PRELIMINARY SITE ASSESSMENT

NC 268 FROM MULTI-LANES EAST OF NC 18
TO SR 1966 (AIRPORT ROAD)
PARCEL 48 AMANDA JOLLY
MODERN AUTO SALES
603 ELKIN HIGHWAY
WILKESBORO, WILKES COUNTY, NORTH CAROLINA

NCDOT WBS ELEMENT 36001.1.2
STATE PROJECT R-2603

July 12, 2013

Prepared for:

Gordon H. Box, L.G.
North Carolina Department of Transportation
Geotechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Prepared by:

Kleinfelder Southeast, Inc.
6200 Harris Technology Blvd.
Charlotte, North Carolina 28269

Kleinfelder Project No. 134245

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July 12, 2013
134245 | CLT13R0323

Gordon H. Box, L.G.
North Carolina Department of Transportation
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Subject: **Preliminary Site Assessment**
WBS Element No. 36001.1.2, State Project R-2603
Parcel 48 Amanda Jolly
Modern Auto Sales
603 Elkin Highway
Wilkesboro, North Carolina

Dear Mr. Box:

Please find the enclosed report summarizing the sampling activities for the preliminary site assessment conducted at the referenced site. Field analysis of nine soil samples collected at the site detected contaminant at concentrations exceeding the state action level. This report summarizes our field activities, field analytical report, conclusions, and recommendations.

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

Sincerely,

KLEINFELDER SOUTHEAST, INC.

Travis L. O'Quinn
Staff Professional I

Craig D. Neil, P.G.
Senior Professional

PRELIMINARY SITE ASSESSMENT

Site Name and Location:	Parcel 48 Amanda Jolly Modern Auto Sales 603 Elkin Highway Wilkesboro, Wilkes County, North Carolina
Latitude and Longitude:	36° 11' 05.53" N, 81° 07' 46.87" W
Facility ID Number:	Not Applicable
NCDOT Project No.:	NCDOT WBS Element 36001.1.2 State Project R-2603
Date of Report:	July 12, 2013
Consultant:	Kleinfelder Southeast, Inc. 6200 Harris Technology Blvd. Charlotte, North Carolina 28269 Attn: Mr. Craig D. Neil Phone: 704.598.1049 X457

Seal and Signature of Certifying Licensed Geologist

I, Craig D. Neil, 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.

NORTH CAROLINA SEAL 1882 GEOLOGIST CRAIG NEIL

July 12, 2013

Craig D. Neil, P.G.
NC License No. 1882

TABLE OF CONTENTS

1.0 INTRODUCTION

Kleinfelder Southeast, Inc. (Kleinfelder) has prepared this Preliminary Site Assessment (PSA) report documenting assessment activities performed at the Parcel 48 Amanda Jolly property located at 603 Elkin Highway in Wilkesboro, Wilkes County, North Carolina (Figure 1). The site is currently developed with the Modern Auto Sales which was a former gas station. This assessment was conducted on behalf of the North Carolina Department of Transportation (NCDOT) in accordance with Kleinfelder's May 3, 2013 proposal.

NCDOT is proposing to widen NC 268 (Elkin Highway) east of NC 18 to SR 1966 (Airport Road). The proposed right-of-way includes a portion of Parcel 48 (Figure 2). Based on information provided by NCDOT, the site was formerly a gas station in the 1950s and it was implied by the current tenant that the underground storage tanks (USTs) were removed. 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 related to the widening of Elkin Highway east of NC 18 to SR 1966 (Airport Road).

1.1 Site Description

The proposed right-of-way includes the construction areas related to the widening of Elkin Highway east of NC 18 to SR 1966. At the time of our site reconnaissance, the site contained an active used car dealership that was formerly a gas station. Based on information provided by NCDOT, the site is a former gasoline station and based on the information provided by the current tenant the USTs have been removed. The geophysical investigation located a probable UST located outside the proposed right-of-way at the southwestern corner of the structure. No unidentified anomalies were located during the geophysical investigation within the proposed right-of-way. Site photographs are shown in Appendix A.

1.2 Site Location

The facility is located at 603 Elkin Highway in Wilkesboro, North Carolina. The property is bound to the north by wooded land, to the east by a commercial building, to the south by Elkin Highway, and to the west by Fairplains Road.

2.0 SITE ASSESSMENT

2.1 Geophysical Investigation

Pyramid Environmental & Engineering, P.C (Pyramid) conducted a geophysical investigation of the property on May 17, 2013. Pyramid utilized ground penetrating radar (GPR) and electromagnetic (EM) induction technology to locate potential geophysical anomalies and potential USTs at the site. The geophysical investigation located a probable UST located outside the proposed right-of-way at the southwestern corner of the structure. The fillport of the UST was observed, however, Pyramid was unable to determine the size of the UST. No unidentified anomalies were located during the geophysical investigation within the proposed right-of-way. A copy of the Pyramid Geophysical Investigation Report is included in Appendix B. concrete vault with a capped pipe was observed north of the onsite structure. Since the vault and pipe were well outside the proposed easement, no further investigation was conducted. A photograph of the vault and pipe is included in Appendix A.

2.2 Soil Sampling

To determine if contaminated soil may be encountered during the proposed construction activities, nine soil samples were collected along the NCDOT proposed easement. Prior to conducting soil borings, utilities were marked by NC One Call and Taylor Wiseman & Taylor (TWT). Kleinfelder met Probe Technology at the site on May 29, 2013. Probe Technology advanced eight soil borings (SS-1 to SS-7 and SS-4-1) by direct push technology (DPT). The approximate location of the borings is shown on Figure 3.

Soil borings were advanced to a depth of ten feet below the ground surface (bgs) at each location and SS-4 was advanced to 45 feet bgs in an effort to find groundwater. SS-4 was drilled to 45 feet bgs and the boring was left open for approximately twenty minutes and water did not enter the boring. Soil boring SS-1 was located on the western portion of the property in the vicinity of the proposed drainage feature. Soil borings SS-2 through SS-7 were located on the southern portion of the property and along the proposed easement. Soil samples were collected by driving a macrocore sampler in five foot intervals in each boring. Each five 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 field analysis. If no organic vapors were detected, the sample collected from the maximum proposed excavation depth and 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 with a pressure washer. The soil samples collected for analysis were analyzed in the field by a QED for total benzene, toluene, ethyl benzene, and xylenes (BTEX); total petroleum hydrocarbons (TPH); TPH diesel range organics (DRO); TPH gasoline range organics (GRO); total Aromatics (C10-C35); 16 EPA PAHs; and benzo(a)pyrene. The soil samples were placed into laboratory provided containers, labeled, and were analyzed by the QED for chemical analysis.

Based on the results of the QED results, Kleinfelder selected soil sample SS-4 for laboratory analysis for TPH-DRO and TPH-GRO using EPA Method 8015B following 3546 and 5035 preparation. All soil samples were placed into laboratory provided jars, labeled, and maintained on ice until delivered to Pace Analytical, a NCDOT contract laboratory, for chemical analysis.

3.0 RESULTS

3.1 Geophysical Investigation

Pyramid concluded that the GPR and EM investigation did not detect metallic USTs within the survey area, however, they did identify a probable UST at the southwestern corner of the structure. No unidentified anomalies were located during the geophysical investigation within the proposed right-of-way. Pyramid's report is included in Appendix B.

3.2 Soil Sampling

TPH-DRO were detected in SS-3 (14.1 milligrams per kilogram (mg/kg)) at 9 to 10 feet below ground surface (bgs), in SS-4 (214 and 534 (laboratory results)mg/kg) at 9 to 10 feet bgs, in SS-4 (150 mg/kg) at 44 to 45 feet bgs, and in SS-5 (12.5 mg/kg) at 4 to 5 feet bgs at concentrations above the North Carolina action level (10 mg/kg). TPH-GRO were also detected in SS-4 (568.5 and 1,830 (laboratory results) mg/kg) at 9 to 10 feet bgs and in SS-4 (1,875 mg/kg) at 44 to 45 feet bgs at concentrations above the North Carolina action level (10 mg/kg). The analytical results are summarized in Table 2. The field analytical report is included in Appendix D. The laboratory analytical report is included in Appendix E.

Based on field analytical results and PID readings, petroleum impacted soils were identified in the vicinity of SS-3, SS-4, and SS-5. Based on the analytical results and PID readings, SS-3, SS-4, and SS-5 contain petroleum impacted from the surface to approximate forty-five feet bgs. Kleinfelder estimates that the contaminated soil in the vicinity SS-3, SS-4, and SS-5 to covers an area approximately 5,000 square feet in size. Based on the future construction plans, the maximum depth of proposed onsite structures is approximately four to five feet bgs. Based on these dimensions Kleinfelder, estimates that there are approximately 185 cubic yards of impacted soil at the site. The approximate area of soil contamination is depicted on Figure 4.

4.0 CONCLUSIONS AND RECOMMENDATION

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

- The GPR and EM investigation did not detect metallic USTs within the survey area. Pyramid did identify a probable UST located outside the proposed right-of-way at the southwestern corner of the structure. The fillport of the UST was observed, however, Pyramid was unable to determine the size of the UST.
- Groundwater was not encountered in the soil borings.
- TPH-DRO was detected above the North Carolina action level in boring SS-3, SS-4, and SS-5. TPH-GRO was detected above the North Carolina action level in boring SS-4.
- Based upon the analytical results, petroleum impacted soil is located in the vicinity of SS-3, SS-4, and SS-5 between the surface and forty-five feet bgs. Based on the future construction plans, the maximum depth of proposed onsite structures is approximately four to five feet bgs.
- Approximately 185 cubic yards of contaminated soil was identified at the site.
- No existing groundwater monitoring wells were observed within the survey area

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

- Kleinfelder recommends that the petroleum impacted soil in the vicinity of SS-3, SS-4, and SS-5 be removed and disposed of at an approved disposal facility prior to the start of construction activities.

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 data evaluated. Kleinfelder makes no guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

The information included on graphic representations in the report has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. These documents are not intended for use as a land survey product, nor are they designed or intended as a construction design document. The use or misuse of the information contained on these graphic representations is at the sole risk of the party using or misusing the information.

TABLES

TABLE 1: SOIL SAMPLE PID RESULTS

SAMPLE LOCATION	DEPTH (feet bgs)	PID READINGS
SS-1	2.0-3.0	3.0
	4.0-5.0	4.8
	7.0-8.0	4.9
	9.0-10.0	5.1
SS-2	2.0-3.0	11.5
	4.0-5.0	15.0
	7.0-8.0	5.7
	9.0-10.0	4.4
SS-3	2.0-3.0	5.9
	4.0-5.0	8.8
	7.0-8.0	11.7
	9.0-10.0	27.6
SS-4	2.0-3.0	25.1
	4.0-5.0	266.4
	7.0-8.0	726.0
	9.0-10.0	**830.6**
	44.0-45.0	830.0
SS-4-1	2.0-3.0	18.2
	4.0-5.0	28.0
	7.0-8.0	68.0
	9.0-10.0	120.0
SS-5	2.0-3.0	12.3
	4.0-5.0	12.5
	7.0-8.0	13.8
	9.0-10.0	20.0
SS-6	2.0-3.0	5.7
	4.0-5.0	12.2
	7.0-8.0	17.1
	9.0-10.0	14.5
SS-7	2.0-3.0	23.3
	4.0-5.0	10.6
	7.0-8.0	6.7
	9.0-10.0	3.3

Notes:
Samples were collected on May 29, 2013.
Readings reported in parts per million
feet bgs = feet below ground surface
Shaded = Selected for field analysis
Bold and Shaded = Selected for laboratory analysis

