Solutions-IES
Industrial & Environmental Services

1101 Nowell Rd. ■ Raleigh, NC 27607
(919) 873-1060 ■ Fax (919) 873-1074
www.solutions-ies.com

December 20, 2016

Mr. Terry Fox, L.G.
North Carolina Department of Transportation
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Reference: **Preliminary Site Assessment**
Trade Land Co. LLC Property (Parcel #207)
4560 Raeford Road
Fayetteville, Cumberland County, North Carolina
State Project: U-4405
WBS Element 39049.1.1
SIES Project No. 2016.0054.NDOT

Dear Mr. Fox:

Solutions-IES, Inc., (SIES) has completed the Preliminary Site Assessment conducted at the above-referenced property. The work was performed in accordance with the Technical and Cost proposal dated September 26, 2016, and the North Carolina Department of Transportation's (NCDOT's) Notice to Proceed dated September 26, 2016. Activities associated with the assessment consisted of conducting a geophysical investigation, collecting soil samples for analysis, and reviewing applicable North Carolina Department of Environmental Quality (NCDEQ) records. The purpose of this report is to document the field activities, present the laboratory analyses, and provide recommendations regarding the property.

Location and Description

The Trade Land Co. LLC Property (Parcel #207) is located at 4560 Raeford Road in Fayetteville, Cumberland County, North Carolina. The property is situated on the north side of Raeford Road in the northeast quadrant of the intersection of Raeford Road and Brighton Road (**Figure 1**). The property consists of an active gas station and convenience store (Speedway #6998). Based on a review of on-line UST registry information, one diesel fuel, one kerosene, and three gasoline underground storage tanks (USTs) were reportedly removed in 1998 and were replaced with one diesel fuel and three gasoline USTs.

An asphalt parking area surrounds the building and extends almost to the property boundaries. Two attached canopies are located on the property, one on the north side and one on the south side of the building. The northern canopy includes two dispensers and the southern canopy includes four dispensers. A concrete pad covering the existing USTs is located east of the building (noted as U/G Gas

Tanks on **Figure 2**). The proposed easement had not been marked at the site on the date of the field work, but NCDOT plan sheets show the easement as not affecting any of the structures or USTs.

The NCDOT requested a Preliminary Site Assessment for the right-of-way and proposed easement because of the presence of the gas station. The scope of work as defined in the Request for Technical and Cost Proposal was to evaluate the site with respect to the presence of known and unknown USTs and assess where contamination exists on the right-of-way/proposed easement. An estimate of the quantity of impacted soil was to be provided, should impacted soils be encountered.

SIES reviewed the on-line NCDEQ Incident Management database and Incident Number 19670 was assigned to the site. A further review of files regarding the incident from the NCDEQ Fayetteville Regional Office indicated that a UST closure occurred in October 1998[1]. Six USTs were removed; two 15,000 and one 8,000-gallon gasoline tank, one 10,000-gallon kerosene tank, and one 10,000-gallon diesel fuel tank. The approximate location of the former tank excavation is shown on **Figure 2**. The closure consultant collected 27 soil samples from below the USTs, product lines, and dispensers. The analytical results indicated that seven of these soil samples contained total petroleum hydrocarbon diesel range or gasoline range organics, or individual risk-based constituents above the applicable action levels. The approximate locations of the soil contamination are presented on **Figure 2**. The findings of the closure report recommended additional assessment of the site; however, no further information was on file with the NCDEQ. The closure report (without the laboratory reports) is provided in **Attachment A**.

SIES also examined the UST registration database to obtain UST ownership information. According to the database, the USTs on the property as of the date of this report are operated under Facility Number 00-0-0000012649. The active USTs include one 12,000-gallon diesel fuel, one 12,000-gallon gasoline, and two 10,000-gallon gasoline USTs. The owner and operator of the tanks are listed as follows:

Owner
Speedway LLC
500 Speedway Drive
Enon, OH 45323

Operator
Speedway #6998
4560 Raeford Road
Fayetteville, NC 28304

Geophysical Survey

Prior to SIES' mobilization to the site, Pyramid Environmental & Engineering of Greensboro, NC (Pyramid) conducted a geophysical survey to determine if additional USTs were present in that area. The geophysical survey consisted of an electromagnetic (EM) survey using a Geonics EM61 time-domain electromagnetic induction meter to locate buried metallic objects, and specifically looking for USTs.

[1] Wallace-Lee Consultants, LLC, Underground Storage Tank Closure Report, Servco #03016, Fayetteville, North Carolina, October 1998.

A survey grid was laid out along the right-of-way/proposed easement with the X-axis oriented approximately parallel to Raeford Road and the Y-axis oriented approximately perpendicular to Raeford Road. The grid was positioned to cover the entire right-of-way/proposed easement.

The survey lines were spaced five feet apart and magnetic data were collected continuously along each survey line with a data logger. After collection, the data were reviewed in the field with graphical computer software. All of the EM-detected anomalies were directly attributed to visible cultural features and known utilities. Therefore, a ground penetrating radar survey was not required.

Access was available to all areas of the study area and several anomalies were detected with the geophysical survey. No unknown metallic USTs were detected within the geophysical survey area. Pyramid's detailed report of findings and interpretations is presented in **Attachment B**.

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Site Assessment Activities

On October 26, 2016, SIES mobilized to the site to conduct a Geoprobe® direct-push investigation to evaluate subsurface soil conditions on the property. As directed by the NCDOT, the Geoprobe® borings were terminated at 10 feet below ground surface (ft bgs). Seven direct-push holes (207-SB-1 through 207-SB-7) were drilled in the right-of-way/proposed easement (**Figure 2**). The soil boring logs are included as **Attachment C**. Borings 207-SB-1, 207-SB-6, and 207-SB-7 were located to evaluate the subsurface conditions near proposed drop inlets. Borings 207-SB-2 through 207-SB-5 were placed to assess the conditions at the canopy and dispensers (see photos in **Attachment D**). Boring 207-SB-2 was located within the former UST excavation and boring 207-SB-4 was placed near the former dispenser contamination (**Figure 2**).

Continuous sampling using a Geoprobe® resulted in good recovery of soil samples from the direct-push holes. Soil samples were collected and contained in four-foot long acetate sleeves inside the direct-push Macro-Core® sampler. Each of the sleeves was divided into two-foot long sections for soil sample screening. Soil from each two-foot interval was placed in a resealable plastic bag and the bag was set aside for volatilization of organic compounds from the soil to the bag headspace. A photoionization detector (PID) probe was inserted into the bag and the reading was recorded.

The PID concentrations were consistently low and one sample from the bottom interval of each boring was selected for analysis. Two soil samples were collected from boring 207-SB-2 because of hydrocarbon odors from the interval above the bottom. The PID results are summarized in **Table 1**.

The selected soil samples were submitted to an on-site mobile laboratory for analysis of total petroleum hydrocarbons (TPH) diesel range organics (DRO) and gasoline range organics (GRO) using ultraviolet fluorescence (UVF) methodology. Each boring was backfilled with bentonite and drill cuttings to the surface after completion.

The lithology encountered by the direct-push samples was generally consistent throughout the site. The ground surface was covered with about 0.5 feet of asphalt or topsoil. Below this surface cover was a mottled brown and red silty sand. No groundwater or bedrock was noted in any of the borings.

According to the 1985 Geologic Map of North Carolina, the site is within of Coastal Plain Physiographic Province in North Carolina near the contact between the Cretaceous Black Creek and Middendorf Formations. The strata of the Black Creek Formation consist of gray to black clay, thin lenses of fine-grained sand and thick lenses of cross-bedded sand. The lithology may also include glauconite and fossils. In comparison, the Middendorf Formation consists of sand, sandstone, and mudstone that are laterally discontinuous. The soils observed at the site are consistent with the MIddendorf Formation as the parent material.

Analytical Results

The laboratory data are summarized in **Table 1** and the complete report is presented in **Attachment E**. Eight soil samples (two from one boring and one each from the remainder) were submitted for analysis. Of these samples, none contained detectable GRO compounds and all eight contained detectable DRO compounds. Detected DRO concentrations ranged from 0.77 to 43.8 milligrams per kilogram (mg/kg). The action levels are 50 mg/kg for GRO and 100 mg/kg for DRO[2]. None of the soil samples analyzed for this Preliminary Site Assessment contained DRO or GRO concentrations above their respective action levels.

The soil samples from boring 207-SB-2 (within the former UST excavation) contained DRO concentrations of 12.5 and 6.4 mg/kg at a depth of six to eight feet and eight to ten feet, respectively. Soil samples collected for the closure report from this area reported DRO concentrations less than the detection limit at a depth of 14 feet.

The soil sample from boring 207-SB-4 (near the dispenser contamination in the closure report) contained a DRO concentration of 22.5 mg/kg at a depth of eight to ten feet. Soil samples collected for the closure report from this area reported a DRO concentration of 700 mg/kg and several risk-based constituents above the applicable action level at a depth of two feet. Field measurements in boring 207-SB-4 at a

[2] NCDEQ, *Guidelines for North Carolina Action Limits for Total Petroleum Hydrocarbons (TPH)*, July 26, 2016,

depth of two feet indicated no elevated PID readings or hydrocarbon odors. This area is the only closure report identified contaminated area within the right-of-way/proposed easement as shown on **Figure 2**.

Conclusions and Recommendations

A Preliminary Site Assessment was conducted to evaluate the Trade Land Co. Property (Parcel #207) located at 4560 Raeford Road in Fayetteville, Cumberland County, North Carolina. A closure report for the property dated 1998 reported that five USTs were removed from the site. Soil sample analytical data indicated that soil contamination was detected in the former UST area and near two dispensers. One of the dispenser areas noted as having contamination in the closure report is located within the right-of-way/proposed easement.

A geophysical survey conducted at the site indicated that no unknown metallic USTs were present within the geophysical survey area of the site. Seven soil borings were advanced to evaluate the subsurface soil conditions along the right-of-way/proposed easement, from which eight soil samples were collected. None of the soil samples analyzed had a GRO concentration above the detection limit All eight soil samples had DRO concentrations, none of which were above the action level.

None of the soil samples had contaminant concentrations above applicable action levels (**Table 1**). Therefore, no estimate of the volume of soil requiring possible remediation was made.

SIES appreciates the opportunity to work with the NCDOT on this project. Because compounds were detected above the method detection limit in the soil samples, SIES recommends that a copy of this report be submitted to the Division of Waste Management, UST Section, in the Fayetteville Regional Office. If you have any questions, please contact us at (919) 873-1060.

