

Southeastern Soil & Environmental Associates, Inc.

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May 29, 2017

Gourd Springs Baptist Church
C/o Construction Systems Inc.
6205 Raeford Road
Fayetteville, NC 28304

Re: Preliminary soil evaluation and septic analysis for addition of 551 occupant proposed church facility, 4575 Ray Road, Harnett County, North Carolina

To whom it may concern,

A preliminary soils investigation has been completed for the above referenced tract. The property evaluated is located at 4575 Ray Road and across Ray Road (portion of cemetery parcel) as illustrated on the accompanying maps. The purpose of the investigation was to roughly determine the extent of soil areas that may have the ability to support a relocated and enlarged subsurface waste disposal system to serve the proposed addition. All ratings and determinations were made in accordance with "Laws and Rules for Sanitary Sewage Collection, Treatment, and Disposal, 15A NCAC 18A .1900".

Southeastern Soil and Environmental Associates, Inc. (SSEA) performed these soil evaluations in May, 2017. SSEA traversed the property and observed landforms (slope, drainage patterns, etc.) as well as soil conditions through the use of hand auger borings and/or soil probes. From these observations and aerial photography (accuracy may vary; **not based on a current survey**) the boundaries between usable and unusable soils has been **estimated** on the accompanying maps (soil mapping not to scale).

Site "A" (portion of Cemetery)

This area is dominated by soils that are provisionally suitable for subsurface waste disposal systems (**with the exception of minor drainageways that are too small to delineate at this scale**). Typically, these soils exhibited 18 or more inches of loamy sand underlain by sandy clay loams and/or sandy clays to depths of 48 or more inches.

Soil wetness, depth, and mineralogy were typically suitable to depths of at least 36 inches. **A church building** of the proposed size would require approximately 35,000 sq. ft. of this soil area for septic drainfields and repair areas (exclusive of setbacks from lot lines, buildings, parking areas, drainage features, etc.). This square footage

recommendation assumes appropriate topography for a practical septic system layout on topographical contour. Space requirements could increase with additional flow requirements, difficult topography, irregular lot lines, etc. Septic system/drainfield requirements in these soil areas would typically be pump to conventional drainlines.

Access to this area hinges on the ability to obtain an encroachment from NCDOT to bore under Ray Road with a up to a 4" supply line

In my opinion, this site is the best option to free up additions, parking, etc. on the existing church site.

Site "B" (west side of existing church site)

This area has been designated as a future repair area for the existing church facilities (see attached Harnett County permit). It requires the use of a pretreated low pressure pipe system. This is an alternative, engineered system that is considerably more expensive than a conventional drainfield (which the current facilities now use). These systems are required when soils are shallow (18-23 inches) to an unsuitable characteristic. In our evaluations, we noted these shallower soils as well.

In meeting with Richard Yocco, there was discussion of replacing the existing permitted septic system to allow for a new sanctuary on the north side of the existing sanctuary. In that case, the area described above would need to serve a new (expanded) septic system and future repair area (likely including the use of pretreated LPP as discussed above). A rough design would need to be completed (separate contract) before any final determination could be made as to the viability of this concept. Even if soils and space prove adequate, the entire area is likely to be needed (meaning no future parking, buildings, etc.).

Flow reduction

The currently permitted septic system assumes a daily flow of 1385 gallons per day (462 occupants @ 3 gal/seat). The proposed facilities (551 occupants @ 5 gal/seat) require planning for a daily flow of 2755 gallons per day.

Attached is a copy of the flow reduction rules used in North Carolina. You should obtain the current facility water usage as described to compare to the projected daily flows. If there is a significant difference, a flow reduction might be granted.

Once a revised site plan has been developed, SSEA can design septic system components (if applicable) to serve the proposed facility prior to submittal to the local health department for approval. This work would be done under a separate contract and may require the use of a professional engineer (P.E.).

This report only discusses the general location of potentially usable soils for on-site waste subsurface wastewater disposal and, of course, does not guarantee, constitute or imply any approval, or issuance of permit, as needed by the client from the local health department. Such approval is dependent on evaluations made after requesting appropriate permits from local, state and federal agencies.

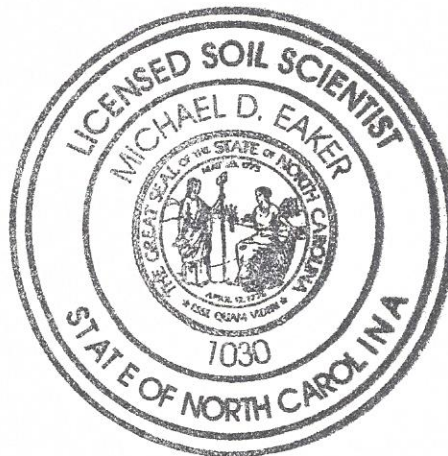
We are a professional consulting firm specializing in delineation and characterization of soils for subsurface waste disposal. SSEA is only hired for its professional opinion in these matters. Because rules governing wastewater treatment are subject to interpretation of individuals in the regulatory agencies, SSEA cannot guarantee that they will concur with these findings. This report only represents the opinion of a licensed soil scientist. In addition, because of the extreme variability of these soils, small areas of differing soil characteristics could be located in any estimated soil area.

Southeastern Soil and Environmental Associates, Inc. is pleased to be of service in this matter. We look forward to assisting in additional site analysis needs you may have in the future. Please feel free to call with any questions.