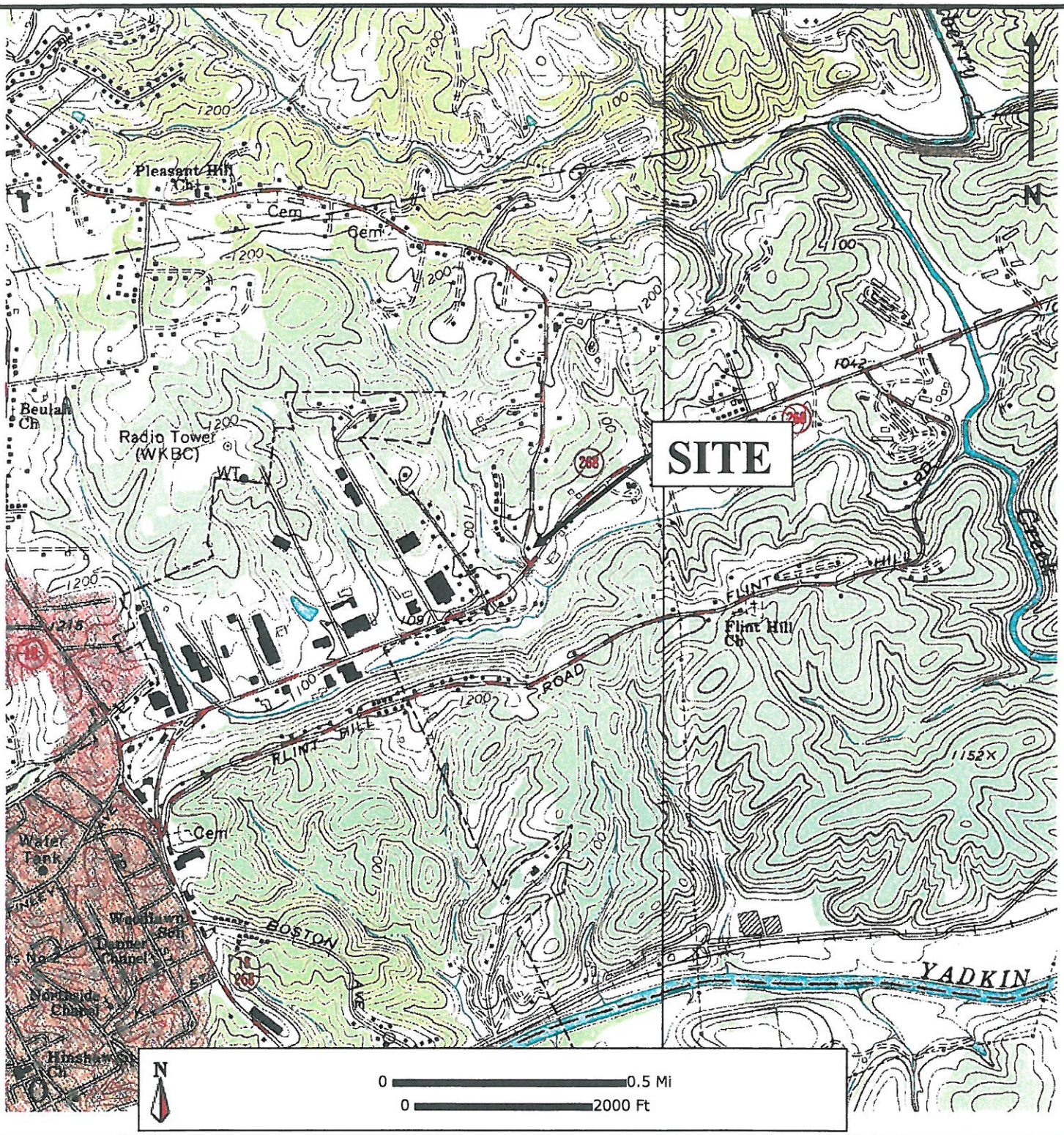
TABLE 2: SOIL SAMPLE FIELD ANALYTICAL SUMMARY

SAMPLE ID	DEPTH	COLLECTION DATE	BTEX	GRO (C5-C10)	DRO (C10-C35)	TPH (C5-C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Laboratory Analysis	
										GRO	DRO
SS-1	9.0-10.0	5/29/2013	<0.6	<0.6	<0.6	<0.6	<0.56	<0.06	<0.028	NA	NA
SS-2	4.0-5.0	5/29/2013	<1	<1	2.1	2.1	1.4	<0.1	<0.049	NA	NA
SS-3	9.0-10.0	5/29/2013	<0.9	<0.9	**14.1**	14.1	10.28	0.31	<0.045	NA	NA
SS-4	9.0-10.0	5/29/2013	215.3	**568.5**	**214**	782.5	130.38	1.65	<0.127	**1,830**	**534**
SS-4	44.0-45.0	5/29/2013	1378	**1872**	**150**	2022	91	12	<1	NA	NA
SS-4-1	9.0-10.0	5/29/2013	<2.2	<2.2	5.6	5.6	4.59	<0.22	<0.108	NA	NA
SS-5	4.0-5.0	5/29/2013	<1.1	<1.1	**12.5**	12.5	11.87	0.36	<0.053	NA	NA
SS-6	7.0-8.0	5/29/2013	<0.9	<0.9	1.7	1.7	<0.94	<0.09	<0.047	NA	NA
SS-7	2.0-3.0	5/29/2013	<1	<1	3.5	3.5	2.31	<0.1	<0.048	NA	NA
State Action Level (Petroleum UST)			NA	10	10	NA	NA	NA	NA	10	10

Notes:

Results presented in milligrams per kilogram, analogous to parts per million
BTEX = Benzene, Toluene, Ethylbenzene, and xylenes
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
TPH = Total Petroleum Hydrocarbons
PAH = Polycyclic Aromatic Hydrocarbons
BaP = Benzo(a)pyrene
Bold denotes concentration exceeds the State Action Level for Petroleum USTs

FIGURES



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6200 HARRIS TECHNOLOGY BOULEVARD
CHARLOTTE, NORTH CAROLINA
PHONE: 704.598.1049

FIGURE 1
SITE LOCATION MAP

PARCEL 48 AMANDA JOLLY
MODERN AUTO SALES
603 ELKIN HIGHWAY
WILKESBORO, NORTH CAROLINA

DATE: 6/4/2013	APPROVED BY: CDN	SCALE: As Shown
SOURCE: USGS Topographic Orthophoto Map, Wilkesboro, NC 1966		PROJECT NO: 134245

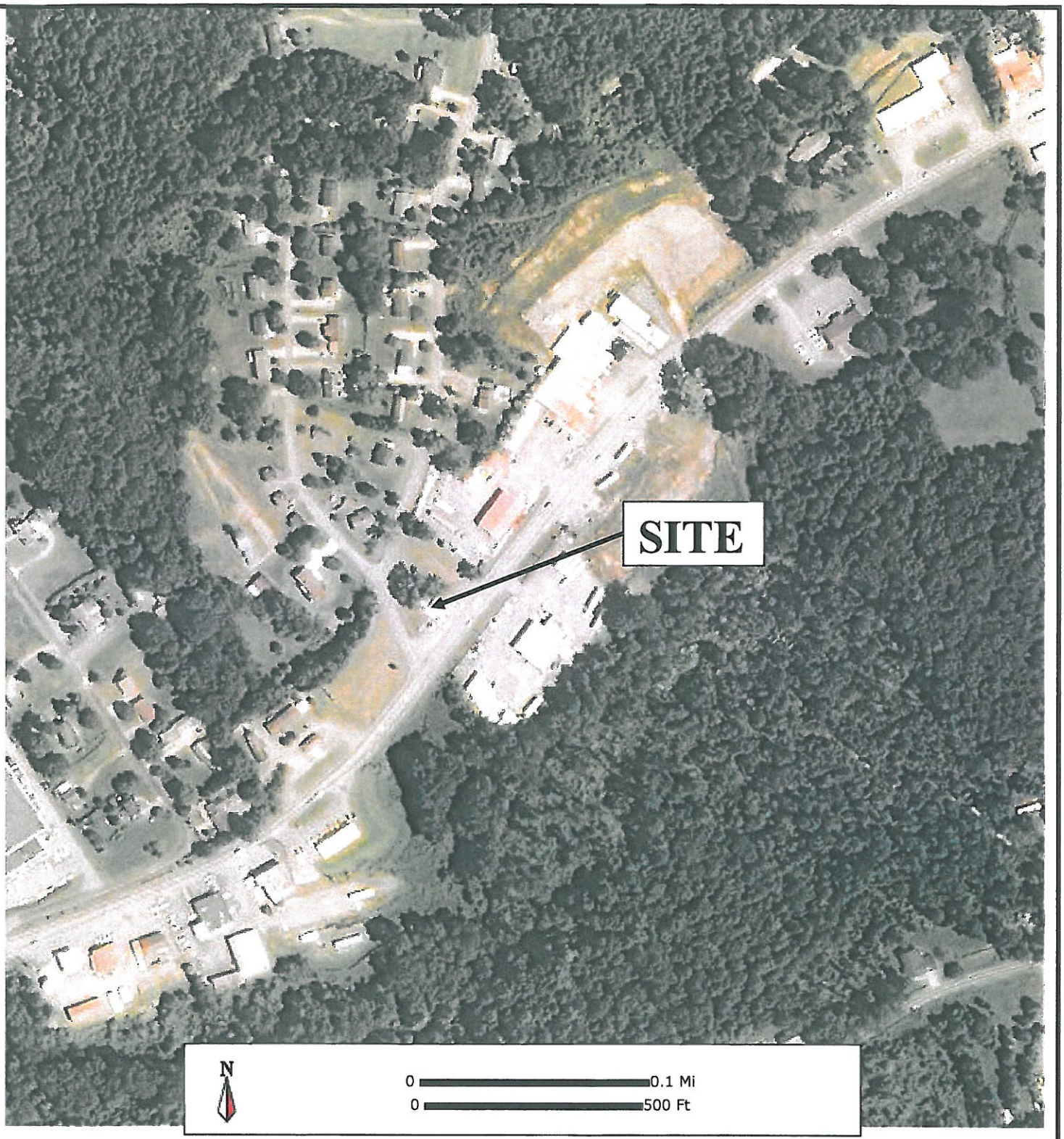

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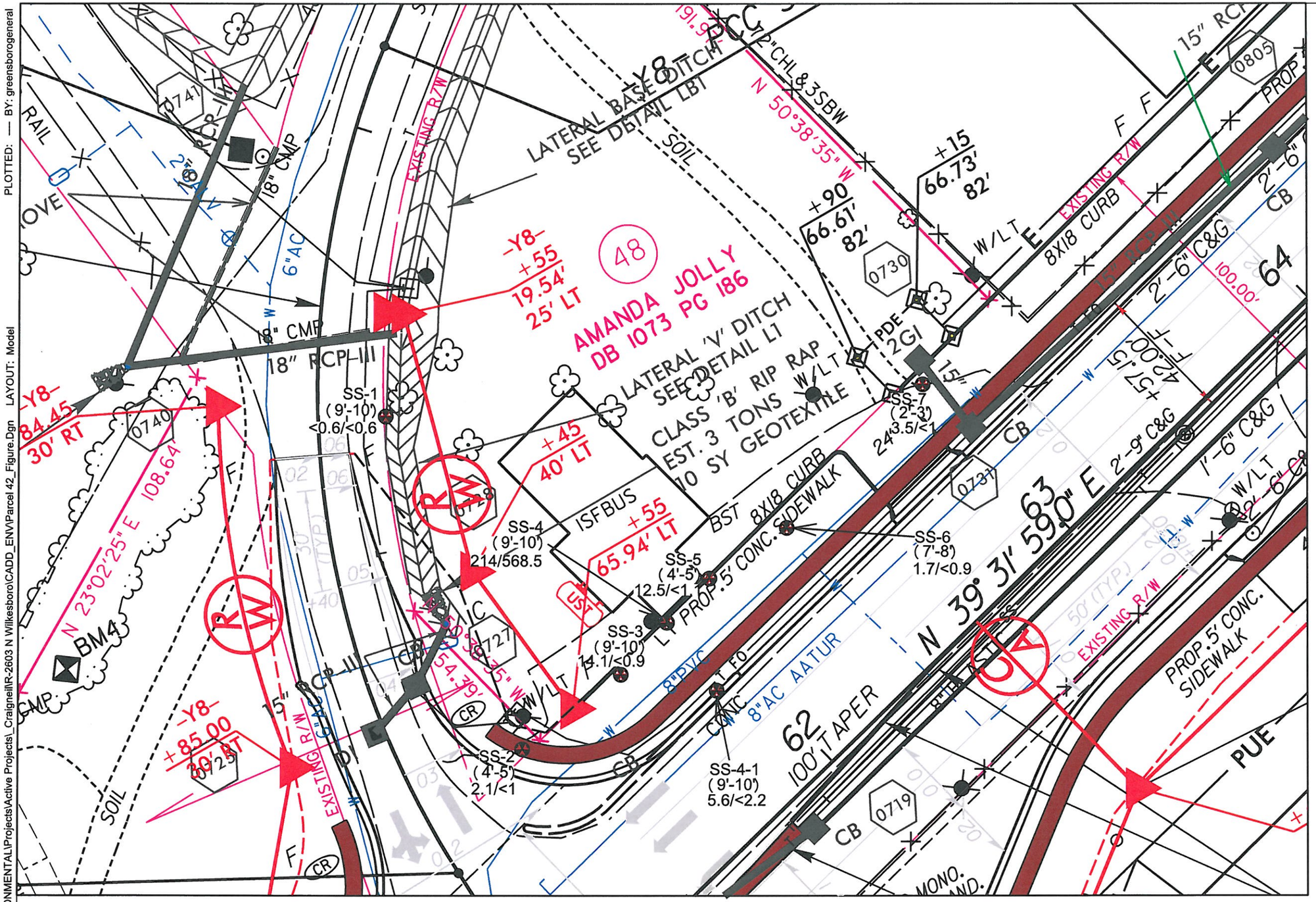
FIGURE 2
SITE MAP

