

# **PRELIMINARY SITE ASSESSMENT**

**PARCEL #107, IDLEWILD BP PROPERTY  
CHARLOTTE – US 74 (INDEPENDENCE BOULEVARD) FROM NC 24 - 27  
(ALBEMARLE ROAD) TO IDELWILD ROAD  
MECKLENBURG COUNTY, NORTH CAROLINA**

**NCDOT WBS ELEMENT 3479.1.1  
STATE PROJECT U-0209B**

**August 20, 2010**

**Prepared for:**

**Ethan J. Caldwell, L.G., P. E.  
North Carolina Department of Transportation  
Geotechnical Engineering Unit  
GeoEnvironmental Section  
1589 Mail Service Center  
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**Prepared by:**

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**Kleinfelder Project No. 111989**

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August 20, 2010  
File No. 111989 | GSO10R156

Ethan J. Caldwell, L.G., P. E.  
North Carolina Department of Transportation  
1589 Mail Service Center  
Raleigh, North Carolina 27699-1589

Reference: **Preliminary Site Assessment**  
**WBS Element No. 34749.1.1, State Project U-0209B**  
**Parcel #107, Idlewild BP**  
**Mecklenburg County, North Carolina**

Dear Mr. Caldwell:

Please find enclosed a report summarizing the sampling activities for the preliminary site assessment conducted at the referenced site. Laboratory analysis of soil samples collected at the site detected contaminant concentrations exceeding the State action levels in four of sixteen samples. This report summarizes our field activities, results, laboratory report, and conclusions.

Should questions arise or additional information be required, please contact the undersigned.

Sincerely,

**Kleinfelder Southeast, Inc.**

  
Annamarie Blausen  
Staff Professional I

  
John M. Stewart, P.G.  
Senior Professional

AB/JMS:cas  
Enclosure

## PRELIMINARY SITE ASSESSMENT

**Site Name and Location:** Parcel #107, Idlewild BP Property  
5520 E. Independence Boulevard  
Charlotte, Mecklenburg County, North  
Carolina

**Latitude and Longitude:** 35° 11' 3" N, 80° 45' 27" W

**Facility ID Number:** 0-013789

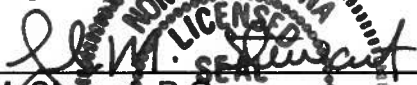
**NCDOT Project No.:** NCDOT WBS Element 34749.1.1  
State Project U-0209B

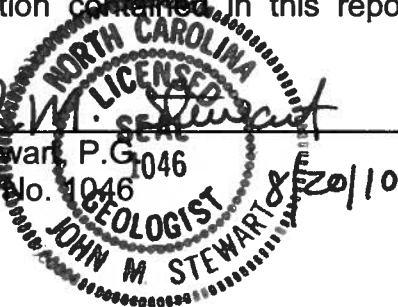
**Date of Report:** August 20, 2010

**Consultant:** Kleinfelder  
313 Gallimore Dairy Road  
Greensboro, North Carolina 27409  
Attn: Mr. John M. Stewart  
Phone: 336.668.0093 X115

### Seal and Signature of Certifying Licensed Geologist

I, John M. Stewart, a Licensed Geologist for Kleinfelder Southeast, Inc., do certify that the information contained in this report is correct and accurate to the best of my knowledge.

  
\_\_\_\_\_  
John M. Stewart, P.G.  
NC License No. 1046



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## 1.0 INTRODUCTION

Kleinfelder Southeast, Inc. (Kleinfelder) has prepared this Preliminary Site Assessment (PSA) report documenting assessment activities performed at the Idlewild BP Station (BP) property (Parcel 107) located at 5520 East Independence Boulevard (US 74) in Charlotte, Mecklenburg County, North Carolina (Figure 1). This assessment was conducted on behalf of the North Carolina Department of Transportation (NCDOT) in accordance with Kleinfelder's June 15, 2010 proposal.

NCDOT is proposing to widen US 74 (Independence Boulevard) from NC 24-27 (Albemarle Road) to Idlewild Road and construct a bridge with on and off ramps accessing Idlewild Road. The proposed right-of-way is located along the north and east sides of the BP Property (Figure 2). Based upon the location of the proposed right-of-way, NCDOT has determined that the entire property will be taken. Therefore, there is concern that contaminated soils could be encountered during the construction activities at this site.

The purpose of this assessment was to determine the presence or absence of impacted soil at the subject property in proposed right-of-way construction areas.

### 1.1 Site Description

The proposed right-of-way encompasses the property owned by Rhesa R. Tull, ET AL, and at the time of our site reconnaissance, this parcel was occupied by an active BP convenience store and gas station (BP, Facility ID No. 0-013789). A car wash which is no longer in use is located on the north side of the property. Four underground storage tanks (USTs) are registered for the facility and are located on the west side (rear) of the property. Two dispenser islands are located on either side of the convenience store (north and south). The majority of the site is covered by asphalt and the areas around the dispensers and over the USTs are covered with concrete. Site photographs are shown in Appendix A.

## 1.2 Site Location

The facility is located in the northwest quadrant of the intersection of Idlewild Road and East Independence Boulevard. A used auto sales business (former dry cleaners) is located north of the site; a shopping strip mall with a pet supply store; Pizza Hut, and a Family Dollar is located further north. A new automobile dealership is located east of the site beyond Independence Boulevard. The site is bound to the south by Idlewild Road and beyond by a McDonald's restaurant. The site bound by Idlewild Road and beyond by a shopping center.

## 1.3 NCDENR File Review

Kleinfelder reviewed archived files at the North Carolina Department of Environment and Natural Resources (NCDENR) Mooresville Regional Office. Archived files are generally for those incidents that have been closed. A past release at the site was issued Incident Number 12863. Documented information associated with Incident Number 12863 is summarized below.

- ◆ On October 17, 1994, Handex of the Carolinas, Inc. (Handex) prepared an Initial Site Characterization Report. The site has been an Amoco|BP retail gas station for over twenty years. Groundwater samples were collected and laboratory analytical results indicated that the samples were contaminated above State Standards with petroleum constituents. The highest concentration of hydrocarbons was detected upgradient of tank field.
- ◆ On September 28, 1994, Handex prepared an UST Leak Report. Analysis of samples collected from monitoring wells around the USTs were contaminated.
- ◆ On December 11, 1994, a 24-Hour Report was prepared for a gasoline release discovered at the pump island on September 28, 1994.
- ◆ On March 30, 1995, Handex prepared a Comprehensive Site Assessment (CSA) Report. Analysis of samples collected from monitoring wells during an initial site characterization detected the presence of petroleum hydrocarbons. In 1995 there were four, 10,000 gallon fiberglass USTs, containing regular unleaded gas, unleaded mid-grade gas, and premium unleaded gas. There were four existing wells on site located around the USTs. Nine additional monitoring wells were installed, eight shallow and one deep as part of the CSA. Liquid hydrocarbons were not reported in the wells. Volatile petroleum hydrocarbons (VPH) were detected above the State Standard in ten of the thirteen wells. Analysis of soil samples also detected petroleum constituents above the State limit.
- ◆ On April 19, 1995, NCDENR, ranked the site as 080E.

- ◆ In August 10, 1995, Handex prepared an Air Sparging and Soil Vapor Extraction Pilot Test Report.
- ◆ In November 8, 1997, Handex prepared a Preliminary Corrective Action Plan. This report explained how the air sparging and soil vapor extraction will reduce the hydrocarbons in the soil and groundwater.
- ◆ In April 3, 1998, Handex prepared a Request for Site Closure. The report stated in the last sampling event no hydrocarbons were detected in the samples above the Gross Contaminant Levels (GCLs).
- ◆ In June 12, 1998, Handex requested a No Further Action Notification.
- ◆ In May 12, 1998, NCDENR issued a No Further Action letter for the site.

## **2.0 SITE ASSESSMENT**

### **2.1 Geophysical Investigation**

Pyramid Environmental & Engineering, P.C (Pyramid) conducted a geophysical investigation of the entire property on June 23 and July 1, 2010. Pyramid utilized ground penetration radar (GPR) and electromagnetic (EM) induction technology to identify potential geophysical anomalies and potential USTs at the site. A more detailed description of their scope of work is explained in their Geophysical Investigation Report included in Appendix B. Prior to drilling the soil borings, buried utilities were marked by NC One Call and Taylor Wiseman & Taylor (TWT).

### **2.2 Soil Samples**

To determine if contaminated soil may be encountered during the proposed construction activities, soil samples were collected along the drainage features in the proposed right-of-way, and adjacent to the existing dispenser islands, supply lines, and USTs on the BP site. Kleinfelder met Probe Technology at the BP Station property on July 14, 2010; Probe Technology advanced sixteen soil borings (B-1 to B-16) by direct push technology (DPT). The approximate location of the borings is shown on Figure 3.

Soil borings were advanced between a depth of five to twelve feet below the ground surface (bgs) depending on their location. Borings B-1 through B-6 were located around the UST field. Borings B-7 and B-16 were located adjacent to the product lines and borings B-8, B-9, B-14 and B-15 were drilled on either side of the dispenser islands. The last four borings B-10 through B-13 are located along the proposed drainage feature on the east side of the property. Because of the concern with the

buried utilities, soil boring B-10 was hand augured to five feet then advance to ten feet with the DPT rig. Soil samples were collected by driving a macrocore sampler in 5-foot intervals in each boring. Each 5-foot sample sleeve was divided in half and screened for volatile organic compounds in the field using a MiniRae 2000 photo-ionization detector (PID). In each boring, the soil interval with the highest PID reading was collected for laboratory analysis. If no organic vapors were detected, the sample collected from the bottom of the boring was submitted for analysis. The PID readings are summarized in Table 1. Copies of the boring logs are included in Appendix C.

Prior to the initial boring and after each subsequent boring, the sampling equipment was decontaminated. The soil samples collected for laboratory analysis were analyzed for total petroleum hydrocarbons (TPH) similar to diesel and gasoline (DRO/GRO) using EPA Method 8015B following 3550 and 5035 preparation. All soil samples were placed into laboratory provided jars, labeled, and maintained on ice until delivered to Prism laboratories, a NCDOT contract laboratory for chemical analysis.

## **3.0 RESULTS**

### **3.1 Geophysical Investigation**

Pyramid's results indicate that disregarding the active and known USTs, the EM/GPR investigation did not detect unknown metallic USTs within the survey area. Pyramid's report is included in Appendix B.

### **3.2 Soil Samples**

Diesel range organics (DRO) were detected at concentrations above the State action level of 10 milligrams per kilogram in soil sample B-2 (7.5-10ft). Gasoline range organics (GRO) were detected at concentrations above the State action level of 10 milligrams per kilogram in soil sample B-4 (10-12ft). Analysis of soil samples B-5 (2.5-5ft) and B-6 (10-12ft) detected concentrations for both DRO and GRO above the State action level. The laboratory results are summarized in Table 2 and on Figure 3. The laboratory report and associated chain-of-custody document are included in Appendix D.

Based upon laboratory analytical results and PID readings, petroleum impacted soils are present on Parcel 107 adjacent to the USTs in the west central half of the property.



The contaminated soil covers an area approximately 4,600 square feet (Figure 4). The contaminated soil extends vertically approximately 10 to 14 feet below ground surface. Based on these dimensions, Kleinfelder estimates that there are approximately 2,200 cubic yards of impacted soil, following removal of the volumes associated with the four USTs (10,000 gallon = 49 cubic yards).

#### **4.0 CONCLUSIONS**

Based on results of the laboratory analysis and field observations, Kleinfelder has the following conclusions:

- ◆ Groundwater was not encountered in the soil borings.
- ◆ DRO and GRO were detected above the State action level in four of the sixteen soil samples collected from the site.
- ◆ Based on the laboratory results, petroleum impacted soil is located at a depth of 2.5 to 12 feet bgs in the area of borings B-2, B-4, B-5, and B-6 which are located around the four USTs in the west central half of the project area.
- ◆ No petroleum hydrocarbons were detected in samples collected adjacent to the dispensers, product lines, or along proposed drainage features on the east side of the property. Approximately 2,200 cubic yards of contaminated soil was identified in and around the existing USTs located on the western side of the site. Approximately half of this soil is located within the proposed right-of-way on the southwest boundary of the property. Petroleum contaminated soil could be encountered as shallow as 2.5 feet below grade in the area of Boring B-5, and at a depth of 7.5 feet in boring B-2.