Sincerely,

Michael W. Branson, P.G.
Project Manager

John Palmer, P.G.
Senior Hydrogeologist

Attachments

TABLE 1
SOIL FIELD SCREENING AND ANALYTICAL RESULTS
TRADE LAND CO LLC PROPERTY (PARCEL #207)
FAYETTEVILLE, CUMBERLAND COUNTY, NORTH CAROLINA
STATE PROJECT: U-4405
WBS ELEMENT 39049.1.1
SIES PROJECT NO. 2016.0054.NDOT

SAMPLE ID	DEPTH (ft)	PID READING (ppm)	SAMPLE ID	ANALYTICAL RESULTS (mg/kg)	
				UVF GRO	UVF DRO
	Action Level (mg/kg)			50	100
207-SB-1	0 - 2	0.2			
	2 - 4	0.1			
	4 - 6	0.0			
	6 - 8	0.6			
	8 - 10	0.2	207-SB-1-8-10	<0.56	**0.86**
207-SB-2	0 - 2	0.0			
	2 - 4	0.0			
	4 - 6	0.0			
	6 - 8	0.9	207-SB-2-6-8	<0.56	**12.5**
	8 - 10	0.0	207-SB-2-8-10	<0.66	**6.4**
207-SB-3	0 - 2	0.1			
	2 - 4	0.0			
	4 - 6	0.8			
	6 - 8	0.6			
	8 - 10	0.2	207-SB-3-8-10	<0.62	**43.8**
207-SB-4	0 - 2	0.0			
	2 - 4	0.0			
	4 - 6	0.0			
	6 - 8	0.0			
	8 - 10	0.0	207-SB-4-8-10	<0.78	**22.5**
207-SB-5	0 - 2	0.0			
	2 - 4	0.0			
	4 - 6	0.0			
	6 - 8	0.2			
	8 - 10	0.7	207-SB-5-8-10	<0.72	**21.5**
207-SB-6	0 - 2	0.0			
	2 - 4	0.0			
	4 - 6	0.8			
	6 - 8	0.4			
	8 - 10	0.6	207-SB-6-8-10	<0.15	**0.77**
207-SB-7	0 - 2	0.0			
	2 - 4	0.0			
	4 - 6	0.0			
	6 - 8	0.0			
	8 - 10	0.6	207-SB-7-8-10	<0.69	**2.3**

1) ft - feet

2) ppm - parts per million.

3) PID - photoionization ionization detector

4) mg/kg - milligrams per kilogram.

5) UVF DRO - Diesel range organics by UVF.

6) UVF GRO - Gasoline range organics by UVF.

7) Action level based upon NCDEQ memo *Guidelines for North Carolina Action Limits for Total Petroleum Hydrocarbons* - July 29, 2016.

8) Soil samples were collected on October 26, 2016.

9) **Bold** values are above the detection level.

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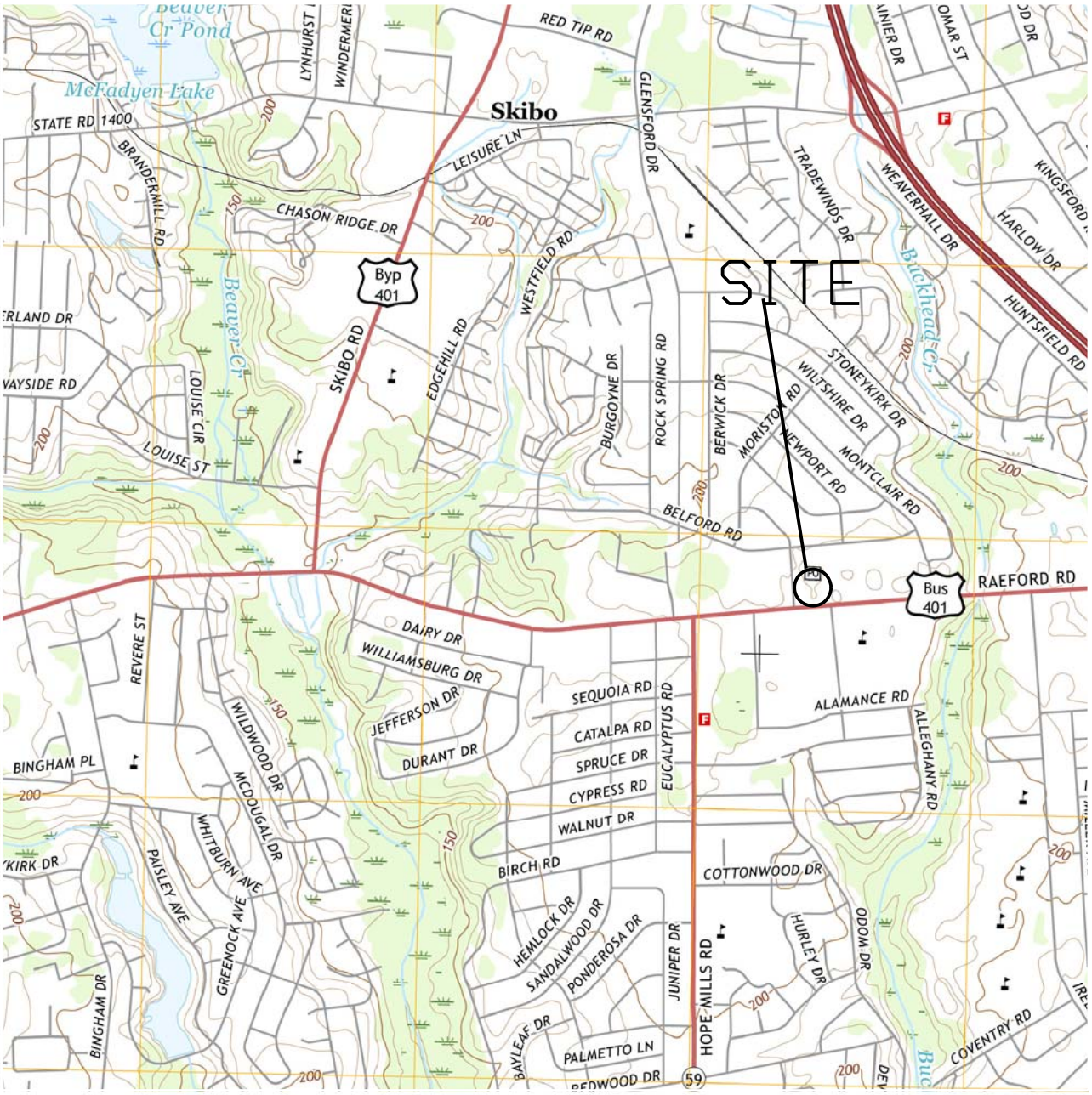
FIGURES



SCALE 1:24,000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

SOURCE: U.S. GEOLOGICAL SURVEY 7.5 MIN QUADRANGLE: FAYETTEVILLE, NC (2016)

FILE: FAYETTEVILLE PSAS
DATE: NOVEMBER 2016
PROJECT MANAGER: MWB
CHECKED BY: JEP
PROJECT NUMBER: 2016.0054.NDOT

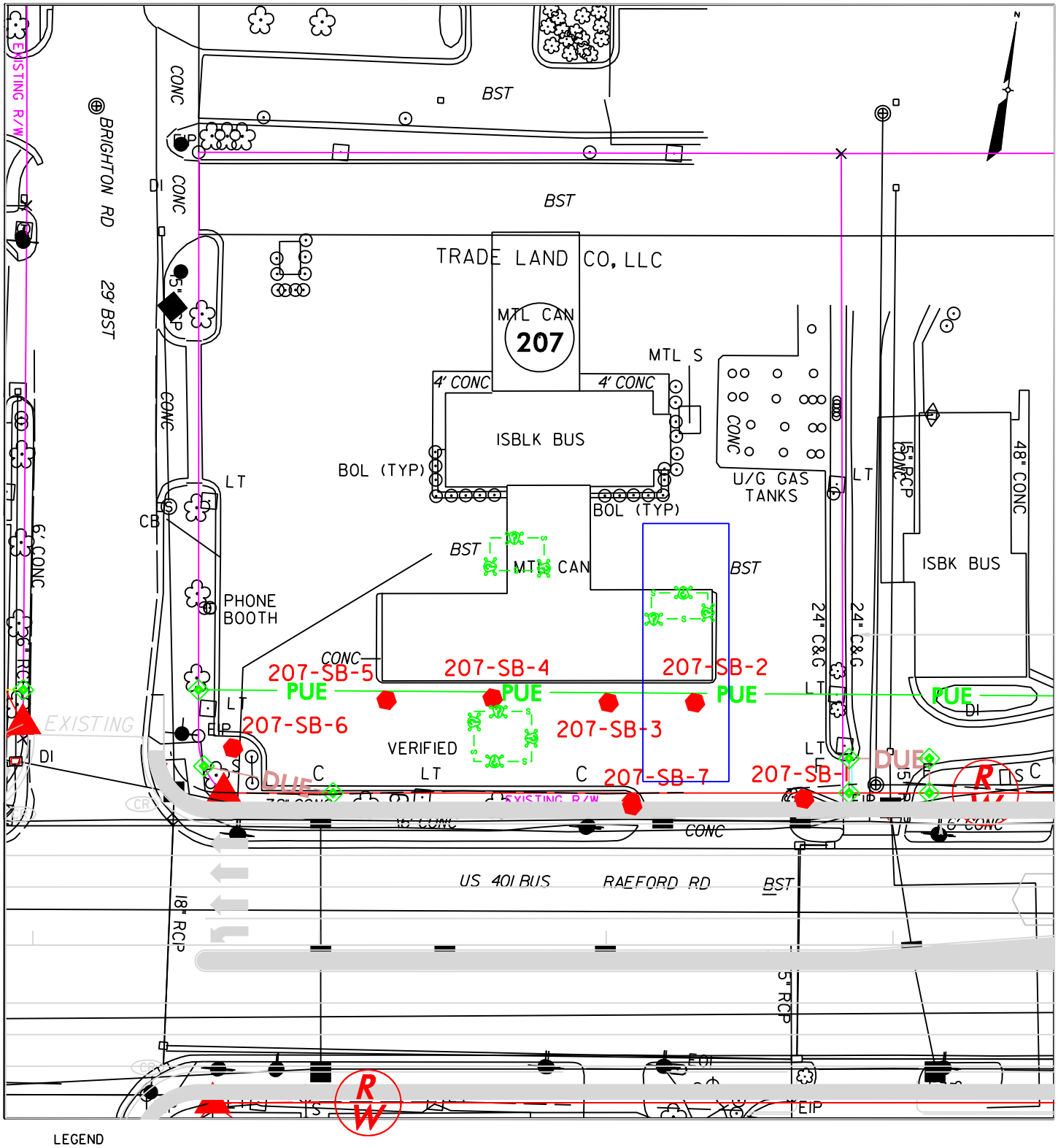
Solutions-IES
Industrial & Environmental Services
1101 NOWELL ROAD
RALEIGH, NORTH CAROLINA 27607
TEL: (919) 873-1060 FAX: (919) 873-1074

VICINITY MAP

TRADE LAND CO. LLC PROPERTY (PARCEL #207)
FAYETTEVILLE, CUMBERLAND COUNTY NORTH CAROLINA

FIGURE
1

PROJECT NUMBER 2016.0054.NDOT
MWB
DRAFTER
JEP
CHECKED BY
MWB
PROJECT MANAGER
NOVEMBER 2016
DATE
FAYETTEVILLE PSAS
FILE



LEGEND

207-SB-1 SOIL SAMPLE LOCATION AND IDENTIFICATION

APPROXIMATE LOCATION OF FORMER UST EXCAVTION

APPROXIMATE LOCATION OF CONTAMINATION IN CLOSURE REPORT

0 25 50
GRAPHIC SCALE (FEET)

Solutions-IES
Industrial & Environmental Services
1101 NOWELL ROAD
RALEIGH, NORTH CAROLINA 27607
TEL: (919) 873-1060 FAX: (919) 873-1074

SITE MAP

TRADE LAND CO. LLC PROPERTY (PARCEL #207)

FAYETTEVILLE, CUMBERLAND COUNTY, NORTH CAROLINA

FIGURE 2

ATTACHMENT A

Report

UNDERGROUND STORAGE TANK CLOSURE REPORT

SERVCO # 03016
FAYETTEVILLE, NORTH CAROLINA

OCTOBER 1998

WALLACE - LEE CONSULTANTS, L.L.C.
Assessment • Design • Remediation

I. GENERAL INFORMATION

A. Ownership of USTs

1. *Name of UST owner:* Service Distributing Company, Inc.