PARCEL 48 AMANDA JOLLY
MODERN AUTO SALES
603 ELKIN HIGHWAY
WILKESBORO, NORTH CAROLINA

DATE: 6/4/2013	APPROVED BY: CDN	SCALE: As Shown
SOURCE: MyTopo.com		PROJECT NO. 134245



LEGEND

- Existing Right of Way
- Proposed Right of Way
- E — Proposed Construction Easement
- C — Proposed Cut Line
- T — Proposed Transition Line
- F — Proposed Fill Line
- W — Existing Utilities Water UG Line SUE
- TC — Existing Utilities Telephone UG Line SUE
- SS — Exist Utilities Sanitary Sewer UG Line
- P — Exist Utilities Power UG Cable SUE
- Approximate Boring Location
- (9'-10') — Sample Depth location
- <0.6/<0.6 — Concentration of TPH-DRO/TPH-GRO mg/kg (QROS-QED data)
- UST — Probable USTs

0 30 60

SCALE: 1" = SCALE IN FEET

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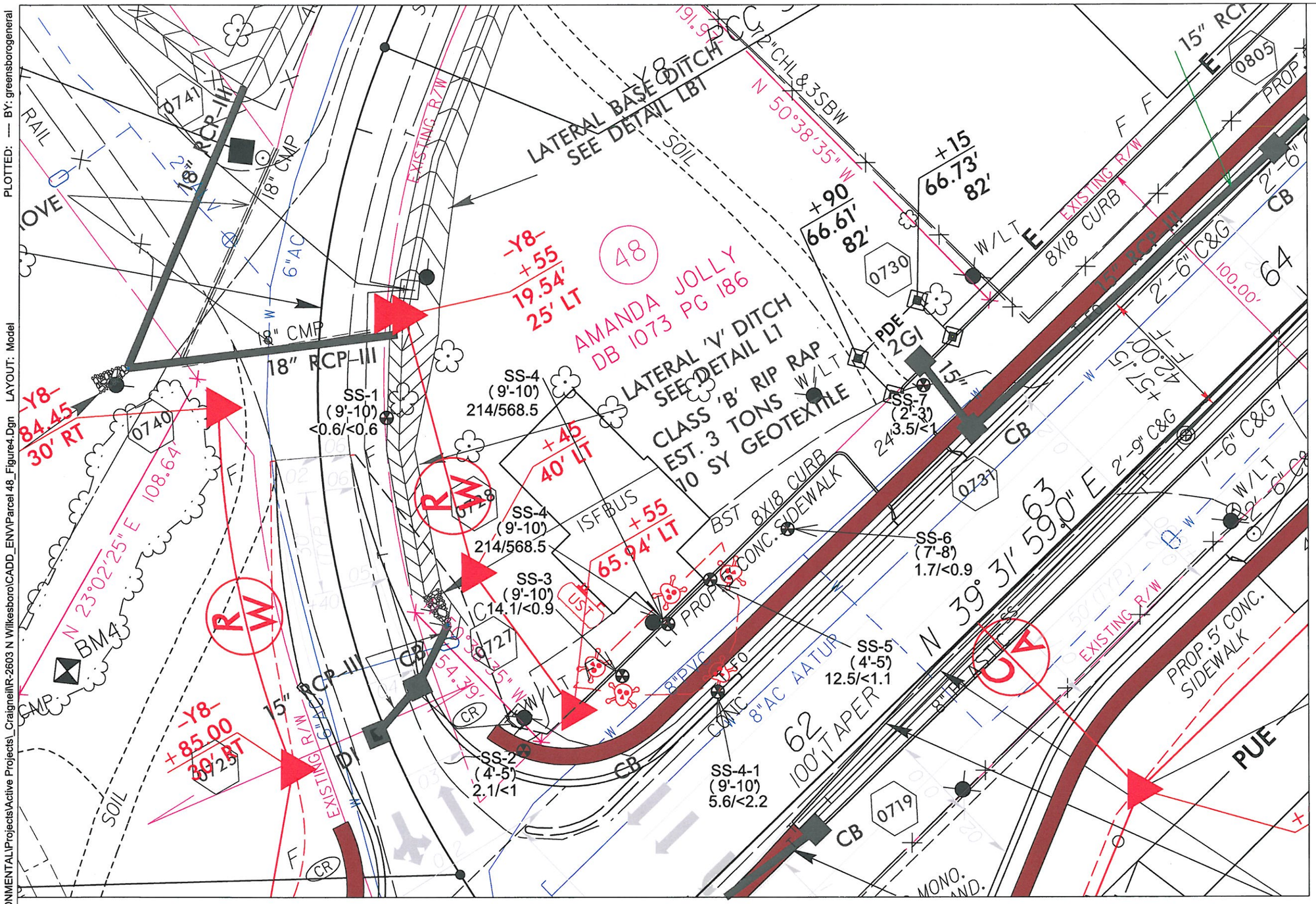
PROJECT NO.	134245
DRAWN BY	WJF
CHECKED BY	TO
DATE:	6/6/13

BORING LOCATION MAP
PARCEL 48

NC DEPARTMENT OF TRANSPORATION
TIP#: R-2603
WILKESBORO, NORTH CAROLINA

Figure 3



LEGEND

- Existing Right of Way
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- W — Existing Utilities Water UG Line SUE
- TC — Existing Utilities Telephone UG Line SUE
- SS — Exist Utilities Sanitary Sewer UG Line
- P — Exist Utilities Power UG Cable SUE
- Approximate Boring Location
- (9'-10') Sample Depth location
- <0.6/<0.6 Concentration of TPH-DRO/TPH-GRO mg/kg (QROS-QED data)
- UST Probable USTs
- Approximate location of soil contamination

0 30 60

SCALE: 1" = SCALE IN FEET

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PROJECT NO.	134245
DRAWN BY	WJF
CHECKED BY	TO
DATE:	6/6/13

SOIL CONTAMINATION LOCATION MAP
PARCEL 48

NC DEPARTMENT OF TRANSPORATION
TIP#: R-2603
WILKESBORO, NORTH CAROLINA

Figure 4

APPENDIX A

SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 134245
PARCEL NO. 48

Photograph 1 – View of the site from across Elkin Highway.

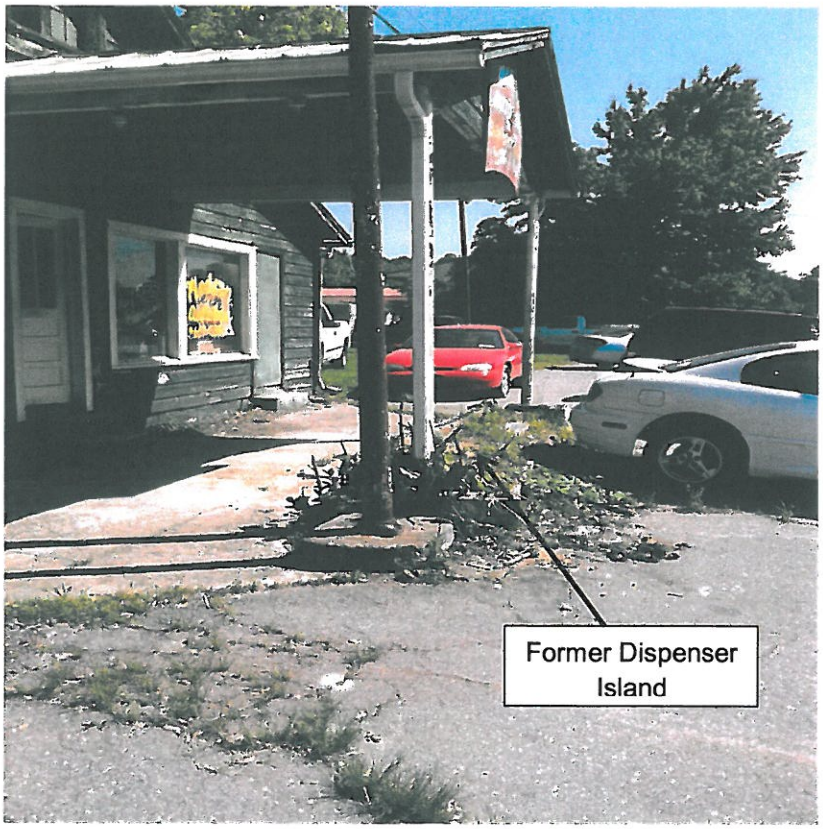
Photograph 2 – View of the eastern portion of the site.

SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 134245
PARCEL NO. 48

Photograph 3 – View of the western portion of the site.

Photograph 4 – View of the front of the structure.

SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 134245
PARCEL NO. 48



Photograph 5 – View of the former dispenser island.

Photograph 6 – View of the western portion of the site.

SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 134245
PARCEL NO. 48

Photograph 7 – View from the southern property corner looking north.

Photograph 8 – View of a vault and pipe observed north of the structure.

SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 134245
PARCEL NO. 48

Photograph 9 – View of a fill port observed on the western side of the structure.

APPENDIX B

Pyramid Project # 2013-124

GEOPHYSICAL INVESTIGATION REPORT

EM61 & GPR SURVEYS

KLEINFELDER – NCDOT ROW GEOPHYSICAL SURVEY
PARCEL 48 – NC HWY 268
Wilkes County, North Carolina

June 7, 2013

Report prepared for: **Travis O'Quinn**
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Prepared by: _____

Eric C. Cross, P.G.
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Reviewed by: _____

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NC Board for Licensing of Geologists C-257
NC Board of Examiners for Engineers & Surveyors C-1251

GEOPHYSICAL INVESTIGATION REPORT
KLEINFELDER – NCDOT ROW GEOPHYSICAL SURVEY
PARCEL 48 – NC HWY 268
Wilkes County, North Carolina

TABLE OF CONTENTS PAGE

FIGURES

1.0 INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Kleinfelder as part of the North Carolina Department of Transportation's (NCDOT) proposed right-of way (ROW) and easement areas across Parcel 48, NC Hwy. 268, North Wilkesboro, NC. The survey area extended across the south and west sides of the parcel, spanning a distance of approximately 210 feet along NC 268 and 140 feet along Fairfield Road. The geophysical survey area extended 30 feet at its maximum north/south distance from the NC 268 north into the property, and 30 feet from Fairfield Road west into the property. Conducted on May 17, 2013, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the proposed ROW/easement areas of the site.