#### **5.0 LIMITATIONS**

Our work has been performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services were provided. Our conclusions, opinions and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the

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## **TABLES**

**TABLE 1: SOIL SAMPLE PID RESULTS**

SAMPLE LOCATION	DEPTH (feet bgs)	PID READINGS
B-1	0.0 - 2.5	3.2
	2.5 - 5.0	5.8
	5.0 - 7.5	32.6
	7.5 - 10.0	23.6
	10.0 - 12.0	<b>73.2</b>
B-2	0.0 - 2.5	43.4
	2.5 - 5.0	40.5
	5.0 - 7.5	52.1
	7.5 - 10.0	<b>126.0</b>
	10.0 - 12.0	6.2
B-3	0.0 - 2.5	2.0
	2.5 - 5.0	1.4
	5.0 - 7.5	1.8
	7.5 - 10.0	2.6
	10.0 - 12.0	<b>10.2</b>
B-4	0.0 - 2.5	11.6
	2.5 - 5.0	4.4
	5.0 - 7.5	22.6
	7.5 - 10.0	71.6
	10.0 - 12.0	<b>145.0</b>
B-5	0.0 - 2.5	50.8
	2.5 - 5.0	<b>1337.0</b>
	5.0 - 7.5	110.0
	7.5 - 10.0	28.1
	10.0 - 12.0	1073.0
B-6	0.0 - 2.5	24.7
	2.5 - 5.0	44.8
	5.0 - 7.5	81.8
	7.5 - 10.0	53.9
	10.0 - 12.0	<b>1883.0</b>
B-7	0.0 - 2.5	<b>10.5</b>
	2.5 - 5.0	4.4
B-8	0.0 - 2.5	<b>3.1</b>
	2.5 - 5.0	2.0
B-9	0.0 - 2.5	1.4
	2.5 - 5.0	<b>1.6</b>
B-10	0.0 - 2.5	1.6
	2.5 - 5.0	1.0
	5.0 - 7.5	1.6
	7.5 - 10.0	<b>1.6</b>
B-11	0.0 - 2.5	1.4
	2.5 - 5.0	0.9
	5.0 - 7.5	<b>1.5</b>
	7.5 - 10.0	1.2
B-12	0.0 - 2.5	1.6
	2.5 - 5.0	1.1
	5.0 - 7.5	1.3
	7.5 - 10.0	<b>1.8</b>
B-13	0.0 - 2.5	1.8
	2.5 - 5.0	<b>2.5</b>
	5.0 - 7.5	1.1
	7.5 - 10.0	1.1
B-14	0.0 - 2.5	6.0
	2.5 - 5.0	<b>12.8</b>
B-15	0.0 - 2.5	1.8
	2.5 - 5.0	<b>2.5</b>
B-16	0.0 - 2.5	3.4
	2.5 - 5.0	<b>9.2</b>

Notes:

Samples were collected on July 14, 2010.  
 Readings reported in parts per million  
 feet bgs = feet below ground surface  
**Bold** = Selected for laboratory analysis

**TABLE 2: SOIL SAMPLE ANALYTICAL SUMMARY**

<b>SAMPLE ID</b>	<b>COLLECTION DATE</b>	<b>DRO</b>	<b>GRO</b>
B-1 (10-12ft)	7/14/2010	BRL	BRL
B-2 (7.5-10ft)	7/14/2010	<b>25</b>	BRL
B-3 (10-12ft)	7/14/2010	BRL	BRL
B-4 (10-12ft)	7/14/2010	BRL	<b>52</b>
B-5 (2.5-5ft)	7/14/2010	<b>650</b>	<b>1000</b>
B-6 (10-12ft)	7/14/2010	<b>570</b>	<b>4500</b>
B-7 (0-2.5ft)	7/14/2010	BRL	BRL
B-8 (0-2.5ft)	7/14/2010	BRL	BRL
B-9 (2.5-5ft)	7/14/2010	BRL	BRL
B-10 (7.5-10ft)	7/14/2010	BRL	BRL
B-11 (5-7.5ft)	7/14/2010	BRL	BRL
B-12 (7.5-10ft)	7/14/2010	BRL	BRL
B-13 (2.5-5ft)	7/14/2010	BRL	BRL
B-14 (2.5-5ft)	7/14/2010	BRL	BRL
B-15 (2.5-5ft)	7/14/2010	BRL	BRL
B-16 (2.5-5ft)	7/14/2010	BRL	BRL
State Action Level		10	10

**Notes:**

Sample collection depth is indicated in Sample ID, following sequential soil sample number

Results presented in milligrams per kilogram, analogous to parts per million

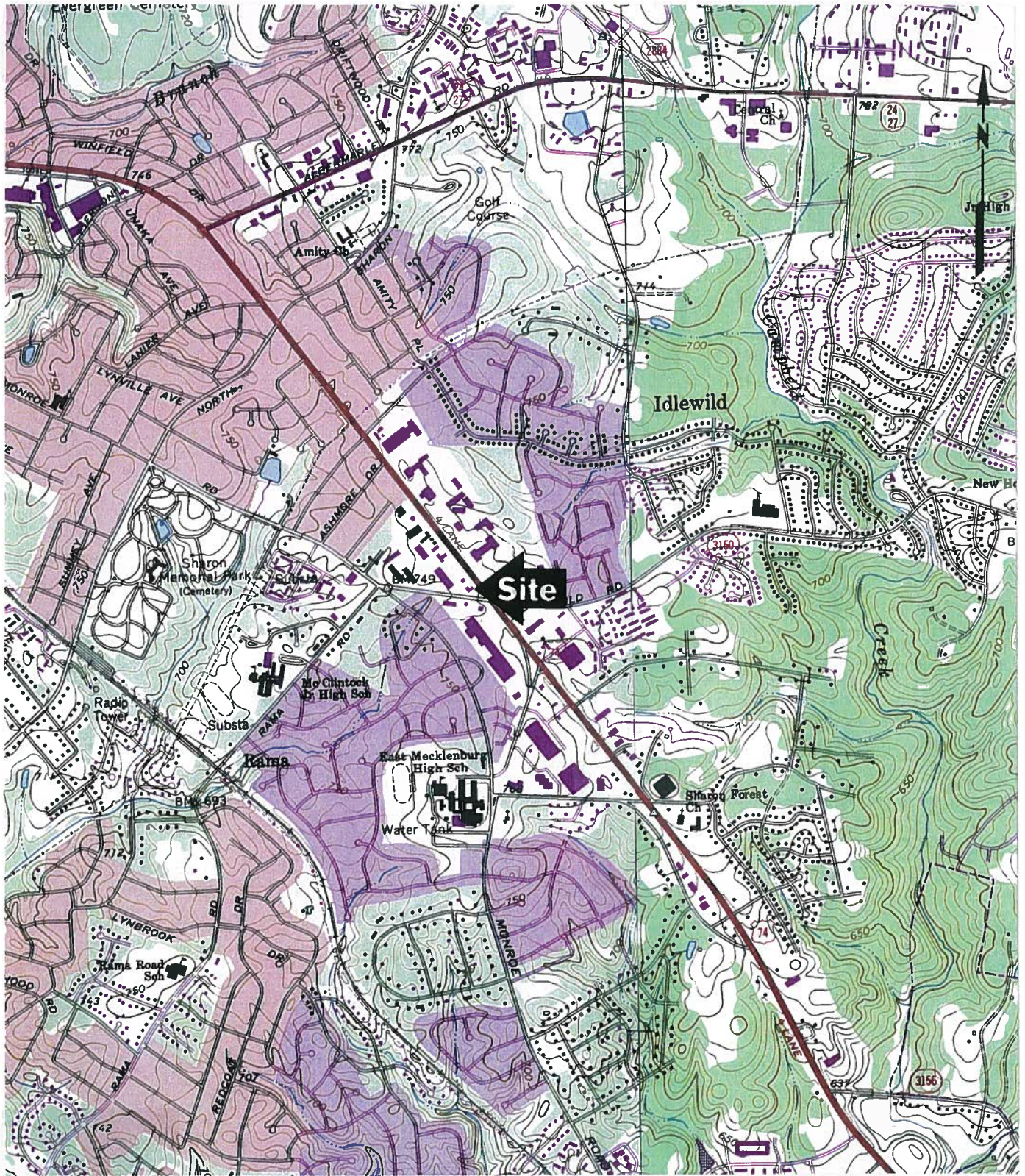
DRO = Diesel Range Organics

GRO = Gasoline Range Organics

BRL = Below reporting limit

**Bold** denotes concentration exceeds the State Action Level

## **FIGURES**



**FIGURE 1  
SITE LOCATION MAP**

**PARCEL # 107 – IDLEWILD BP PROPERTY  
5520 EAST INDEPENDENCE BOULEVARD  
MECKLENBURG COUNTY, NORTH CAROLINA**

DATE: July 26, 2010

APPROVED  
BY

SCALE: 1" to 2,000'

SOURCE: USGS 7.5' Topographic Map,  
Charlotte East Quadrangle

*[Signature]*

PROJECT NO. 111989

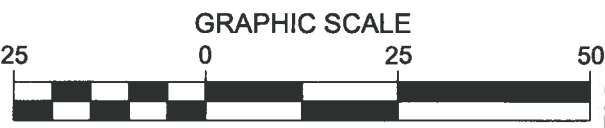
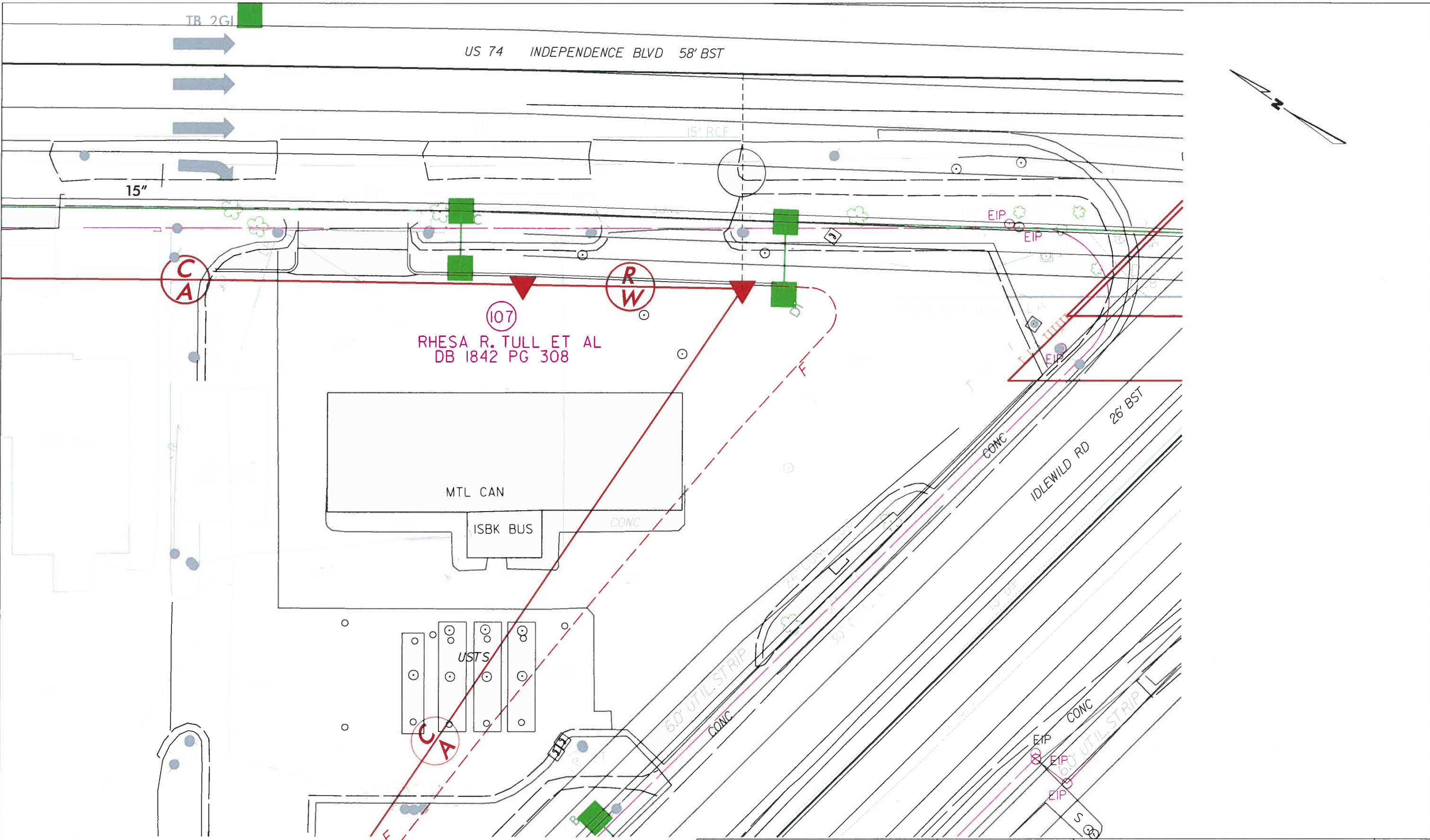


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KLEINFELDER JOB NUMBER: 111989