2. *Owner address and telephone number:*

   110 North 2nd Street
   Albemarle, North Carolina 28001
   Telephone: (704) 982-2197

B. Operator of USTs

1. *Name of UST operator:* Service Distributing Company, Inc.

2. *Operator address and phone number:*

   110 North 2nd Street
   Albemarle, North Carolina 28001
   Telephone: (704) 982-2197

C. Facility Information

1. *Facility name:* Servco # 03016

2. *NCDENR Facility ID #:* 0-012649

3. *Facility address, telephone number and county:*

   4560 Raeford Road
   Fayetteville, North Carolina 28304
   Cumberland County
   Telephone: (910) 423-1240

D. Contacts

1. *Name, address, telephone number, and job title of primary contact person:*

   Mr. Rick Smith
   Manager of Construction
   Service Distributing Company, Inc.
   110 North 2nd Street
   Albemarle, North Carolina 28001
   Telephone: (704) 982-2197

2. *Name, address, and telephone number of closure contractor:*

   D.R. Mozeley, Inc.
   6309 Brookshire Blvd.
   Charlotte, North Carolina 28216
   Telephone: (704) 394-0133

3. *Name, address, and telephone number of primary consultant:*

   Wallace-Lee Consultants, L.L.C.
   1913 Bailey Avenue
   Wilmington, North Carolina 28405
   Telephone: (910) 686-3461

4. *Name, address, telephone number, and State certification number of laboratory:*

   Quanterra Incorporated
   5910 Breckenridge Parkway, Suite H
   Tampa, Florida 33610
   Telephone: (813) 621-0784
   State Certification Number: 272

E. UST Information

Tank No.	Installation Dates	Size in Gallons	Tank Dimensions	Last Contents	Status	Previous Contents
1	5/10/70	15,000	36'6" x 8'	Gasoline	Removed-8/13/98	None
2	5/10/70	15,000	36'6" x 8'	Gasoline	Removed-8/13/98	None
3	5/10/70	8,000	21'4" x 8'	Gasoline	Removed-8/13/98	None
4	5/10/70	10,000	26'8" x 8'	Kerosene	Removed-8/13/98	None
6	5/10/70	10,000	26'8" x 8'	Diesel	Removed-8/13/98	None

F. Site Characteristics

1. *Describe any past releases at this site.*

   Service Distributing Company, Inc. and Wallace-Lee Consultants, L.L.C. (WLC) are not aware of any past releases from the UST systems.

2. *Is the facility active or inactive at this time?*

   The facility is an active fuel station and convenience store.

3. *Describe surrounding property use.*

   All adjacent properties are commercial.

4. *Describe the site geology/hydrogeology.*

   The Servco site is located in the Coastal Plain Physiographic Province of North Carolina (Geologic Map of North Carolina, 1985). In general, the Coastal Plain is underlain by a thick sequence of unconsolidated sediments and sedimentary rocks. Beneath the sedimentary units are crystalline igneous rocks. The thickness of the complete sedimentary sequence ranges from a few feet near the western edge of the Coastal Plain to over 10,000 feet along the east coast.

In the Fayetteville area, the Coastal Plain is characterized as the Cape Fear Formation and the Middendorf Formation, both Cretaceous in age (Geologic Map of North Carolina, 1985). The Cape Fear Formation consists of mottled red to yellowish orange sandstone and sandy mudstone with graded and laterally continuous bedding and some faint cross bedding. Feldspar and mica are common constituents. The Middendorf Formation consists of unconsolidated sand, and mottled gray to pale gray with and orange cast sandstone and mudstone with laterally discontinuous beds. Cross bedding is common within the formation.

The geology in the shallow subsurface at the site consists of orange to brown sandy clay to a depth of approximately 14 feet below land surface (BLS), as indicated by samples collected from below the USTs. Samples collected from below dispensers (approximately 2 feet BLS) consisted of gray to orange-brown clayey sand, likely fill material.

Ground water was not encountered at the site during UST closure activities. Based on our review of the United States Geological Survey (USGS) 7.5 minute series topographic map, Fayetteville Quadrangle (Figure 1), it appears that shallow ground-water flow is to the south-southeast toward Buckhead Creek. Buckhead Creek is located approximately 2,000 feet east of the site.

5. *Describe the results of the receptor survey.*

During a drive-by reconnaissance of the area within 1500 feet of the site, three suspected water supply wells were observed by WLC. The site and surrounding area are served by a the City water supply.

II. CLOSURE PROCEDURES

A. Describe the preparations for closure, including the steps taken to notify authorities, permits obtained, and the steps taken to clean and purge the tanks.

WLC submitted a Notice of Intent: UST Permanent Closure (GW/UST-3 form) to the Fayetteville regional office of the North Carolina Department of Environment and Natural Resources (NCDENR). A copy of the form is included in Appendix A.

D.R. Mozeley, Inc. notified the local fire marshal of the scheduled closure activities.

The residual material in the USTs was pumped by A&D Environmental, Inc. prior ro tank removal. The gasoline USTs were purged of potentially explosive vapors using

dry ice by D.R. Mozeley, Inc. prior to tank removal.

A copy of the Site Investigation Report for Permanent Closure of USTs (GW/UST-2 form) is included in Appendix B.

B. Note the amount of residual material pumped from the tanks.

Approximately 150 total gallons of fuel was removed from the five USTs.

C. Describe the storage, sampling, and disposal of the residual material and USTs.

The residual material pumped from the USTs was transported to the A&D Environmental, Inc. facility in Greensboro, NC for disposal

The USTs, which were removed on August 13, 1998, were transported to the Safeway Tank Disposal, Inc. facility located in Walnut Cove, North Carolina. A copy of the Certificate of Disposal is included in Appendix C.

D. Excavation

1. *Describe excavation procedures, noting the condition of the soil encountered and the dimensions of the excavation in relation to the tanks, piping and/or pumps.*

   Soil above and around the sides of the USTs was removed using track excavators. The USTs were removed using the track excavators. Soil samples were collected routinely during excavation activities for field screening using an organic vapor analyzer (OVA). Elevated OVA readings and petroleum odor were not documented in the soil excavated from around the sides and the fill ports of the USTs. The limits of the excavation are shown on Figure 3.

2. *Note the depth of tank burials (from land surface to top of tank).*

   The USTs were buried approximately 4 feet below land surface (BLS).

3. *Note the volume of soil excavated.*

   The total volume of soil excavated was limited to the amount of soil necessary to remove the UST systems.

4. *Describe the soil types encountered.*

The soil encountered during UST closure activities consisted primarily of orange to brown clayey sands and sandy clays, and gray clayey sands.

5. *Describe the type and source of backfill used.*

Upon completion of UST system removal activities, soil excavated from around the USTs was used to backfill the tank excavation. Additional fill material consisted of red to brown sandy silt obtained from a local source.

6. *Describe the condition of the USTs systems.*

No holes or pitting were observed on the two 15,000 gallon gasoline USTs, the 8,000-gallon gasoline UST, the 10,000-gallon kerosene UST, the 10,000-gallon diesel UST, or the product piping.

E. Contaminated Soil

1. *Describe how it was determined to what extent to excavate the soil.*

The extent that soil was excavated was limited to the amount of soil necessary to remove the UST systems.

2. *Describe the storage, sampling, and treatment/disposal of the soil.*

Since elevated OVA readings, petroleum odor and/or dark staining were not documented in the soil excavated during UST closure activities, the soil was used to backfill the excavation.

III. SITE INVESTIGATION

A. Provide information on field screening and physical observations, as well as methods used to calibrate field screening instruments.

Field headspace screening of soil samples was performed using a Foxboro OVA equipped with a flame-ionization detector (FID). The unit was calibrated according to the manufacturers instructions prior to use in the field.

A portion of each sample collected from the UST excavation and from below the product lines and dispensers was place a new plastic bag and sealed. The bag

remained sealed for approximately 15 minutes to allow volatilization of any petroleum hydrocarbon compounds in the headspace of the bag. The OVA probe was inserted into the headspace of the bag and the highest instrument reading was recorded. OVA headspace screening results are summarized in Table 1.

The soil samples were inspected by STS staff to document the lithology.

B. Describe soil sampling points and sampling procedures used.

Soil samples were collected from the UST excavation and from below product lines and dispensers using the excavator bucket. A new pair of disposable nitrile gloves were used to collect each sample. Soil sample locations are shown on Figure 3.

C. Describe ground-water or surface water sampling procedures used.

Ground water was not encountered in the UST excavations.

D. Describe quality control measures.

Each soil sample retained for laboratory analysis was placed in a labeled laboratory supplied container, logged onto a chain of custody record, and placed in a cooler with ice. A new pair of disposable nitrile gloves were used to collect each sample. The soil samples were shipped to the laboratory by Airborne Express overnight delivery service. The chain of custody records are included in Appendix D.

E. Describe the investigation results.

Naphthalene was detected in soil sample T 1 N, collected from the below the north end of a 15,000-gallon gasoline UST (Tank No. 1), at a concentration exceeding the Soil-to-Ground Water Maximum Soil Contaminant Concentrations (MSCCs) established by the NCDENR.

Gasoline range total petroleum hydrocarbons (TPH), ethylbenzene, toluene, xylenes, naphthalene, n-butylbenzene, n-propylbnezene, isopropylbenzene, 1,2,4-trimethylbenzene and 1,3,5 trimethylbenzene were detected in soil sample T 2 N, collected from below the north end of a 15,000-gallon gasoline UST (Tank No. 2), at concentrations exceeding their Soil-to-Ground Water MSCCs. The concentration of gasoline range TPH reported for the soil sample also exceeds its Residential MSCC.

Diesel and gasoline range TPH, ethylbenzene, toluene, xylenes, naphthalene, n-

butylbenzene, n-propylbnezene, isopropylbenzene, 1,2,4-trimethylbenzene, 1,3,5 trimethylbenzene and 2-methylnaphthalene were detected in soil sample T 4 S, collected from below the south end of the 10,000-gallon kerosene UST, at concentrations exceeding their Soil-to-Ground Water MSCCs. The concentrations of diesel and gasoline range TPH reported for the soil sample also exceed their Residential MSCCs.

Diesel range TPH, 2-methylnaphthalene and naphthalene were detected in soil sample T 5 S, collected from below the south end of the 10,000-gallon diesel UST, at concentrations exceeding their Soil-to-Ground Water MSCCs. The concentration of diesel range TPH reported for the soil sample also exceeds its Residential MSCC.

Diesel range TPH was detected in soil sample DD, collected from the below the diesel dispenser, at a concentration exceeding its Soil-to-Ground Water MSCC.

Diesel range TPH was detected in soil sample KD, collected from the below the kerosene dispenser, at a concentration exceeding its Soil-to-Ground Water MSCC.