The site was relatively open, and consisted of a combination of asphalt parking space and grassy fields. Due to the property extending around the intersection of NC 268 and Fairfield Road, the area was divided into two geophysical surveys (west and east). The west geophysical survey area had a maximum width (north/south) of approximately 140 feet and a maximum length (east/west) of approximately 30 feet. The east geophysical area had a maximum width (east/west) of approximately 210 feet, and a maximum length (north/south) of approximately 30 feet. Combined, the two areas encompassed the total portion of the property to be covered by the geophysical survey, as directed by Kleinfelder. Aerial photographs showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

2.0 FIELD METHODOLOGY

Prior to conducting the geophysical investigation, a 20-foot by 10-foot survey grid was established across the geophysical survey areas using measuring tapes 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 and ground penetrating radar (GPR) surveys. The EM survey was performed on May 17, 2013, using a Geonics EM6 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 north-south trending (west survey area) or east-west trending (north/east survey area), 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 DAT61 and Surfer for Windows Version 7.0 software programs.

GPR data were acquired on May 17, 2013, across selected EM61 differential anomalies and/or suspected USTs using a GSSI SIR-2000 unit equipped with a 400 MHz antenna. Data were collected generally from east to west and north to south. All of the GPR data were viewed in real time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 8 feet, based on an estimated two-way travel time of 8 nanoseconds per foot. GPR transect and image files were saved to the hard drive of the SIR unit.

3.0 DISCUSSION OF RESULTS

Contour plots of the EM61 bottom coil and differential results obtained across the proposed ROW/easement areas at the property for the east and west survey grids 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.

East Survey Grid: The EM anomaly at X=35, Y=50 was the result of a power pole. The large EM response directly in front of (south) the store building was the result of a metal canopy and metal

posts, as well as reinforcement within the building foundation. The EM anomalies between X=130 and X=190 at Y=50 were the result of a row of vehicles across this area. Lastly, the anomaly at the southwest corner of the building was due to either the building foundation, or a possible UST that was evidenced by a pipe protruding from the ground at this location. GPR transects were performed around the pipe to determine if a UST was located in this area.

GPR scans were performed adjacent to the visible pipe protruding from the ground. All other EM anomalies could be directly attributed to visible objects at the ground surface. The GPR data were viewed in real time as the equipment was surveyed across the anomalies. Transects were saved to the hard drive for post-processing in the office. **Figure 4** presents an aerial photograph showing the location of the GPR transects performed as well as the GPR images that were collected.

GPR Transect 1 was performed from north to south, directly on the west side of the visible pipe. GPR Transect 2 was performed from west to east, directly to the south of the pipe. Transects could not be performed directly across the location of the pipe due to debris and the pipe itself. The two GPR Transects did not record any evidence that would confirm a UST extended away from the building at this location. However, due to the presence of the pipe, the EM anomaly at the southwest corner of the building, and the inability to perform a GPR transect directly adjacent to the building, we are classifying this feature as a possible UST. The possible UST is likely oriented from south to north, directly adjacent to the structure where the GPR could not be performed.

West Survey Grid: The EM anomaly at X=152, Y=25 was the result of a storm drain pipe. The EM anomalies between X=135 and 115 at Y=35, as well as at X=55, Y=35 were likely the result of minor buried metallic debris. These features were only evidence on the bottom coil results, and are not indicative of a UST. The EM anomaly at X=100, Y=25 and the surrounding feature was the result of a street sign. The EM anomaly at X=35, Y=45 was the result of a metal utility junction box. No significant features were observed that would warrant further investigation by the GPR.

The geophysical investigation suggests that the area of the proposed ROW/easement at Parcel 48 in North Wilkesboro, NC, may contain a possible metallic UST at the southwest corner of the store building.

4.0 SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across the proposed ROW/easement area at Parcel 48, North Wilkesboro, North Carolina provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the geophysical survey area.

- The majority of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as signs and structures. The anomaly at the southwest corner of the building was due to either the building foundation, or a possible UST that was evidenced by a pipe protruding from the ground at this location. GPR transects were performed around the pipe to determine if a UST was located in this area.

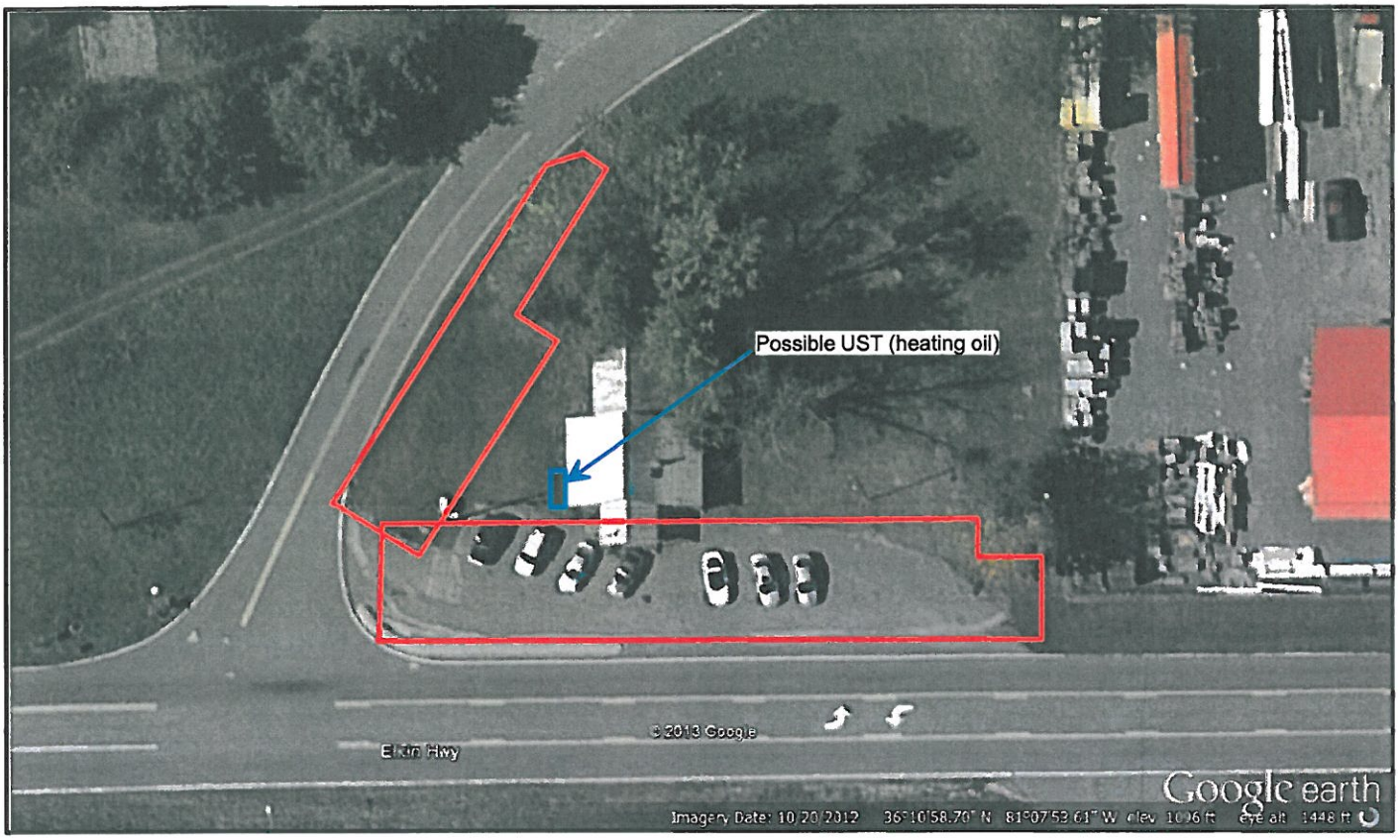
- The GPR transects performed near the visible pipe were inconclusive, however, the remaining evidence from the EM survey and visual inspection of the area lead us to conlude that a possible UST may be present at this location.

- The geophysical investigation suggests that the proposed ROW/easement area at the property may contain a possible metallic UST at the southwest corner of the store building.

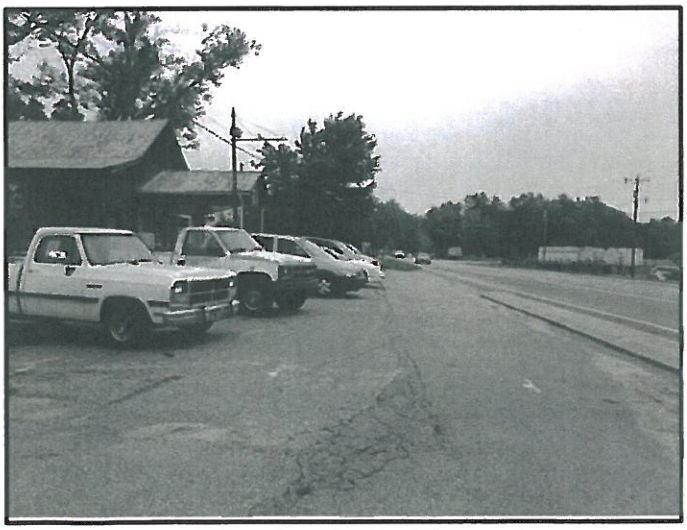
5.0 LIMITATIONS

Geophysical 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 surveys are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined that metallic USTs do not lie within the proposed ROW/easement area of the Wilkes County property, but that none were detected. Additionally, it should be understood that areas containing vehicles or other restrictions to the accessibility of the geophysical instruments could not be investigated.

FIGURES



Aerial Photograph Showing Approximate Geophysical Survey Boundaries
of East and West Survey Grids



View of East Geophysical Survey Area
(Photograph Facing Approximately West)

View of East Geophysical Survey Area
(Photograph Facing Approximately North)

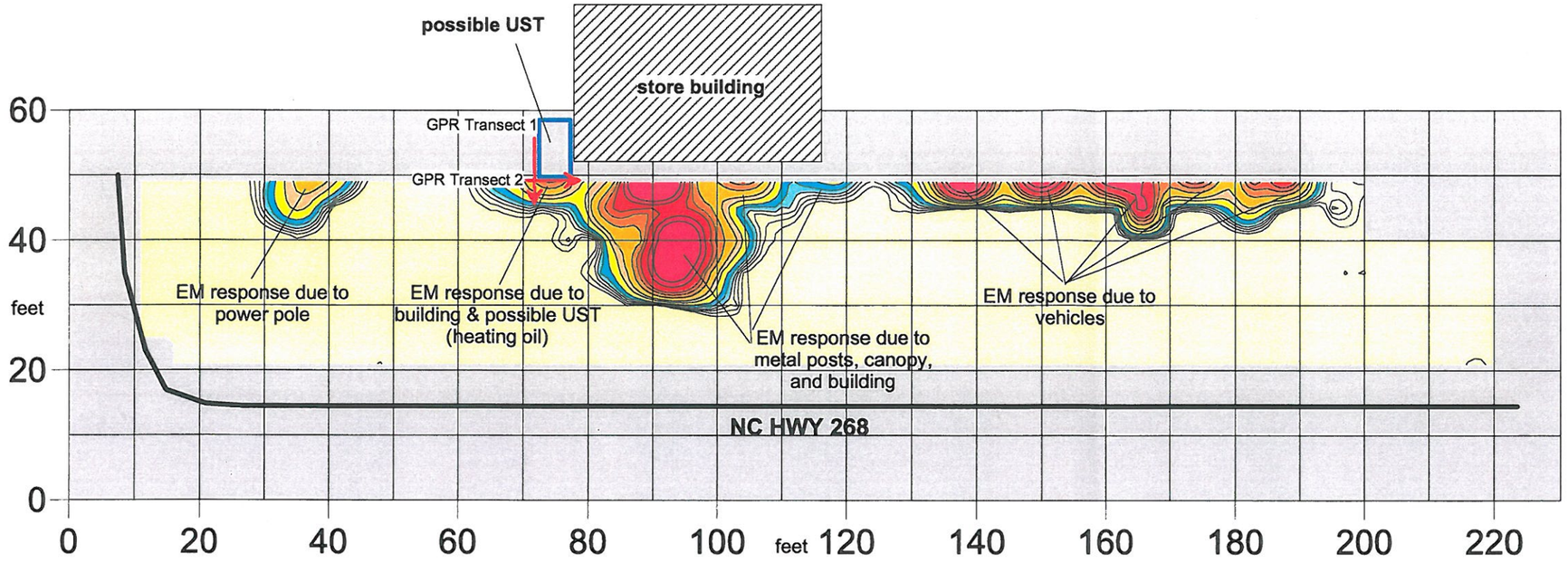
PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	KLEINFELDER		DATE 05/16/13	DRWN ECC	
SITE	PARCEL 48, WILKES COUNTY (NCDOT ROW PROJECT)		LAY	CHKD	
CITY	NORTH WILKESBORO	STATE NORTH CAROLINA	DWG		
TITLE	GEOPHYSICAL RESULTS		CHT 2013-131	HOURS	