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CHECKED BY:	JMS
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<b>SITE MAP</b>	
<b>PARCEL #107</b>	
<b>TULL PROPERTY (IDLEWILD BP)</b>	
<b>5516 E. INDEPENDENCE BLVD.</b>	
TIP NO.	U-0209B
WBS ELEMENT NO.	34749.1.1
MECKLENBURG COUNTY	
NORTH CAROLINA	

FIGURE: **2**

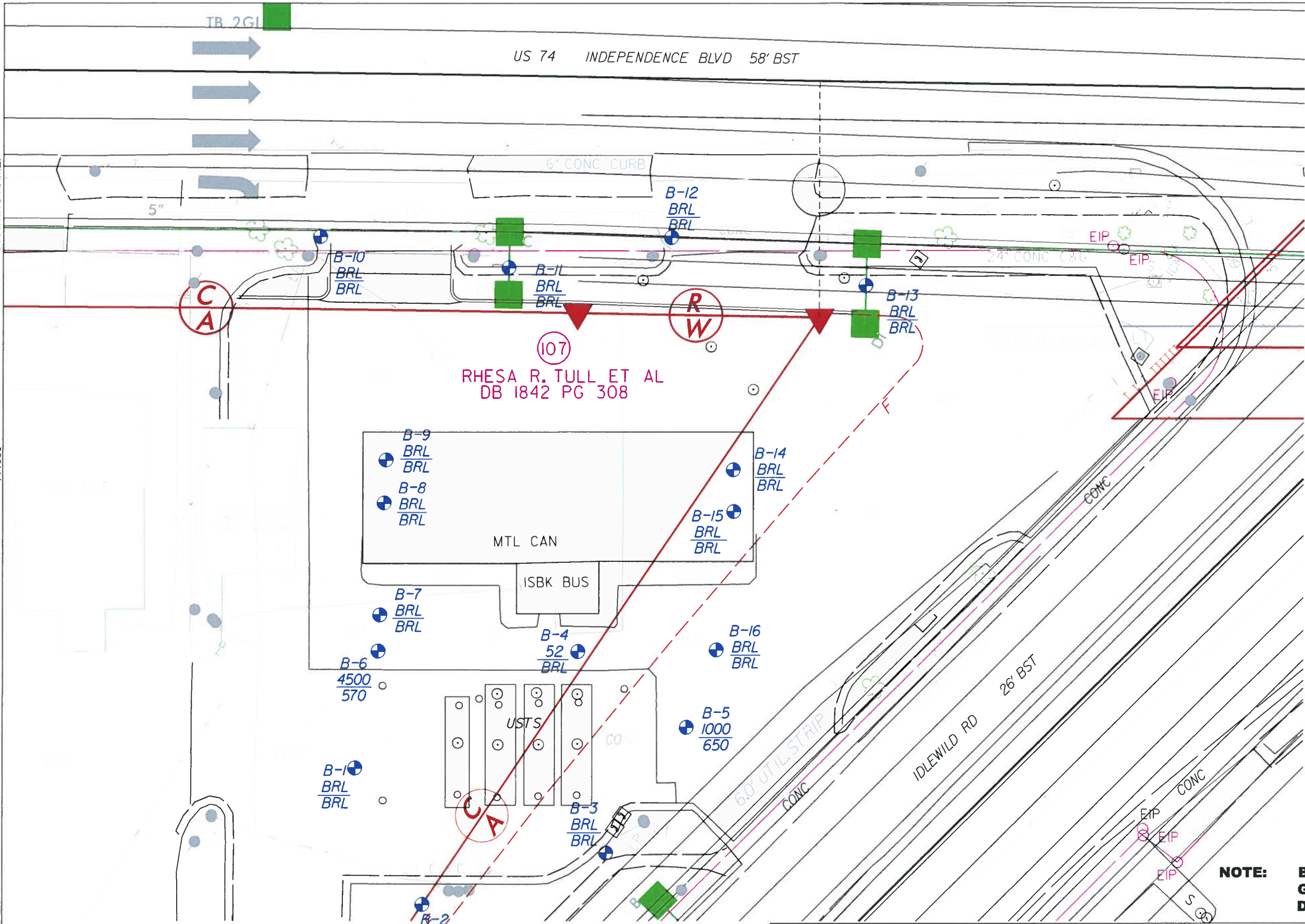
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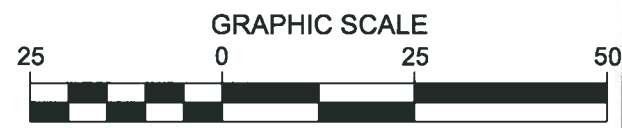


**EXPLANATION**

- SOIL BORING
- B-1
- 1000  
650
- GRO** IN PPM
- DRO**

**NOTE:** BRL - BELOW REPORTING LIMIT  
 GRO - GASOLINE RANGE ORGANICS  
 DRO - DIESEL RANGE ORGANICS

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CHECKED BY:	JMS
SCALE:	1" = 25'

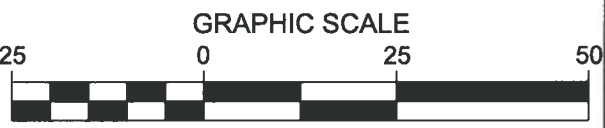
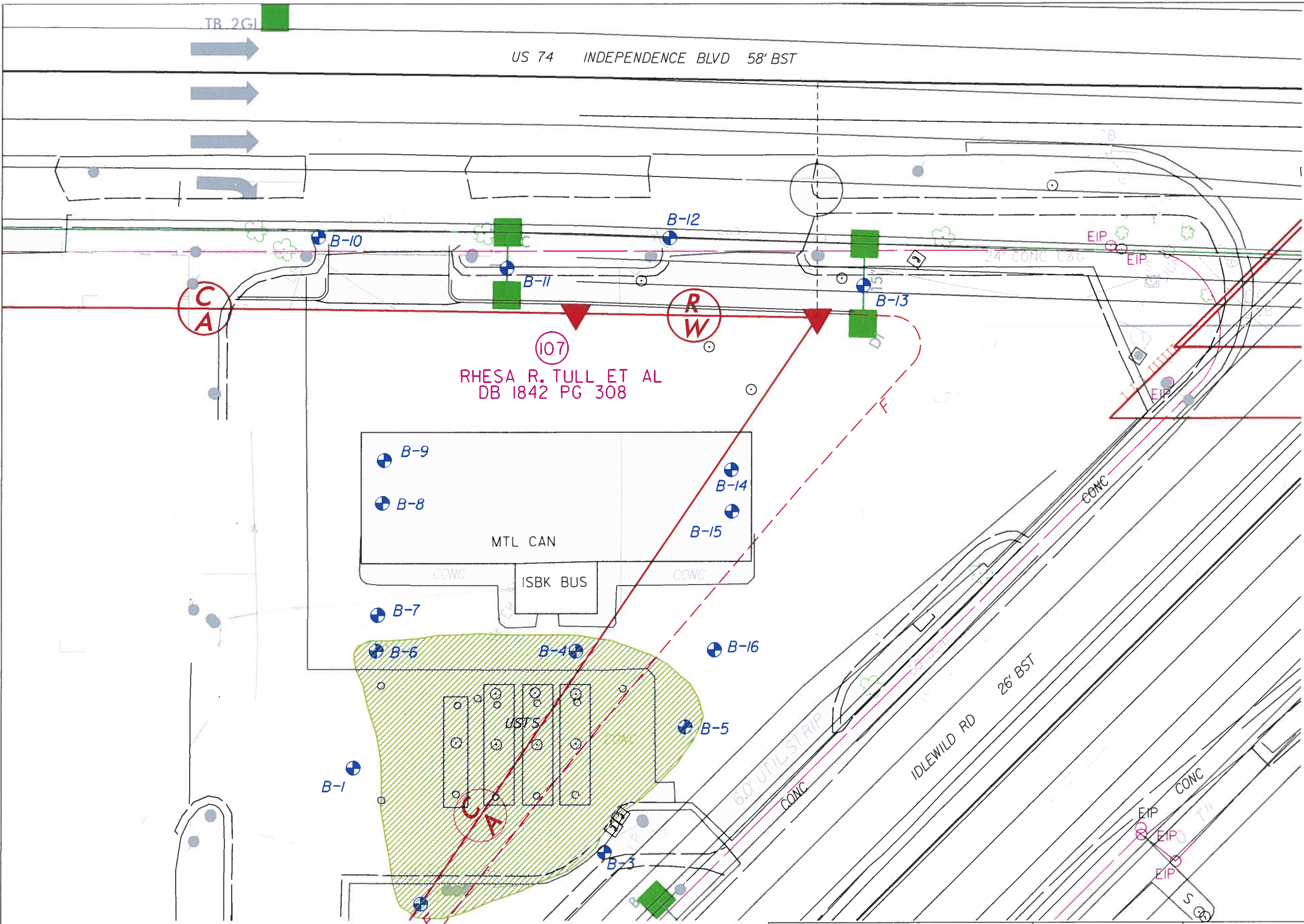
<b>BORING LOCATION MAP</b>	
PARCEL #107 TULL PROPERTY (IDLEWILD BP) 5520 E. INDEPENDENCE BLVD.	
TIP NO.	U-0209B
WBS ELEMENT NO.	34749.1.1
MECKLENBURG COUNTY NORTH CAROLINA	

FIGURE:  
**3**

DRAWING NAME:

KLEINFELDER JOB NUMBER: 111989

OFFICE LOCATION: GREENSBORO



PROJECT NO.	111989
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SCALE:	1" = 25'

<b>HORIZONTAL EXTENT OF CONTAMINATION MAP</b>	
PARCEL #107 TULL PROPERTY (IDLEWILD BP) 5520 E. INDEPENDENCE BLVD.	
TIP NO.	U-0209B
WBS ELEMENT NO.	34749.1.1
MECKLENBURG COUNTY NORTH CAROLINA	

FIGURE:  
**4**

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**EXPLANATION**

	SOIL BORING
	AREA OF CONTAMINATION

## **APPENDIX A**

**SITE PHOTOGRAPHS  
KLEINFELDER PROJECT NO. 111989  
PARCEL NO. 107 (BP)**



**Photograph 1 – View of the Idlewild BP station looking northeast. The UST field is located in the foreground. Two dispenser islands are shown on the north side of the store.**



**Photograph 2 – View of the Idlewild BP station looking southeast. A portion of the UST field is located in the foreground. Two dispenser islands are shown on the south side of the store.**

**SITE PHOTOGRAPHS  
KLEINFELDER PROJECT NO. 111989  
PARCEL NO. 107 (BP)**



**Photograph 3 – View looking north along the front of the property.**



**Photograph 4 – View looking south along the front of the property.**

**APPENDIX B**

Pyramid Project # 2010153

**GEOPHYSICAL INVESTIGATION REPORT**

***EM61 & GPR SURVEYS***

**RHESA R. TULL, ETAL PROPERTY**

**PARCEL 107**

**Charlotte, North Carolina**

**August 10, 2010**

**Report prepared for: John Stewart P.G.  
Kleinfelder  
6200 Harris Technology Boulevard  
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**Prepared by: \_\_\_\_\_  
Mark J. Denil, P.G.**

**Reviewed by: \_\_\_\_\_  
Douglas Canavello, P.G.**

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**Kleinfelder**  
**GEOPHYSICAL INVESTIGATION REPORT**  
**RHESA R. TULL, ETAL PROPERTY**  
**PARCEL 107**  
**Charlotte, North Carolina**

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| Figure 4 | Image of GPR Survey Line Y=180              |



## **1.0 INTRODUCTION**

Pyramid Environmental conducted a geophysical investigation for Kleinfelder across the Rhesa R. Tull, et al property (Parcel 107) located along the northwest corner of the Independence Boulevard and Idlewild Road intersection in Charlotte, North Carolina. Conducted on June 23 and July 1, 2010 the geophysical investigation was performed as part of the North Carolina Department of Transportation (NCDOT) preliminary site assessment project to determine if unknown, metallic underground storage tanks (UST's) were present beneath the proposed ROW area of the site.

Parcel 107 consists of an active BP gas station and car wash facility and the geophysical survey area covered the entire property which had a maximum length and width of 320 feet and 310 feet, respectively. The survey area extended across the northeastern (front) portion of the used car lot property located immediately northwest of Parcel 107. Grass covers the southwestern portion of the survey area whereas, asphalt and concrete covers much of the northeastern portion of the site.

Kleinfelder representative Mr. John Stewart, <sup>PE</sup> provided site maps during the week of June 1, 2010 that outlined the geophysical survey area of the Tull property and Kleinfelder representative Mr. John Lindemann was on site the morning of June 23, 2010 and identified the perimeter of the geophysical survey area to Pyramid Environmental personnel. Photographs of the geophysical equipment used in this investigation and a portion of the Rhesa R. Tull property are shown in **Figure 1**.