Gasoline range TPH, naphthalene, n-butylbenzene, 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene were detected in soil sample GD-2, collected from below a gasoline dispenser, at concentrations exceeding their Soil-to-Ground Water MSCCs. The concentration of gasoline range TPH reported for the soil sample also exceeds its Residential MSCC.

The analytical results of the soil samples are summarized in Table 2 and shown on Figure 4. The laboratory report is included in Appendix E.

IV. CONCLUSIONS AND RECOMMENDATIONS

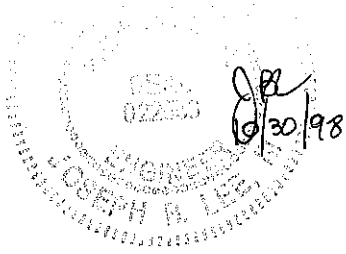
Diesel and gasoline range TPH, ethylbenzene, toluene, xylenes, naphthalene, n-butylbenzene, n-propylbnezene, isopropylbenzene, 1,2,4-trimethylbenzene, 1,3,5 trimethylbenzene and 2-methylnaphthalene were detected in soil samples collected for closure requirements at concentrations exceeding the Soil-to-Ground Water MSCCs. Diesel and gasoline range TPH also exceeded the Residential MSCCs in soil samples collected for closure requirements.

Based on the analytical results, a Phase I Limited Site Assessment will be required for this site.

V. SIGNATURE AND SEAL OF PROFESSIONAL ENGINEER

Professional Engineer NC Registration #: 022553

Joseph B. Lee, III, P.E.



VI. ENCLOSURES

A. Figures

Figure 1	Site Location Map
Figure 2	Site Features Map
Figure 3	UST Excavation Limits and Soil Sample Locations
Figure 4	Soil Sample Analytical Results

B. Tables

Table 1	OVA Screening Results
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Appendix B	Site Investigation Report for the Permanent Closure of USTs (GW/UST-2)
Appendix C	Certificate of UST Disposal
Appendix D	Chain of Custody Records
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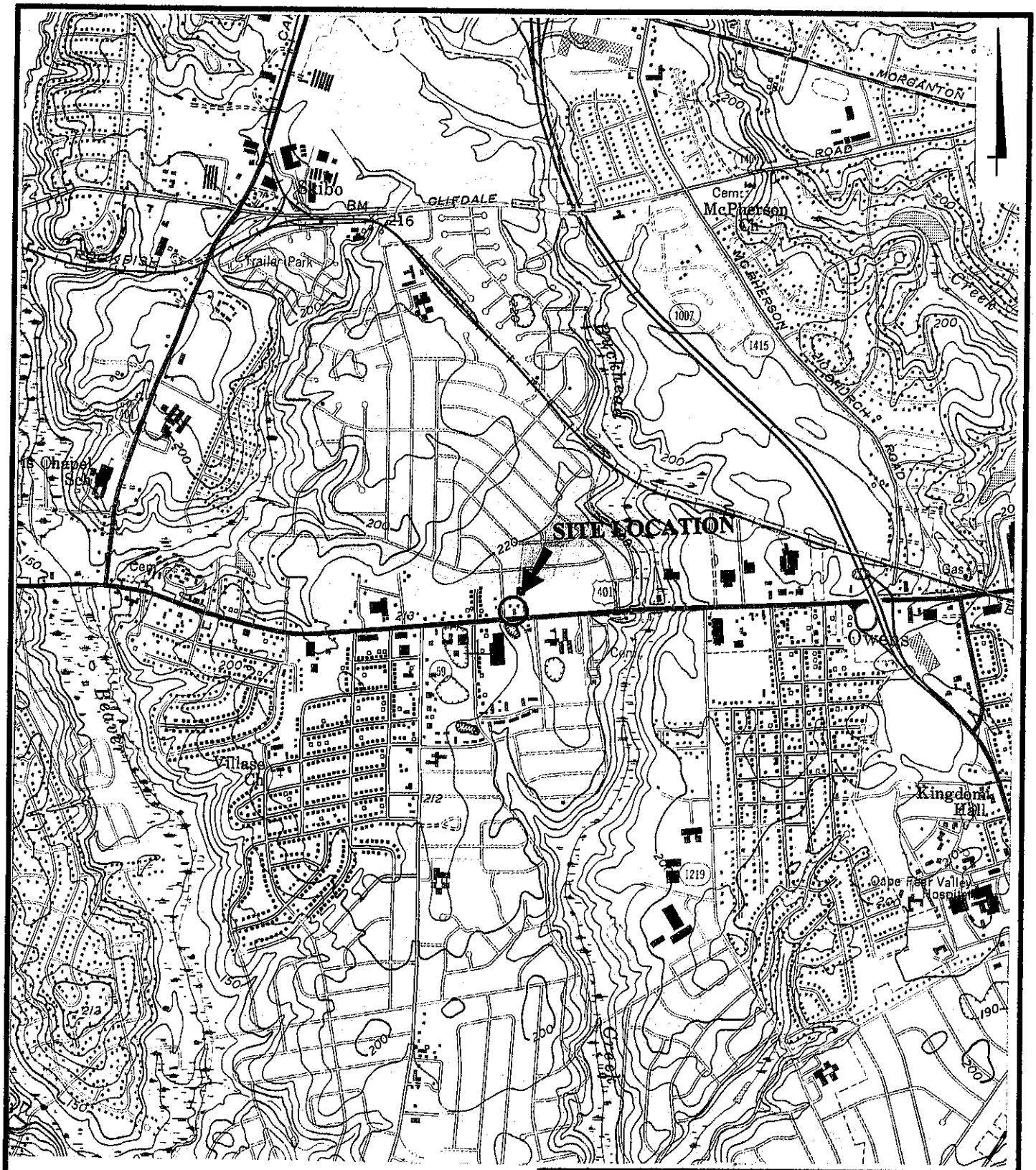


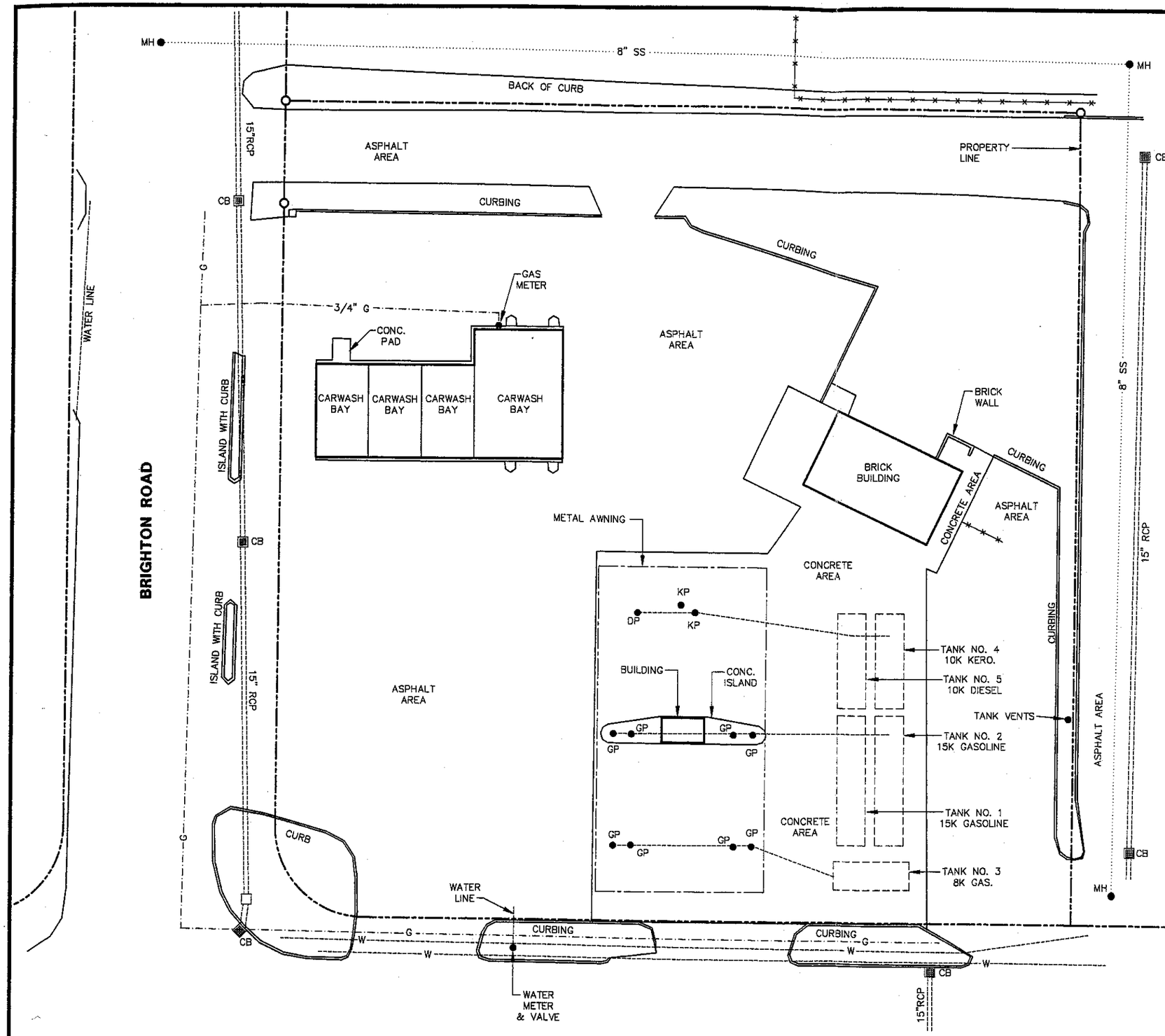
SERVICE DISTRIBUTING COMPANY, INC.
FAYETTEVILLE, NORTH CAROLINA

SITE LOCATION MAP

Wallace-Lee Consultants, L.L.C.
Assessment • Design • Remediation

FIGURE
1

11/5/98 DMW
029803/029SSL1.DWG



LEGEND

- GP — GASOLINE PUMP
- DP — DIESEL PUMP
- KP — KEROSENE PUMP
- PRODUCT LINE
- 8" SS — SANITARY SEWER LINE
- G — GAS LINE
- W — WATER LINE
- 15" RCP — STORM SEWER LINE (RCP = REINFORCED CONCRETE PIPE)
- FENCE
- MH — MANHOLE
- CB — CATCH BASIN

NOTES:
1. BASE MAP FROM ELECTRONIC AUTOCAD FILE FROM P.E.A. OF NORTH CAROLINA ENTITLED "PHYSICAL AND TOPOGRAPHIC SURVEY FOR SERVICE DISTRIBUTING CO., INC., DATED 5/27/97, MAP NO. 97064.
2. NOT ALL CABLES ETC. WERE LOCATED OR FOUND BY THIS SURVEY. CONTRACTORS SHOULD NOTIFY UTILITIES BEFORE DIGGING.
3. TANK LOCATIONS AND PRODUCT LINES ARE APPROXIMATE.