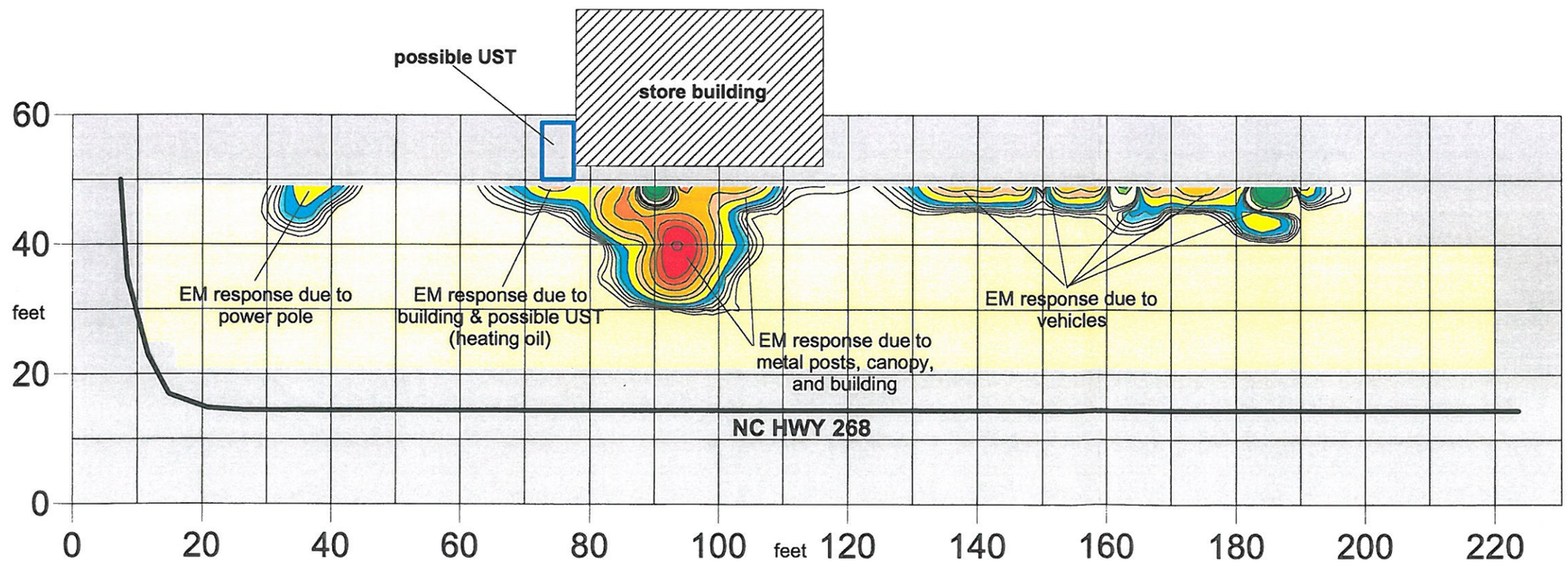
SURVEY BOUNDARIES &
SITE PHOTOGRAPHS

FIGURE 1

EM61 Bottom Coil Results



EM61 Differential Results



EVIDENCE OF ONE POSSIBLE USTs OBSERVED

The contour plots show the bottom coil (most sensitive) and differential results of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The differential response focuses on larger, buried metallic objects such as drums and USTs and ignores smaller miscellaneous buried, metal debris.The EM61 data were collected on May 17, 2013 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data collected on May 17, 2013, using a GSSI SIR 2000 unit coupled to a 400MHz antennae.

EM61 Metal Detection Response
(millivolts)

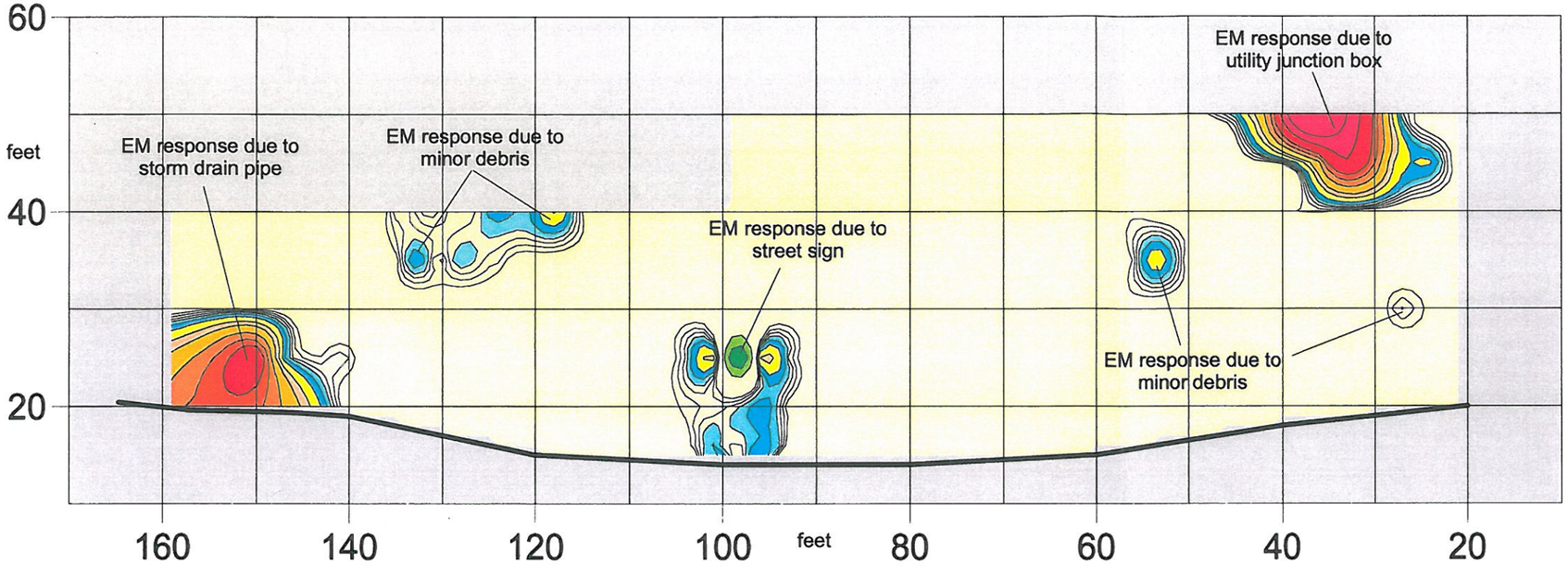
N

TITLE	PARCEL 48 EAST GRID - EM61 BOTTOM COIL & DIFFERENTIAL RESULTS CONTOUR MAP
PROJECT	NC DEPARTMENT OF TRANSPORTATION ROW IMPROVEMENT PROJECT NORTH WILKESBORO, WILKES COUNTY, NC

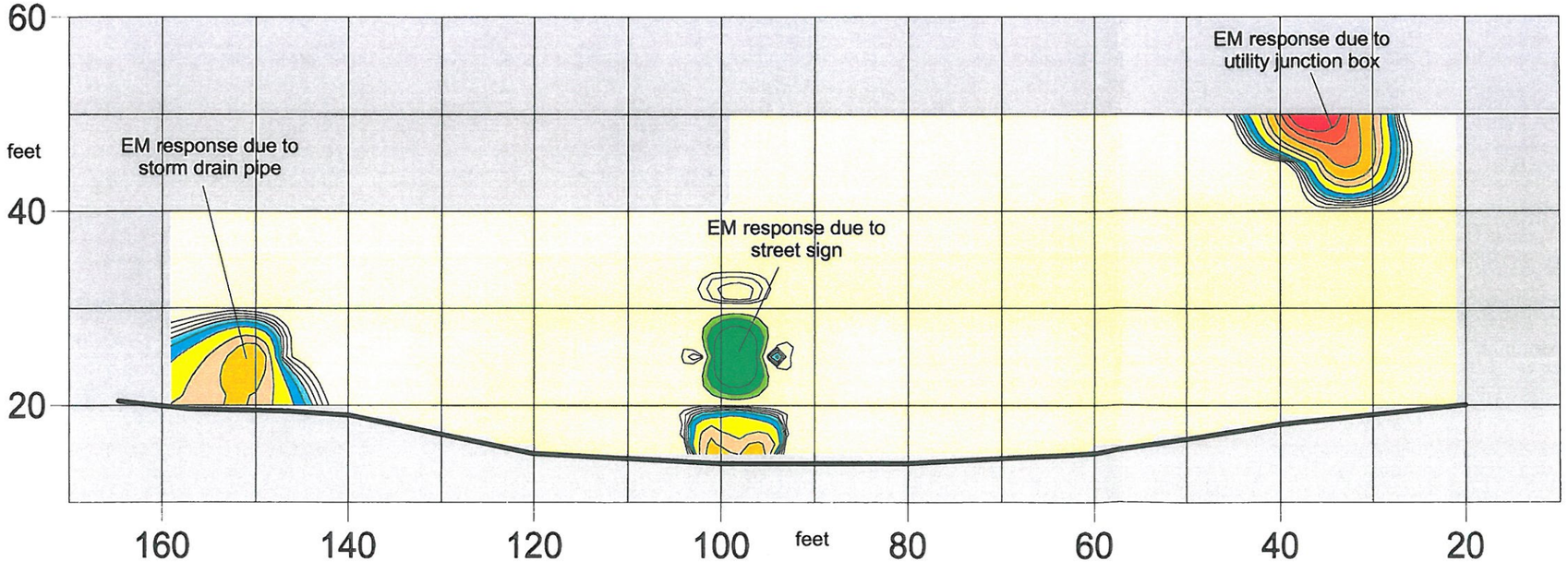
PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE	06/05/2013	CLIENT	KLEINFELDER
PYRAMID PROJECT #:	2013-124		FIGURE 2

EM61 Bottom Coil Results



EM61 Differential Results



NO EVIDENCE OF METALLIC USTs OBSERVED

The contour plots show the bottom coil (most sensitive) and differential results of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The differential response focuses on larger, buried metallic objects such as drums and USTs and ignores smaller miscellaneous buried, metal debris.The EM61 data were collected on May 17, 2013 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were not collected due to no unexplained anomalies in the EM survey.

