed lines with fill required over the disposal field), panel block, low profile chamber, large diameter pipe,

and/or low pressure pipe (LPP) septic systems. The blue cross hatched units indicate areas of soils which are at least 13 to 18+ inches deep to prohibitive soil characteristics and these areas have potential for TS-II pretreatment subsurface drip septic systems. The magenta cross hatched units indicate areas of soils that will require backhoe pit evaluations to determine septic feasibility. The green cross hatched unit indicates areas of soils which contain suitable soils for septic but due to the encountered thick vegetation these areas will need to be cleared for further evaluation. "UN" on the attached map indicates areas of soils that are unsuitable due to soil wetness conditions, soil depth, clay mineralogy, and/or landscape position and are generally unsuitable for the type of systems mentioned above.

The site plan for each lot must ensure that adequate soil area for system and repair is unaffected by site elements (house placement, driveway, wells, patios, decks, etc.) on that or adjacent lots. The area ultimately designated by the health department on the site plan for the septic system and repair must remain undisturbed (no mechanical clearing, excavation, heavy traffic or other significant site disturbing activities) until authorized by the health department. A lot with initially adequate useable soil area may be rendered unusable as a result of improper site planning and/or disturbance. Field layouts of the proposed septic systems may be required as part of the individual lot development process.

### **CHATHAM COUNTY REGULATIONS**

As part of Chatham County's subdivision recordation process, Chatham County requires a licensed soil scientist to sign and seal the final mylar plat(s) to certify that each proposed lot meets the .1900 NC wastewater and/or 2T wastewater regulations. This preliminary report and map is to assist in developing a preliminary subdivision plan but additional soils work and a soil scientist sealing the subdivision mylars will be needed once a subdivision plan is developed. Additional soils work may include additional hand auger soil borings and/or backhoe pits and (depending on the size of the usable, suitable soil area on each lot) a field septic layout of the system and repair utilizing the site plan showing the proposed house/building, driveway/parking lots, deck(s), well, etc that is prepared by your planner. Once the subdivision is recorded, individual lot owners can apply for septic permit(s) and can provide the soils/septic layout information for the given lot (if any additional work was performed on the lot) from the recordation process to aid in the septic permitting process. S&EC will be glad to provide a cost for the additional work needed to record a subdivision once a preliminary subdivision plan has been developed.

It is important to note that any preliminary certification for a subdivision final plat does not represent approval or a permit for any site work, nor does it guarantee issuance of an improvement permit for any lot. Final site approval for issuance of improvements is based on regulations in force at the time of permitting and is dependent on satisfactory completion of individual site evaluations following application for an improvement permit detailing a specific use and siting.

### **GENERAL WASTEWATER CONSIDERATIONS**

Once potentially useable areas are located through vertical borings, the next consideration is the horizontal extent of those areas. The size and configuration of the useable soil area dictate the utility of that area. The size of a subsurface disposal field is determined by: 1) the design flow

from the source (120 gallons/bedroom/day in residences), and 2) the long term acceptance rate (LTAR) of the soil (based on the hydraulic conductivity of the soil, a function of the soil's texture, mineralogy, structure, porosity, etc.). The configuration must be such that an efficient layout of disposal lines (on contour) is possible. An additional consideration is the required setbacks for the system from various elements such as wells (50'), streams and ponds (50') or more (depending on watershed regulations), property lines (10'), top of embankment (15'), watershed buffers, etc. (see Attachment 1).

The utility of a potential useable soil area for a subsurface system is most accurately determined by an on-ground layout of the proposed system. The total area needed for system and repair areas will depend upon the system type, the layout of that system and the total design flow (factors mentioned above). In the red cross hatched soil area, a typical area needed outside of septic setbacks for a 4 bedroom residence is approximately 14,000 ft<sup>2</sup> (could be more depending on site features) or 880 linear feet of conventional line (system and repair) or 1,165 linear feet of low profile chamber line (system and repair). These estimates reference Laws and Rules for Sewage Treatment and Disposal Systems for North Carolina and use a LTAR of 0.275 to 0.3gpd/ft<sup>2</sup> for conventional septic systems (.1955). The ultimate LTAR will be determined by the health department after their lot evaluation. S&EC will be glad to assist in any system layout or sizing calculations if requested.