SCALE: 0 — 30' — 60'

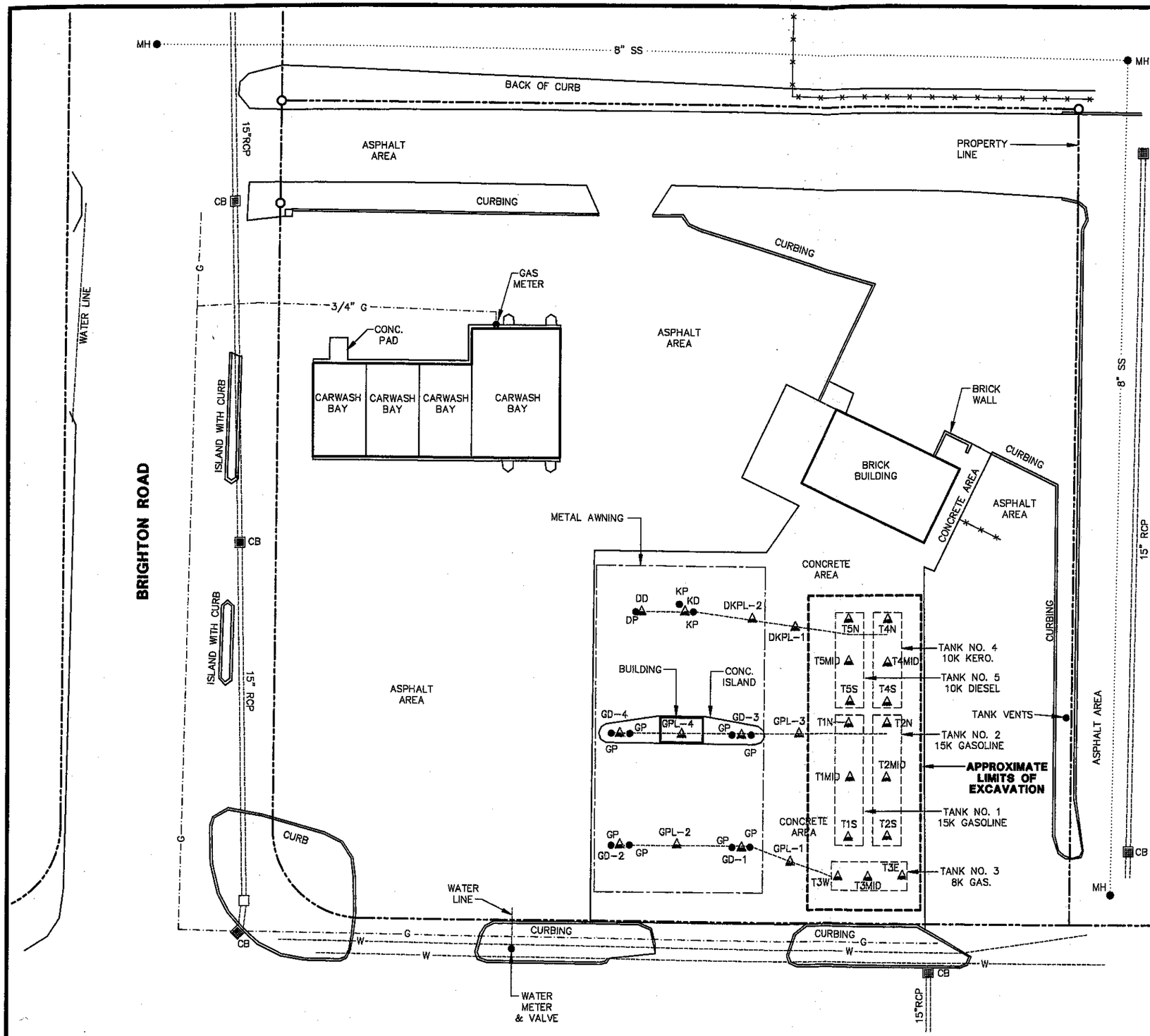
SERVICE DISTRIBUTING COMPANY, INC.
FAYETTEVILLE, NORTH CAROLINA

SITE FEATURES MAP

Wallace-Lee Consultants, L.L.C.
Assessment • Design • Remediation

FIGURE 2

11/7/96 DMW
029503/029SB01.DWG



LEGEND

- GP — GASOLINE PUMP
- DP — DIESEL PUMP
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- G — GAS LINE
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- MH — MANHOLE
- CB — CATCH BASIN
- GD-1 — SOIL SAMPLE LOCATION

NOTES:
1. BASE MAP FROM ELECTRONIC AUTOCAD FILE FROM P.E.A. OF NORTH CAROLINA ENTITLED "PHYSICAL AND TOPOGRAPHIC SURVEY FOR SERVICE DISTRIBUTING CO., INC., DATED 5/27/97, MAP NO. 97064.
2. NOT ALL CABLES ETC. WERE LOCATED OR FOUND BY THIS SURVEY. CONTRACTORS SHOULD NOTIFY UTILITIES BEFORE DIGGING.
3. TANK LOCATIONS AND PRODUCT LINES ARE APPROXIMATE.

SCALE: 0 — 30' — 60'

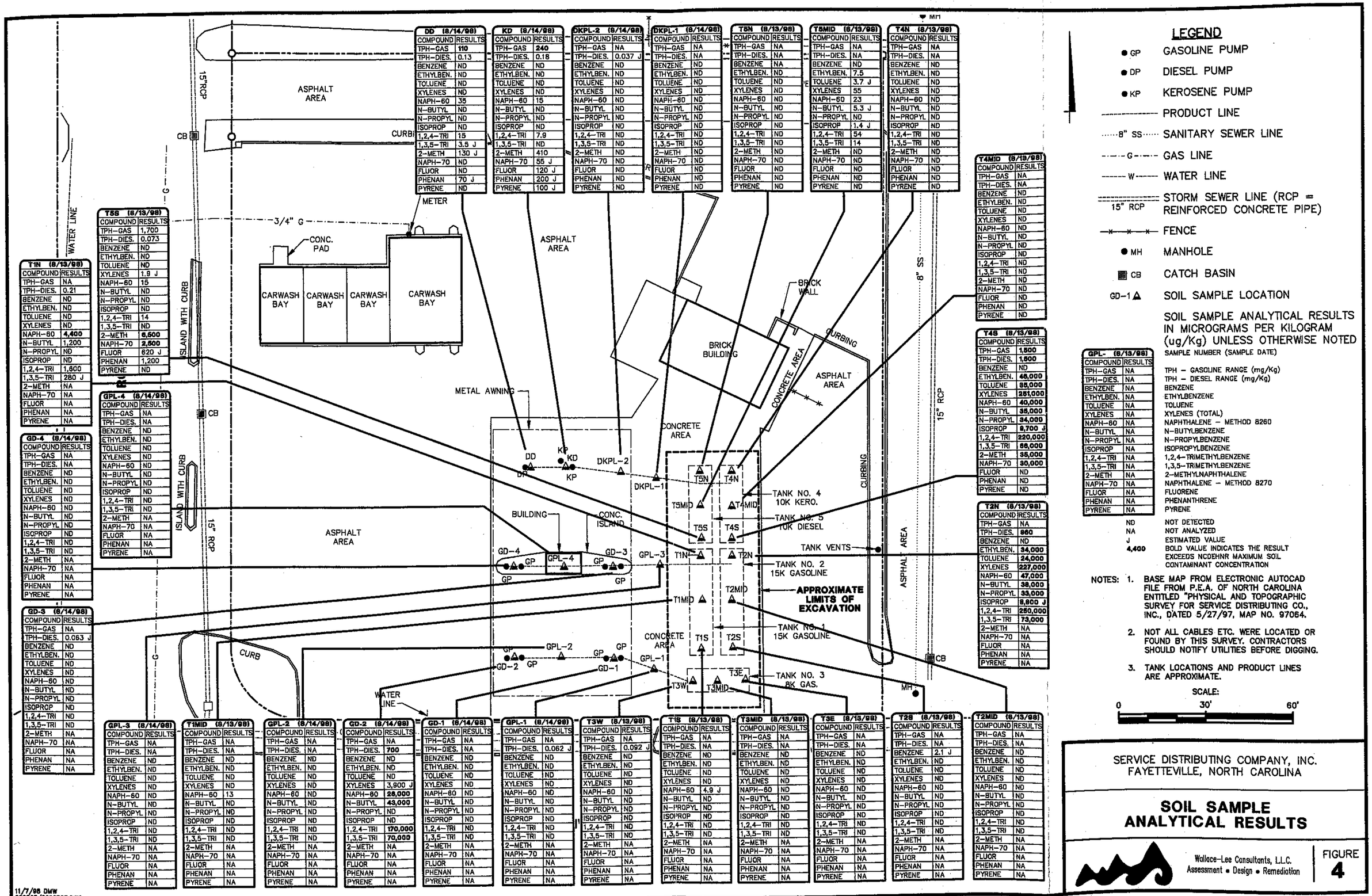
SERVICE DISTRIBUTING COMPANY, INC.
FAYETTEVILLE, NORTH CAROLINA

EXCAVATION LIMITS AND SOIL SAMPLE LOCATIONS

Wallace-Lee Consultants, LLC.
Assessment • Design • Remediation

FIGURE 3

11/7/98 DMW
029803/0298B02.DWG



DD (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	110
TPH-DIES.	0.13
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	35
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	15
1,3,5-TRI	3.5 J
2-METH	130 J
NAPH-70	ND
FLUOR	ND
PHENAN	70 J
PYRENE	ND

KD (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	240
TPH-DIES.	0.18
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	15
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	7.9
1,3,5-TRI	ND
2-METH	410
NAPH-70	55 J
FLUOR	120 J
PHENAN	200 J
PYRENE	100 J

DKPL-2 (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	0.037 J
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	ND
NAPH-70	ND
FLUOR	ND
PHENAN	ND
PYRENE	ND

DKPL-1 (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	ND
NAPH-70	ND
FLUOR	ND
PHENAN	ND
PYRENE	ND

T5N (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	ND
NAPH-70	ND
FLUOR	ND
PHENAN	ND
PYRENE	ND

T5MID (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	7.5
TOLUENE	3.7 J
XYLENES	55
NAPH-60	23
N-BUTYL	5.3 J
N-PROPYL	ND
ISOPROP	1.4 J
1,2,4-TRI	54
1,3,5-TRI	14
2-METH	ND
NAPH-70	ND
FLUOR	ND
PHENAN	ND
PYRENE	ND

T4N (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	ND
NAPH-70	ND
FLUOR	ND
PHENAN	ND
PYRENE	ND

T5S (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	1,700
TPH-DIES.	0.073
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	1.9 J
NAPH-60	15
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	14
1,3,5-TRI	ND
2-METH	6,500
NAPH-70	2,500
FLUOR	620 J
PHENAN	1,200
PYRENE	ND

T1N (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	0.21
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	4,400
N-BUTYL	1,200
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	1,600
1,3,5-TRI	280 J
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

GPL-4 (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

GD-4 (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

GD-3 (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	0.063 J
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

T4MID (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	ND
NAPH-70	ND
FLUOR	ND
PHENAN	ND
PYRENE	ND

T4S (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	1,500
TPH-DIES.	1,500
BENZENE	ND
ETHYLBEN.	46,000
TOLUENE	35,000
XYLENES	251,000
NAPH-60	40,000
N-BUTYL	35,000
N-PROPYL	34,000
ISOPROP	8,700 J
1,2,4-TRI	220,000
1,3,5-TRI	66,000
2-METH	35,000
NAPH-70	30,000
FLUOR	ND
PHENAN	ND
PYRENE	ND