## **2.0 FIELD METHODOLOGY**

Prior to conducting the geophysical investigation, a 10-foot by 10-foot survey grid was established across the geophysical survey area (property) using measuring tapes, pin flags and water-based marking paint. These grid marks were used as X-Y coordinates for location control when collecting the geophysical data and establishing base maps for the geophysical results.

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection surveys and ground penetrating radar (GPR) surveys. The EM survey was performed on June 23, 2010 using a Geonics EM61-MK1 metal detection instrument. 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. All of the EM61 data were digitally collected at approximately 0.8 foot intervals along northerly-southerly, or easterly-westerly, parallel survey lines spaced five feet apart. All of the data were downloaded to a computer and reviewed in the field and office using the Geonics DAT61W and Surfer for Windows Version 7.0 software programs.

GPR surveys were conducted on July 1, 2010 across selected EM61 differential anomalies, areas containing steel reinforced concrete using a GSSI SIR-2000 unit equipped with a 400 MHz antenna. Data were digitally collected in a continuous mode along X-axis and/or Y-axis survey lines, spaced 2.5 to 5.0 feet apart using a vertical scan of 512 samples, at a rate of 48 scans per second. A 70 MHz high pass filter and an 800 MHz low pass filter were used during data acquisition with the 400 MHz antenna. GPR data were collected down to a maximum depth of approximately 5 feet, based on an estimated two-way travel time of 8 nanoseconds per foot. All of the GPR data were downloaded to a field computer and reviewed in the field and office using Radprint software.

Contour plots of the EM61 bottom coil and differential results are presented in **Figures 2 and 3**, respectively. The bottom coil results represent the most sensitive component of the EM61 instrument and detect metal objects regardless of size. The bottom coil response can be used to delineate metal conduits or utility lines, small, isolated metal objects, and areas containing insignificant metal debris. The differential results are obtained from the difference between the top and bottom coils of the EM61 instrument. The differential results focus on the larger metal objects such as drum and UST-size objects and ignore the smaller insignificant metal objects.

Preliminary geophysical results obtained from Parcel 107 were reported to Mr. Stewart on July 14, 2010.

### **3.0 DISCUSSION OF RESULTS**

The linear EM61 bottom coil anomaly running along the edge of Independence Boulevard and intersecting grid coordinates X=190 Y=320 is probably in response to a buried utility line(s). Similarly, the linear bottom coil anomalies intersecting grid coordinates X=120 Y=295, X=150 Y=280, X=210 Y=200, X=210 Y=295, and X=260 Y=252 are probably in response to buried lines or conduits. The series of bottom coil anomalies intersecting grid coordinates X=40 Y=280 are probably in response to parked vehicles not shown on the map.

GPR data suggest that the high amplitude, EM61 bottom coil anomalies (contours shaded in red) or negative EM61 differential anomalies (contours shaded in green) centered near grid coordinates X=90 Y=270, X=100 Y=170, X=135 Y=230, and X=190 Y=240 are probably in response to steel reinforced concrete, pump islands, buildings, dumpster, and/or miscellaneous buried conduits. GPR data acquired across the concrete UST pad centered near grid coordinates X=150 Y=175, confirms the presence of the four active USTs buried approximately 1.5 feet below the concrete surface. The axes of the four USTs lie in a northeast-southwest orientation and are easily identified by the visible UST vent/fill/valve covers. The image from GPR survey line Y=180 showing the response of the four USTs, is presented in **Figure 4**. The high amplitude GPR reflections that are in response to the active USTs suggest a metallic composition.

The remaining EM61 anomalies shown in Figures 2 and 3 are probably in response to known surface objects, structures or equipment. Excluding the known and active four metallic USTs centered near grid coordinates X=150 Y=175, the geophysical investigation suggests the surveyed portion of the Rhesa R. Tull property and the front portion of the adjacent used car lot do not contain unknown, metallic USTs.

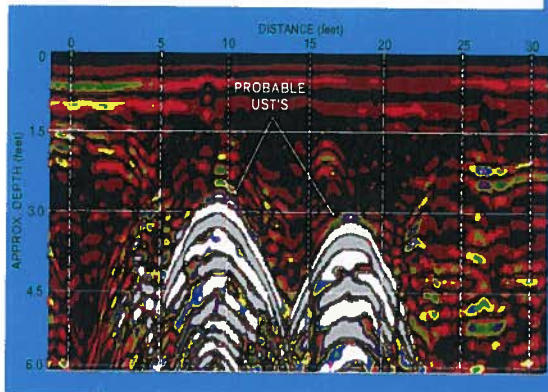
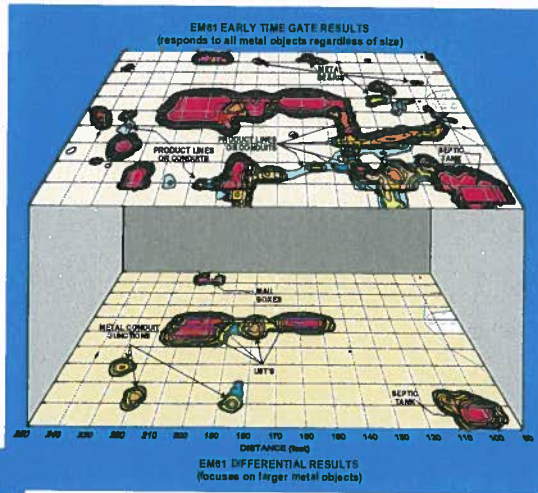
#### **4.0 SUMMARY & CONCLUSIONS**

Our evaluation of the EM61 and GPR data collected across the Rhesa R. Tull, et al property (Parcel 107) located in Charlotte, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the surveyed portions of the site.
- The linear EM61 bottom coil anomalies intersecting grid coordinates X=190 Y=320, X=120 Y=295, X=150 Y=280, X=210 Y=200, X=210 Y=295, and X=260 Y=252 are probably in response to buried lines or conduits.
- GPR data suggest that the high amplitude, EM61 bottom coil anomalies (contours shaded in red) or negative EM61 differential anomalies (contours shaded in green) centered near grid coordinates X=90 Y=270, X=100 Y=170, X=135 Y=230, and X=190 Y=240 are probably in response to steel reinforced concrete, pump islands, buildings, dumpster, and/or miscellaneous buried conduits.
- GPR data acquired across the concrete UST pad centered near grid coordinates X=150 Y=175, confirms the presence of the four active USTs buried approximately 1.5 feet below the concrete surface. The axes of the four USTs lie in a northeast-southwest orientation and are easily identified by the visible UST vent/fill/valve covers.
- Excluding the known and active four metallic USTs centered near grid coordinates X=150 Y=175, the geophysical investigation suggests the surveyed portion of the Rhesa R. Tull property and the front portion of the adjacent used car lot do not contain unknown, metallic USTs.

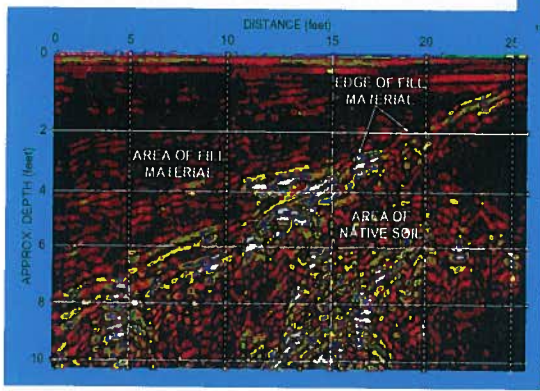
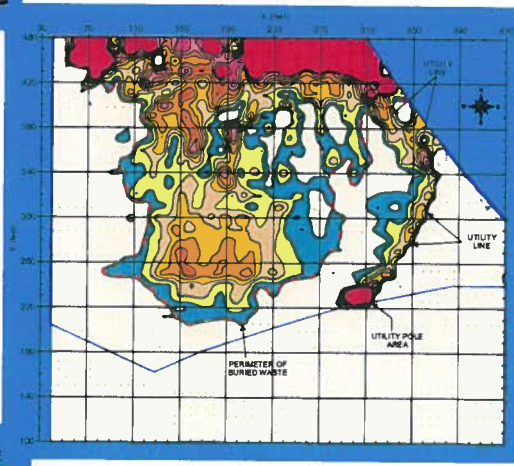
## **5.0 LIMITATIONS**

EM61 and GPR surveys have been performed and this report prepared for Kleinfelder in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR are non-unique and may not represent actual subsurface conditions. Excluding the active (known) USTs, the EM61 and GPR results obtained for this project have not conclusively determined that the site does not contain unknown, buried metallic USTs, but that none were detected.



**FIGURES**  
(on the following pages)

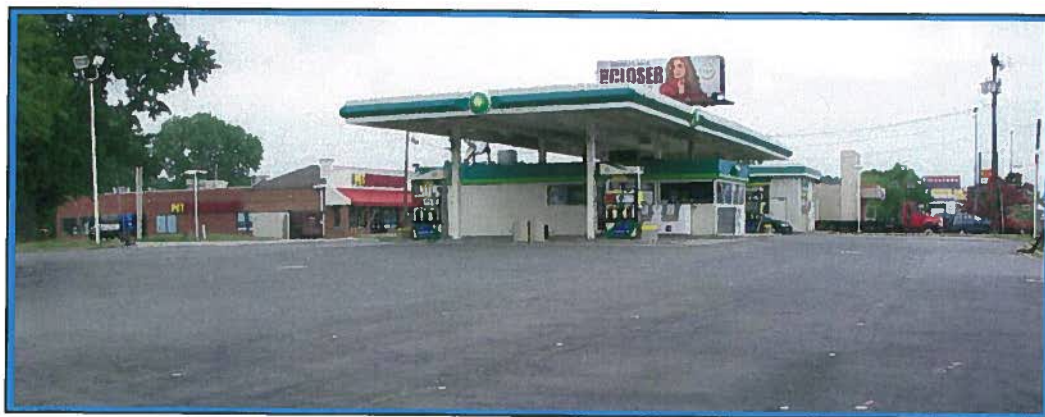
Figures shown on this page are for esthetic purposes only and are not related to the geophysical results discussed in this report.



The photograph shows the Geonics EM61 metal detector that was used to conduct the metal detection survey across Parcel 107 on June 23, 2010.



The photographs show the SIR-2000 GPR system equipped with a 400 MHz antenna that were used to conduct the ground penetrating radar investigation at Parcel 107 on July 1, 2010.

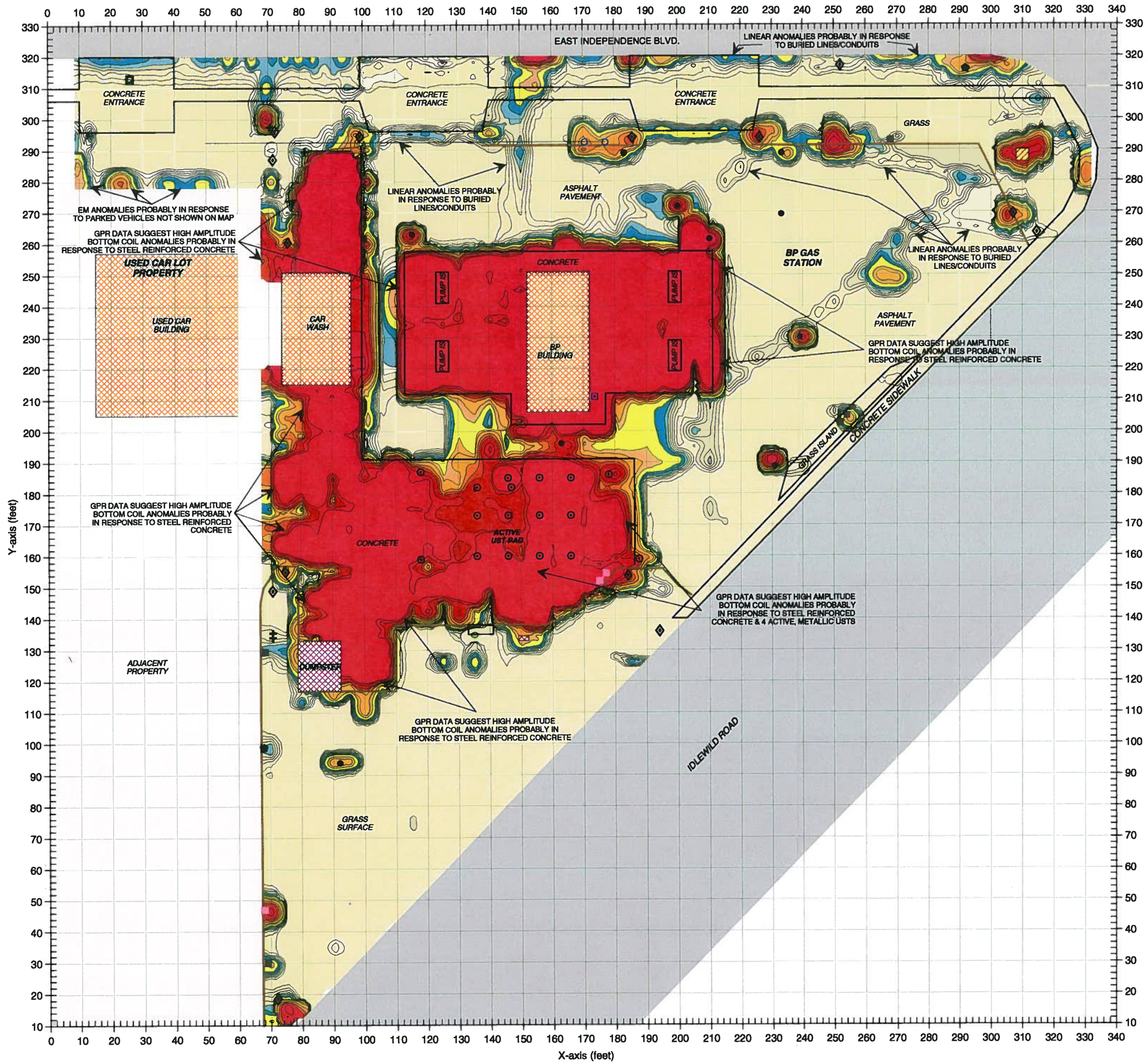


The photograph shows the southeastern portion of the Rhessa R. Tull property (Parcel 107) located at the intersection of Independence Boulevard and Idlewild Road in Charlotte, North Carolina. The photograph is viewed in a northwesterly direction.



