



## STATEMENT OF QUALIFICATIONS



January 28, 2015

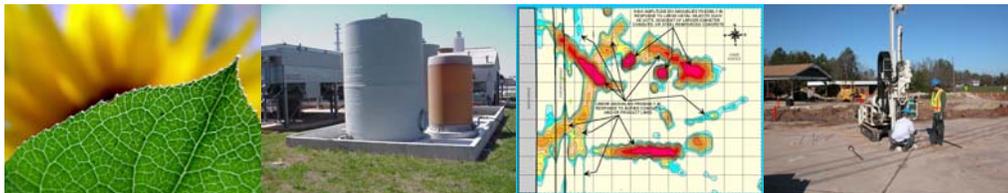
North Carolina Office:  
100 East Ruffin Street  
Mebane, NC 27302

## 1.0 INTRODUCTION

Terraquest Environmental Consultants, P.C. (Terraquest) formed to provide environmental consulting services to clients in industry, banking, law, and real estate. Professionally prepared environmental site assessments, hydrogeological assessments, and geophysical surveys in addition to consulting in groundwater resource development and underground storage tank management are the products offered by Terraquest. Our clients benefit from our many years of experience in environmental consulting and are provided a level of confidence that comes from knowing that all professional services provided by Terraquest are supervised by licensed professionals.

Terraquest concentrates on project management instead of corporate management and we are able to consistently meet our goal of completing projects on time and within budget despite the many complications which often arise. Terraquest constantly strives to help solve clients' environmental problems through professional application of good environmental practice.

Terraquest service area includes North Carolina, Virginia, Tennessee, and South Carolina. This document presents specific areas of technical expertise, the resumes of key personnel, and examples of successfully completed environmental consulting projects.



## 2.0 AREAS OF EXPERTISE

Terraquest Environmental Consultants, P.C. offers a broad range of expertise in the following environmental service areas:

### 2.1 Petroleum Tank Release Response and Remediation

Federal and State regulations and an increasing public awareness of environmental impacts from leaking aboveground (ASTs) and underground storage tanks (USTs) have resulted in the need for specific expertise in petroleum storage tank assessment and remediation. Terraquest has extensive experience in the closure of storage tanks containing petroleum products and the subsequent assessment and remediation of petroleum impacted soil and groundwater. Specific areas of expertise include:

- Removal of existing aboveground and underground storage tank systems and subsequent field screening and soil sampling beneath the excavated tank to confirm the presence or absence of soil contamination.
- Utilization of several methods for the successful remediation of petroleum contaminated soils. Soil remediation methods include bioremediation, the incorporation of contaminated soils into brick manufacture, incineration, and in situ techniques including soil vapor extraction and bioventing.
- Investigation of groundwater quality at sites where released petroleum products have potentially impacted saturated soils. Terraquest has mapped groundwater contaminant plumes associated with petroleum releases and determined the rate/extent of contaminant plume migration. Terraquest has also utilized methyl tertiary-butyl ether, ethylene di-bromide, and known petroleum product gas chromatograms (in addition to BTEX and TPH) to trace specific sources of contamination.
- Completion of various state trust fund applications in an effort to obtain reimbursement of costs associated with the investigation/remediation of sites with leaking USTs.



## 2.2 Hydrogeological Assessments

Terraquest provides soil and groundwater assessment services to determine site suitability and assess potential contaminant sources. These services are utilized primarily to evaluate potential landfill sites and conduct soil and groundwater studies of properties contaminated with heavy metals, herbicides, pesticides, chlorinated solvents, and other wastes.



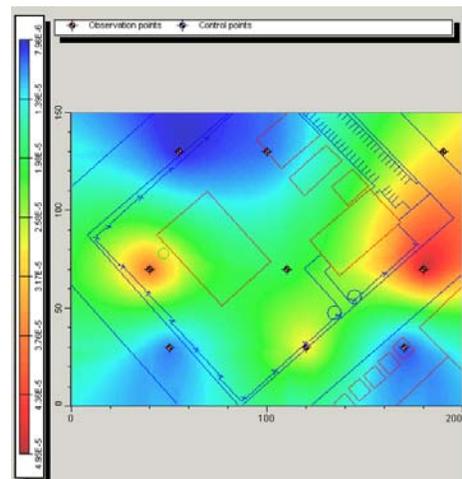
Terraquest owns a Geoprobe 7822DT Direct Push/Augering Machine that can be used to conduct soil and groundwater investigations. The machine has solid and hollow-stem auger capability for the installation of Type II groundwater monitoring wells. Having in-house direct push/drilling capabilities allows Terraquest to be very cost-competitive.