T2N (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	860
BENZENE	ND
ETHYLBEN.	34,000
TOLUENE	24,000
XYLENES	227,000
NAPH-60	47,000
N-BUTYL	38,000
N-PROPYL	33,000
ISOPROP	8,800 J
1,2,4-TRI	250,000
1,3,5-TRI	73,000
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

GPL-3 (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

T1MID (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	13
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

GPL-2 (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

GD-2 (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	700
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	3,900 J
NAPH-60	28,000
N-BUTYL	48,000
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	170,000
1,3,5-TRI	70,000
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

GD-1 (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

GPL-1 (8/14/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	0.062 J
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

T3W (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	0.092 J
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

T1S (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	4.9 J
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

T3MID (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

T3E (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

T2S (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	2.1 J
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

T2MID (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	ND
ETHYLBEN.	ND
TOLUENE	ND
XYLENES	ND
NAPH-60	ND
N-BUTYL	ND
N-PROPYL	ND
ISOPROP	ND
1,2,4-TRI	ND
1,3,5-TRI	ND
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

LEGEND

- GP — GASOLINE PUMP
- DP — DIESEL PUMP
- KP — KEROSENE PUMP
- PRODUCT LINE
- 8" SS — SANITARY SEWER LINE
- G — GAS LINE
- W — WATER LINE
- 15" RCP — STORM SEWER LINE (RCP = REINFORCED CONCRETE PIPE)
- FENCE
- MH — MANHOLE
- CB — CATCH BASIN
- GD-1 ▲ — SOIL SAMPLE LOCATION

SOIL SAMPLE ANALYTICAL RESULTS IN MICROGRAMS PER KILOGRAM (ug/Kg) UNLESS OTHERWISE NOTED

GPL- (8/13/98)	
COMPOUND	RESULTS
TPH-GAS	NA
TPH-DIES.	NA
BENZENE	NA
ETHYLBEN.	NA
TOLUENE	NA
XYLENES	NA
NAPH-60	NA
N-BUTYL	NA
N-PROPYL	NA
ISOPROP	NA
1,2,4-TRI	NA
1,3,5-TRI	NA
2-METH	NA
NAPH-70	NA
FLUOR	NA
PHENAN	NA
PYRENE	NA

SAMPLE NUMBER (SAMPLE DATE)

TPH – GASOLINE RANGE (mg/Kg)
TPH – DIESEL RANGE (mg/Kg)
BENZENE
ETHYLBENZENE
TOLUENE
XYLENES (TOTAL)
NAPHTHALENE – METHOD 8260
N-BUTYLBENZENE
N-PROPYLBENZENE
ISOPROPYLBENZENE
1,2,4-TRIMETHYLBENZENE
1,3,5-TRIMETHYLBENZENE
2-METHYLNAPHTHALENE
NAPHTHALENE – METHOD 8270
FLUORENE
PHENANTHRENE
PYRENE

ND — NOT DETECTED
NA — NOT ANALYZED
J — ESTIMATED VALUE
4,400 — BOLD VALUE INDICATES THE RESULT EXCEEDS NCDEHNR MAXIMUM SOIL CONTAMINANT CONCENTRATION

NOTES:
1. BASE MAP FROM ELECTRONIC AUTOCAD FILE FROM P.E.A. OF NORTH CAROLINA ENTITLED "PHYSICAL AND TOPOGRAPHIC SURVEY FOR SERVICE DISTRIBUTING CO., INC., DATED 5/27/97, MAP NO. 97064.
2. NOT ALL CABLES ETC. WERE LOCATED OR FOUND BY THIS SURVEY. CONTRACTORS SHOULD NOTIFY UTILITIES BEFORE DIGGING.
3. TANK LOCATIONS AND PRODUCT LINES ARE APPROXIMATE.

SCALE:
0 30' 60'

SERVICE DISTRIBUTING COMPANY, INC.
FAYETTEVILLE, NORTH CAROLINA

SOIL SAMPLE ANALYTICAL RESULTS

Wallace-Lee Consultants, L.L.C.
Assessment • Design • Remediation

FIGURE 4

11/7/98 DMW
029803/0298803.DWG

Table 1
OVA Screening Results

Sample I.D.	Sample Description	Date	Time	Depth (feet BLS)	OVA Readings (ppm)	
T 1 S	Bottom - South end Tank 1 (Gasoline)	8/13/98	1604	14'	220	220
T 1 Mid	Bottom - Middle of Tank 1 (Gasoline)	8/13/98	1605	14'	>1000	>1000
T 1 N	Bottom - North end Tank 1 (Gasoline)	8/13/98	1606	14'	>1000	>1000
T 2 S	Bottom - South end Tank 2 (Gasoline)	8/13/98	1645	14'	150	240
T 2 Mid	Bottom - Middle of Tank 2 (Gasoline)	8/13/98	1646	14'	360	180
T 2 N	Bottom - North end Tank 2 (Gasoline)	8/13/98	1647	14'	>1000	>1000
T 3 W	Bottom - West end Tank 3 (Gasoline)	8/13/98	1636	14'	200	50
T 3 Mid	Bottom - Middle of Tank 3 (Gasoline)	8/13/98	1637	14'	80	80
T 3 E	Bottom - East end Tank 3 (Gasoline)	8/13/98	1647	14'	34	14
T 4 S	Bottom - South end Tank 4 (Kerosene)	8/13/98	1227	14'	>1000	>1000
T 4 Mid	Bottom - Middle of Tank 4 (Kerosene)	8/13/98	1228	14'	70	90
T 4 N	Bottom - North end Tank 4 (Kerosene)	8/13/98	1229	14'	70	60
T 5 S	Bottom - South end Tank 5 (Diesel)	8/13/98	1233	14'	>1000	>1000
T 5 Mid	Bottom - Middle of Tank 5 (Diesel)	8/13/98	1235	14'	150	120
T 5 N	Bottom - North end Tank 5 (Diesel)	8/13/98	1236	14'	50	40
DD	Diesel Dispenser	8/14/98	0729	2'	70	70
KD	Kerosene Dispenser	8/14/98	0736	2'	2	20
GD-1	Gasoline Dispenser	8/14/98	0806	2'	600	400
GD-2	Gasoline Dispenser	8/14/98	0817	2'	>1000	>1000
GD-3	Gasoline Dispenser	8/14/98	0826	2'	100	100
GD-4	Gasoline Dispenser	8/14/98	0838	2'	30	30
GPL-1	Gasoline Product Line	8/14/98	0715	2'	80	70
GPL-2	Gasoline Product Line	8/14/98	0721	2'	10	0
GPL-3	Gasoline Product Line	8/14/98	0843	2'	7	0
GPL-4	Gasoline Product Line	8/14/98	0850	2'	25	20
DKPL-1	Diesel and Kerosene Product Line	8/14/98	0749	2'	0	0
DKPL-2	Diesel and Kerosene Product Line	8/14/98	0758	2'	0	0

Notes:
BLS = below land surface
ppm = parts per million

Table 2
Summary of Soil Laboratory Analytical Results

Soil Sample ID	Sample Depth	Date Sampled	SW-846 Method 3550 (mg/Kg)	SW-846 Method 5030 (mg/Kg)	SW-846 Method 8260										SW-846 Method 8270				
					Benzene	Ethyl-benzene	Toluene	Xylenes (Total)	Naphthalene	n-Butyl-benzene	n-Propyl-benzene	Isopropyl-benzene	1,2,4-Trimethyl-benzene	1,3,5 Trimethyl-benzene	2-Methyl-naphthalene	Naphthalene	Fluorene	Phenanthrene	Pyrene
T 1 S	14'	8/13/98	NA	NA	ND	ND	ND	ND	4.9 J	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
T 1 Mid	14'	8/13/98	NA	NA	ND	ND	ND	ND	13	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
T 1 N	14'	8/13/98	NA	0.21	ND	ND	ND	ND	**4,400**	1,200	ND	ND	1,600	280 J	NA	NA	NA	NA	NA
T 2 S	14'	8/13/98	NA	NA	2.1 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
T 2 Mid	14'	8/13/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
T 2 N	14'	8/13/98	NA	**860**	ND	**34,000**	**24,000**	**227,000**	**47,000**	**38,000**	**33,000**	**8,800 J**	**250,000**	**73,000**	NA	NA	NA	NA	NA
T 3 W	14'	8/13/98	NA	0.092 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
T 3 Mid	14'	8/13/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
T 3 E	14'	8/13/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
T 4 S	14'	8/13/98	**1,500**	**1,500**	ND	**46,000**	**35,000**	**251,000**	**40,000**	**35,000**	**34,000**	**9,700 J**	**220,000**	**66,000**	**35,000**	**30,000**	ND	ND	ND
T 4 Mid	14'	8/13/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T 4 N	14'	8/13/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
T 5 S	14'	8/13/98	**1,700**	0.073	ND	ND	ND	1.9 J	15	ND	ND	ND	14	ND	**6,500**	**2,500**	620 J	1,200	ND
T 5 Mid	14'	8/13/98	NA	NA	ND	7.5	3.7 J	55	23	5.3 J	ND	1.4 J	54	14	ND	ND	ND	ND	ND
T 5 N	14'	8/13/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MSCC Residential			469	469	22,000	$1.56\ E^{6}$	$3.2\ E^{6}$	$3.2\ E^{7}$	63,000	156,000	156,000	$1.564\ E^{6}$	782,000	782,000	63,000	63,000	620,000	469,000	469,000
MSCC Industrial-Commercial			12,264	12,264	200,000	$4.0\ E^{7}$	$8.2\ E^{7}$	$2.0\ E^{8}$	$1.635\ E^{6}$	$4.09\ E^{6}$	$4.09\ E^{6}$	$4.09\ E^{7}$	$2.04\ E^{7}$	$2.04\ E^{7}$	$1.635\ E^{6}$	$1.635\ E^{6}$	$1.64\ E^{7}$	$1.23\ E^{7}$	$1.23\ E^{7}$
MSCC Soil-to-Ground Water			34	34	5.6	240	7,000	5,000	580	4,000	2,000	2,000	8,000	7,000	3,000	580	44,000	60,000	286,000

Table 2 (Continued)

Soil Sample ID	Sample Depth	Date Sampled	SW-846 Method 3550 (mg/Kg)	SW-846 Method 5030 (mg/Kg)	SW-846 Method 8260										SW-846 Method 8270				
					Benzene	Ethyl-benzene	Toluene	Xylenes (Total)	Naphthalene	n-Butyl-benzene	n-Propyl-benzene	Isopropyl-benzene	1,2,4-Trimethyl-benzene	1,3,5 Trimethyl-benzene	2-Methyl-naphthalene	Naphthalene	Fluorene	Phenanthrene	Pyrene
DD	2'	8/14/98	**110**	0.13	ND	ND	ND	ND	35	ND	ND	ND	15	3.5 J	130 J	ND	ND	70 J	ND
KD	2'	8/14/98	**240**	0.18	ND	ND	ND	ND	15	ND	ND	ND	7.9	ND	410	55 J	120 J	200 J	100J
GD-1	2'	8/14/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
GD-2	2'	8/14/98	NA	**700**	ND	ND	ND	3,900 J	**26,000**	**43,000**	ND	ND	**170,000**	**70,000**	NA	NA	NA	NA	NA
GD-3	2'	8/14/98	NA	0.063 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
GD-4	2'	8/14/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
GPL-1	2'	8/14/98	NA	0.062 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
GPL-2	2'	8/14/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
GPL-3	2'	8/14/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
GPL-4	2'	8/14/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
DKPL-1	2'	8/14/98	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
DKPL-2	2'	8/14/98	ND	0.037 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MSCC Residential			469	469	22,000	1.56 E^6	3.2 E^6	3.2 E^7	63,000	156,000	156,000	1.564 E^6	782,000	782,000	63,000	63,000	620,000	469,000	469,000
MSCC Industrial-Commercial			12,264	12,264	200,000	4.0 E^7	8.2 E^7	2.0 E^8	1.635 E^6	4.09 E^6	4.09 E^6	4.09 E^7	2.04 E^7	2.04 E^7	1.635 E^6	1.635 E^6	1.64 E^7	1.23 E^7	1.23 E^7
MSCC Soil-to-Ground Water			34	34	5.6	240	7,000	5,000	580	4,000	2,000	2,000	8,000	7,000	3,000	580	44,000	60,000	286,000

Notes:
Concentrations are reported in micrograms per kilogram (µg/Kg) unless otherwise noted.
MSCC Maximum Soil Contaminant Concentration established by the North Carolina Department of Environment and Natural Resources.
ND Not detected above the reporting limit for the analyte.
NA Sample was not analyzed for that particular compound.
J Estimated value. Result is less than the reporting limit for the analyte.