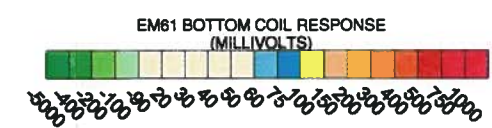
CLIENT	KLEINFELDER		DATE	08/06/10	BY	MJD
PROJECT	RHESA R. TULL, ET AL PROPERTY (PARCEL 107)		DATE		BY	
CITY	CHARLOTTE	STATE	NORTH CAROLINA	DATE		
TITLE	GEOPHYSICAL RESULTS		NO.	2010-153	DATE	

GEOPHYSICAL EQUIPMENT & SITE PHOTOGRAPHS



**LEGEND**

- SURVEY AREA: EM61 DATA ACQUIRED ALONG X-AXIS OR Y-AXIS TRENDING LINES SPACED 5 FEET APART
- BUILDING
- AIR VAC PUMP AREA
- BUSINESS SIGN
- CONCRETE ABUTMENT
- CONCRETE CURBING
- DUMPSTER
- GUY WIRE
- MONITORING WELL
- MANHOLE COVER
- PVC VENT PIPE
- ROAD SIGN
- TELEPHONE
- UTILITY LINE BOX
- UTILITY OR LAMP POLE
- WATER METER BOX
- UST VALVE COVER
- UST VENT PIPE



The contour plot shows the bottom coil (most sensitive) response of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The EM metal detection data were collected on June 23, 2010 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were acquired on July 1, 2010 using a Geophysical Survey Systems SIR 2000 instrument with a 400 MHz antenna.

The geophysical investigation detected the active (known) USTs but did not detect additional, unknown metallic USTs within the surveyed portion of the site.

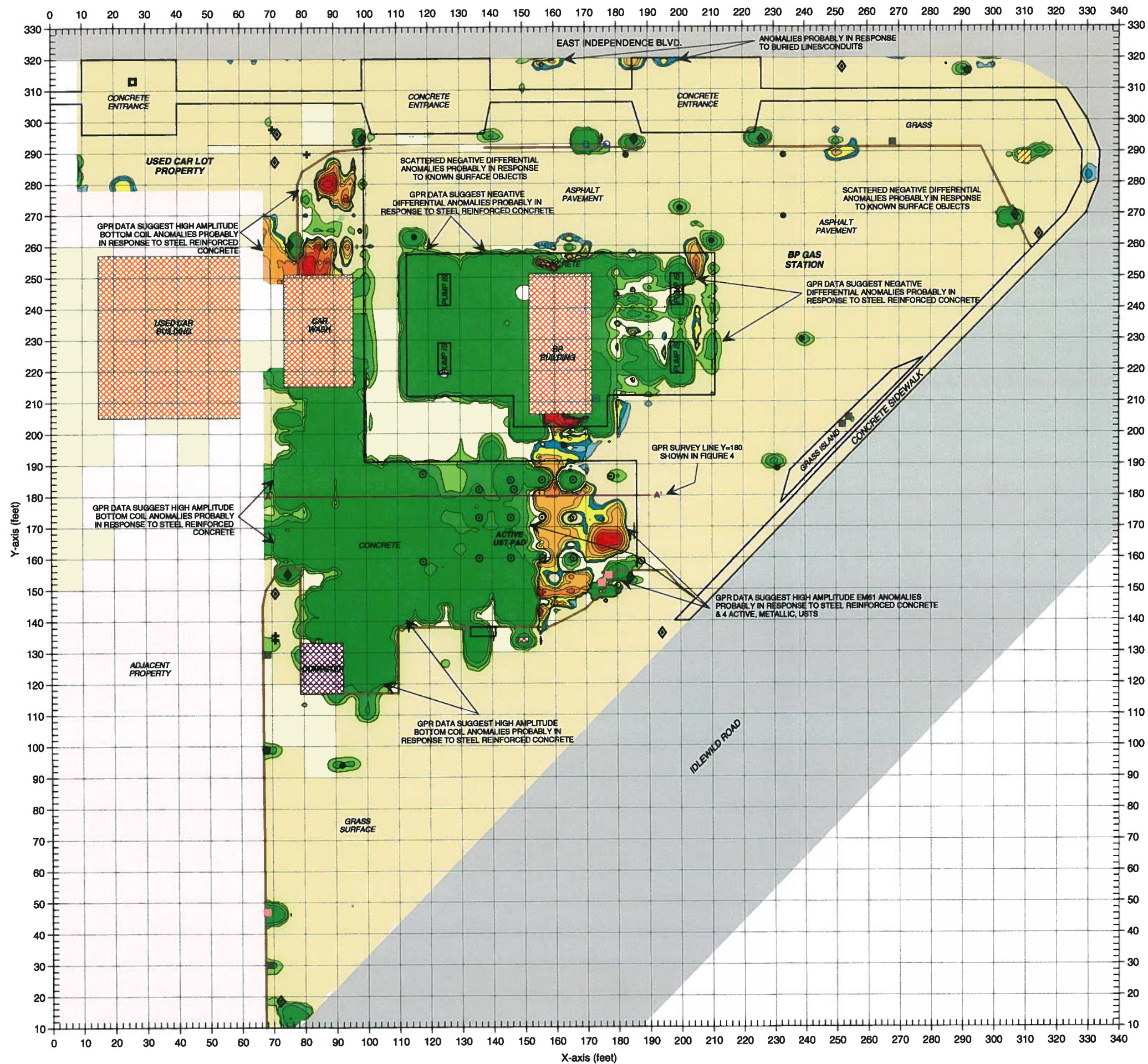
**EM61 METAL DETECTION (BOTTOM COIL RESULTS)**

FIGURE 2

PROJECT	MJD	DATE	LVA	DNG	LNC
KLEINFELDER	07/12/10	07/12/10	107	107	153
CLIENT			SITE		
RHESA R. TULL, ET AL PROPERTY (PARCEL 107)			NORTH CAROLINA		
CHARLOTTE			GEOPHYSICAL RESULTS		

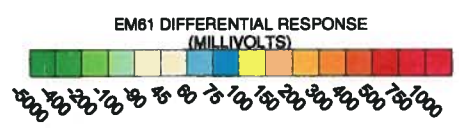
**PYRAMID**  
ENVIRONMENTAL & ENGINEERING, P.C.





**LEGEND**

- SURVEY AREA: EM61 DATA ACQUIRED ALONG X-AXIS OR Y-AXIS TRENDING LINES SPACED 5 FEET APART
- BUILDING
- AIR VAC PUMP AREA
- BUSINESS SIGN
- CONCRETE ABUTMENT
- CONCRETE CURBING
- DUMPSTER
- + GUY WIRE
- MONITORING WELL
- MANHOLE COVER
- PVC VENT PIPE
- ROAD SIGN
- TELEPHONE
- UTILITY LINE BOX
- ♦ UTILITY OR LAMP POLE
- WATER METER BOX
- UST VALVE COVER
- UST VENT PIPE



Note: The contour plot shows the differential response between the bottom and top coils of the EM61 instrument in millivolts (mV). The differential response focuses on larger, buried metallic objects such as drums and USTs and ignores smaller misc. buried, metal debris. The EM metal detection data were collected on June 23, 2010 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were acquired on July 1, 2010 using a Geophysical Survey Systems SIR 2000 instrument with a 400 MHz antenna.

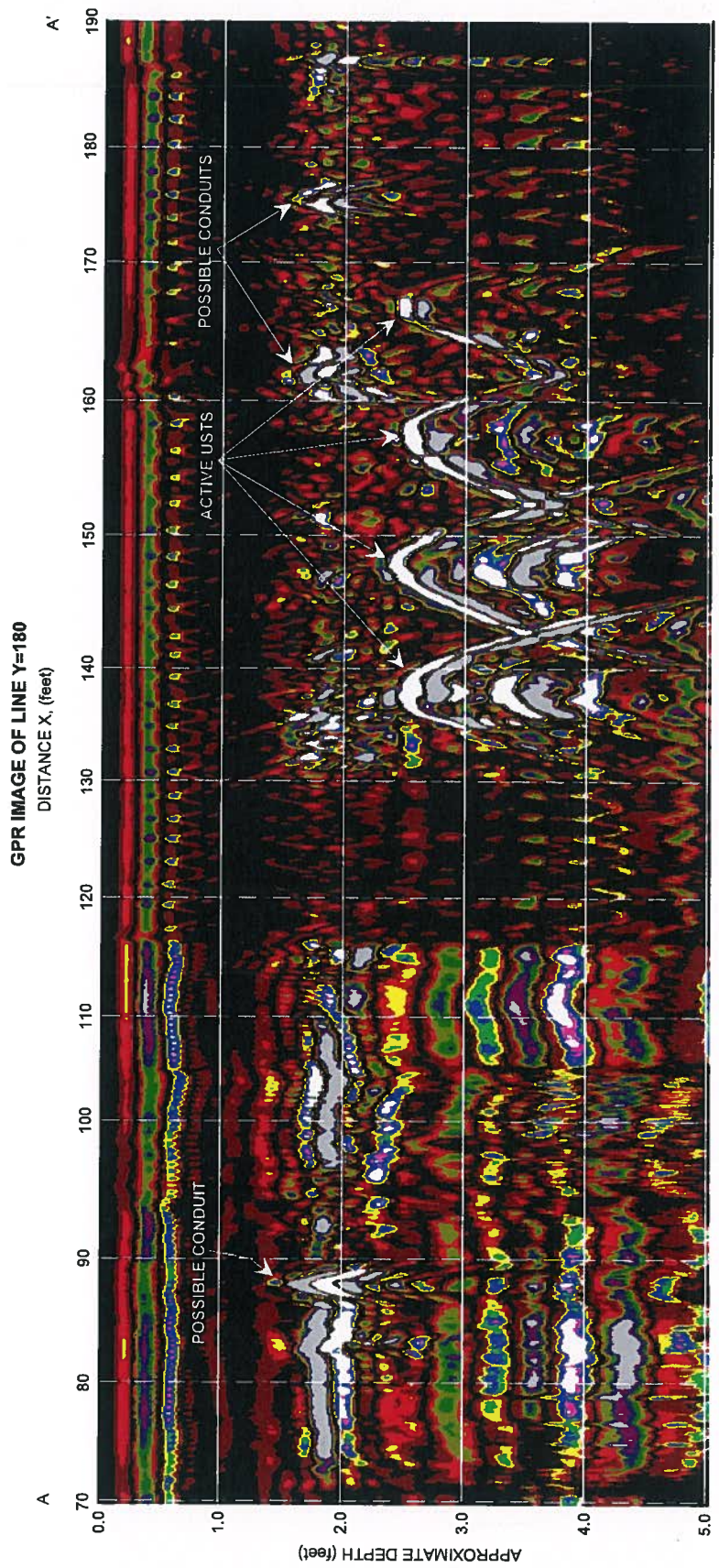
The geophysical investigation detected the active (known) USTs but did not detect additional, unknown metallic USTs within the surveyed portion of the site.