This report discusses the general location of potentially useable soils for on-site subsurface wastewater disposal and, of course, does not constitute or imply any approval or permit as needed by the client from the local health department. S&EC is a professional consulting firm that specializes in the delineation of soil areas for wastewater disposal and the layout and design of wastewater treatment systems. As a professional consulting firm, S&EC is hired for its professional opinion in these matters. The rules governing wastewater treatment (interpreted and governed by local and state agencies) are evolving constantly and, in many cases, affected by the opinions of individuals employed by these governing agencies. Because of this, S&EC cannot guarantee that areas delineated and/or systems designed will be permitted by the governing agencies. As always, S&EC recommends that anyone making financial commitments on a tract be fully aware of individual permit requirements on that tract prior to final action.

An individual septic system permit will be required for each lot prior to obtaining a building permit. This will involve a detailed evaluation by the local health department to determine, among other things, system size and layout, well, drive and house location. Only after developing this information can a final determination be made concerning specifics of system design and site utilization. Additional site testing and evaluations will be required prior to signing and sealing the final mylar plat(s) to certify that each proposed lot meets the .1900 NC wastewater and/or 2T wastewater regulations.

This report and site evaluation is not conformant to the Engineered Option Permit (EOP), session law (A2), or AOWE private permitting process. Additional site testing and evaluations will be required to utilize a private septic permitting process. The soil report and map associated with this project is for the exclusive use of the addressee and the use or reliance by all others is expressly denied without the written consent of S&EC.

Soil & Environmental Consultants, PA is pleased to be of service in this matter and we look forward to assisting in any site analysis needs you may have in the future. Please feel free to call with any questions or comments.

