



Piedmont **ENVIRONMENTAL** ASSOCIATES, PA

10/15/2016

Project # 680

Mr. Keith Brown
Sun Forest Systems
542 Finnbar Dr.
Cary, NC 27519

Dear Mr. Brown,

This report gives the findings of a detailed site and soil evaluation performed on a tract of land off of Mann's Chapel Road in Chatham County, NC. The evaluation was conducted at your request in order to determine the site's suitability for the installation of sub-surface wastewater disposal systems to serve domestic strength wastewater. This report does not address systems receiving more than 3,000 gallons per day of flow.

The evaluation was conducted by G. Christopher Murray and James L. Beeson, NC Licensed Soil Scientists. The evaluation was conducted during moist soil conditions in Fall 2016 with the use of a hand auger. Characteristics that affect the suitability of sub-surface systems include soil depth to expansive clay, seasonal high water table, rock, and unusable saprolite. Topography and slope also affect the suitability of an area for septic systems. The evaluation of these components was conducted on the site. The level of the evaluation was detailed for the requested area.

Suitable soil areas are hatched in green and magenta on the attached map. The green hatched areas have usable topography and a minimum soil depth of 24 inches. Areas suitable for sub-surface drip septic systems are hatched in magenta. These areas have usable topography and a minimum soil depth of 14 inches. These areas were identified in the field, and located using a global position system. These areas were not surveyed and therefore may be lacking in accuracy.

Once the soils map is complete the size of area required for a septic system can be estimated. Systems are sized according to the number of bedrooms in the proposed dwelling. Systems are not sized based on the number of family members or the number of bathrooms in the dwelling. Each bedroom in the proposed dwelling is calculated to generate a daily flow of 120 gallons. A four-bedroom dwelling would therefore have a daily calculated flow of 480 gallons. The daily flow is divided by the loading rate based on the soil texture. This site has a clay texture so would have an estimated loading rate of .275 gallons per square foot of trench bottom per day. This loading rate will eventually be determined by the local health department! This division would result in the required trench bottom area of 1,745 square feet. The trenches are three feet wide, which means the total trench length for a gravel conventional system would be 581 linear feet. The common chamber type systems would require 25% less trench length or 435 linear feet of

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trench. These trenches are spaced on nine foot minimum widths and must converge and diverge with contour. The conservative estimate of the area required for a gravel conventional type system on this tract is approximately 6,500 square feet. The approximate area required for a chamber type system is 4,500 square feet. The system area must be doubled in order to fulfill the required repair area requirement unless the tract was originally recorded prior to 1981.

It should be noted that this evaluation was conducted in extremely thick wooded vegetation. While every attempt was made to locate all unsuitable topographical features and unsuitable soils, there could be inclusions of unsuitable soils and or topography that were not identified due to the existing vegetation.

It should also be noted that large rock outcroppings are prevalent in this area of Chatham County. Whenever possible, we delineated these surface rock formations so they would not be considered as suitable area. As mentioned above however, there may be inclusions of surface rock that we missed due the thickness of vegetation.

In this instance there does appear to be soils for conventional and/or drip type septic systems. To proceed, you will need to make applications with Chatham County Environmental Health section for Improvements permits. The attached map, which shows the suitable soils should be included with these application. If you wish to subdivide the tract you should use a licensed surveyor or engineer to create the proposed lots in order to ensure that they meet all zoning and planning restrictions. This soil map will be beneficial to any subdivision activity. If you have any further questions please feel free to call (336-662-5487).

Sincerely,



G. Christopher Murray
NC Licensed Soil Scientist #1284

Attachment I

.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.
from mean high water mark | 100 feet |
| (5) Other coastal waters
from mean high water mark | 50 feet |
| (6) Any other stream, canal, marsh, or other surface waters | 50 feet |
| (7) Any Class I or Class II reservoir
from normal pool elevation | 100 feet |
| (8) Any permanent storm water retention pond
from flood pool elevation | 50 feet |
| (9) Any other lake or pond
from normal pool elevation | 50 feet |
| (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.



