



Soil & Environmental Consultants, PA

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August 14, 2006
Project #4-1677.S1

Mr. Kirk J. Bradley
Lee-Moore Oil Company
PO Drawer 9
Sanford, NC 27331

Re: **Detailed Soil/Site Evaluation** for Reuse Wastewater Applications on 62acres N 15-501
Project, +/-62acres bordering the Orange County Line - Chatham County, NC

Dear Mr. Bradley:

Soil & Environmental Consultants, PA (S&EC) performed a detailed soil/site evaluation on the above referenced tract. This was performed at your request as part of the preliminary planning process in order to delineate dominant soil types within the proposed wetted areas. Proposed wetted areas provided to us and evaluated total +/-16acres. Fieldwork was August 10, 2006. As of today, the CE Group, PA provided us with changes in the site plan and wetted areas. We are scheduled to go back to the field this week to perform services to accommodate those changes. This map and report is therefore a "DRAFT". The type of septic system that was proposed at the time of the evaluation was a spray irrigation system with reuse quality effluent. The new proposed system is a surface drip irrigation type of septic system with pretreatment per the CE Group, PA. This type of system is still a surface discharge type of system and will require permitting by the DWQ at NCDNR.

DETAILED SOIL/SITE EVALUATION FOR REUSE SPRAY APPLICATIONS

S&EC traversed the property and mapped the soils to the Natural Resource Conservation Service (NRCS) Soil Series level. The accompanying AutoCAD map depicts the dominant soil series' present on the project. The majority of soils on this site have a bouldery surface. Areas outside of proposed wetted areas were not evaluated. A well was observed and GPS-located on the site, and is shown on the attached map. After the revisit later in the week, there may or may not be changes to these soil series listed.

Wedowee – These soils are very deep, well-drained, moderately permeable soils with kaolinitic clay mineralogy. Depth to Seasonally High Water Table (SHWT) and Rock/Cr is greater than 60 inches.

Louisburg – These soils are very deep, well-drained, rapidly permeable soils. Depth to SHWT and Rock/Cr is greater than 60 inches.

Hard Labor – These soils are very deep, moderately well drained, slowly permeable soils with kaolinitic clay mineralogy. Depth to SHWT is 30 to 60 inches. Depth to Rock/Cr is greater than 60 inches. There was very little of this series noted in the wetted areas evaluated.

Santuc – These soils are very deep, moderately well drained, and moderately slowly permeable. Depth to Cr is greater than 60 inches. These soils have a SHWT at 30 to 60 inches. There was very little of this series noted in the wetted areas evaluated.

Helena – These soils are very deep, moderately well drained, slowly permeable soils with mixed clay mineralogy. Depth to SHWT is 12 inches or more. Depth to Rock/Cr is greater than 60 inches.

Please refer to the attached NRCS Official Soil Series Descriptions for more in depth information on typical soil pedons for these soil series.

General Wastewater Considerations

After we completed the initial visit, we were notified of changes to the site and wetted areas. The flow proposed by the CE Group is 14,000 gallons per day. Mr. Ashness, PE of the CE Group requested a feasibility study on the proposed wetted areas to determine if 14,000-gpd flow was possible given the soils discovered on the site.

For the following calculations, I assumed that the change made in the area south of proposed construction, which is +/- 3.3 acres in size, has uniform soils (Wedowee) this will be field verified later this week. I also assumed a hypothetical application rate for each of the soil series proposed to be wetted. This will also have to be field verified using Ksat analysis. The application rates used are conservative, but are realistic in that these rates have been assigned to similar soils that we have tested on sites nearby in the past. I have also assumed that from a design/engineering standpoint, that wastewater could be efficiently applied to higher application rate soils that lie as inclusions in the lower application rate areas.

Using these assumptions, I determined the following application rates for the soil series to be wetted:

Wedowee	26 inches/year	High
Louisburg	35 inches/year	High
Santuc	7 inches/year	Low/seasonal restrictions
Helena	7 inches/year	Low/seasonal restrictions

From the AutoCAD drawing provided by CE Group, the areas of each wetted area are as follows (note this includes the changes that will be field verified later this week):

Wedowee	143,748 ft ²
Louisburg	96,494 ft ²
Santuc	23,369 ft ²
Helena	329,908 ft ²

After converting the application rates from inches/year to gallons/day, we get the following hypothetical irrigation amounts on a gallon per day basis for the areas listed above:

Wedowee	6383 gallons/day
Louisburg	5768 gallons/day
Santuc	279 gallons/day
Helena	3944 gallons/day
Total	16,374 gallons/day

After making the aforementioned assumptions, hypothetically, we should be able to assimilate 14,000 gallons/day on this site with the latest site plan. We will have to field verify the changes to the wetted areas and confirm that they are consistent, and we will have to run Ksats to verify

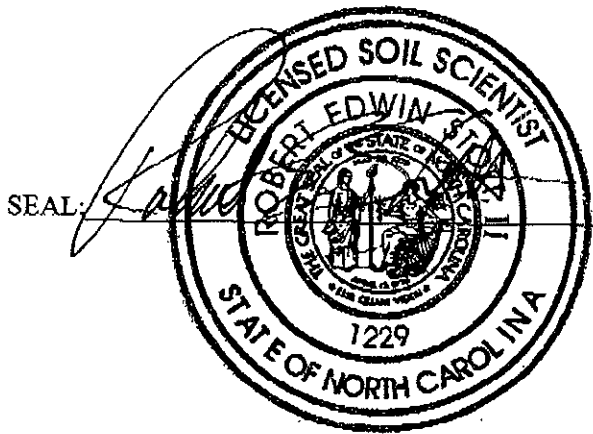
the assumed application rates. Any changes in the application rates will affect the amount of wastewater that can be applied to this site.

The next step in this process is to perform Ksats, deep borings, and profile descriptions in each soil series found within the wetted areas. This work will provide the necessary data to assist the hydrogeologist with determining the final application rates as well as the final water balance. A proposal for this work is forthcoming.

This report discusses the general location of potentially useable soils for on-site surface wastewater disposal and, of course, does not constitute or imply any approval or permit as needed by the client from the State. S&EC is a professional consulting firm that specializes in the delineation of soil areas for wastewater disposal. 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. Following KSAT analysis, field review with NCDWQ, and any site plan changes, modifications to the soil map may be required.

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,



Robert Edwin Stott, R.S.
NC Licensed Soil Scientist

Jonathon R. Townsley
NC Soil Scientist in Training

Encl:

- Detailed Soil/Site Evaluation for Reuse Spray
- NRCS Official Soil Series Descriptions
- Proposal/contract for Hydrology Phase