Sincerely,  
Soil & Environmental Consultants, PA 06/12/23



Ricky Pontello  
NC Licensed Soil Scientist

Encl: Attachment 1  
Soil Suitability Map

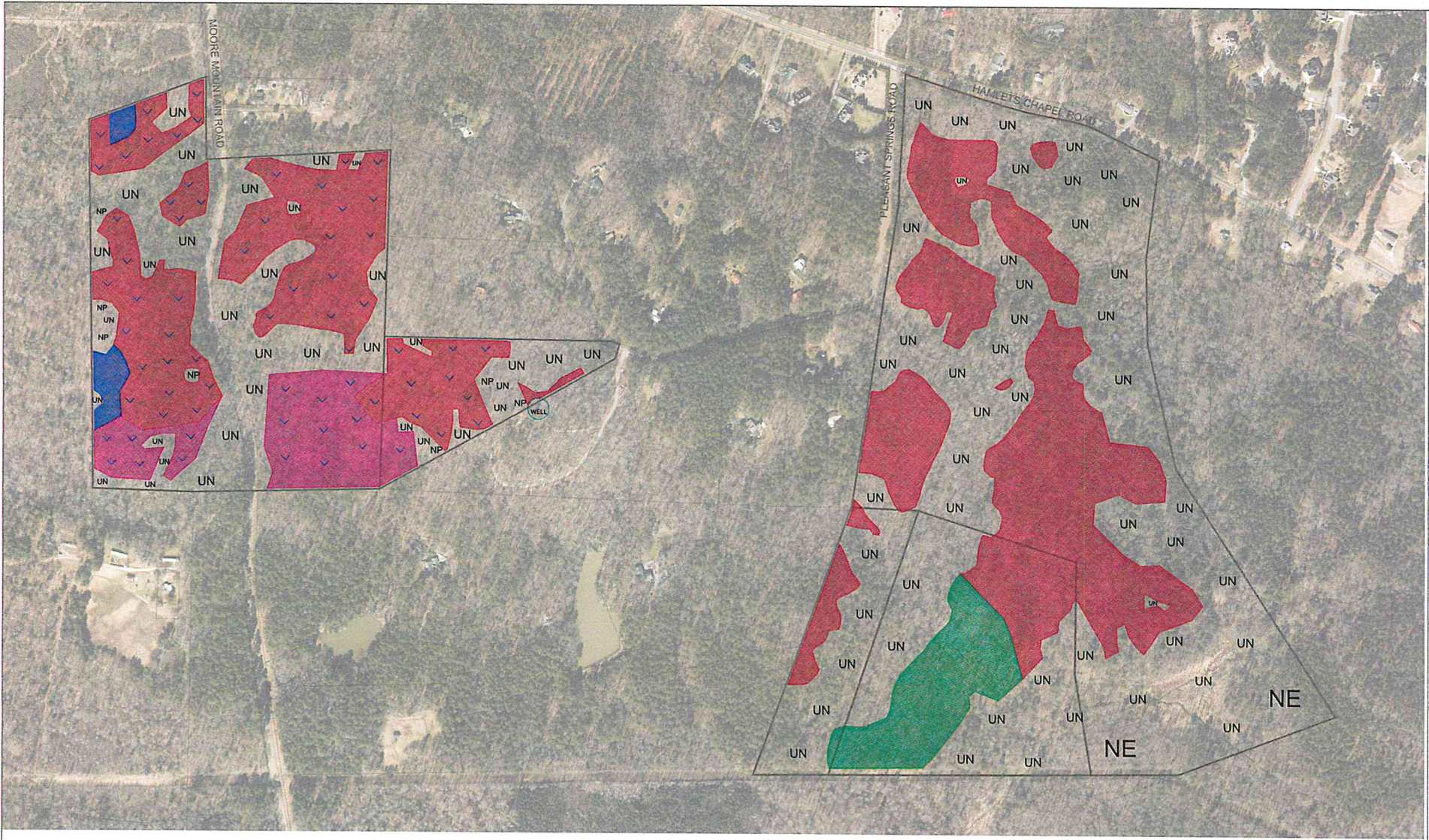
## Attachment 1

### .1950 Location of Sanitary Sewage Systems

(c) Every sanitary sewage treatment and disposal system shall be located at least the minimum horizontal distance from the following:

- |  |                                     |
|--|-------------------------------------|
| (1) any private water supply source including a well or spring   | 100 feet                            |
| (2) any public water supply source   | 100 feet                            |
| (3) streams classified as WS-I   | 100 feet                            |
| (4) water classified as S.A.   | 100 feet from mean high water mark  |
| (5) Other coastal waters   | 50 feet from mean high water mark   |
| (6) any other stream, canal, marsh, or other surface waters  | 50 feet                             |
| (7) any Class I or Class II reservoir  | 100 feet from normal pool elevation |
| (8) any permanent storm water retention pond   | 50 feet from flood pool elevation   |
| (9) any other lake or pond   | 50 feet from normal pool elevation  |
| (10) any building foundation   | 5 feet                              |
| (11) any basement  | 15 feet                             |
| (12) any property line   | 10 feet                             |
| (13) top of slope of embankments or cuts of 2 feet or more vertical height   | 15 feet                             |
| (14) any water line  | 10 feet                             |
| (15) drainage systems:   |                                     |
| (A) Interceptor drains, foundation drains and storm water diversions   |                                     |
| (i) upslope  | 10 feet                             |
| (ii) sideslope   | 15 feet                             |
| (iii) downslope  | 25 feet                             |
| (B) Groundwater lowering ditched and devices   | 25 feet                             |
| (16) any swimming pool   | 15 feet                             |
| (17) any other nitrification field (except repair area)  | 20 feet                             |
| (b) Ground absorption, sewage treatment and disposal systems may be located closer than 100 feet from a private well supply, except springs and uncased wells located downslope and used as a source of drinking water, repairs, space limitations and other site-planning considerations but shall be located the maximum feasible distance and, in no case, less than 50 feet. |                                     |
| (c) Nitrification fields and repair areas shall not be located under paved areas or areas subject to vehicular traffic. If effluent is to be conveyed under areas subject to vehicular traffic, ductile iron or its equivalent pipe shall be used. However, pipe specified in Rule .1955 (e) may be used if a minimum of 30 inches of compacted cover is provided over the pipe. |                                     |

Note: Systems over 3000 GPD or an individual nitrification fields with a capacity of 1500 GPD or more have more restrictive setback requirements, see .1950 (a) (17) (d) for specifics.