Sincerely,



Mike Eaker
President



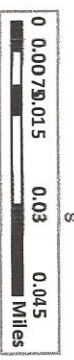
Harnett County GIS

NOT FOR LEGAL USE



LEGEND

- | | | | | | |
|---|-------------------------------|---|------------|---|---------------|
|  | Surrounding County Boundaries |  | NC |  | Parcels |
|  | Federal Property |  | US |  | CapeFearRiver |
|  | City Limits |  | Airport | | |
|  | Hammett County Boundary |  | MajorRoads | | |
| | |  | Interstate | | |
| | |  | Roads | | |
| | |  | Railroad | | |



May 24, 2017

GIS/E-911 Addressing

HARNETT COUNTY GIS

1 inch = 167 feet

Harnett COUNTY NORTH CAROLINA

Soils Overlay Res

Zoom in Zoom out Pan



M
C
F
A
C
A

E

ID	Soil Name	Hydric	Description
1	BnB		Blaney loamy sand, 2 to 8 percent slopes

Hospitals	300 gal/bed
Marinas	10 gal/boat slip
With bathhouse	30 gal/boat slip
Meat Markets	
(1) Per 100 square feet of market floor space	50 gal
(2) Add per market employee	25 gal
Motels/Hotels	120 gal/room
With cooking facilities	175 gal/room
Offices (per shift)	25 gal/person
Residential Care Facilities	60 gal/person
Rest Homes and Nursing Homes	
With laundry	120 gal/bed
Without laundry	60 gal/bed
Schools	
Day Schools	
With cafeteria, gym, and showers	15 gal/student
With cafeteria only	12 gal/student
With neither cafeteria nor showers	10 gal/student
Boarding Schools	60 gal/person
Service Stations	250 gal/water closet or urinal
24-hour Service Stations	325 gal/water closet
Stores, Shopping Centers, and Malls	
(Exclusive of food service and meat markets)	120 gal/1000 ft ² of retail sales area
Stadium, Auditorium, Theater, Drive-in	5 gal/seat or space
Swimming Pools, Spas, and Bathhouses	10 gal/person

(c) An adjusted design daily sewage flow may be granted by the local health department upon a showing as specified in Subparagraphs (c)(1) through (c)(2) that a sewage system is adequate to meet actual daily water consumption from a facility included in Paragraph (b) of this Rule.

- (1) Documented data from that facility or a comparable facility justifying a flow rate reduction shall be submitted to the local health department and the State. The submitted data shall consist of at least 12 previous consecutive monthly total water consumption readings and at least 30 consecutive daily water consumption readings. The daily readings shall be taken during a projected normal or above normal sewage flow month. A peaking factor shall be derived by dividing the highest monthly flow as indicated from the 12 monthly readings by the sum of the 30 consecutive daily water consumption readings. The adjusted design daily sewage flow shall be determined by taking the numerical average of the greatest ten percent of the daily readings and multiplying by the peaking factor. Further adjustments shall be made in design sewage flow rate used for sizing nitrification fields and pretreatment systems when the sampled or projected wastewater characteristics exceed those of domestic sewage, such as wastewater from restaurants or meat markets.
- (2) An adjusted daily sewage flow rate may be granted contingent upon use of extreme water-conserving fixtures, such as toilets which use 1.6 gallons per flush or less, spring-loaded faucets with flow rates of one gallon per minute or less, and showerheads with flow rates of two gallons per minute or less. The amount of sewage flow rate reduction shall be determined by the local health department and the State based upon the type of fixtures and documentation of the amount of flow reduction to be expected from the proposed facility. Adjusted daily flow rates based upon use of water-conserving fixtures shall apply only to design capacity requirements of dosing and distribution systems and nitrification fields. Minimum pretreatment capacities shall be determined by the design flow rate of Table I of this Rule.

*History Note: Authority G.S. 130A-335(e);
Eff. July 1, 1982;
Amended Eff. January 1, 1990; January 1, 1984.*

03-5-7245

HARNETT COUNTY HEALTH DEPARTMENT

No 20097

IMPROVEMENT PERMIT

Be it ordained by the Harnett County Board of Health as follows: Section III, Item B. "No Person shall begin construction of any building at which a septic tank system is to be used for disposal of sewage without first obtaining a written permit from the Harnett County Health Department."

Name: (owner) GOVED SPRINGS BAPTIST CHURCH New Installation Septic Tank
Property Location: SR# 1121 RAY RD Repairs Nitrification Line

Subdivision _____ Lot # _____

Tax ID # _____ Quadrant # _____

Number of Bedrooms Proposed: 462 SEAT (SEE BELOW) SANCTUARY Lot Size: 4.29 AC

Basement with Plumbing: Garage:

Water Supply: Well Public Community

Distance From Well: 100 ft.

Following is the minimum specifications for sewage disposal system on above captioned property. Subject to final approval.

Type of system: Conventional Other PUMP TO CONVENTIONAL

Size of tank: Septic Tank: 1500 gallons Pump Tank: 2000 gallons

Subsurface Drainage Field No. of ditches 4 exact length of each ditch 80 ft. width of ditches 3 ft. depth of ditches 18-24 in.

French Drain Required: _____ Linear feet

Date: 7/10/03
Signed: [Signature] RS OLIVER TOURSORE
Environmental Health Specialist

This permit is subject to revocation if site plans or intended use change.

- * MAINTAIN ALL SETBACKS
- * CONTRACTOR TO MEET ON SITE PRIOR TO ANY INSTALLATION
- * DISTRIBUTION METHOD TO LINES TO BE DETERMINED AT MEETING
- * CONSTRUCTION AUTHORIZATION TO BE ISSUED AFTER MEETING