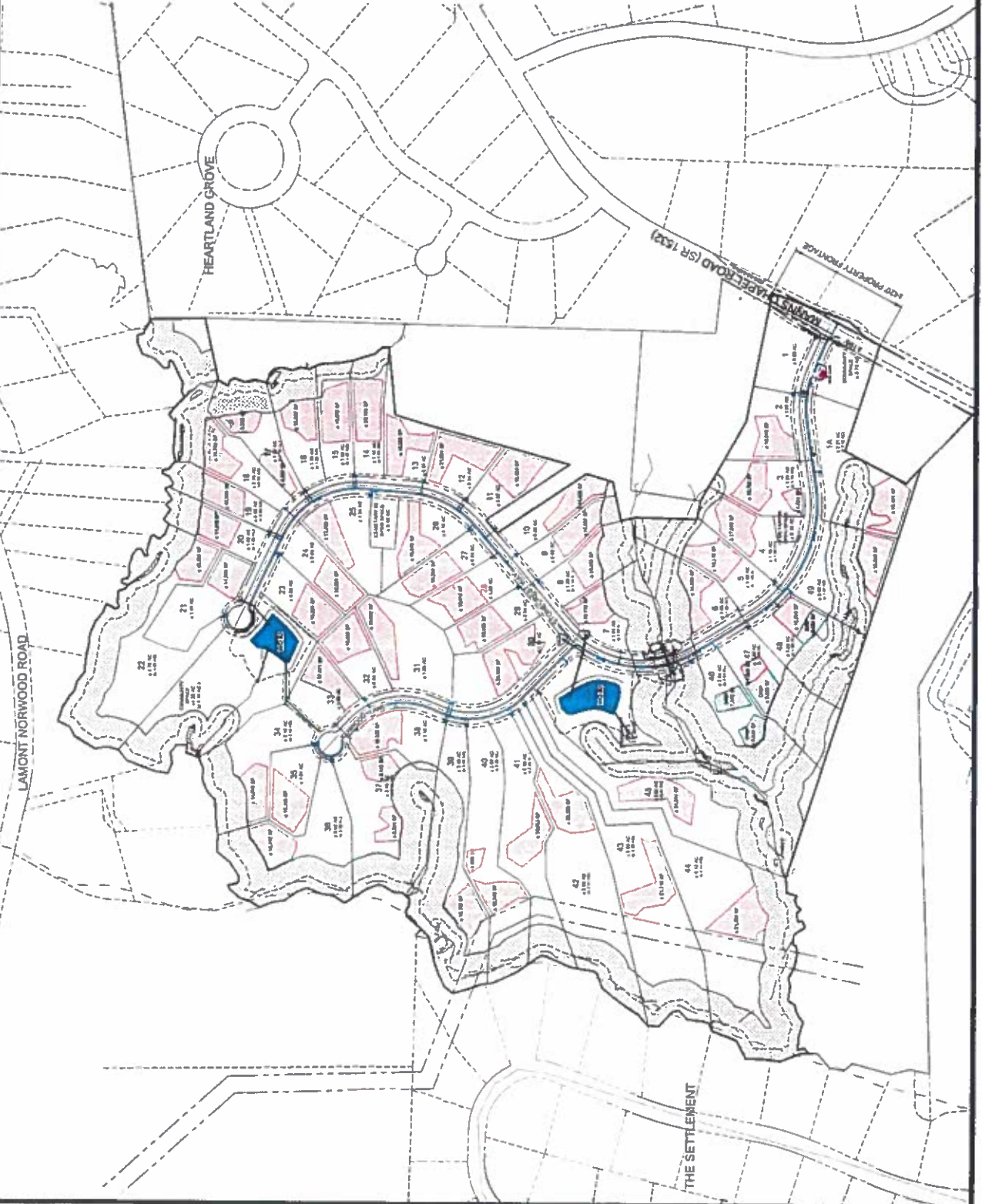
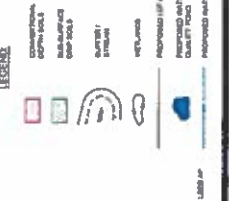
SOILS EXHIBIT

STONECREST AT NORWOOD SUBDIVISION

DEED BOOK 1377, PAGE 0961
CHATHAM COUNTY, NC
AUGUST 23, 2017



- NOTES:**
1. CLAYTON TRACTITY DRAINAGE FACILITY AS SHOWN ON THE SITE PLAN IS AVAILABLE AND WILL BE UTILIZED TO TREAT WASTEWATER.
 2. ALL UTILITIES TO BE LOCATED AS SHOWN ON THE SITE PLAN.
 3. ALL UTILITIES TO BE LOCATED AS SHOWN ON THE SITE PLAN.
 4. ALL UTILITIES TO BE LOCATED AS SHOWN ON THE SITE PLAN.
 5. ALL UTILITIES TO BE LOCATED AS SHOWN ON THE SITE PLAN.



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