EM61 Metal Detection Response (millivolts)

N

TITLE
PARCEL 48 WEST GRID - EM61 BOTTOM COIL & DIFFERENTIAL RESULTS CONTOUR MAP

PROJECT
NC DEPARTMENT OF TRANSPORTATION
ROW IMPROVEMENT PROJECT
NORTH WILKESBORO, WILKES COUNTY, NC

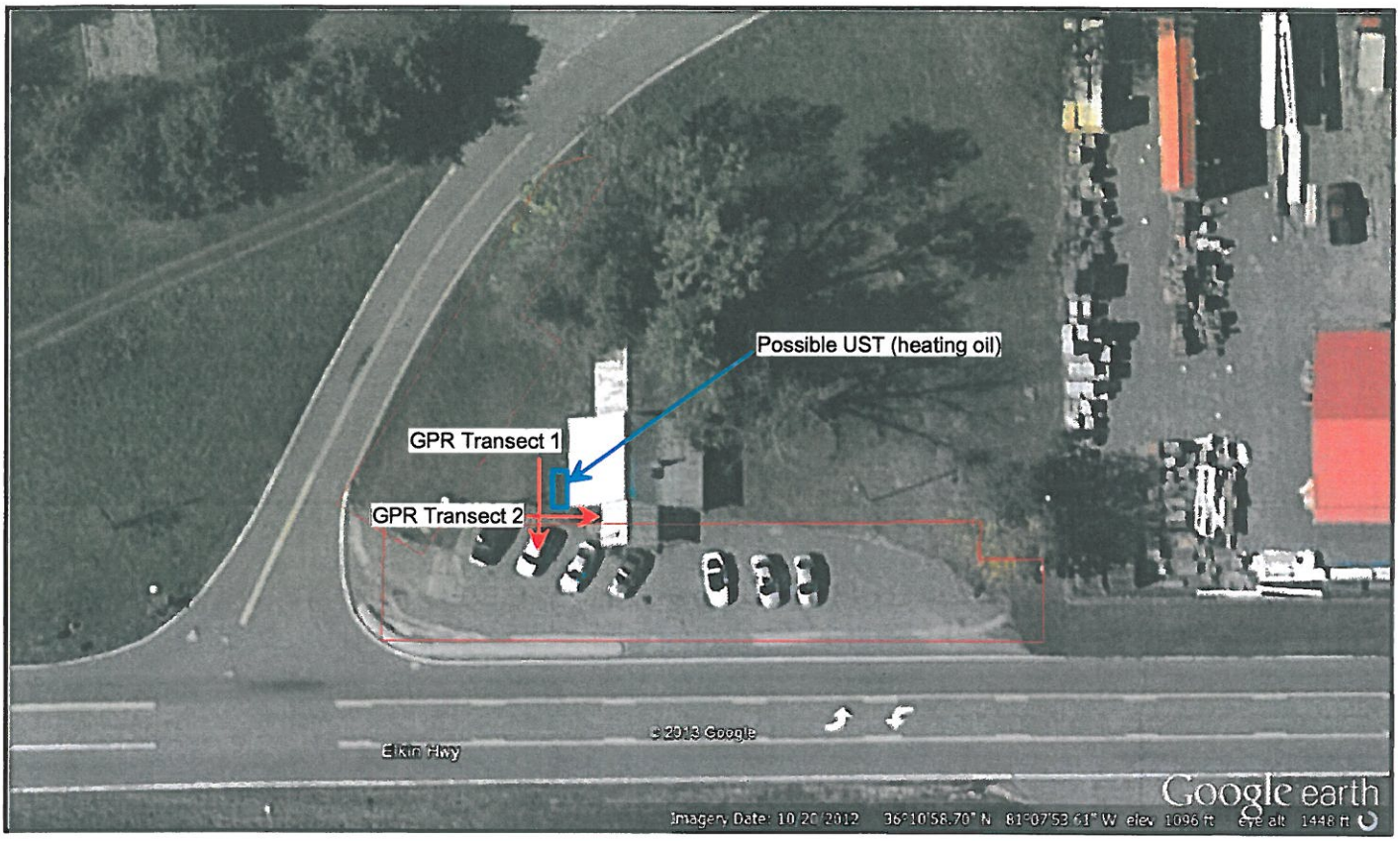
PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE 06/05/2013

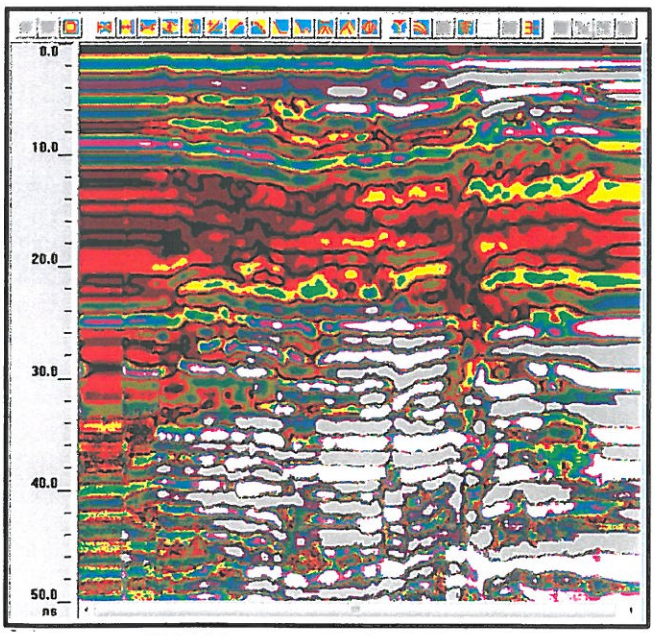
CLIENT KLEINFELDER

PYRAMID PROJECT #: 2013-124

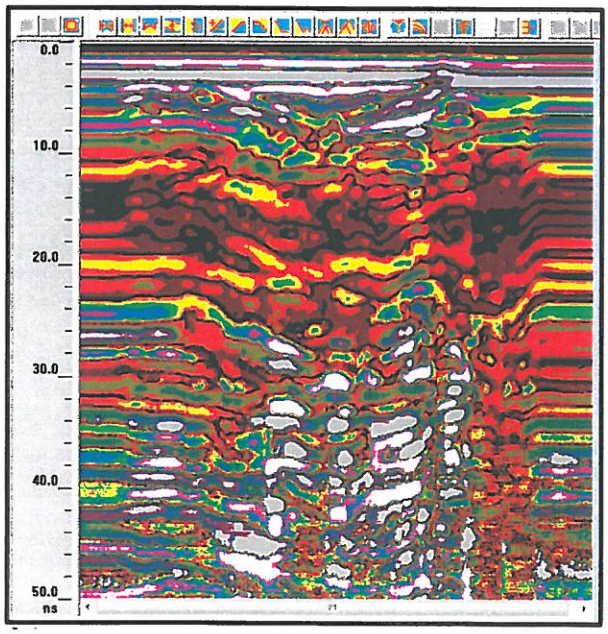
FIGURE 3



Aerial Photograph Showing Approximate Locations of
GPR Transects Adjacent to Possible UST



GPR Transect 1 - North to South
Adjacent to Possible UST
(No Evidence Detected)



GPR Transect 2 - West to East
Adjacent to Possible UST
(No Evidence Detected)

PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	KLEINFELDER	DATE	05/16/13	DRWN	ECC
SITE	PARCEL 48, WILKES COUNTY (NCDOT ROW PROJECT)	LAY		CHKD	
CITY	NORTH WILKESBORO	STATE	NORTH CAROLINA	DWG	
TITLE	GEOPHYSICAL RESULTS	JOB#	2013-131	FIGURE	

GPR TRANSECT LOCATIONS AND IMAGES

FIGURE 3

APPENDIX C

Date Begin - End:	5/29/2013	**Drill Company:**	Probe Technology
Logged By:	Peter Pozzo	**Drill Crew:**	John Allen
Hor.-Vert. Datum:	Not Available	**Drill Equipment:**	6610DT Geoprobe
Angle from Vert.:	0 degrees	**Exploration Method:**	Geoprobe
Weather:	Sunny 70's	**Auger Diameter:**	2.25 in. O.D.

BORING LOG P48_SS-1

FIELD EXPLORATION

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	blows/6 in.	PID / FID (ppmv)	Graphical Log	No Coordinates Available No Elevation Available
							SILT with Clay: reddish tan, dry, Fill Material
					3		
					4.8		**SILT with Sand**: reddish tan, dry
5					4.9		
		SS-1			5.1		**SAND with Silt**: brown and white, dry
10							
15							
20							
25							
30							

The exploration was terminated at approximately 10 ft. below ground surface

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	134245
DRAWN BY:	WJF
CHECKED BY:	PFP
DATE:	
REVISED:	

BORING LOG P48_SS-1

Parcel 48 - Amanda Jolly
Modern Auto Sales
603 Elkin Highway
Wilkesboro, NC

PLATE 1

Date Begin - End:	5/29/2013	**Drill Company:**	Probe Technology
Logged By:	Peter Pozzo	**Drill Crew:**	John Allen
Hor.-Vert. Datum:	Not Available	**Drill Equipment:**	6610DT Geoprobe
Angle from Vert.:	0 degrees	**Exploration Method:**	Geoprobe
Weather:	Sunny 70's	**Auger Diameter:**	2.25 in. O.D.

BORING LOG P48_SS-2

FIELD EXPLORATION

No Coordinates Available
No Elevation Available

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	blows/6 in.	PID / FID (ppmv)	Graphical Log	
0					11.5		**SILT with Clay**: reddish tan, dry, Fill Material; Low Recovery
5		SS-2			15.0		
					5.7		**SILT with Sand and Clay**: white
10					4.4		

The exploration was terminated at approximately 10 ft. below ground surface

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	134245
DRAWN BY:	WJF
CHECKED BY:	PFP
DATE:	
REVISED:	

BORING LOG P48_SS-2

Parcel 48 - Amanda Jolly
Modern Auto Sales
603 Elkin Highway
Wilkesboro, NC

PLATE 2

PAGE: 1 of 1

Date Begin - End:	5/29/2013	**Drill Company:**	Probe Technology
Logged By:	Peter Pozzo	**Drill Crew:**	John Allen
Hor.-Vert. Datum:	Not Available	**Drill Equipment:**	6610DT Geoprobe
Angle from Vert.:	0 degrees	**Exploration Method:**	Geoprobe
Weather:	Sunny 70's	**Auger Diameter:**	2.25 in. O.D.

BORING LOG P48_SS-3

FIELD EXPLORATION

No Coordinates Available
No Elevation Available

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	blows/6 in.	PID / FID (ppmv)	Graphical Log	Description
0–3					5.9		**SILT with Clay**: reddish tan, dry, Fill Material
3–10					8.6		**SILT with Clay and Sand**: reddish tan, dry, Fill Material
					11.2		
		SS-3			27.6		

Depth scale: 5, 10, 15, 20, 25, 30

The exploration was terminated at approximately 10 ft. below ground surface

<u>GROUNDWATER LEVEL INFORMATION:</u>
Groundwater was not encountered during drilling or after completion.
<u>GENERAL NOTES:</u>

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	134245
DRAWN BY:	WJF
CHECKED BY:	PFP
DATE:	
REVISED:	

BORING LOG P48_SS-3

Parcel 48 - Amanda Jolly
Modern Auto Sales
603 Elkin Highway
Wilkesboro, NC

PLATE
3

Date Begin - End:	5/29/2013	**Drill Company:**	Probe Technology	**BORING LOG P48_SS-4**
Logged By:	Peter Pozzo	**Drill Crew:**	John Allen	
Hor.-Vert. Datum:	Not Available	**Drill Equipment:**	6610DT Geoprobe	
Angle from Vert.:	0 degrees	**Exploration Method:**	Geoprobe	
Weather:	Sunny 70's	**Auger Diameter:**	2.25 in. O.D.	

FIELD EXPLORATION

No Coordinates Available
No Elevation Available

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	blows/6 in.	PID / FID (ppmv)	Graphical Log	Description
0							**SILT with Clay**: reddish tan, petroleum odor, dry, Fill Material
2					25.1		
4					266.1		
5							**SILT with Clay**: white tan, petroleum odor, dry
7					726.0		
9					830.6		**SILT with Clay and Sand**: brownish tan, petroleum odor, dry
10							
15							
20							
25							
30							

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 134245	BORING LOG P48_SS-4		PLATE
DRAWN BY: WJF			
CHECKED BY: PFP	Parcel 48 - Amanda Jolly Modern Auto Sales 603 Elkin Highway Wilkesboro, NC		4
DATE:			
REVISED:			PAGE: 1 of 2

Date Begin - End:	5/29/2013	**Drill Company:**	Probe Technology	**BORING LOG P48_SS-4**
Logged By:	Peter Pozzo	**Drill Crew:**	John Allen	
Hor.-Vert. Datum:	Not Available	**Drill Equipment:**	6610DT Geoprobe	
Angle from Vert.:	0 degrees	**Exploration Method:**	Geoprobe	
Weather:	Sunny 70's	**Auger Diameter:**	2.25 in. O.D.	

FIELD EXPLORATION

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	blows/6 in.	PID / FID (ppmv)	Graphical Log	No Coordinates Available No Elevation Available
							SILT with Clay and Sand: brownish tan, petroleum odor, dry
40							
		SS-4			830		
45							
50							
55							
60							
65							

The exploration was terminated at approximately 45 ft. below ground surface

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 134245	BORING LOG P48_SS-4	PLATE
DRAWN BY: WJF		
CHECKED BY: PFP	Parcel 48 - Amanda Jolly Modern Auto Sales 603 Elkin Highway Wilkesboro, NC	5
DATE:		
REVISED:		PAGE: 2 of 2

Date Begin - End:	5/29/2013	**Drill Company:**	Probe Technology	**BORING LOG P48_SS-4-1**
Logged By:	Peter Pozzo	**Drill Crew:**	John Allen	
Hor.-Vert. Datum:	Not Available	**Drill Equipment:**	6610DT Geoprobe	
Angle from Vert.:	0 degrees	**Exploration Method:**	Geoprobe	
Weather:	Sunny 70's	**Auger Diameter:**	2.25 in. O.D.	