**EM61 METAL DETECTION (DIFFERENTIAL RESULTS)**

FIGURE 3

CLIENT	KLEINFELDER	DATE	08/06/10	DRAWN	MJD	FIGURE	2010-150
SITE	RHESA R. TULL, ET AL PROPERTY (PARCEL 107)	CITY	NORTH CAROLINA	TITLE	GEOPHYSICAL RESULTS		

**PYRAMID**  
ENVIRONMENTAL & ENGINEERING, P.C.



The image of GPR survey line Y=180 recorded four high amplitude, hyperbolic anomalies (reflections shaded in white) from grid line X=134 to grid line X=170 that are probably in response to the four active USTs buried approximately 1.5 feet below the concrete surface. The high amplitude responses suggest the USTs are metallic. The smaller and shallower higher amplitude GPR anomalies located near grid lines X=88, X=163 and X=176 are probably in response to buried conduits or lines. The solid purple line labeled AA' in Figure 3 represents the location of GPR survey line Y=180.



CLIENT	KLEINFELDER		DATE	08/04/10	BY	MJD
PROJECT	RHESA R. TULL, ET AL PROPERTY (PARCEL 107)		LOC		CONTR	
CITY	CHARLOTTE	STATE	NORTH CAROLINA	ENGR		
TITLE	GEOPHYSICAL RESULTS		NO	2010-153	REV	

IMAGE OF GPR SURVEY LINE Y=180

**APPENDIX C**

Client NCDOT

Drill Contractor Probe Technology

# LOG OF BORING B-1

SHEET 1 OF 1

Project Name U-0209B

Drill Method 2 inch Direct Push

Elevation --

Number 111989

Drilling Started 7/14/10 Ended 7/14/10

Total Depth 12.0

Location Parcel 107-BP Station

Logged By T. Stewart

Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
			3.2			Yellowish Brown, Red Brown, Silty Lean CLAY, Dry, Petroleum Odor	
			5.8				5
5			32.6	CL			
			23.6				
10	SS		73.2				10
						Boring Terminated at 12 feet in RESIDUAL	
15							15
20							20
25							25
30							30

LOG A EWN05 111989.GPJ LOG A EWN05.GDT 8/6/10



Kleinfelder  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-1 collected from 10-12 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

Client NCDOT

Drill Contractor Probe Technology

# LOG OF BORING B-2

SHEET 1 OF 1

Project Name U-0209B

Drill Method 2 inch Direct Push

Elevation -

Number 111989

Drilling Started 7/14/10 Ended 7/14/10

Total Depth 12.0

Location Parcel 107-BP Station

Logged By T. Stewart

Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
			43.4		CL	Red Brown, Yellow, Lean CLAY, Dry, Petroleum Odor	
			40.5				
5			52.1				
			126				
10	SS		6.2				10
						Boring Terminated at 12 feet in RESIDUAL	
15							15
20							20
25							25
30							30

LOG A EWNN05 111989.GPJ LOG A EWNN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-2 collected from 7.5-10 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

# LOG OF BORING B-3

SHEET 1 OF 1

Client NCDOT

Drill Contractor Probe Technology

Project Name U-0209B

Drill Method 2 inch Direct Push

Elevation —

Number 111989

Drilling Started 7/14/10 Ended 7/14/10

Total Depth 12.0

Location Parcel 107-BP Station

Logged By T. Stewart

Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
0						Red Brown, Yellowish Brown, Lean CLAY, Dry, Petroleum Odor	0
2.0							2.0
1.4							1.4
5				CL			5
1.8							1.8
2.6							2.6
10	SS						10
10.2							10.2
Boring Terminated at 12 feet in RESIDUAL							
15							15
20							20
25							25
30							30

LOG A EWN05 111989.GPJ LOG A EWN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-3 collected from 10-12 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart

**LOG OF BORING B-4**

SHEET 1 OF 1

Elevation --  
 Total Depth 12.0  
 Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
11.6						Red Brown, Yellowish Brown, Lean CLAY, Hard, Dry, Petroleum Odor	
4.4							
22.6				CL			
71.6							
145	SS						
Boring Terminated at 12 feet in RESIDUAL							

LOG A EWINN05 111989.GPJ LOG A EWINN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-4 collected from 10-12 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart

**LOG OF BORING B-5**

SHEET 1 OF 1

Elevation --  
 Total Depth 12.0  
 Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
5.0	SS					Gray, Dark Yellowish Brown, Lean CLAY, Hard, Dry, Petroleum Odor	5.0
5.0			50.8	CL			
5.0			1337				
5.0			110	CL		Gray, Brown, Lean CLAY, Hard, Moist, Petroleum Odor	5.0
10.0			28.1	SM		Brown, Fine SAND, Dry, Petroleum Odor	10.0
10.0			1073	CL		Red Brown, Yellowish Brown, Lean CLAY, Soft, Dry, Petroleum Odor	10.0
Boring Terminated at 12 feet in RESIDUAL							

LOG A EWINN05 111989.GPJ LOG A EWINN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-5 collected from 2.5-5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.



Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart

**LOG OF BORING B-6**

SHEET 1 OF 1

Elevation —  
 Total Depth 12.0  
 Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET	
			24.7		LITHOLOGY	Red Brown, Yellowish Brown, Lean CLAY, Hard, Dry, Petroleum Odor		
			44.8	CL				
5			81.8					5
			53.9	CL			Red Brown, Yellow Brown, Light Yellow, Sandy Lean CLAY, Dry, Petroleum Odor	
10	SS		1883	CL		Red Brown, Tan, Lean CLAY, Soft, Dry, Petroleum Odor	10	
						Boring Terminated at 12 feet in RESIDUAL		
15							15	
20							20	
25							25	
30							30	

LOG A EWN05 111989.GPJ LOG A EWN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-6 collected from 10-12 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.


Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart

**LOG OF BORING B-7**

SHEET 1 OF 1

Elevation             
 Total Depth 5.0  
 Depth To Water           

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
0 - 2.5	SS		10.5	CL		Red Brown, Yellowish Brown, Lean CLAY, Hard, Dry, Petroleum Odor	0 - 2.5
2.5 - 5.0			4.4				2.5 - 5.0
Boring Terminated at 5 feet in RESIDUAL							5
5 - 10							5 - 10
10 - 15							10 - 15
15 - 20							15 - 20
20 - 25							20 - 25
25 - 30							25 - 30
30 - 35							30 - 35

LOG A EWN05 111989.GPJ LOG A EWN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-7 collected from 0-2.5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

Client NCDOT

Drill Contractor Probe Technology

# LOG OF BORING B-8

SHEET 1 OF 1

Project Name U-0209B

Drill Method 2 inch Direct Push

Elevation --

Number 111989


Drilling Started 7/14/10 Ended 7/14/10

Total Depth 5.0

Location Parcel 107-BP Station

Logged By T. Stewart

Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
0	SS		3.1	CL		Red Brown, Yellowish Brown, Lean CLAY, Hard, Dry, Petroleum Odor	0
5			2.0			Boring Terminated at 5 feet in RESIDUAL	5
10							10
15							15
20							20
25							25
30							30

LOG A EWIN05 111989.GPJ LOG A EWIN05.GDT 8/6/10



Kleinfelder  
313 Gallimore Dairy Road  
Greensboro, NC 27409  
Telephone: 336-668-0093  
Fax: 336-668-3868

Remarks Sample B-8 collected from 0-2.5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart


**LOG OF BORING B-9**

SHEET 1 OF 1

Elevation —  
 Total Depth 5.0  
 Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
			1.4			Red Brown, Yellowish Brown, Lean CLAY, Hard, Dry, No Odor	
	SS		1.6	CL			
5						Boring Terminated at 5 feet in RESIDUAL	5
10							10
15							15
20							20
25							25
30							30

LOG A EWINN05 111989.GPJ LOG A EWINN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-9 collected from 2.5-5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.



Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart

**LOG OF BORING B-10**

SHEET 1 OF 1

Elevation --  
 Total Depth 10.0  
 Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
			1.6	CL		Red Brown, Lean CLAY, Soft, Dry, No Odor	
			1.0			Light Red Brown, Light Yellowish Brown, Sandy Lean CLAY, Soft, Dry, No Odor	
5			1.6	CL			5
	SS		1.6				
10						Boring Terminated at 10 feet in RESIDUAL	10
15							15
20							20
25							25
30							30

LOG A EWINN05 111989.GPJ LOG A EWINN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-10 collected from 7.5-10 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart


**LOG OF BORING B-11**

SHEET 1 OF 1

Elevation --  
 Total Depth 10.0  
 Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
1.4				CL	[Hatched Box]	Red Brown, Yellowish Brown, Lean CLAY, Hard, Dry, No Odor	
0.9				CL			
5.0	SS			CL	[Hatched Box]	Red Brown, Light Yellowish Brown, White, Lean CLAY, Soft, Dry, No Odor	5
1.5				CL			
1.2						Boring Terminated at 10 feet in RESIDUAL	10

LOG A EWINN05 111989.GPJ LOG A EWINN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-11 collected from 5-7.5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart

**LOG OF BORING B-12**  
 SHEET 1 OF 1

Elevation —  
 Total Depth 10.0  
 Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
1.6						Light Red Brown, Light Yellowish Brown, Lean CLAY, Hard, Dry, No Odor	
1.1				CL			
1.3							
1.8	SS						
Boring Terminated at 10 feet in RESIDUAL							

LOG A EWN05 111989.GPJ LOG A EWN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-12 collected from 7.5-10 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart

**LOG OF BORING B-13**

SHEET 1 OF 1

Elevation --  
 Total Depth 10.0  
 Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
1.8						Red Brown, Yellowish Brown, Lean CLAY, Hard, Dry, No Odor	
2.5	SS			CL			
1.1							
1.1							
Boring Terminated at 10 feet in RESIDUAL							

LOG A EWN05 111989.GPJ LOG A EWN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-13 collected from 2.5-5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.




Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart

**LOG OF BORING B-14**

SHEET 1 OF 1

Elevation --  
 Total Depth 5.0  
 Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
			6.0	CL		Dark Reddish Brown, Brown, Lean CLAY, Hard, Dry, Petroleum Odor	
5	SS	12.8					
						Boring Terminated at 5 feet in RESIDUAL	5
10							10
15							15
20							20
25							25
30							30

LOG A EWNN05 111989.GPJ LOG A EWNN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-14 collected from 2.5-5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart

**LOG OF BORING B-15**

SHEET 1 OF 1

Elevation --  
 Total Depth 5.0  
 Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
1.8						Red Brown, Lean CLAY, Hard, Dry, Petroleum Odor	
2.5	SS			CL			
5						Boring Terminated at 5 feet in RESIDUAL	5
10							10
15							15
20							20
25							25
30							30

LOG A EWNN05 111989.GPJ LOG A EWNN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-15 collected from 2.5-5 ft. submitted for laboratory analysis.


See key sheet for symbols and abbreviations used above.

Client NCDOT  
 Project Name U-0209B  
 Number 111989  
 Location Parcel 107-BP Station

Drill Contractor Probe Technology  
 Drill Method 2 inch Direct Push  
 Drilling Started 7/14/10 Ended 7/14/10  
 Logged By T. Stewart

**LOG OF BORING B-16**  
 SHEET 1 OF 1

Elevation --  
 Total Depth 5.0  
 Depth To Water

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
			3.4	CL		Red Brown, Lean CLAY, Hard, Dry, Petroleum Odor	
5	SS		9.2				
Boring Terminated at 5 feet in RESIDUAL							5
10							10
15							15
20							20
25							25
30							30

LOG A EWN05 111989.GPJ LOG A EWN05.GDT 8/6/10



**Kleinfelder**  
 313 Gallimore Dairy Road  
 Greensboro, NC 27409  
 Telephone: 336-668-0093  
 Fax: 336-668-3868

Remarks Sample B-16 collected from 2.5-5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

## **APPENDIX D**



Full-Service Analytical &  
Environmental Solutions

NC Certification No. 402  
SC Certification No. 99012  
NC Drinking Water Cert No. 37735

## Case Narrative

07/28/2010

Kleinfelder SE, Inc. (NCDOT Project)  
John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Lab Submittal Date: 07/14/2010  
Prism Work Order: 0070410

This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

Please call if you have any questions relating to this analytical report.

Respectfully,

**PRISM LABORATORIES, INC.**

VP Laboratory Services

Reviewed By

### Data Qualifiers Key Reference:

- A Surrogate recovered outside established QC range.
- Aa Surrogate was diluted out.
- BRL Below Reporting Limit
- MDL Method Detection Limit
- RPD Relative Percent Difference
- \* Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and reporting limit indicated with a J.