All subsurface studies are planned, implemented, and interpreted by professionals. Terraquest has two licensed geologists and four licensed drillers. Once a remedial investigation study is completed, Terraquest utilizes the data collected to specify the most efficient and cost-effective groundwater remediation alternative.

## 2.3 Contaminant Fate and Transport Modeling

Computer modeling of contaminant fate and transport in groundwater environments is primarily used to determine the degree of risk associated with contaminant plumes that migrate to sensitive receptors (drinking water wells, surface water bodies, and other structures). Computer modeling may be used to simulate the processes of advection, dispersion, sorption, degradation, and volatilization of substances to predict the distribution of contaminants in the groundwater environment. These models can be used to determine alternative cleanup standards and support arguments for remediation through natural attenuation and biodegradation. Corrective action strategies which use alternative treatments or rely on natural attenuation to achieve remediation are well known to save considerable amounts of money over the life of a project.



## 2.4 Field Scale Pilot Testing

Field scale pilot testing is used to establish critical parameters of the soil and groundwater environment at sites that require active remediation or at sites that require a rigorous contaminant fate and transport modeling effort. Terraquest has conducted pilot tests to support the design of soil vapor extraction, bioventing, air sparging, biosparging, and pump-and-treat systems. Data collected during the pilot tests is reduced by licensed professionals and incorporated into reports for submittal to clients and/or federal or state environmental regulators.

## 2.5 Environmental Site Assessments

Environmental property surveys are utilized by lending institutions, industry, and commercial real estate brokers to establish the environmental baseline conditions of a given site prior to a property transaction. The purpose of an environmental property survey is to identify environmental risk at a given site in order to avoid acquiring a liability associated with soil or groundwater contamination. Terraquest utilizes a two-phased approach during these property assessments.

Phase I includes a physical reconnaissance and historical review of the subject property. During Phase I, a visual observation of the property is conducted to identify overt signs of potential environmental risk. Close scrutiny is also paid to surrounding properties that could potentially contribute contamination from off-site. A public record and regulatory agency review is conducted to establish the history of the site and surrounding properties. Historical aerial photographs and a property title search are examined to augment the regulatory file review. Finally, site geology and topography are investigated to determine direction of flow of surface and groundwaters. All Phase I Environmental Site Assessments are conducted in accordance with the most current ASTM Standard Practices or US EPA All Appropriate Inquiry rules. Phase I ESAs can be customized to meet the requirements of US Housing & Urban Development, US Small Business Administration, and Freddie Mac and Fannie Mae requirements.

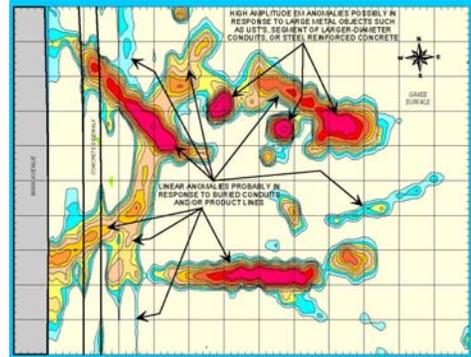


If areas of concern are identified on- or off-site during Phase I, a Phase II field sampling effort is initiated upon client approval. This second phase typically includes the sampling of soil, groundwater, surface waters or suspected hazardous materials, both on- and off- property, to determine the extent of environmental liability at the site.

All data collected during the Phase I and Phase II ESAs are assembled in a comprehensive site assessment report. The report becomes an integral portion of the property transfer package during negotiation of the subject property's divestiture or acquisition.

## 2.6 Geophysical Surveys

Geophysical surveys can be cost-effective and useful for obtaining subsurface information at sensitive study sites. Information such as depth to groundwater, depth to bedrock, subsurface stratigraphy, presence or absence of buried metal, and groundwater contaminant plume geometry can be determined using geophysical techniques without disturbing existing structures at the study site. Data collected during geophysical surveys can be utilized to identify the location of buried underground storage tanks, locate buried drums, delineate the extent of groundwater contamination, and gain a preliminary understanding of subsurface structures prior to initiating a remediation plan.