\*\*THIS MAP AND CORRESPONDING SITE EVALUATION IS NOT CONFORMANT TO THE ENGINEERED OPTION PERMIT (EOP), LSS OPTION (SESSION LAW), OR ON-SITE WASTEWATER EVALUATOR (ACWE) PERMITTING PROCESS. ADDITIONAL SITE TESTING AND EVALUATIONS WILL BE REQUIRED TO UTILIZE A PRIVATE SEPTIC PERMITTING PROCESS.

\*\*SUITABLE FOR PRELIMINARY PLANNING PURPOSES ONLY. SITE WILL REQUIRE APPROVAL BY THE COUNTY HEALTH DEPARTMENT AND/OR SOILS CONSULTANT ON A CASE BY CASE BASIS. THIS MAP SHOULD BE USED AS A GENERAL GUIDE. SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND TOPOGRAPHIC IRREGULARITIES. THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC TANK SYSTEMS. SOME OTHER CONSIDERATIONS THAT AFFECT SITE SUITABILITY THAT SHOULD BE CONSIDERED IN DEVELOPMENT DESIGN ARE:










- 1) 10' SETBACK FROM PROPERTY LINE
- 2) 50' TO 100' SETBACK FROM ANY WELL
- 3) 25' SETBACK FROM DRAINAGE DITCHES.

SEE ACCOMPANYING S&EC REPORT.

PRELIMINARY SOILS/SITE EVALUATION. SOIL LINES WERE DELINEATED IN THE FIELD BY S&EC PERSONNEL. THE SOIL LINES WERE SKETCHED ONTO THE MAP BASED ON TOPOGRAPHY, GPS POINTS, AND OTHER SITE FEATURES. SOME AREAS MAY NEED TO BE EVALUATED THROUGH BACKHOE PIT EVALUATIONS DUE TO GRAVELLY SOIL AND/OR SHALLOW SAPROLITE. SOME AREAS MAY NEED TO BE CLEARED AND/OR HAVE PATHS CUT THROUGH THEM BEFORE FURTHER SOILS/SITE EVALUATIONS AND/OR FIELD SEPTIC LAYOUTS.

NOT A SURVEY  
2-FOOT CONTOURS FROM NCGD2 GIS. PARCEL BOUNDARIES FROM CHATHAM COUNTY GIS.  
2021 AERIAL FROM NCGENMAP.COM.

LEGEND

-  Areas contain soils with 24 to 30 inches or more of useable material and have the potential for conventional, modified conventional, panel block, low profile chamber, ultra-shallow conventional, large diameter pipe and/or low pressure pipe septic systems.
-  Areas contain soils with 13 to 18 inches or more of useable material and have the potential for TS-II pretreatment subsurface drip septic systems.
-  Areas contain soils that need to be evaluated through backhoe pits to determine feasibility for onsite wastewater septic systems. These areas contain significant surface and shallow subsurface rock.
-  Area contains soils with 12 to 36 inches or more of useable material. This area has thick vegetation and will need clearing in order to fully evaluate for septic feasibility.
-  NP Areas that will need to be evaluated through backhoe pits to determine feasibility for onsite wastewater septic systems.
-  UN Unsuitable areas due to soil wetness condition, soil depth, clay mineralogy, and/or landscape position.
-  NE Areas that were not evaluated due to inaccessibility.
-  Existing private well. 50' septic system setback.
-  Extremely rocky areas; Backhoe pits are needed to further evaluate these areas.



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**S&EC**

<b>Project:</b>	MOORE FAMILY PARTNERSHIP PROPERTIES
<b>Location:</b>	CHATHAM CO., NC
<b>Client:</b>	MOORE FAMILY PARTNERSHIP
<b>Sheet Title:</b>	PRELIMINARY SOILS/SITE EVALUATION
<b>Project No.:</b>	15635.51
<b>Project Manager:</b>	RP
<b>Drawn:</b>	RP, CC, JM
<b>Field Work:</b>	RP, CC, JM
<b>Date:</b>	JUNE 2023
<b>Sheet No.:</b>	1 of 1