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449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543  
Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409



# Sample Receipt Summary

07/28/2010

Prism Work Order: 0070410

Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
B-1 (10-12)	0070410-01	Solid	07/14/10	07/14/10
B-2 (7.5-10)	0070410-02	Solid	07/14/10	07/14/10
B-3 (10-12)	0070410-03	Solid	07/14/10	07/14/10
B-4 (10-12)	0070410-04	Solid	07/14/10	07/14/10
B-5 (2.5-5)	0070410-05	Solid	07/14/10	07/14/10
B-6 (10-12)	0070410-06	Solid	07/14/10	07/14/10
B-7 (0-2.5)	0070410-07	Solid	07/14/10	07/14/10
B-8 (0-2.5)	0070410-08	Solid	07/14/10	07/14/10
B-9 (2.5-5)	0070410-09	Solid	07/14/10	07/14/10
B-10 (7.5-10)	0070410-10	Solid	07/14/10	07/14/10
B-11 (5-7.5)	0070410-11	Solid	07/14/10	07/14/10
B-12 (7.5-10)	0070410-12	Solid	07/14/10	07/14/10
B-13 (2.5-5)	0070410-13	Solid	07/14/10	07/14/10
B-14 (2.5-5)	0070410-14	Solid	07/14/10	07/14/10
B-15 (2.5-5)	0070410-15	Solid	07/14/10	07/14/10
B-16 (2.5-5)	0070410-16	Solid	07/14/10	07/14/10

Samples received in good condition at 19.2 degrees C unless otherwise noted.



Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-1 (10-12)  
Prism Sample ID: 0070410-01  
Prism Work Order: 0070410  
Time Collected: 07/14/10 08:18  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	10	2.0	1	*8015C	7/23/10 15:21	GRR	P0G0458
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			83 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	8.9	1.2	50	*8015C	7/22/10 20:03	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			104 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	57.7	% by Weight	0.100	0.100	1	*SM2540 G	7/19/10 14:40	JAB	P0G0356



Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-2 (7.5-10)  
Prism Sample ID: 0070410-02  
Prism Work Order: 0070410  
Time Collected: 07/14/10 08:26  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	25	mg/kg dry	8.8	1.4	1	*8015C	7/23/10 22:28	GRR	P0G0458
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			91 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	5.8	0.76	50	*8015C	7/22/10 20:35	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			118 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	79.4	% by Weight	0.100	0.100	1	*SM2540 G	7/19/10 14:40	JAB	P0G0356





Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-3 (10-12)  
Prism Sample ID: 0070410-03  
Prism Work Order: 0070410  
Time Collected: 07/14/10 08:41  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.6	1.5	1	*8015C	7/23/10 15:57	GRR	P0G0458
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			89 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	6.6	0.86	50	*8015C	7/22/10 21:07	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			115 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	72.8	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388

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Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-4 (10-12)  
Prism Sample ID: 0070410-04  
Prism Work Order: 0070410  
Time Collected: 07/14/10 09:00  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	11	1.8	1	*8015C	7/23/10 16:33	GRR	P0G0458
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			88 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	52	mg/kg dry	7.4	0.97	50	*8015C	7/22/10 21:38	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			106 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	62.5	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388



Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-5 (2.5-5)  
Prism Sample ID: 0070410-05  
Prism Work Order: 0070410  
Time Collected: 07/14/10 09:30  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	660	mg/kg dry	150	25	20	*8015C	7/23/10 23:03	GRR	P0G0458
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			0 %		49-124	Aa
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	1000	mg/kg dry	64	8.3	500	*8015C	7/23/10 4:59	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			0 %		55-129	Aa
<b>General Chemistry Parameters</b>									
% Solids	90.3	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388

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Kleinfelder SE, Inc. (NCDOT Project)
Attn: John Stewart
313 Gallimore Dairy Rd.
Greensboro, NC 27409

Project: NCDOT Parcel #107BP
Project No.: WBS# 34749.1.1
Sample Matrix: Solid

Client Sample ID: B-6 (10-12)
Prism Sample ID: 0070410-06
Prism Work Order: 0070410
Time Collected: 07/14/10 09:56
Time Submitted: 07/14/10 16:05

Table with 10 columns: Parameter, Result, Units, Report Limit, MDL, Dilution Factor, Method, Analysis Date/Time, Analyst, Batch ID. Rows include Diesel Range Organics by GC/FID, Gasoline Range Organics by GC/FID, and General Chemistry Parameters.

Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-7 (0-2.5)  
Prism Sample ID: 0070410-07  
Prism Work Order: 0070410  
Time Collected: 07/14/10 10:03  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.4	1.5	1	*8015C	7/23/10 17:44	GRR	P0G0458
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			80 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	7.0	0.91	50	*8015C	7/22/10 22:10	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			86 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	74.4	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388

Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-8 (0-2.5)  
Prism Sample ID: 0070410-08  
Prism Work Order: 0070410  
Time Collected: 07/14/10 10:22  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.3	1.5	1	*8015C	7/23/10 20:41	GRR	P0G0458
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			79 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	5.1	0.67	50	*8015C	7/22/10 22:41	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			96 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	75.5	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388

Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-9 (2.5-5)  
Prism Sample ID: 0070410-09  
Prism Work Order: 0070410  
Time Collected: 07/14/10 10:25  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.2	1.5	1	*8015C	7/23/10 21:17	GRR	P0G0458
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			84 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	6.8	0.88	50	*8015C	7/22/10 23:13	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			90 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	75.6	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388



Kleinfelder SE, Inc. (NCDOT Project)  
 Attn: John Stewart  
 313 Gallimore Dairy Rd.  
 Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
 Project No.: WBS# 34749.1.1  
 Sample Matrix: Solid

Client Sample ID: B-10 (7.5-10)  
 Prism Sample ID: 0070410-10  
 Prism Work Order: 0070410  
 Time Collected: 07/14/10 10:40  
 Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.4	1.5	1	*8015C	7/23/10 17:08	GRR	P0G0458
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			85 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	9.7	1.3	50	*8015C	7/22/10 23:44	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			99 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	74.1	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388

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Kleinfelder SE, Inc. (NCDOT Project)  
 Attn: John Stewart  
 313 Gallimore Dairy Rd.  
 Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
 Project No.: WBS# 34749.1.1  
 Sample Matrix: Solid

Client Sample ID: B-11 (5-7.5)  
 Prism Sample ID: 0070410-11  
 Prism Work Order: 0070410  
 Time Collected: 07/14/10 10:49  
 Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	10	1.6	1	*8015C	7/24/10 3:46	GRR	P0G0489
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			86 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	5.8	0.76	50	*8015C	7/23/10 0:16	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			118 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	68.4	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388

Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-12 (7.5-10)  
Prism Sample ID: 0070410-12  
Prism Work Order: 0070410  
Time Collected: 07/14/10 10:56  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.8	1.6	1	*8015C	7/24/10 4:22	GRR	P0G0489
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			88 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	5.7	0.74	50	*8015C	7/23/10 0:48	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			114 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	71.7	% by Weight	0.100	0.100	1	*SM2640 G	7/20/10 13:00	JAB	P0G0388

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Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-13 (2.5-5)  
Prism Sample ID: 0070410-13  
Prism Work Order: 0070410  
Time Collected: 07/14/10 12:50  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.2	1.5	1	*8015C	7/24/10 4:57	GRR	P0G0489
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			80 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	5.7	0.74	50	*8015C	7/23/10 1:19	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			124 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	75.7	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388

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Kleinfelder SE, Inc. (NCDOT Project)  
 Attn: John Stewart  
 313 Gallimore Dairy Rd.  
 Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
 Project No.: WBS# 34749.1.1  
 Sample Matrix: Solid

Client Sample ID: B-14 (2.5-5)  
 Prism Sample ID: 0070410-14  
 Prism Work Order: 0070410  
 Time Collected: 07/14/10 13:02  
 Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.6	1.5	1	*8015C	7/24/10 5:33	GRR	P0G0489
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			87 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	7.1	0.92	50	*8015C	7/23/10 1:51	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			85 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	72.7	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388

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Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-15 (2.5-5)  
Prism Sample ID: 0070410-15  
Prism Work Order: 0070410  
Time Collected: 07/14/10 13:05  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.3	1.5	1	*8015C	7/24/10 6:08	GRR	P0G0489
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			82 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	9.2	1.2	50	*8015C	7/23/10 2:22	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			89 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	74.7	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388

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Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No.: WBS# 34749.1.1  
Sample Matrix: Solid

Client Sample ID: B-16 (2.5-5)  
Prism Sample ID: 0070410-16  
Prism Work Order: 0070410  
Time Collected: 07/14/10 13:09  
Time Submitted: 07/14/10 16:05

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.5	1.5	1	*8015C	7/24/10 6:43	GRR	P0G0489
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			82 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	8.5	1.1	50	*8015C	7/23/10 2:53	HPE	P0G0478
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			90 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	73.2	% by Weight	0.100	0.100	1	*SM2540 G	7/20/10 13:00	JAB	P0G0388

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Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No: WBS# 34749.1.1

Prism Work Order: 0070410  
Time Submitted: 7/14/10 4:05:00PM

**Gasoline Range Organics by GC/FID - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P0G0478 - 5035</b>										
<b>Blank (P0G0478-BLK1)</b>				Prepared & Analyzed: 07/22/10						
Gasoline Range Organics	BRL	5.0	mg/kg wet							
Surrogate: a,a,a-Trifluorotoluene	4.45		mg/kg wet	5.00		89	55-129			
<b>LCS (P0G0478-BS1)</b>				Prepared & Analyzed: 07/22/10						
Gasoline Range Organics	41.2	5.0	mg/kg wet	50.0		82	67-116			
Surrogate: a,a,a-Trifluorotoluene	5.10		mg/kg wet	5.00		102	55-129			
<b>LCS Dup (P0G0478-BSD1)</b>				Prepared & Analyzed: 07/22/10						
Gasoline Range Organics	42.2	5.0	mg/kg wet	50.0		84	67-116	3	200	
Surrogate: a,a,a-Trifluorotoluene	5.20		mg/kg wet	5.00		104	55-129			
<b>Matrix Spike (P0G0478-MS1)</b>				Source: 0070410-01		Prepared & Analyzed: 07/22/10				
Gasoline Range Organics	77.7	8.7	mg/kg dry	86.7	5.09	84	57-113			
Surrogate: a,a,a-Trifluorotoluene	8.58		mg/kg dry	8.67		99	55-129			
<b>Matrix Spike Dup (P0G0478-MSD1)</b>				Source: 0070410-01		Prepared & Analyzed: 07/22/10				
Gasoline Range Organics	79.8	8.7	mg/kg dry	86.7	5.09	86	57-113	3	23	
Surrogate: a,a,a-Trifluorotoluene	8.75		mg/kg dry	8.67		101	55-129			



Kleinfelder SE, Inc. (NCDOT Project)  
 Attn: John Stewart  
 313 Gallimore Dairy Rd.  
 Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
 Project No: WBS# 34749.1.1

Prism Work Order: 0070410  
 Time Submitted: 7/14/10 4:05:00PM

**Diesel Range Organics by GC/FID - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P0G0458 - 3545A</b>										
<b>Blank (P0G0458-BLK1)</b> Prepared: 07/01/10 Analyzed: 07/23/10										
Diesel Range Organics	BRL	7.0	mg/kg wet							
Surrogate: o-Terphenyl	1.38		mg/kg wet	1.60		86	49-124			
<b>LCS (P0G0458-BS1)</b> Prepared: 07/01/10 Analyzed: 07/23/10										
Diesel Range Organics	62.7	7.0	mg/kg wet	79.7		79	55-109			
Surrogate: o-Terphenyl	2.03		mg/kg wet	1.59		127	49-124			A
<b>LCS Dup (P0G0458-BSD1)</b> Prepared: 07/01/10 Analyzed: 07/23/10										
Diesel Range Organics	59.5	7.0	mg/kg wet	79.7		75	55-109	5	200	
Surrogate: o-Terphenyl	1.79		mg/kg wet	1.59		113	49-124			
<b>Batch P0G0489 - 3545A</b>										
<b>Blank (P0G0489-BLK1)</b> Prepared: 07/22/10 Analyzed: 07/24/10										
Diesel Range Organics	BRL	7.0	mg/kg wet							
Surrogate: o-Terphenyl	1.37		mg/kg wet	1.60		86	49-124			
<b>LCS (P0G0489-BS1)</b> Prepared: 07/22/10 Analyzed: 07/24/10										
Diesel Range Organics	66.9	7.0	mg/kg wet	80.0		84	55-109			
Surrogate: o-Terphenyl	1.47		mg/kg wet	1.60		92	49-124			
<b>LCS Dup (P0G0489-BSD1)</b> Prepared: 07/22/10 Analyzed: 07/24/10										
Diesel Range Organics	73.2	7.0	mg/kg wet	79.8		92	55-109	9	200	
Surrogate: o-Terphenyl	1.99		mg/kg wet	1.60		125	49-124			A
<b>Matrix Spike (P0G0489-MS1)</b> Source: 0070410-11 Prepared: 07/22/10 Analyzed: 07/24/10										
Diesel Range Organics	90.8	10	mg/kg dry	116	BRL	78	50-117			
Surrogate: o-Terphenyl	2.72		mg/kg dry	2.33		117	49-124			

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Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No: WBS# 34749.1.1