## 2.7 Environmental Permitting

Environmental permits are required for many activities including the discharging of treated groundwater to surface water systems, accessing public right-of-ways to install wells, trenches or discharge pipelines on right-of-way properties, landfarming contaminated soil, installing closed-loop groundwater remediation systems, and many other activities. Terraquest is experienced at procuring permits from state and local agencies for these and other circumstances.

## 2.8 Groundwater and Soil Remediation Systems

Terraquest offers sound technical experience in the installation, and operation of groundwater and soil remediation systems. The experienced staff can evaluate the specific characteristics of a contaminated site and recommend an effective treatment strategy. Remediation system design is a subcontracted engineering service. Both traditional and more advanced technologies are used, depending on the site and the treatment objectives.

For system installations, Terraquest offers complete project management. Only reputable contractors are used, and on-site supervision is provided to assure high quality.

Even a well designed and installed system can not provide optimal performance unless operated properly. Terraquest recognizes this fact and provides complete maintenance and operation services. The focus of these services is optimization of system operation to minimize the duration of the cleanup effort and, therefore, the cleanup cost.

The staff at Terraquest can also provide solutions which take advantage of regulatory allowances in alternate



cleanup standards and natural attenuation. Terraquest continues to strive for quick response to changes in regulations and technologies as part of our commitment to client advocacy.

Terraquest also offers remediation installation and maintenance services. Terraquest employs service technicians with over 15 years of remediation system installation and maintenance. This technical experience allow for Terraquest to provide excellent remediation system services to clients.

## **2.9 Brownfields Program**

Terraquest works with local commercial real estate developers and the North Carolina Division of Waste Management – Brownfields Program to develop properties that would otherwise be unused due to potential contamination concerns. These properties are commonly referred to as Brownfields. A "Brownfields site" is an abandoned, idled, or underused property where the threat of environmental contamination has hindered its redevelopment. The goal of a Brownfields agreement is to allow the underused property to have a productive use rather than building in a green space or undeveloped area and contributing to urban sprawl.

## **2.10 Chlorinated Solvent Assessment**

Terraquest has the ability to characterize releases of chlorinated solvents, typically from dry cleaners, and to interface with the appropriate regulatory agency in developing an appropriate remedial strategy. Terraquest also has a network of subcontractors specialized in various aspects of site decontamination. Specialized subcontracted services include hazardous waste characterization, disposal, and the injection of various chemicals into the subsurface to remediate the contaminant plume.

### 3.0 RESUMES OF KEY PERSONNEL

#### MICHAEL J. BROWN, P.G.

##### EDUCATION

B.S. Earth Science - 1987  
University of North Carolina at Wilmington  
Wilmington, NC

##### PROFESSIONAL REGISTRATION

North Carolina Licensed Geologist  
Registration No. 1185

Virginia Professional Geologist  
Registration No. 1369

Tennessee Professional Geologist  
Registration No. 2240

#### JONATHAN R. GRUBBS, P.G.

##### EDUCATION

B.S. Geology & B.A. History - 1995  
University of North Carolina at Chapel Hill  
Chapel Hill, NC

##### PROFESSIONAL REGISTRATION

North Carolina Licensed Geologist  
Registration No. 1691

North Carolina Licensed Driller  
Registration No. 3001

**RYAN D. KERINS**

**EDUCATION**

B.S. Environmental Resource Management, Minor Marine Science - 1999  
The Pennsylvania State University  
University Park, PA

**PROFESSIONAL REGISTRATION**

Water Pollution Control System Operator – Physical / Chemical Grade 1  
Certification No. PC-1 / 986481

**ANDREW C. WRENN**

**EDUCATION**

B.S. Natural Resources Management– 2007  
Western Carolina University  
Cullowhee, NC

**PROFESSIONAL REGISTRATION**

Water Pollution Control System Operator – Physical / Chemical Grade 1  
Certification No. PC-1 / 996062

**JORDAN T. LEREW**

**EDUCATION**

Bachelor of Science, Environmental Science, May 2010  
Elon University  
Elon, NC

**NICHOLAS K. PERRY**

**PROFESSIONAL REGISTRATION**

North Carolina Licensed Driller  
Registration No. 3329

CDL – Class A with restrictions

**WESLEY SORRELLS**

**PROFESSIONAL REGISTRATION**

North Carolina Licensed Driller  
Registration No. 3377-B

CDL – Class A with restrictions

#### 4.0 REPRESENTATIVE PROJECT EXPERIENCE / REFERENCES

Please contact us to discuss specific projects and references.