ATTACHMENT B

Pyramid Geophysics

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2016-265)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 207 – TRADE LAND CO., LLC
NCDOT PROJECT U-4405

4560 RAEFORD RD., FAYETTEVILLE, CUMBERLAND COUNTY, NC

NOVEMBER 4, 2016

Report prepared for: **Mike Branson**
Solutions, IES
1101 Nowell Road
Raleigh, North Carolina 27607

Prepared by: _____
Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____
Douglas A. Canavello, P.G.
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406
P: 336.335.3174 F: 336.691.0648
C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 207 – 4560 Raeford Road
Fayetteville, Cumberland County, North Carolina

Table of Contents

Figures

LIST OF ACRONYMS

CADD	Computer Assisted Drafting and Design
DF	Dual Frequency
EM	Electromagnetic
GPR	Ground Penetrating Radar
GPS	Global Positioning System
NCDOT	North Carolina Department of Transportation
ROW	Right-of-Way
SVE	Soil Vapor Extraction
UST	Underground Storage Tank

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Solutions, IES (Solutions) at Parcel 207, located at 4560 Raeford Road, Fayetteville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-4405). Solutions directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to extend from the existing edge of pavement to the proposed ROW lines and/or easement lines within the property, whichever distance was greater. Conducted from October 12-17, 2016, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: All EM anomalies were directly attributed to visible cultural features and known utilities. A GPR survey was not required. Collectively, the geophysical data did not show any evidence of unknown metallic USTs at Parcel 207.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Solutions, IES (Solutions) at Parcel 207, located at 4560 Raeford Road, Fayetteville, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project U-4405). Solutions directed Pyramid as to the geophysical survey boundaries at the project site, which were designed to extend from the existing edge of pavement to the proposed ROW lines and/or easement lines within the property, whichever distance was greater. Conducted from October 12-17, 2016, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included an active service station with a pump island and canopy surrounded by asphalt parking areas and grass medians. Aerial photographs showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of an electromagnetic (EM) induction-metal detection survey. Pyramid collected the EM data using a Geonics EM61 metal detector integrated with a Trimble AG-114 GPS antenna. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8 foot intervals along north-south trending or east-west trending, generally

parallel survey lines spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 11.0 software programs.

GPR data were not required at this property due to all EM anomalies being directly attributed to visible cultural features at the ground surface or known utilities (see Discussion of Results below).

Pyramid's classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

High Confidence	Intermediate Confidence	Low Confidence	No Confidence
Known UST Active tank - spatial location, orientation, and approximate depth determined by geophysics.	**Probable UST** Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	**Possible UST** Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist's discretion.

DISCUSSION OF RESULTS

Discussion of EM Results

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The following table presents the list of EM anomalies and the cause of the metallic response, if known:

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Storm Sewer/Telephone Pole	
2	Water Line	
3	Light Pole	
4	Sign	
5	Vehicle/Utility Box	
6	Light Pole	
7	Guy Wires	

All of the EM anomalies recorded by the survey are directly attributed to visible cultural features such as storm sewer drains, pipes, utility poles, signs, a vehicle and guy wires. For this reason, a GPR survey was not required to verify any unknown anomalies.

Collectively, the geophysical data did not show any evidence of unknown metallic USTs at Parcel 207.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 data collected at Parcel 207 in Fayetteville, Cumberland County, North Carolina, provides the following summary and conclusions:

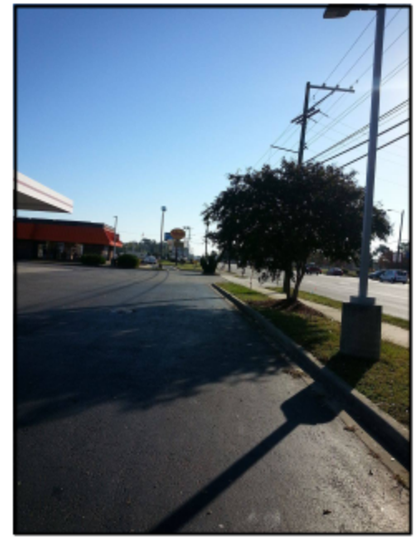
- The EM61 survey provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- All EM anomalies were directly attributed to visible cultural features and known utilities. A GPR survey was not required.
- Collectively, the geophysical data did not show any evidence of unknown metallic USTs at Parcel 207.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for Solutions, IES in accordance with generally accepted guidelines for EM61 surveys. It is generally recognized that the results of the EM61 surveys are non-unique and may not represent actual subsurface conditions. The EM61 results obtained for this project have not conclusively determined the definitive presence or absence of metallic USTs, but the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

N↑

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA



View of Survey Area
(Facing Approximately East)

View of Survey Area
(Facing Approximately West)

TITLE
PARCEL 207 - GEOPHYSICAL SURVEY
BOUNDARIES AND SITE PHOTOGRAPHS

PROJECT
4560 RAEFORD ROAD
FAYETTEVILLE, NORTH CAROLINA
NCDOT PROJECT U-4405

Pyramid Geophysics
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE 10/31/16	CLIENT SOLUTIONS, IES
PYRAMID PROJECT #: 2016-265	**FIGURE 1**

N↑

EM61 METAL DETECTION RESULTS

NC STATE PLANE, EASTING (NAD83, FEET)

NUMBERS IN BLUE (x) CORRESPOND TO ANOMALY TABLE INCLUDED IN THE REPORT

NO EVIDENCE OF UNKNOWN METALLIC USTs OBSERVED

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM61 data were collected on October 13, 2016, using a Geonics EM61 instrument. Verification GPR data were not required due to all EM anomalies being directly attributed to visible cultural features or known utilities.

EM61 Metal Detection Response (millivolts)

TITLE	PARCEL 207 - EM61 RESULTS CONTOUR MAP
PROJECT	4560 RAEFORD ROAD FAYETTEVILLE, NORTH CAROLINA NCDOT PROJECT U-4405
Pyramid Geophysics	503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology
DATE 10/31/2016	CLIENT SOLUTIONS, IES
PYRAMID PROJECT #: 2016-265	**FIGURE 2**

ATTACHMENT C

Solutions-IES
Industrial & Environmental Services

Log of Boring 207-SB-1

BORING LOCATION: Parcel #207, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/26/2016 — DATE FINISHED: 10/26/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0–5		100%	0.2 / 0.1	Light brown and red mottled silty clay. Dry	0–5
5–8		100%	0.0 / 0.6	Light brown and red mottled silty clay. Dry	5–8
8–10	207-SB-1-8-10	100%	0.2	Light brown and red mottled silty clay. Dry	8–10

End of Boring

Solutions-IES
Industrial & Environmental Services

Log of Boring 207-SB-2

BORING LOCATION: Parcel #207, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/26/2016 — DATE FINISHED: 10/26/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0				Asphalt.	0
1		100%	0.0		1
2					2
3			0.0		3
4					4
5		100%	0.0	Light brown and red mottled silty clay. Dry. Mild hydrocarbon odors from 6-8 ft bgs.	5
6	207-SB-2-6-8				6
7			0.9		7
8	207-SB-2-8-10				8
9		100%	0.0		9
10				End of Boring	10

Solutions-IES
Industrial & Environmental Services

Log of Boring 207-SB-3

BORING LOCATION: Parcel #207, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/26/2016 — DATE FINISHED: 10/26/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0				Asphalt.	0
1		100%	0.1		1
2					2
3			0.0		3
4					4
5		100%	0.8	Light brown and red mottled silty clay. Dry.	5
6					6
7			0.6		7
8	207-SB-3-8-10	100%			8
9			0.2		9
10					10

End of Boring

Solutions-IES
Industrial & Environmental Services

Log of Boring 207-SB-4

BORING LOCATION: Parcel #207, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/26/2016 — DATE FINISHED: 10/26/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0				Asphalt.	0
1		100%	0.0		1
2					2
3			0.0		3
4					4
5		100%	0.0	Light brown and red mottled silty clay. Dry.	5
6					6
7			0.0		7
8	207-SB-4-8-10	100%			8
9			0.0		9
10				End of Boring	10

Solutions-IES
Industrial & Environmental Services

Log of Boring 207-SB-5

BORING LOCATION: Parcel #207, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/26/2016 — DATE FINISHED: 10/26/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0				Asphalt.	0
1		100%	0.0		1
2					2
3			0.0		3
4					4
5		100%	0.0	Light brown and red mottled silty clay. Dry.	5
6					6
7			0.2		7
8	207-SB-5-8-10	100%			8
9			0.7		9
10					10

End of Boring

Solutions-IES
Industrial & Environmental Services

Log of Boring 207-SB-6

BORING LOCATION: Parcel #207, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/26/2016 — DATE FINISHED: 10/26/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0				Asphalt.	0
1		100%	0.0		1
2					2
3			0.0		3
4					4
5		100%	0.8	Light brown and red mottled silty clay. Dry.	5
6					6
7			0.4		7
8	207-SB-6-8-10	100%			8
9			0.6		9
10				End of Boring	10

Solutions-IES
Industrial & Environmental Services

Log of Boring 207-SB-7

BORING LOCATION: Parcel #207, Fayetteville, NC	PROJECT NUMBER: 2016.0054.NDOT
DRILLING CONTRACTOR: Regional Probing Services	DATE STARTED: 10/26/2016 — DATE FINISHED: 10/26/2016
DRILLING METHOD: Direct Push — BOREHOLE DIAMETER: 2.25"	TOTAL DEPTH (ft bgs): 10 ft bgs — SCREEN INTERVAL (ft bgs): NA
DRILLING EQUIPMENT: Geoprobe 5410	NORTHING: NA — EASTING: NA
SAMPLING METHOD: Macro Core	INITIAL DTW: NA — FINAL DTW: NA
LOGGED BY: Samuel McIntyre — CHECKED BY:	

