13 May, 2005

Mr. Samir Bahho
Civil & Structural Engineering
4612 Kaplan Drive
Raleigh, NC 27606

Reference: Preliminary Soil Investigation
Cattail Creek Subdivision
Lots 6 -77

Dear Mr. Bahho,

A preliminary site investigation has been conducted for the above referenced property, located on the eastern side of White Smith Road, Hadley Township, Chatham County, North Carolina. The purpose of the investigation was to determine the ability of each lot to support a subsurface sewage waste disposal system and 100% repair area for a typical three bedroom home. It is our understanding that individual septic systems and wells will be utilized for each lot at this site. Foundation drains appear to be possible for all lots. All ratings and determinations were made in accordance with "Laws and Rules for Sewage Treatment and Disposal Systems, 15A NCAC 18A .1900" and Chatham County Development Regulations. This report represents my professional opinion as a Licensed Soil Scientist but does not guarantee or represent permit approval for any lot by the local Health Department. Improvement permits will need to be obtained from the Health Department that specify the proposed home size and location, and the design and location of the septic system to be installed.

This property is composed of a mixture of soils that range from provisionally suitable to unsuitable for subsurface sewage waste disposal (see attached map). The useable soils shown on the map conform to all required regulatory setback restrictions from creeks. The soils on the western side of Cattail Creek are typically clayey and often deep enough to support conventional or innovative type septic systems with ditch bottoms at 18 to 24 inches below surface. Most of these soils appear adequate to support long-term acceptance rates (LTAR’s) of 0.3 gal/day/sqft. Some areas will require ultra shallow drainline placement, and LTAR’s of 0.2 to 0.25 gal/day/sqft may be more appropriate. These soils were most often limited by excessive soil wetness and sometimes unsuitable saprolite or expansive clay layers. The soils on the eastern side of Cattail Creek are typically loamy and limited by depth to rock and sometimes associated soil wetness conditions. Some areas of soils adequate for conventional systems and adequate to support LTAR’s of 0.25 to 0.3 gal/day/sqft were observed near Cattail Creek. However, most of the useable soils east of Cattail Creek will likely require drip-type disposal systems that utilize LTAR’s of 0.075 to 0.1 gal/day/sqft.
The soils indicated on the attached map as provisionally suitable for subsurface sewage waste disposal are so rated due to clayey textured subsoil layers and limited useable soil depth. Much of this area exhibited useable soil depths greater than 30 inches below surface. Blue flags were hung at the boring when these soils were observed. Included in the provisionally suitable soil area are soils with useable soil depths between 24 and 30 inches and are rated as provisionally suitable for modified or alternative subsurface sewage waste disposal systems. White flags were hung at the boring when these soils were observed. These provisionally suitable soils will likely require systems that can be installed ultra shallow and the addition of topsoil material.

The soils indicated as provisionally suitable for experimental or innovative systems are so rated due to limited useable soil depths to unsuitable layers between 18 and 24 inches below surface. Orange and black striped flags were hung at the boring when these soils were observed. The soils in these areas were investigated with great effort through the advancing of auger borings. This area will be studied in more detail in the future when the site is accessible to grading equipment. A few areas may support fill systems but the site’s sloping topography greatly limits this potential. It is more likely that drip disposal systems will be required when usable soil depths range from 18 to 24 inches.

The unsuitable soil area is so rated due to excessive soil wetness and/or inadequate soil depth. Red flags were hung at the boring when these soils were observed. The ability to utilize alternative systems or make modifications to this area to allow for septic systems is minimal. Some of this area will likely support building foundations, and homes could be sited in this area.

It appears that the soils on each proposed lot are adequate to support a septic system and repair area for one residence. Based on this study, it appears likely that conventional or innovative systems (including ultra shallow systems and the use of pumps) can be utilized on Lots 6–13, Lot 19, Lots 24–44, Lots 46–51, and Lot 77 for both the initial system and the repair. Lots 14, 16, 17, 18, 21, 23, and 45 appear to have an area located somewhere on the lot that may be adequate for an innovative initial septic system (see map). A drip system will likely be required for the repair systems on these lots. Lots 15, 20, 22 and Lots 52–76 will likely require drip disposal systems for both the initial system and the repair system. However, deeper soils were observed at the rear of Lots 53, 56, and 61–67, 74, and 75. Deeper soils were also observed on the front of Lot 52 and on the left front of Lot 72. Further investigation with the assistance of a backhoe may allow for the use of innovative type systems in these areas of deeper soils.

I appreciate the opportunity to provide this service and believe that the required information is enclosed. If you have any questions or need additional information, please contact me at your convenience.

Sincerely,

Hal Owen
Licensed Soil Scientist

[Signature]