FIELD EXPLORATION

No Coordinates Available
No Elevation Available

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	blows/6 in.	PID / FID (ppmv)	Graphical Log	Description
							SILT with Clay and Sand: reddish tan, dry, Fill Material
					18.2		
							SILT with Sand and Clay: tannish white, dry
					2.8		
5							
					68.0		
		SS-4-1			120		
10							

The exploration was terminated at approximately 10 ft. below ground surface

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

15

20

25

30

KLEINFELDER
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PROJECT NO.: 134245	BORING LOG P48_SS-4-1	PLATE
DRAWN BY: WJF		
CHECKED BY: PFP	Parcel 48 - Amanda Jolly Modern Auto Sales 603 Elkin Highway Wilkesboro, NC	6
DATE:		
REVISED:		PAGE: 1 of 1

Date Begin - End:	5/29/2013	**Drill Company:**	Probe Technology	**BORING LOG P48_SS-5**
Logged By:	Peter Pozzo	**Drill Crew:**	John Allen	
Hor.-Vert. Datum:	Not Available	**Drill Equipment:**	6610DT Geoprobe	
Angle from Vert.:	0 degrees	**Exploration Method:**	Geoprobe	
Weather:	Sunny 70's	**Auger Diameter:**	2.25 in. O.D.	

FIELD EXPLORATION

No Coordinates Available
No Elevation Available

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	blows/6 in.	PID / FID (ppmv)	Graphical Log	Description
0							**SILT with Clay**: tan, dry, Fill Material
					123		
							SILT with Clay: tannish white, dry
		SS-5			125		
5							
					13.8		
					20		
10							

The exploration was terminated at approximately 10 ft. below ground surface

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

15

20

25

30

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 134245	BORING LOG P48_SS-5		PLATE
DRAWN BY: WJF			
CHECKED BY: PFP	Parcel 48 - Amanda Jolly Modern Auto Sales 603 Elkin Highway Wilkesboro, NC		7
DATE:			
REVISED:			PAGE: 1 of 1

Date Begin - End:	5/29/2013	**Drill Company:**	Probe Technology
Logged By:	Peter Pozzo	**Drill Crew:**	John Allen
Hor.-Vert. Datum:	Not Available	**Drill Equipment:**	6610DT Geoprobe
Angle from Vert.:	0 degrees	**Exploration Method:**	Geoprobe
Weather:	Sunny 70's	**Auger Diameter:**	2.25 in. O.D.

BORING LOG P48_SS-6

FIELD EXPLORATION

No Coordinates Available
No Elevation Available

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	blows/6 in.	PID / FID (ppmv)	Graphical Log	Description
0							**SILT with Clay**: tan, dry, Fill Material
					5.7		
							SILT with Clay and Sand: tan, dry, Fill Material
					12.2		
5							**SILT with Clay and Sand**: tannish brown, dry, Fill Material
		SS-6			17.1		
					14.5		
10							

The exploration was terminated at approximately 10 ft. below ground surface

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:

Depth scale: 15, 20, 25, 30

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 134245	BORING LOG P48_SS-6		PLATE
DRAWN BY: WJF			
CHECKED BY: PFP	Parcel 48 - Amanda Jolly Modern Auto Sales 603 Elkin Highway Wilkesboro, NC		8
DATE:			
REVISED:			PAGE: 1 of 1

Date Begin - End:	5/29/2013	**Drill Company:**	Probe Technology
Logged By:	Peter Pozzo	**Drill Crew:**	John Allen
Hor.-Vert. Datum:	Not Available	**Drill Equipment:**	6610DT Geoprobe
Angle from Vert.:	0 degrees	**Exploration Method:**	Geoprobe
Weather:	Sunny 70's	**Auger Diameter:**	2.25 in. O.D.

BORING LOG P48_SS-7

FIELD EXPLORATION

No Coordinates Available
No Elevation Available

Depth (feet)	Sample Type	Sample Number	Recovery (NR=No Recovery)	blows/6 in.	PID / FID (ppmv)	Graphical Log	Description
0–5							**SILT with Clay**: red, dry, Fill Material
		SS-7			23.3		
					10.6		
5							**SILT with Clay and Sand**: tannish white, dry
					6.7		
							SILT with Clay and Sand: white, dry
					3.3		
10							

The exploration was terminated at approximately 10 ft. below ground surface

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:

Depth scale: 5, 10, 15, 20, 25, 30

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.: 134245	BORING LOG P48_SS-7	PLATE
DRAWN BY: WJF		
CHECKED BY: PFP	Parcel 48 - Amanda Jolly Modern Auto Sales 603 Elkin Highway Wilkesboro, NC	9
DATE:		
REVISED:		PAGE: 1 of 1

APPENDIX D

QED

AQROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: Wilkesboro, nc

Samples taken Wednesday, May 29, 2013
Samples extracted Wednesday, May 29, 2013
Samples analysed Wednesday, May 29, 2013

Contact: Craig Neil

Operator Travis O'Quinn

Project: Parcel 48

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	P48 SS-1 9-10'	11.3	<0.6	<0.6	<0.6	<0.6	< 0.56	< 0.06	< 0.028	0	0	100	Match not possible
s	P48 SS-2 4-5'	19.4	<1	<1	2.1	2.1	1.4	< 0.1	< 0.049	53.1	36.7	10.2	V.Deg.PHC 99.5%
s	P48 SS-3 9-10'	17.9	<0.9	<0.9	14.1	14.1	10.28	0.31	< 0.045	57	36.5	6.5	V.Deg.PHC 99.8%
s	P48 SS-4 9-10'	50.8	215.3	568.5	214	782.5	130.38	1.65	< 0.127	99.6	0.3	0.1	Deg.Petrol (est) 78%
s	P48 SS-4 44-45'	1149.3	1378	1872	150	2022	91	12	<1	100	0	0	Deg.Petrol (est) 77.4%
s	P48 SS-4-1 9-10'	43.1	<2.2	<2.2	5.6	5.6	4.59	< 0.22	< 0.108	62.3	27.9	9.8	V.Deg.PHC 94.2%
s	P48 SS-5 4-5'	21.3	<1.1	<1.1	12.5	12.5	11.87	0.36	< 0.053	46.8	43.8	9.3	V.Deg.PHC 94.1%
s	P48 SS-6 7-8'	18.7	<0.9	<0.9	1.7	1.7	< 0.94	< 0.09	< 0.047	74.2	23.2	2.6	V.Deg.PHC 97.3%
s	P48 SS-7 2-3'	19.3	<1	<1	3.5	3.5	2.31	< 0.1	< 0.048	52.1	38.7	9.1	V.Deg.PHC 97.4%

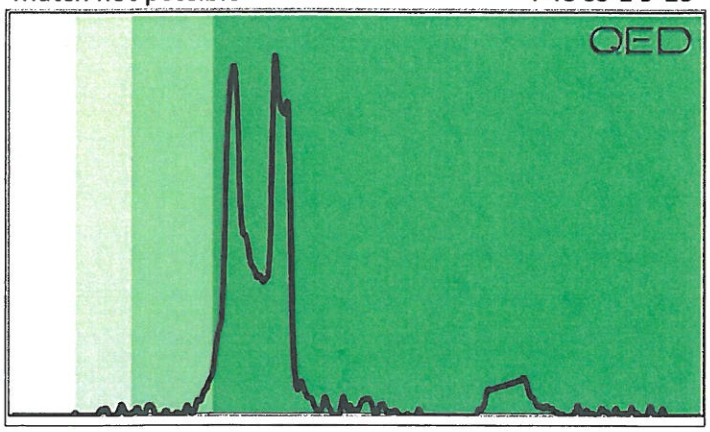
Initial Calibrator QC check Screening

Low Range Calibrator Final check
High Range Calibrator Final check

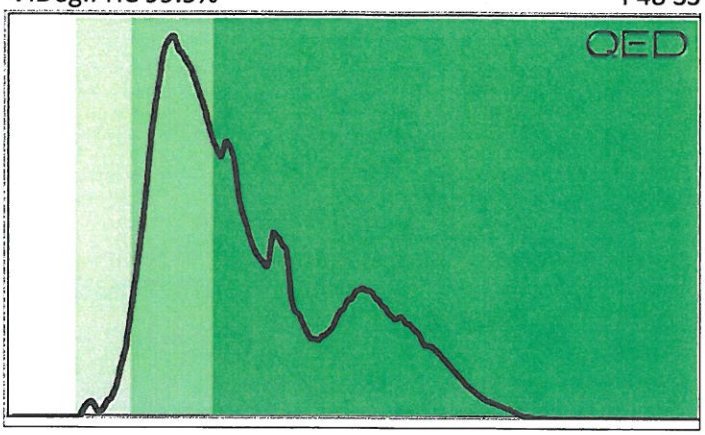
Results generated by a QED HC-1 analyser
Concentration values in mg/kg for soil samples and mg/L for water samples.
Soil values are not corrected for moisture or stone content

Fingerprints provide a tentative hydrocarbon identification based on operator selected library matches
Fingerprint match abbreviations Est = Specific calibrator not used, result estimated (PFM)= Poor library fingerprint match
(SBS)= site specific background subracted (LBS)= Library background subtracted % = match confidence

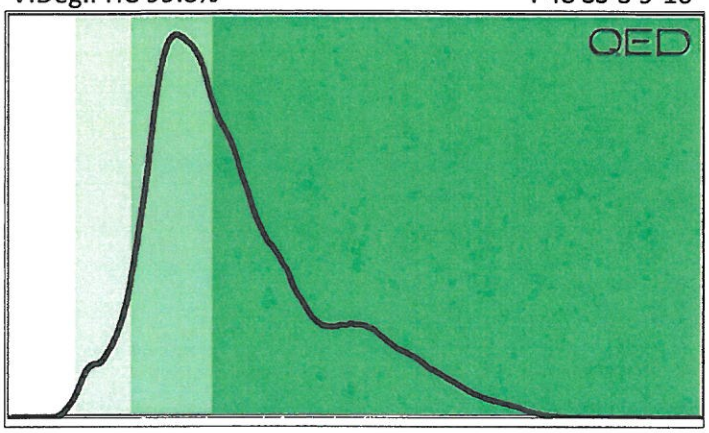
Match not possible P48 SS-1 9-10'



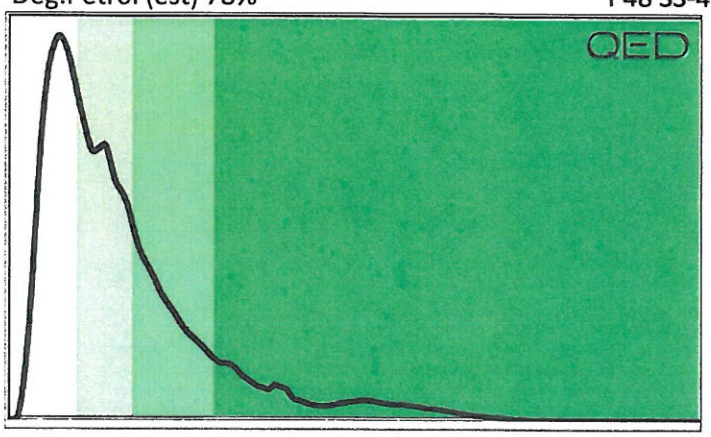
V.Deg.PHC 99.5% P48 SS-2 4-5'



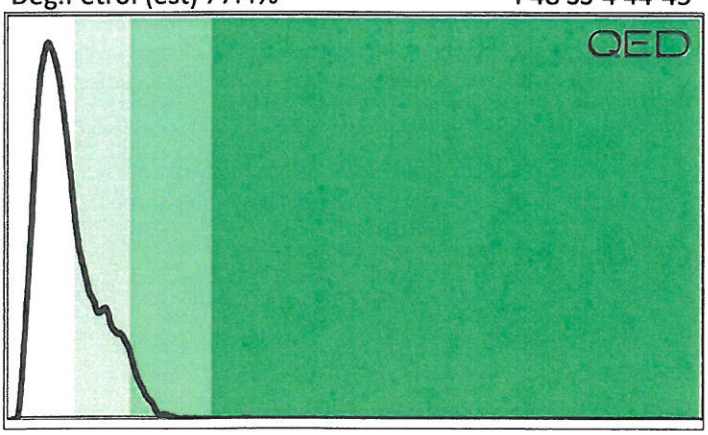
V.Deg.PHC 99.8% P48 SS-3 9-10'



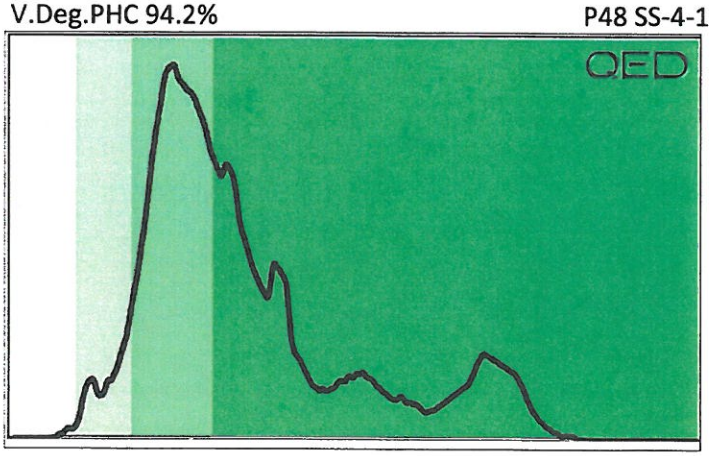
Deg.Petrol (est) 78% P48 SS-4 9-10'



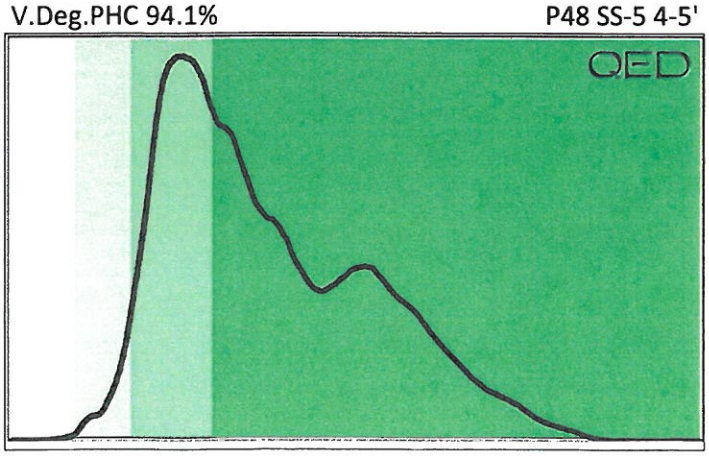
Deg.Petrol (est) 77.4% P48 SS-4 44-45'



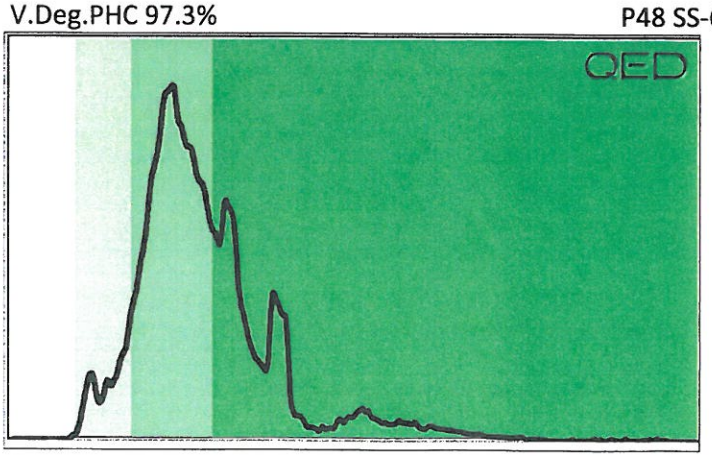
V.Deg.PHC 94.2% P48 SS-4-1 9-10'



V.Deg.PHC 94.1% P48 SS-5 4-5'

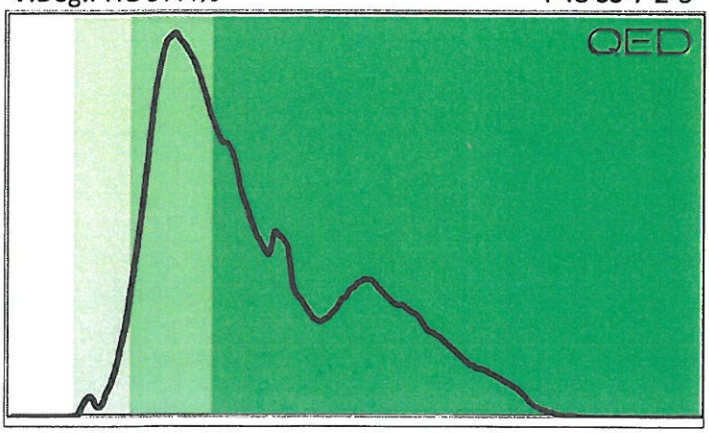


V.Deg.PHC 97.3% P48 SS-6 7-8'



Project Parcel 48 **Date** Wednesday, May 29, 2013

V.Deg.PHC 97.4% P48 SS-7 2-3'



APPENDIX E

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Pace Analytical Services, Inc.
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(704)875-9092

July 09, 2013

Travis O'Quinn
NCDOT West Central

,

RE: Project: P48 SS-4 9-10'
Pace Project No.: 92164248

Dear Travis O'Quinn:
Enclosed are the analytical results for sample(s) received by the laboratory on May 31, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Angela M. Baioni

Angela Baioni

angela.baioni@pacelabs.com
Project Manager

Enclosures

cc: Chemical Testing Engineer, NCDOT

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CERTIFICATIONS

Project: P48 SS-4 9-10'
Pace Project No.: 92164248

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: P48 SS-4 9-10'
Pace Project No.: 92164248

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92159930003	**P48 SS-4 9-10'**	Solid	05/28/13 09:38	05/31/13 13:35

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SAMPLE ANALYTE COUNT

Project: P48 SS-4 9-10'
Pace Project No.: 92164248

Lab ID	Sample ID	Method	Analysts	Analytes Reported
92159930003	**P48 SS-4 9-10'**	EPA 8015 Modified	RES	2
		EPA 8015 Modified	GAW	2
		ASTM D2974-87	TNM	1

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ANALYTICAL RESULTS

Project: P48 SS-4 9-10'
Pace Project No.: 92164248

Sample: P48 SS-4 9-10' **Lab ID: 92159930003** Collected: 05/28/13 09:38 Received: 05/31/13 13:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546							
Diesel Components	**534**	mg/kg	30.7	5	06/03/13 09:41	06/06/13 15:21	68334-30-5	
Surrogates								
n-Pentacosane (S)	0	%	41-119	5	06/03/13 09:41	06/06/13 15:21	629-99-2	S4
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	**1830**	mg/kg	28.5	4	06/05/13 12:11	06/05/13 21:53	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	174	%	70-167	4	06/05/13 12:11	06/05/13 21:53	460-00-4	S5
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**18.7**	%	0.10	1		06/07/13 10:14		

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QUALITY CONTROL DATA

Project: P48 SS-4 9-10'
Pace Project No.: 92164248

QC Batch: GCV/6961
QC Batch Method: EPA 5035A/5030B
Analysis Method: EPA 8015 Modified
Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92159930003

METHOD BLANK: 986894 Matrix: Solid
Associated Lab Samples: 92159930003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	06/05/13 13:26	
4-Bromofluorobenzene (S)	%	93	70-167	06/05/13 13:26	

LABORATORY CONTROL SAMPLE: 986895

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.7	44.9	90	70-165	
4-Bromofluorobenzene (S)	%			88	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 986896 986897

Parameter	Units	92159972001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	52.9	52.9	61.3	63.3	116	120	47-187	3	30	
4-Bromofluorobenzene (S)	%						85	92	70-167			

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QUALITY CONTROL DATA

Project: P48 SS-4 9-10'
Pace Project No.: 92164248

QC Batch: OEXT/22407
QC Batch Method: EPA 3546
Analysis Method: EPA 8015 Modified
Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92159930003

METHOD BLANK: 985352 Matrix: Solid
Associated Lab Samples: 92159930003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	06/05/13 19:36	
n-Pentacosane (S)	%	92	41-119	06/05/13 19:36	

LABORATORY CONTROL SAMPLE: 985353

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	54.7	82	49-113	
n-Pentacosane (S)	%			96	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 985354 985355

Parameter	Units	92159930001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Diesel Components	mg/kg	13.6	80.8	80.8	67.8	53.8	67	50	10-146	23	30	
n-Pentacosane (S)	%						63	60	41-119			

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: P48 SS-4 9-10'
Pace Project No.: 92164248

QC Batch: PMST/5585
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92159930003

SAMPLE DUPLICATE: 987762

Parameter	Units	92160299001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	24.8	25.0	1	25	

SAMPLE DUPLICATE: 988093

Parameter	Units	92160291002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	22.6	22.2	2	25	

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QUALIFIERS

Project: P48 SS-4 9-10'
Pace Project No.: 92164248

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: P48 SS-4 9-10'
Pace Project No.: 92164248

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92159930003	**P48 SS-4 9-10'**	EPA 3546	OEXT/22407	EPA 8015 Modified	GCSV/14790
92159930003	**P48 SS-4 9-10'**	EPA 5035A/5030B	GCV/6961	EPA 8015 Modified	GCV/6962
92159930003	**P48 SS-4 9-10'**	ASTM D2974-87	PMST/5585		

Pace Analytical	Document Number: F-CHR-CS-03-rev.10	Issuing Authority: Pace Huntersville Quality Office

Client Name: Clayfelter

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden ☐ Raleigh

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1101 T1102 **Type of Ice:** Wet Blue None ☐ Samples on ice, cooling process has begun

Temp Correction Factor T1101: No Correction T1102: No Correction

Corrected Cooler Temp.: 4.5 C **Biological Tissue is Frozen:** Yes No N/A

Temp should be above freezing to 6°C **Comments:**

Optional
Proj. Due Date:
Proj. Name:

Date and Initials of person examining contents: [illegible] 5/31/13

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☐Yes ☑No ☐N/A	10. RUSH vial broken for PS9
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11. (methanol vial)
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix:_____		
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☑No	
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted:_____ Date/Time:_____

Comments/ Resolution:_____

SCURF Review: EW **Date:** 5/31/13

SRF Review: AMB **Date:** 5/31/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO# : 92159930

92159930

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1175770

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Kleinfelder	Report To: Travis O'Quinn	Attention: Craig Neil
Address: Charlotte, NC	Copy To: Craig Neil	Company Name: Kleinfelder
		Address:
Email To: toquinn@kleinfelder.com	Purchase Order No.:	Pace Quote Reference: WBS 36000.1.1
Phone: Fax:	Project Name: NCDOT - Wilkesboro	Pace Project Manager: EW 5/31
Requested Due Date/TAT: Std	Project Number: 13424.5	Pace Profile #: ~~8944~~ 5696-1

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: NC

Section D Required Client Information

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Analysis Test: DRO	Analysis Test: GRO	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
P45 SS-1 14-15'	SL	G			5/28/13	1222												X	X		92159430001
P47 SS-3 7-8'					5/25/13	1358												X	X		002
P48 SS-4 9-10'					5/29/13	0938												X	X		003
P51 SS-2 4-5'					5/29/13	~~0854~~ 1644												X	X		004
P59 SS-4 14-15'					5/30/13	0854															005

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	[signature] / Kleinfelder	5/30/13	13:10	Zan Moody - Pace	5-31-13	13:10	
	Zan Moody	5-31-13	13:35	Lin Tyler	5/31/13	13:35	4.5 4.4 — —

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Travis O'Quinn

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 5/30/13

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.