DEPTH (ft bgs)	SAMPLES: Sample ID and Interval	SAMPLES: Recovery	PID (ppm)	DESCRIPTION OF MATERIALS	DEPTH (ft bgs)
0				Asphalt.	0
1		100%	0.0		1
2					2
3			0.0		3
4					4
5		100%	0.0	Light brown and red mottled silty clay. Dry.	5
6					6
7			0.0		7
8	207-SB-7-8-10	100%			8
9			0.6		9
10				End of Boring	10

ATTACHMENT D

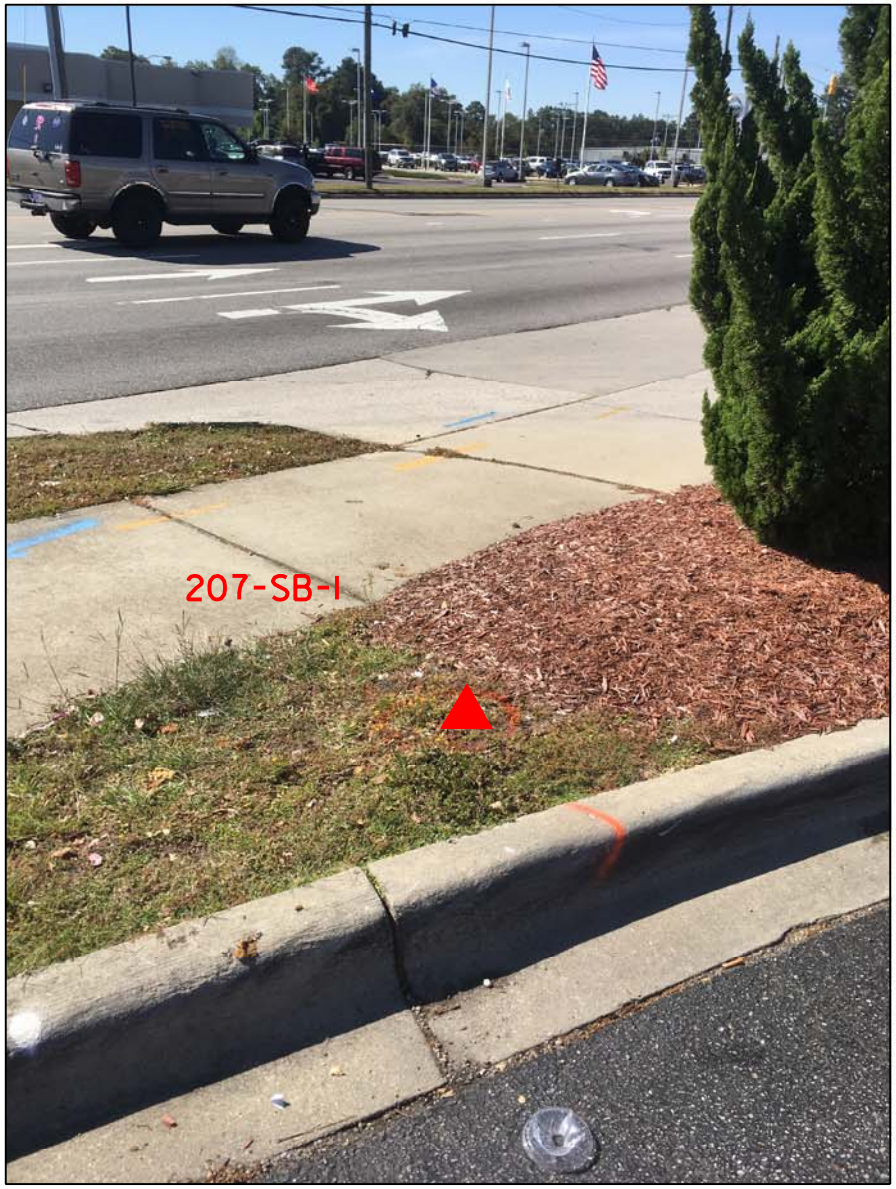


PHOTO 1- VIEW OF SOIL BORING LOOKING SOUTHEAST

PHOTO 2 - VIEW OF SOIL BORING LOOKING NORTHWEST

PHOTO 3 - VIEW OF SOIL BORING LOOKING NORTHWEST

PHOTO 4 - VIEW OF SOIL BORING LOOKING NORTH

PHOTO 5 - VIEW OF SOIL BORING LOOKING NORTH

PHOTO 6 - VIEW OF SOIL BORING LOOKING WEST

PHOTO 7 - VIEW OF SOIL BORING LOOKING EAST

ATTACHMENT E

QED

REDLAB
RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: Site 207: 4560 Raeford Road
Fayetteville, NC

Samples taken 10/26/2016
Samples extracted 10/26/2016
Samples analysed 10/26/2016

Contact:

Operator Candy Elliott

Project: 2016.0054.NDOT

U04049

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	207-SB-1-8-10	22.5	<0.56	<0.56	0.86	0.86	0.86	0.05	0.005	0	61.6	38.4	Pyrogenic HC (FCM) 43.9%
s	207-SB-2-6-8	22.2	<0.56	<0.56	12.5	12.5	5.1	0.25	0.004	0	87.6	12.4	Deg Fuel (FCM) 91.6%
s	207-SB-2-8-10	26.4	<0.66	<0.66	6.4	6.4	3.1	0.15	0.003	0	88.6	11.4	Deg Fuel (FCM) 91.4%
s	207-SB-3-8-10	24.6	<0.62	<0.62	43.8	43.8	21.7	0.95	0.01	0	86.7	13.3	V.Deg.PHC (FCM) 83.7%
s	207-SB-4-8-10	31.4	<0.78	<0.78	22.5	22.5	12.3	0.61	0.012	0	83.7	16.3	Deg Fuel (FCM) 79.5%
s	207-SB-5-8-10	28.8	<0.72	<0.72	21.5	21.5	14.3	0.71	0.014	0	85.6	14.4	Deg Fuel (FCM) 91%
s	207-SB-6-8-10	6.0	<0.15	<0.15	0.77	0.77	0.47	0.02	<0.001	0	89.6	10.4	Deg Fuel (FCM) (P) (BO) 73%
s	207-SB-7-8-10	27.6	<0.69	<0.69	2.3	2.3	1.6	0.08	0.006	0	56.4	43.6	V.Deg.PHC (FCM) (P) 70.7%

Initial Calibrator QC check OK

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

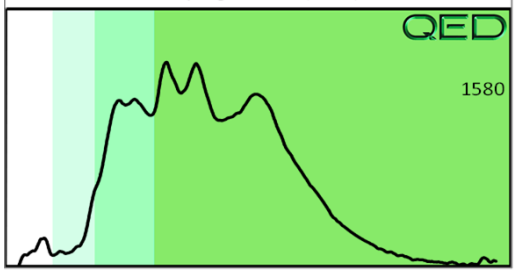
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

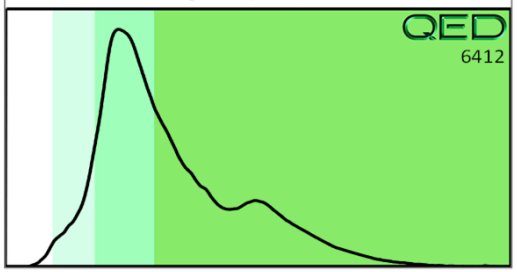
QED Hydrocarbon Fingerprints

Project: 2016.0054.NDOT 10/26/2016

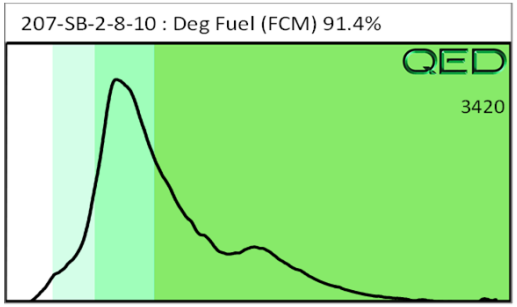
207-SB-1-8-10 : Pyrogenic HC (FCM) 43.9%



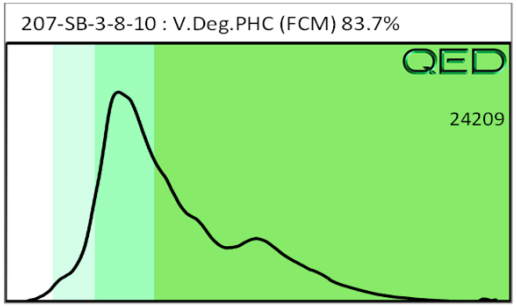
207-SB-2-6-8 : Deg Fuel (FCM) 91.6%



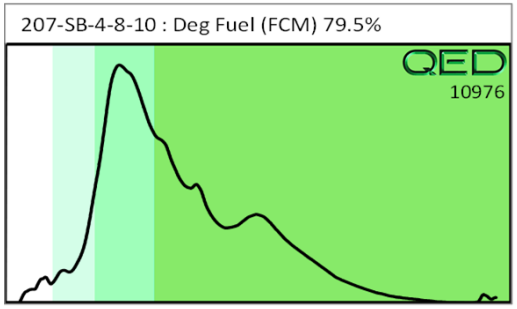
207-SB-2-8-10 : Deg Fuel (FCM) 91.4%



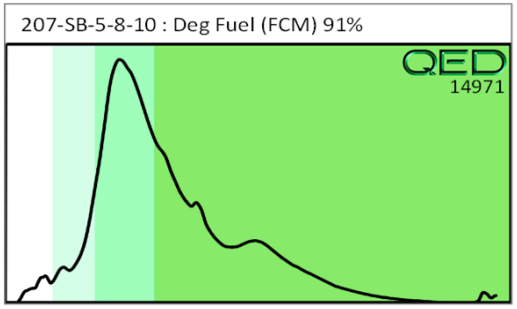
207-SB-3-8-10 : V.Deg.PHC (FCM) 83.7%

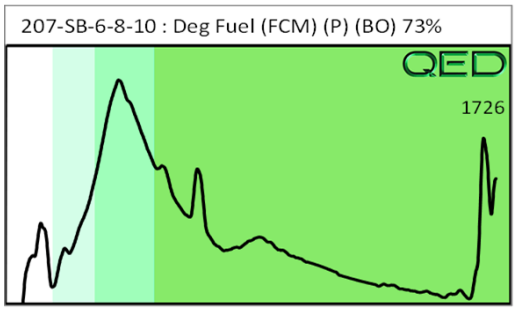


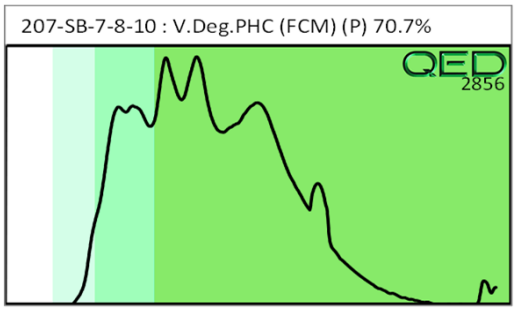
207-SB-4-8-10 : Deg Fuel (FCM) 79.5%



207-SB-5-8-10 : Deg Fuel (FCM) 91%




207-SB-6-8-10 : Deg Fuel (FCM) (P) (BO) 73%
QED
1726


207-SB-7-8-10 : V.Deg.PHC (FCM) (P) 70.7%
QED
2856