Prism Work Order: 0070410  
Time Submitted: 7/14/10 4:05:00PM

**Diesel Range Organics by GC/FID - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch P0G0489 - 3545A**

**Matrix Spike Dup (P0G0489-MSD1)**

Source: 0070410-11

Prepared: 07/22/10

Analyzed: 07/24/10

Diesel Range Organics	87.8	10	mg/kg dry	116	BRL	75	50-117	3	24	
Surrogate: <i>o</i> -Terphenyl	2.63		mg/kg dry	2.33		113	49-124			

Kleinfelder SE, Inc. (NCDOT Project)  
Attn: John Stewart  
313 Gallimore Dairy Rd.  
Greensboro, NC 27409

Project: NCDOT Parcel #107BP  
Project No: WBS# 34749.1.1

Prism Work Order: 0070410  
Time Submitted: 7/14/10 4:05:00PM

**General Chemistry Parameters - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P0G0388 - NO PREP</b>										
<b>Duplicate (P0G0388-DUP1)</b>		<b>Source: 0070410-11</b>			<b>Prepared &amp; Analyzed: 07/20/10</b>					
% Solids	68.0	0.100	% by Weight		68.4			0.6	20	

**Sample Extraction Data**

**Prep Method: 3545A**

Lab Number	Batch	Initial	Final	Date
0070410-01	P0G0458	25.01 g	1 mL	07/21/10
0070410-02	P0G0458	25.08 g	1 mL	07/21/10
0070410-03	P0G0458	25.06 g	1 mL	07/21/10
0070410-04	P0G0458	25 g	1 mL	07/21/10
0070410-05	P0G0458	25.13 g	1 mL	07/21/10
0070410-06	P0G0458	24.99 g	1 mL	07/21/10
0070410-07	P0G0458	25.1 g	1 mL	07/21/10
0070410-08	P0G0458	25 g	1 mL	07/21/10
0070410-09	P0G0458	25.05 g	1 mL	07/21/10
0070410-10	P0G0458	25.02 g	1 mL	07/21/10
0070410-11	P0G0489	25.15 g	1 mL	07/22/10
0070410-12	P0G0489	25.03 g	1 mL	07/22/10
0070410-13	P0G0489	25.05 g	1 mL	07/22/10
0070410-14	P0G0489	25.2 g	1 mL	07/22/10
0070410-15	P0G0489	25.18 g	1 mL	07/22/10
0070410-16	P0G0489	25.12 g	1 mL	07/22/10

**Prep Method: 5035**

Lab Number	Batch	Initial	Final	Date
0070410-01	P0G0478	4.85 g	5 mL	07/22/10
0070410-02	P0G0478	5.41 g	5 mL	07/22/10
0070410-03	P0G0478	5.2 g	5 mL	07/22/10
0070410-04	P0G0478	5.38 g	5 mL	07/22/10
0070410-05	P0G0478	4.35 g	5 mL	07/22/10
0070410-06	P0G0478	5.89 g	5 mL	07/22/10
0070410-07	P0G0478	4.82 g	5 mL	07/22/10
0070410-08	P0G0478	6.44 g	5 mL	07/22/10
0070410-09	P0G0478	4.88 g	5 mL	07/22/10
0070410-10	P0G0478	3.48 g	5 mL	07/22/10
0070410-11	P0G0478	6.25 g	5 mL	07/22/10
0070410-12	P0G0478	6.09 g	5 mL	07/22/10
0070410-13	P0G0478	5.83 g	5 mL	07/22/10
0070410-14	P0G0478	4.84 g	5 mL	07/22/10
0070410-15	P0G0478	3.63 g	5 mL	07/22/10
0070410-16	P0G0478	4.04 g	5 mL	07/22/10

**NO PREP**

Lab Number	Batch	Initial	Final	Date
0070410-01	P0G0356	30 g	30 mL	07/19/10
0070410-02	P0G0356	30 g	30 mL	07/19/10
0070410-03	P0G0388	30 g	30 mL	07/20/10
0070410-04	P0G0388	30 g	30 mL	07/20/10
0070410-05	P0G0388	30 g	30 mL	07/20/10
0070410-06	P0G0388	30 g	30 mL	07/20/10
0070410-07	P0G0388	30 g	30 mL	07/20/10
0070410-08	P0G0388	30 g	30 mL	07/20/10
0070410-09	P0G0388	30 g	30 mL	07/20/10
0070410-10	P0G0388	30 g	30 mL	07/20/10
0070410-11	P0G0388	30 g	30 mL	07/20/10
0070410-12	P0G0388	30 g	30 mL	07/20/10
0070410-13	P0G0388	30 g	30 mL	07/20/10
0070410-14	P0G0388	30 g	30 mL	07/20/10
0070410-15	P0G0388	30 g	30 mL	07/20/10
0070410-16	P0G0388	30 g	30 mL	07/20/10

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449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543  
 Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409



Full-Service Analytical & Environmental Solutions

449 Springbrook Road • P.O. Box 240643 • Charlotte, NC 28224-0643  
Phone: 704/523-6364 • Fax: 704/525-0409

Client Company Name: Kleinfelder  
Report To/Contact Name: John Stewart  
Reporting Address: 313 Galimore Dairy Rd. Greensboro, NC

Phone: 336-688-0243 Fax (Yes/No):  
Email (Yes/No) Address: John Stewart@Kleinfelder.com  
EDD Type: PDF  Excel  Other   
Site Location Name: Parcel 107BP  
Site Location Physical Address: Cher 104, NC

# CHAIN OF CUSTODY RECORD

PAGE 1 OF 3 QUOTE # TO ENSURE PROPER BILLING:

Project Name: NC DOT Parcel # 107BP  
Short Hold Analysis: (Yes) (No)  (Yes) (No)   
\*Please ATTACH any project specific reporting (QC LEVEL I III IIII IV) provisions and/or QC Requirements  
Invoice To: John Stewart  
Address: (SAME)

Purchase Order No./Billing Reference: 111989  
Requested Due Date  1 Day  2 Days  3 Days  5 Days  
"Working Days"  6-9 Days  Standard 10 days  Rush Work Must Be Pre-Approved  
Samples received after 15:00 will be processed next business day.  
Turnaround time is based on business days, excluding weekends and holidays.  
(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER		PRESERVATIVES	ANALYSES REQUESTED	REMARKS	PRISM LAB ID NO.
				*TYPE SEE BELOW	SIZE				
B-1 (10-12)	7/14/10	0818	SO	4		Methanol	GR0	Sample B-1	01
B-2 (7.5-10)	7-14-10	0826	SO	4		"	DR0	through B-16	02
B-3 (10-12)	7-14-10	0841	SO	4		"		for Parcel 107BP	03
B-4 (10-12)	7-14-10	0900	SO	4		"		on one report	04
B-5 (2.5-5)	7-14-10	0930	SO	4		"			05
B-6 (10-12)	7-14-10	0956	SO	4		"			06
B-7 (0-2.5)	7-14-10	1003	SO	4		"			07
B-8 (0-2.5)	7-14-10	1022	SO	4		"			08
B-9 (2.5-5)	7-14-10	1025	SO	4		"			09
B-10 (7.5-10)	7-14-10	1040	SO	4		"			10

Sampler's Signature: John Stewart Sampled By (Print Name): Tina Stewart Affiliation: Kleinfelder

Upon relinquishing this Chain of Custody to your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

Relinquished By: (Signature) [Signature] Received By: (Signature) [Signature]  
Relinquished By: (Signature) [Signature] Received By: (Signature) [Signature]  
Relinquished By: (Signature) [Signature] Received By: (Signature) [Signature]

Method of Shipment:  Fed Ex  UPS  Hand-delivered  Prism Field Service  Other  
NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.

NPDES:  NC  SC  Other  
UST:  NC  SC  Other  
GROUNDWATER:  NC  SC  Other  
DRINKING WATER:  NC  SC  Other  
SOLID-WASTE:  NC  SC  Other  
RCRA:  NC  SC  Other  
CERCLA:  NC  SC  Other  
LANDFILL:  NC  SC  Other  
OTHER:  NC  SC  Other

\*CONTAINER TYPE CODES: A = Amber C = Clear G = Glass P = Plastic; TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)

LAB USE ONLY  
Samples INTACT upon arrival? YES NO N/A  
Received ON WET ICE? Temp: 192  
PROPER PRESERVATIVES indicated?  
Received WITH IN-FOILING TIMES?  
CUSTODY SEALS INTACT?  
VOLATILES rec'd IN/OUT HEADSPACE?  
PROPER CONTAINERS used?

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL  
Certification: NELAC USACE FL NC  
SC OTHER N/A  
Water Chlorinated: YES NO  
Sample Iced Upon Collection: YES NO

ANALYSES REQUESTED	REMARKS	PRISM LAB ID NO.
GR0	Sample B-1	01
DR0	through B-16	02
	for Parcel 107BP	03
	on one report	04
		05
		06
		07
		08
		09
		10

PRESS DOWN FIRMLY - 3 COPIES  
40

PRISM USE ONLY  
Site Arrival Time:  
Site Departure Time:  
Field Tech Fee:  
Mileage:

Additional Comments:  
WBS # 3A749.1.1

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL



Full-Service Analytical & Environmental Solutions

449 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543  
 Phone: 704/525-6364 • Fax: 704/525-0408

Client Company Name: Kleinfelder  
 Report To/Contact Name: John Stewart  
 Reporting Address: 3136 Almore Drive Rd. Greensboro, NC 27409

Phone: 336-668-0933 Fax (Yes) (No):  
 Email (Yes) (No) Email Address: JStewart@Kleinfelder.com  
 EDD Type: PDF  Excel  Other Kleinfelder.com  
 Site Location Name: Parcel 107BP  
 Site Location Physical Address: Charlotte, NC

# CHAIN OF CUSTODY RECORD

PAGE 2 OF 3 QUOTE # TO ENSURE PROPER BILLING.

Project Name: NC DOT - Parcel 107BP UST Project (Yes) (No)  
 Short Hold Analysis: (Yes) (No)  
 \*Please ATTACH any project specific reporting (QC LEVEL I III III IV) provisions and/or QC Requirements  
 Invoice To: John Stewart  
 Address: Same

Purchase Order No./Billing Reference 111987  
 Requested Due Date  1 Day  2 Days  3 Days  4 Days  5 Days  
 Working Days"  6-9 Days  Standard 10 days  Pre-Approved  
 Samples received after 15:00 will be processed next business day.  
 Turnaround time is based on business days, excluding weekends and holidays.  
 (SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

LAB USE ONLY  
 Samples INTACT upon arrival? YES NO N/A  
 Received ON WET/ICE? Temp AZ  
 PROPER PRESERVATIVES indicated?  
 Received WITHIN HOLDING TIMES?  
 CUSTODY SEALS INTACT?  
 VOLATILES rec'd W/OUT HEADSPACE?  
 PROPER CONTAINERS used?

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL  
 Certification: NELAC USACE FL NC  
 SC OTHER N/A  
 Water Chlorinated: YES NO   
 Sample Iced Upon Collection: YES  NO

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER			PRESERVATIVES	ANALYSES REQUESTED	REMARKS	PRISM LAB ID NO.
				*TYPE SEE BELOW	NO.	SIZE				
B-11 (5-7.5)	7-14-10	1049	SO	4			Methanol	X		11
B-12 (7.5-10)	7-14-10	1056	SO	4			"	X		12
B-13 (2.5-5)	7-14-10	1250	SO	4			"	X		13
B-14 (2.5-5)	7-14-10	1302	SO	4			"	X		14
B-15 (2.5-5)	7-14-10	1305	SO	4			"	X		15
B-16 (2.6-5)	7-14-10	1309	SO	4			"	X		16

Sampled By (Print Name) TINA STEWART Affiliation Kleinfelder

Upon relinquishing this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

Relinquished By (Signature) [Signature] Received By (Signature) [Signature]  
 Relinquished By (Signature) [Signature] Received By (Signature) [Signature]

Relinquished By (Signature) [Signature] Received For Prism Laboratories By: [Signature]  
 Date 7/14/10 Military Hours 16:05  
 Date 7/14/10 Date 7-14-10  
 Date 7-14-10 COC Group No. 0070410

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.  
 Fed Ex  UPS  Hand-delivered  Prism Field Service  Other

NPDES:  NC  SC  NC  SC  NC  SC  NC  SC  
 UST:  NC  SC  NC  SC  NC  SC  NC  SC  
 DRINKING WATER:  NC  SC  NC  SC  
 SOLID WASTE:  NC  SC  NC  SC  
 RCRA:  NC  SC  NC  SC  
 CERCLA:  NC  SC  NC  SC  
 LANDFILL:  NC  SC  NC  SC  
 OTHER:  NC  SC  NC  SC

\*CONTAINER TYPE CODES: A = Amber C = Clear G = Glass P = Plastic; TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)

PRISM USE ONLY  
 Site Arrival Time:  
 Site Departure Time:  
 Field Tech Fee:  
 Mileage:

Additional Comments:

PRESS DOWN FIRMLY - 3 COPIES

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL