PRELIMINARY SITE ASSESSMENT

NC 268 FROM MULTI-LANES EAST OF NC 18
TO SR 1966 (AIRPORT ROAD)
PARCEL 45 JAMES BROWN
TOTAL IMAGE BEAUTY SALON
517 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 | CLT13R0318

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 45 James Brown
Total Image Beauty Salon
517 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 six soil samples collected at the site detected contaminant at concentrations exceeding the state action levels in three of the soil samples. 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 45 James Brown Total Image Beauty Salon 517 Elkin Highway Wilkesboro, Wilkes County, North Carolina
Latitude and Longitude:	36° 11' 00.22" N, 81° 07' 50.05" W
Facility ID Number:	NA
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 LICENSED SEAL 1882 GEOLOGIST CRAIG NEIL

July 12, 2013

Craig D. Neil, P.G.
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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 Parcel 45 James Brown located at 517 Elkin Highway in Wilkesboro, Wilkes County, North Carolina (Figure 1). The site is currently developed with the Total Image Beauty Salon and a residence. 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 45 (Figure 2). Based on information provided by NCDOT, the site has no known underground storage tanks (USTs), however, a concrete pad in front of the business may have served as a former pump island. Furthermore, Kleinfelder identified a fill port that appeared to be associated with a heating oil UST at the residential property. 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 was occupied by the Total Image Beauty Salon and a residence. Based on information provided by NCDOT, the site has no known USTs at the site; however, a concrete pad in front of the business may have served as a former pump island. No unidentified anomalies or USTs were located during the geophysical investigation. However, a probable heating oil UST was identified at the residence on the western portion of the site. Site photographs are shown in Appendix A.

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1.2 Site Location

The facility is located at 517 Elkin Highway in Wilkesboro, North Carolina. The property is bound to the north by wooded area, to the east by Fairplains Road, to the south by Elkin Highway, and to the west by residential area.

2.0 SITE ASSESSMENT

2.1 Geophysical Investigation

Pyramid Environmental & Engineering, P.C (Pyramid) conducted a geophysical investigation of the property on May 15, 2013. Pyramid utilized ground penetrating radar (GPR) and electromagnetic (EM) induction technology to locate potential geophysical anomalies and potential USTs at the site. Pyramid did not identify suspected USTs within the proposed right-of-way. Pyramid did identify suspect product piping in front of the Total Image Beauty Salon. The suspected product piping extended from an area that appeared to be an historical dispenser island to the western side of the Total Image Beauty Salon. Kleinfelder also observed a fillport of what appeared to be a heating oil UST adjacent to the residence located on the western portion of the property which had not been identified and was not investigated during the geophysical investigation within the proposed right-of-way. A copy of the Pyramid Geophysical Investigation Report is included in Appendix B.

2.2 Soil Sampling

To determine if contaminated soil may be encountered during the proposed construction activities, six 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 28, 2013. Probe Technology advanced six soil borings (SS-1 to SS-6) by direct push technology (DPT). The approximate location of the borings is shown on Figure 3.

Soil borings were advanced to a depth of fifteen to twenty feet below the ground surface (bgs) at the boring locations. Soil boring SS-1 was located approximately ten feet from the probable UST located at the residential property and along the proposed easement. Since Kleinfelder did not know the exact orientation of the UST, we did not drill closer than ten feet to the fillport. Soil boring SS-2 through SS-4 were located in the vicinity of the suspect former dispenser island and

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product piping at the salon and along the proposed easement. Soil borings SS-5 and SS-6 were located on the vacant property on the eastern 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 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 for the location was selected 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, ethylbenzene 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-1 for laboratory analysis for TPH-DRO and TPH-GRO using EPA Method 8015B following 3546 and 5035 preparation. Soil sample SS-1 was 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 suspect product piping in front of the Total Image Beauty Salon. The suspected product piping extended from an area that appeared to be an historical dispenser island to the western side of the Total Image Beauty Salon. Kleinfelder also observed a fillport of what appeared to be a heating oil UST adjacent to the residence located on the western portion of the property which had not been identified and was not investigated during the geophysical investigation within the proposed right-of-way. Pyramid's report is included in Appendix B.

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3.2 Soil Sampling

TPH-DRO were detected in SS-1 (13.6 (laboratory analysis) and 34.3 (QED analysis) milligrams per kilogram (mg/kg)) at 14 to 15 feet below ground surface (bgs), in SS-5 (11.6 mg/kg) at 9 to 10 feet bgs, and in SS-6 (203.1 mg/kg) at 13 to 14 feet bgs, which are above the North Carolina action level (10 mg/kg). Targeted constituents were also identified in SS-2 and SS-3 at concentrations above the method detection limits, however, below the North Carolina action level. 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-1, SS-5, and SS-6. Based on the location of SS-1 (located approximately 10 feet from fillport) and the depth of the soil sample, Kleinfelder estimates that the contaminated soil at SS-1 covers an area approximately 150 square feet in size. The contaminated soil vertical extent is estimated to be approximately twenty feet bgs, which is the depth of cut in the vicinity of SS-1. Based on these dimensions Kleinfelder, estimates that there are approximately 85 cubic yards of impacted soil in the vicinity of SS-1. SS-5 and SS-6 were located on the vacant property on the eastern portion of the property; based on the available information the site had never been developed. However, based on the boring logs the area contains mostly fill material. Due to the area being fill material it is hard to estimate an accurate quantity of contaminated soils. Based on the limited soil samples, Kleinfelder estimates that the contaminated soil at SS-5 and SS-6 covers an area approximately 600 square feet in size. The contaminated soil vertical extent extends from nine to fourteen feet bgs in the vicinity of the drainage easement. Based on these dimensions Kleinfelder, estimates that there are approximately 111 cubic yards of impacted soil in the vicinity of SS-5 and SS-6. The approximate area of soil contamination is depicted on Figure 4. Kleinfelder was unable to identify a source for the impacted soils identified during the investigation in the vicinity of SS5 and SS-6.

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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 suspect product piping in front of the Total Image Beauty Salon. The suspected product piping extended from an area that appeared to be an historical dispenser island to the western side of the Total Image Beauty Salon.
- Kleinfelder observed a fillport of what appeared to be a heating oil UST adjacent to the residence located on the western portion of the property.
- Groundwater was not encountered in the soil borings.
- TPH-DRO was detected above the North Carolina action level in boring SS-1, SS-5, and SS-6.
- Based upon the analytical results, petroleum impacted soil is located in the vicinity of SS-1 between the five and twenty feet bgs and in the vicinity of SS-5 and SS-6 between nine and fourteen feet bgs.
- Approximately 196 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-1, SS-5, and SS-6 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

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TABLES

TABLE 1: SOIL SAMPLE PID RESULTS

SAMPLE LOCATION	DEPTH (feet bgs)	PID READINGS
SS-1	0.0-2.0	0.0
	7.0-13.0	0.0
	14.0-15.0	1.5
	15.0-20.0	0.0
SS-2	5.0-7.0	0.0
	7.0-9.0	0.0
	9.0-10.0	0.0
	10.0-15.0	0.0
SS-3	5.0-7.0	0.0
	9.0-10.0	0.0
	12.0-13.0	0.0
	14.0-15.0	0.0
SS-4	5.0-7.0	0.0
	9.0-10.0	0.0
	12.0-13.0	0.0
	14.0-15.0	0.0
SS-5	5.0-7.0	0.0
	9.0-10.0	0.0
	12.0-13.0	0.0
	14.0-15.0	0.0
SS-6	11.0-12.0	0.0
	12.0-13.0	0.0
	13.0-14.0	0.0
	14.0-15.0	0.0

Notes:

Samples were collected on May 28, 2013.
Readings reported in parts per million
feet bgs = feet below ground surface
Shaded = Selected for field analysis

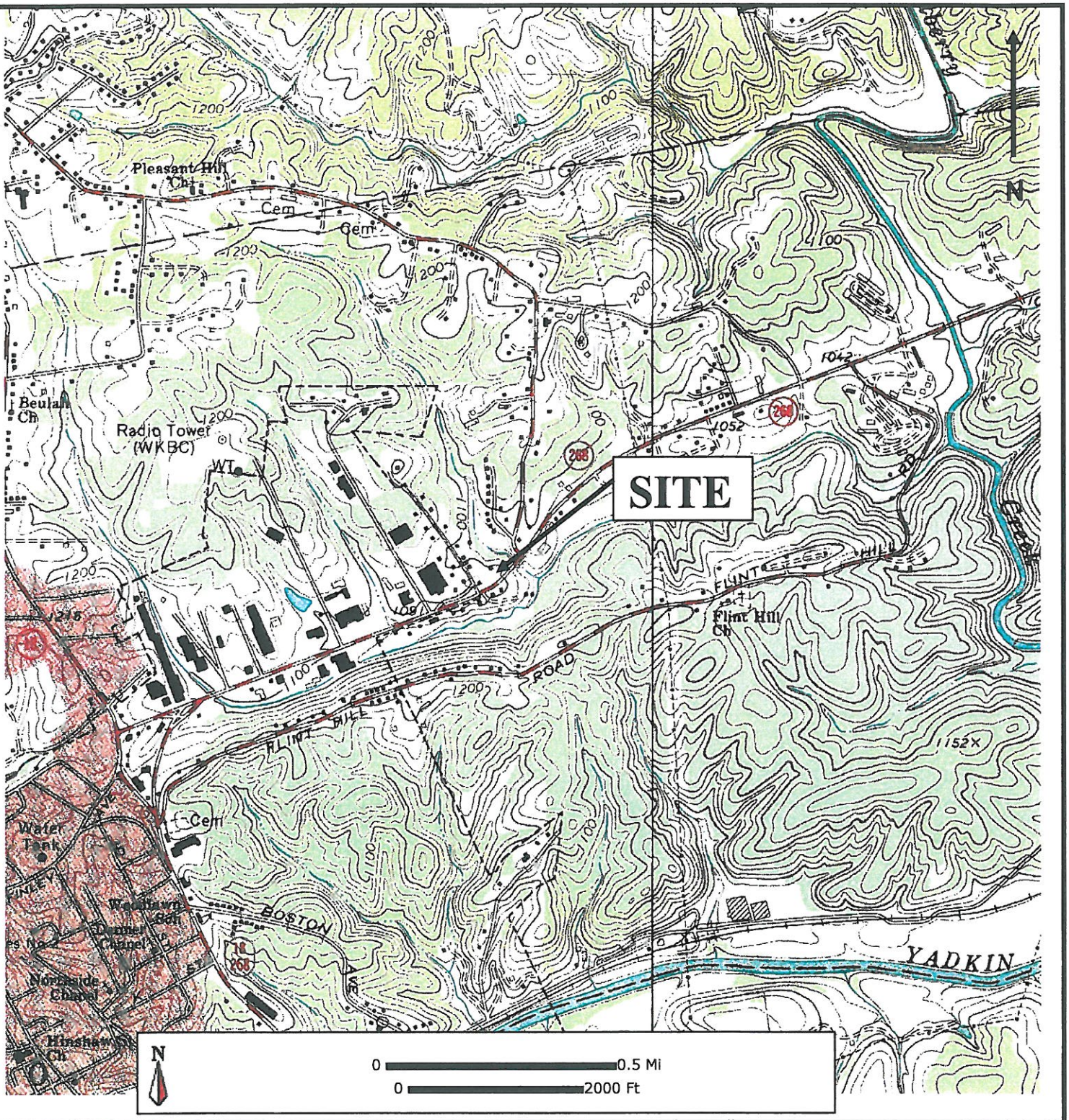
TABLE 2: SOIL SAMPLE FIELD ANALYTICAL SUMMARY

SAMPLE ID	DEPTH	COLLECTION DATE	QED Analysis							Laboratory Analysis	
			BTEX	TPH (C5-C35)	Total Aromatics	16 EPA PAHs	BaP	GRO (C5-C10)	DRO (C10-C35)	GRO	DRO
SS-1	14.0-15.0	5/28/2013	<1	35.7	15.82	0.21	<0.052	1.4	**34.3**	<7.2	**13.6**
SS-2	9.0-10.0	5/28/2013	<0.9	4.7	1.96	<0.09	<0.043	<0.9	4.7	NA	NA
SS-3	9.0-10.0	5/28/2013	<1.1	8.6	6.17	0.16	<0.057	<1.1	8.6	NA	NA
SS-4	9.0-10.0	5/28/2013	<0.6	<0.6	<0.64	<0.06	<0.032	<0.6	<0.6	NA	NA
SS-5	9.0-10.0	5/28/2013	<1.1	11.6	3.91	<0.11	<0.056	<1.1	**11.6**	NA	NA
SS-6	13.0-14.0	5/28/2013	<5.2	203.1	94.5	1.5	<1.1	<5.2	**203.1**	NA	NA
State Action Level (Petroleum UST)			NA	NA	NA	NA	NA	10	10	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
NA = Not Analyzed
Bold denotes concentration exceeds the State Action Level for Petroleum USTs

FIGURES



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CHARLOTTE, NORTH CAROLINA
PHONE: 704.598.1049

FIGURE 1
SITE LOCATION MAP

PARCEL 45 JAMES BROWN
TOTAL IMAGE BEAUTY SALON
517 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

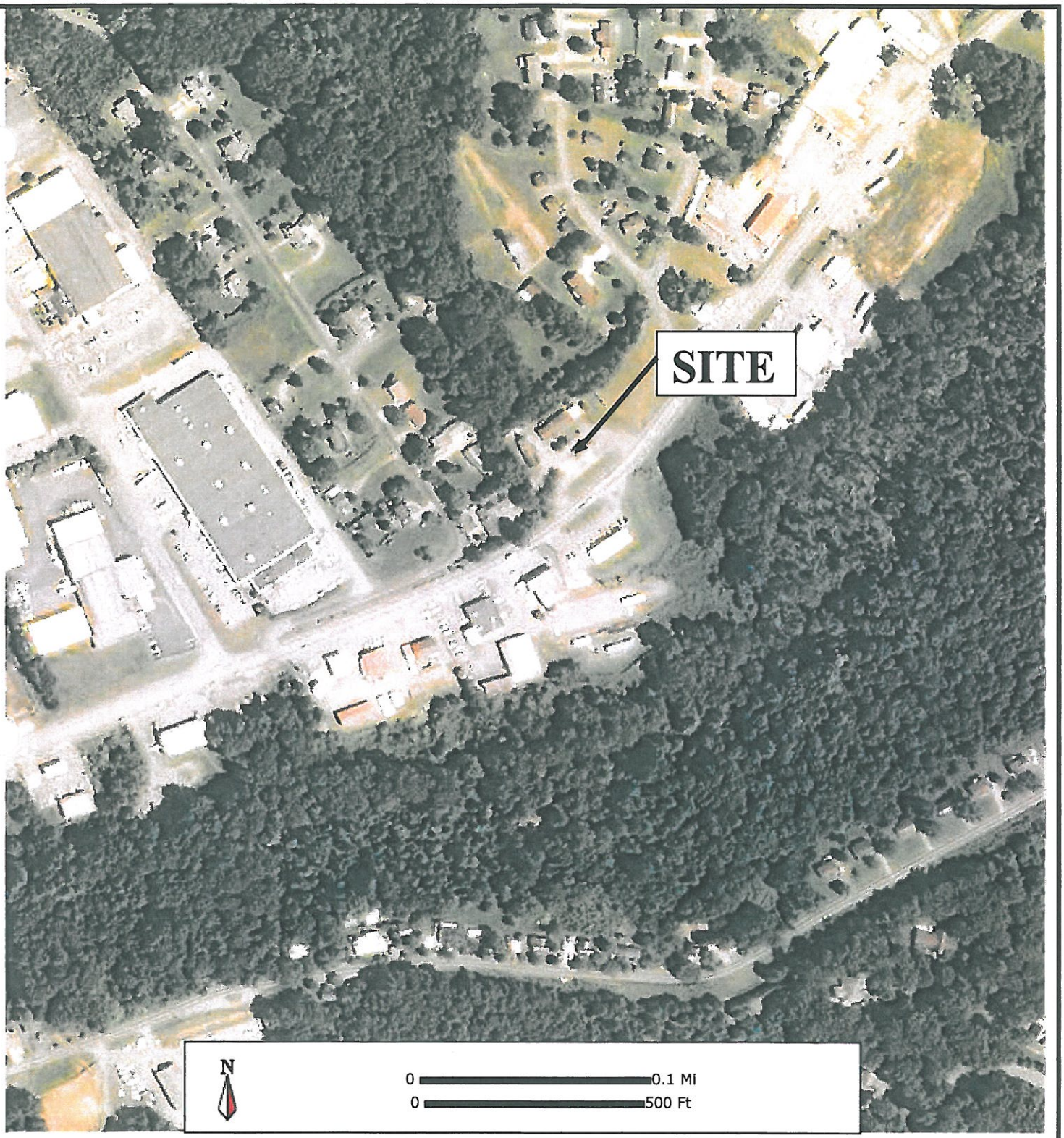

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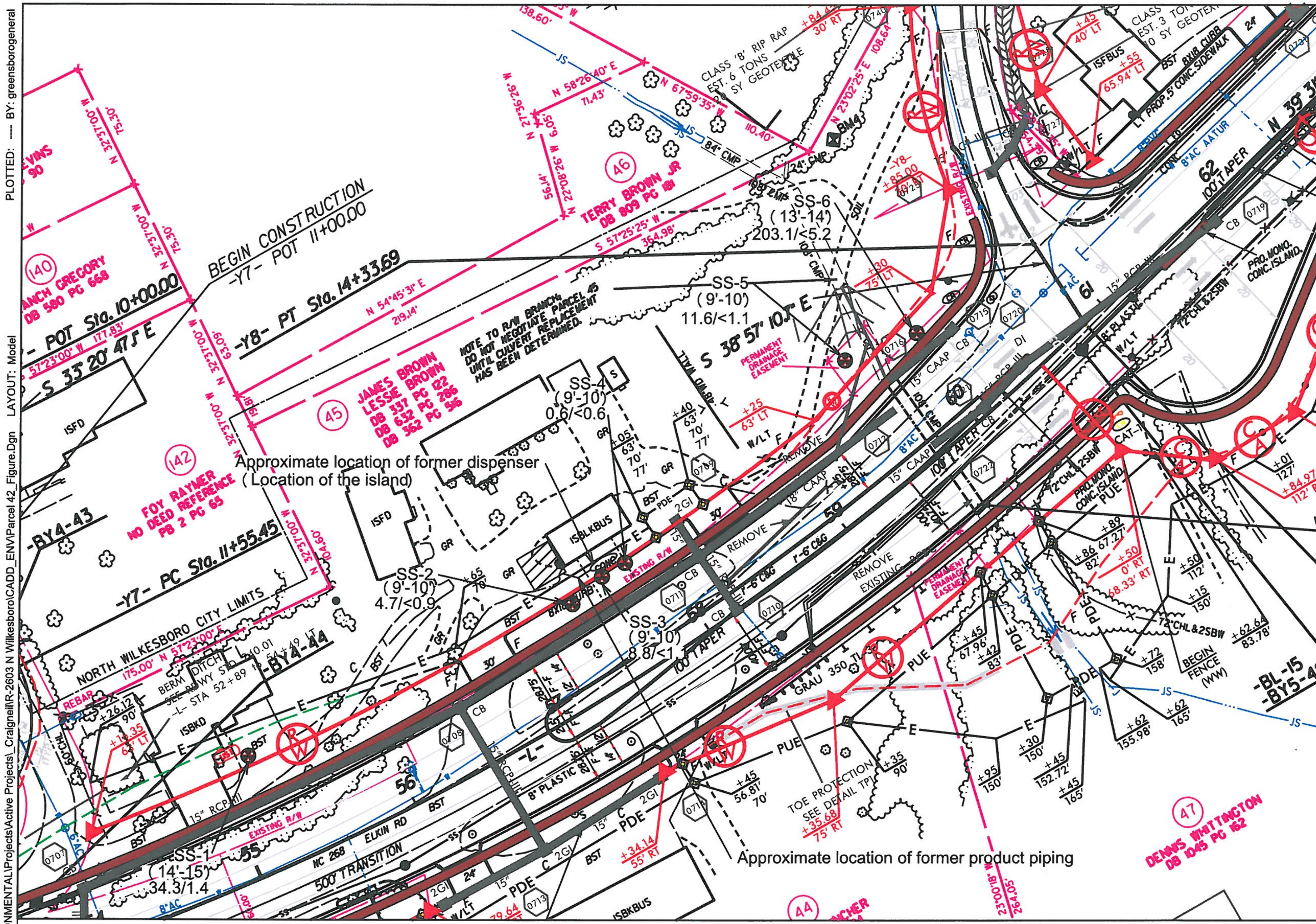
FIGURE 2
SITE MAP

PARCEL 45 JAMES BROWN
TOTAL IMAGE BEAUTY SALON
517 ELKIN HIGHWAY
WILKESBORO, NORTH CAROLINA

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



LEGEND

Symbol	Description
— — — (pink)	Existing Right of Way
—▲— (red)	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
UST	Probable USTs
(9'-10')	Sample Depth location
<0.6/<0.6	Concentration of TPH-DRO/TPH-GRO mg/kg (QROS-QED data)
▨	Approximate location of former UST Basin

0 60 120

SCALE: 1" = SCALE IN FEET

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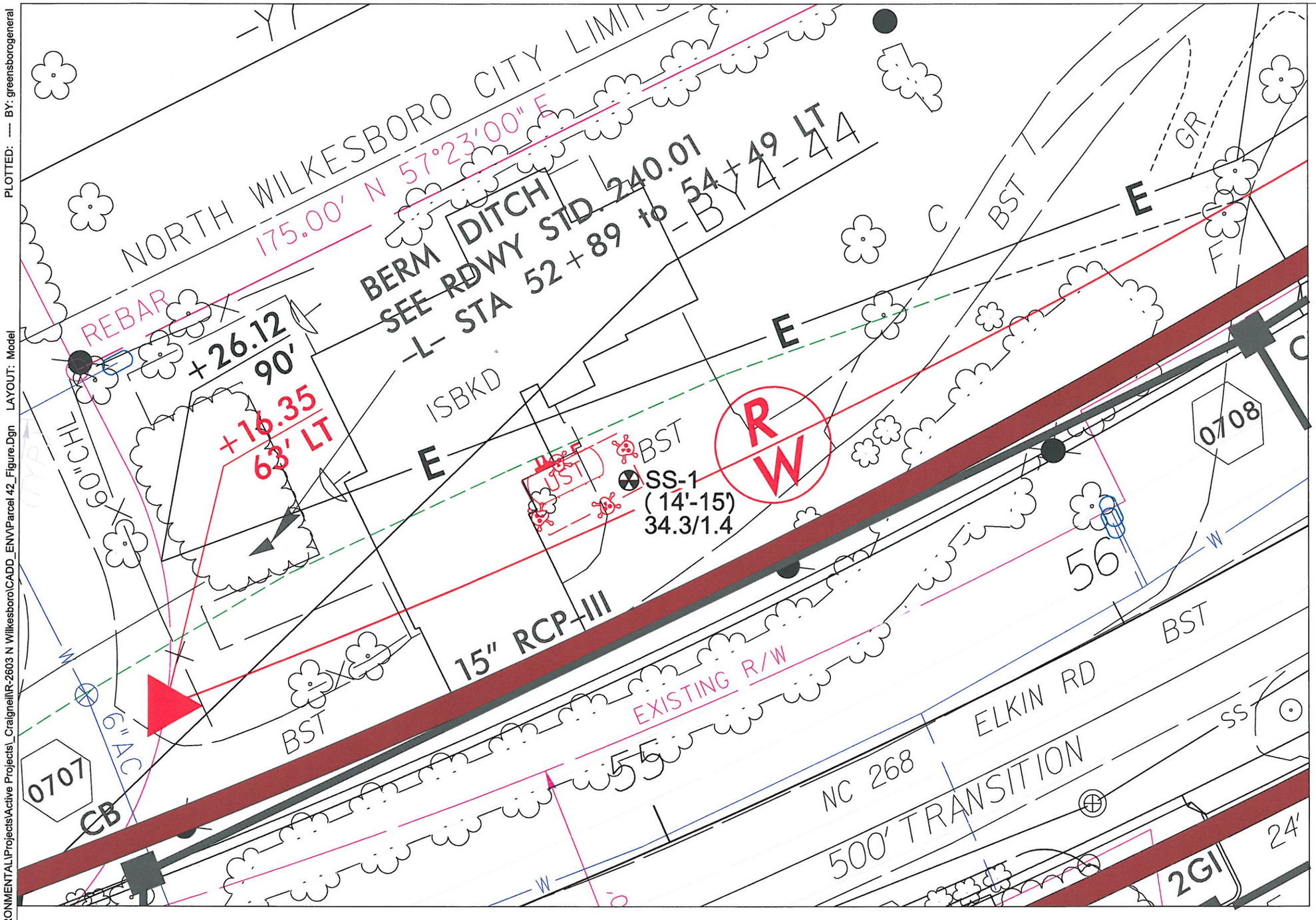
PROJECT NO.	134245	BORING LOCATION MAP PARCEL 45	Figure 3
DRAWN BY	WJF		
CHECKED BY	TO	NC DEPARTMENT OF TRANSPORATION TIP#: R-2603 WILKESBORO, NORTH CAROLINA	
DATE:	6/6/13		

CAD FILE: W:\Share_ENVIRONMENTAL\Projects\Active Projects_Craigne\R-2603 N Wilkesboro\CADD_ENV\Parcel 42_Figure.Dgn LAYOUT: Model PLOTTED: — BY: greensborogeneral



LEGEND

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

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0 20 40

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DRAWN BY	WJF
CHECKED BY	TO
DATE:	6/6/13

SOIL CONTAMINATION LOCATION MAP
PARCEL 45

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

Figure 4a

PLOTTED: --- BY: greensborogeneral
CAD FILE: W:\Share_ENVIRONMENTAL\Projects\Active Projects_Craigneil\R-2603 N Wilkesboro\CADD_ENV\Parcel 42_Figure.Dgn LAYOUT: Model

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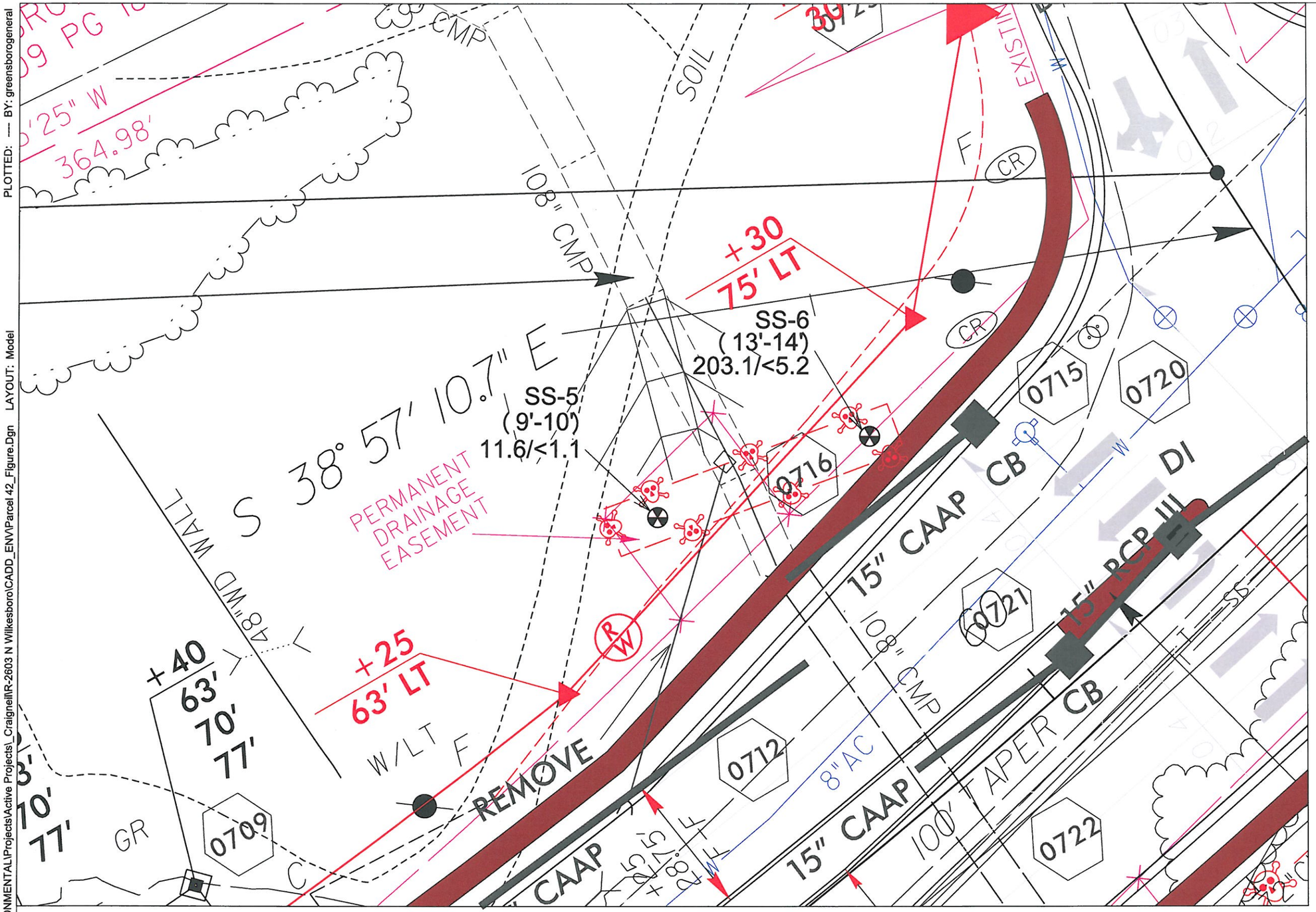

N

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
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- UST — Probable USTs
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DRAWN BY	WJF
CHECKED BY	TO
DATE:	6/6/13

SOIL CONTAMINATION LOCATION MAP
PARCEL 45

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

Figure
4b

APPENDIX A

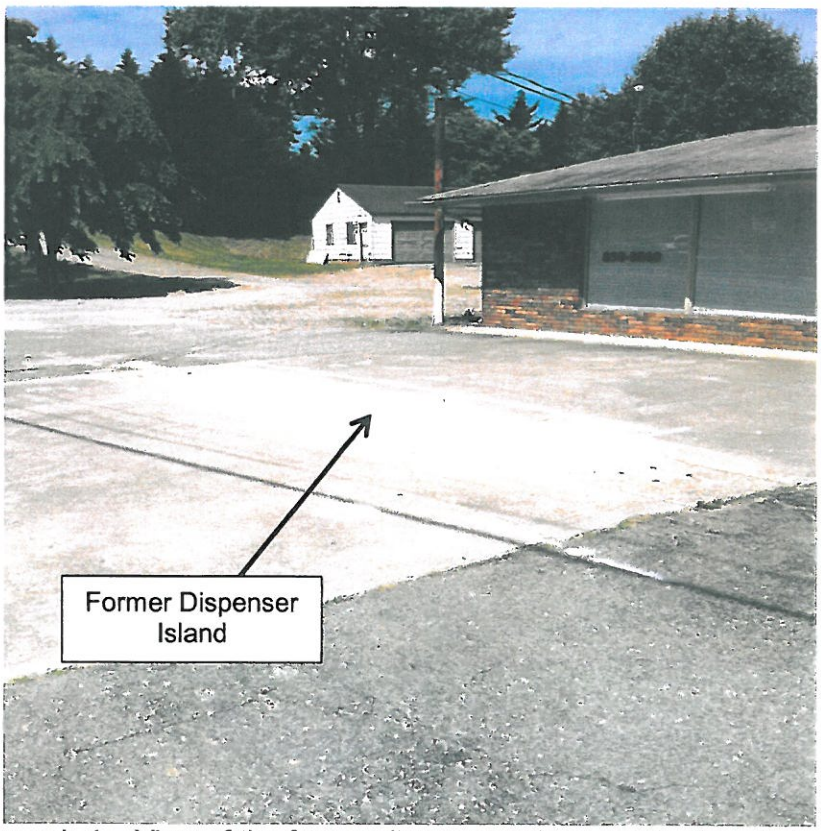
SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 134245
PARCEL NO. 45

Photograph 1 – View of the eastern portion of the site along Elkin Highway.

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

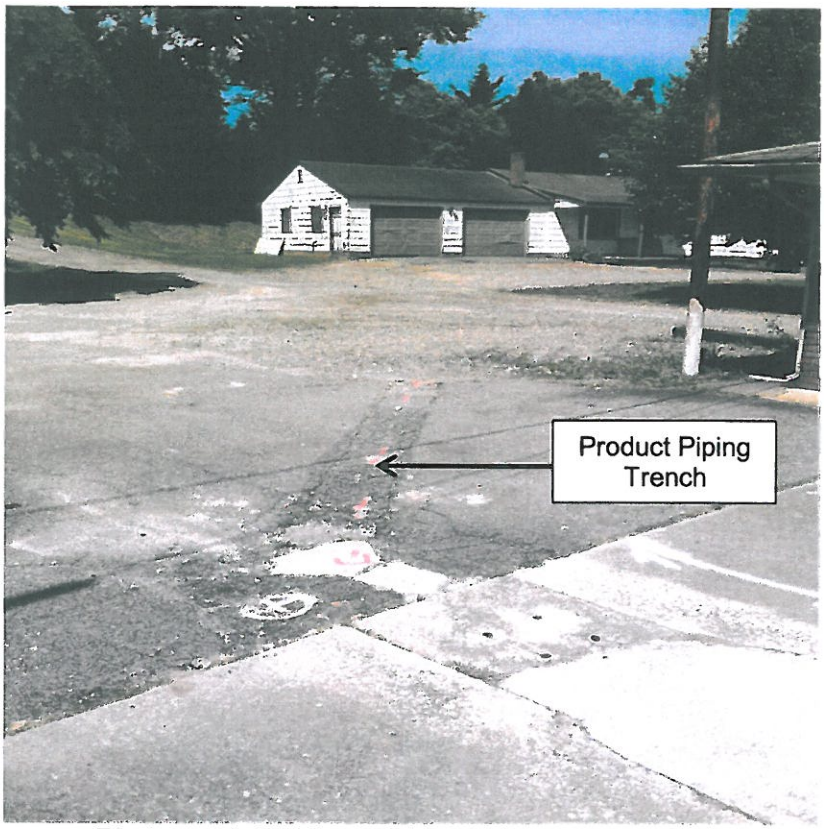
SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 134245
PARCEL NO. 45

Photograph 3 –View of the Total Image Beauty Salon.

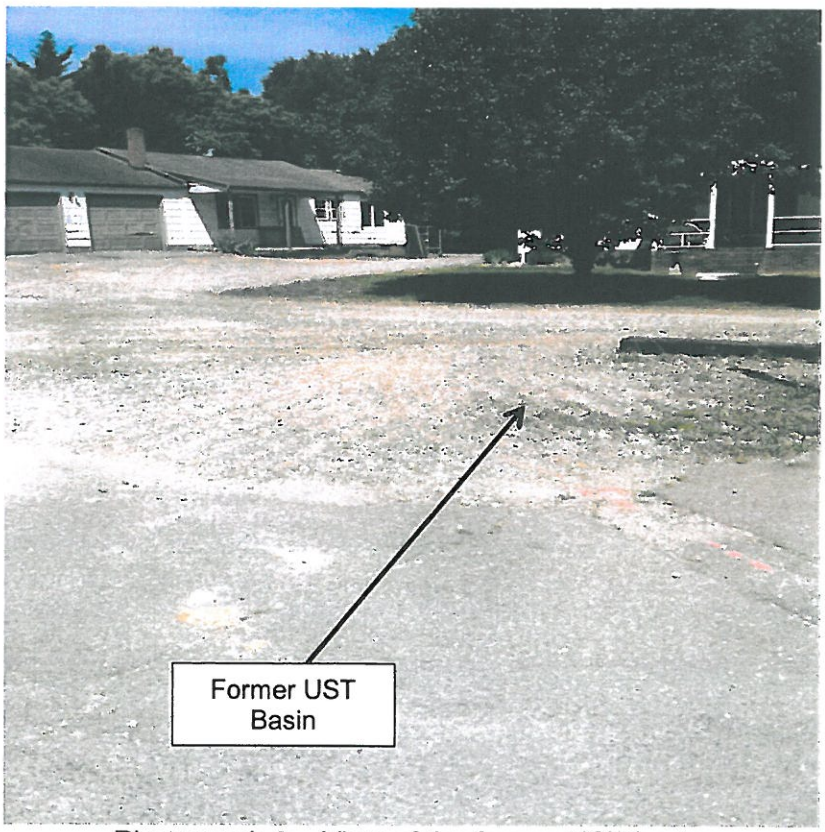


Photograph 4 – View of the former dispenser island south of the hair salon.

SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 134245
PARCEL NO. 45



Photograph 5 –View of the product piping trench.



Photograph 6 – View of the former UST basin.

SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 134245
PARCEL NO. 45

Photograph 7 – View of a residence located on the western portion of the property.

Photograph 8 – View of a heating oil UST fill port.

APPENDIX B

Pyramid Project # 2013-124

GEOPHYSICAL INVESTIGATION REPORT

EM61 & GPR SURVEYS

KLEINFELDER – NCDOT ROW GEOPHYSICAL SURVEY
PARCEL 45 – NC HWY 268
Wilkes County, North Carolina

June 7, 2013

Report prepared for: **Travis O'Quinn**
Kleinfelder
6200 Harris Technology Blvd.
Charlotte, NC 28269

Prepared by: _____

Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____

Douglas A. Canavello, P.G.
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(336) 335-3174

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 45 – NC HWY 268
Wilkes County, North Carolina

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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 45, NC Hwy. 268, North Wilkesboro, NC. The survey area extended across the south and east sides of the parcel, spanning a distance of approximately 400 feet along NC 268 and 160 feet along Fairfield Road. The geophysical survey area extended 70 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 16 and 20, 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.

In addition to the above-described survey area, the boundaries of the parcel extended further west upslope into a residential property. Due to the limited access associated with this area of the parcel, Pyramid (after discussions with Kleinfelder) performed reconnaissance EM transects in this area to determine if any metallic objects were present that may warrant additional investigation.

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 (east/west) of approximately 400 feet and a maximum length (north/south) of approximately 70 feet. The east geophysical area had a maximum width (east/west) of approximately 30 feet, and a maximum length (north/south) of approximately 160 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 reconnaissance transects performed at the western edge of the parcel in the residential property were done so without establishing a formal grid.

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. The EM survey was performed on May 16, 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 20, 2013, across selected EM61 differential anomalies using a GSSI SIR-2000 unit equipped with a 400 MHz antenna. Data were collected generally from east to west and north to south across specific EM61 anomalies. 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 west and east 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.

West Survey Grid: The EM anomaly at X=50, Y=78 was the result of a metal mailbox. The EM anomaly at X=110, Y=75 was the result of a metal pole, and the anomaly extending from this feature to the east was the result of reinforcement within the building foundation. The EM anomalies between X=110 and X=140 at Y=60 were the result of reinforcement within the former pump island at this location. The extensive EM response on the eastern side of the survey area was the result of a large metal storm sewer pipe extending from NC 268 to the north and northeast. The pipe was visible near the road and was also confirmed by the CADD files provided by the NCDOT for the site. The EM anomalies between X=370 and X=380 at Y=60 were the result of a fire hydrant and sign post. The anomaly centered at X=200 between Y=60 and Y=80 could not be attributed to any visible objects at the ground surface, and was investigated further by the GPR.

GPR scans were performed across all EM61 anomalies that could not 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 across EM anomalies were saved to the hard drive for pos-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 east to west and west to east across the unknown anomaly at X=200. A minor feature was noted in GPR Transect 1 that was indicative of a possible pipe/utility or isolated buried debris. The feature was not consistent with an underground tank. GPR Transects 2 and 3 were performed near the former pump island to investigate a possible former product line. A possible product line was noted by the GPR to extend from the former pump island to the west, where it connected to lines that had previously been marked by Kleinfelder's private utility locators.

Pyramid marked this extension of the product line in the field with paint for Kleinfelder. No other significant features were recorded by the GPR that would be indicative of any large objects below the ground surface, such as metallic USTs.

East Survey Grid: The EM anomaly at X=20, Y=45 was the result of a power pole. Minor anomalies that were only apparent in the bottom coil results on the northern half of the survey area were the result of minor metallic debris. No significant features were observed that would warrant further investigation by the GPR.

West Reconnaissance EM Survey: Reconnaissance EM transects were performed generally from east to west up the private driveway leading to the residence on the western portion of the parcel. Additional reconnaissance EM transects were performed adjacent to the residential building at the top of the hill from east to west and north to south. No responses were detected during the reconnaissance survey that would indicate the presence of buried metal objects.

The geophysical investigation suggests that the area of the proposed ROW/easement at Parcel 45 in North Wilkesboro, NC, does not contain metallic USTs.

4.0 SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across the proposed ROW/easement area at Parcel 45, 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 utilities. The GPR surveys across remaining areas at the property indicated that non-cultural anomalies were likely due to buried metallic debris or utilities. Former product lines were delineated by the geophysical survey and connected to

lines marked by Kleinfelder's private utility locator. No evidence was observed to indicate the presence of metallic USTs within the proposed ROW/easement.

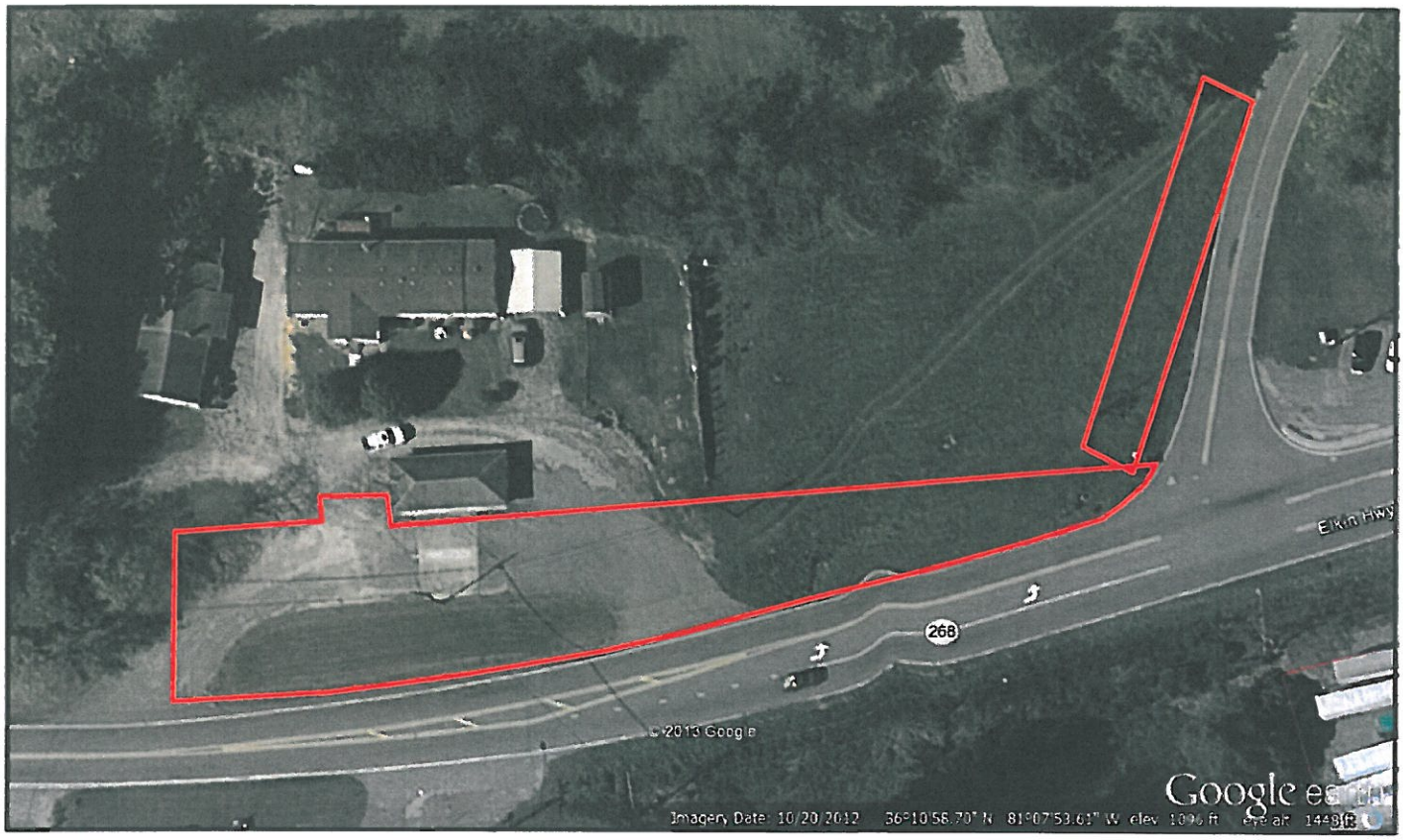
- A reconnaissance EM survey was performed around the residential building on the western portion of the parcel due to limited access. No evidence was recorded during this survey that would indicate the presence of large buried metal objects.

- The geophysical investigation suggests that the proposed ROW/easement area at the property does not contain metallic USTs.

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
for East and West Survey Grids

View of West Geophysical Survey Grid
(Photograph Facing Approximately West)

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

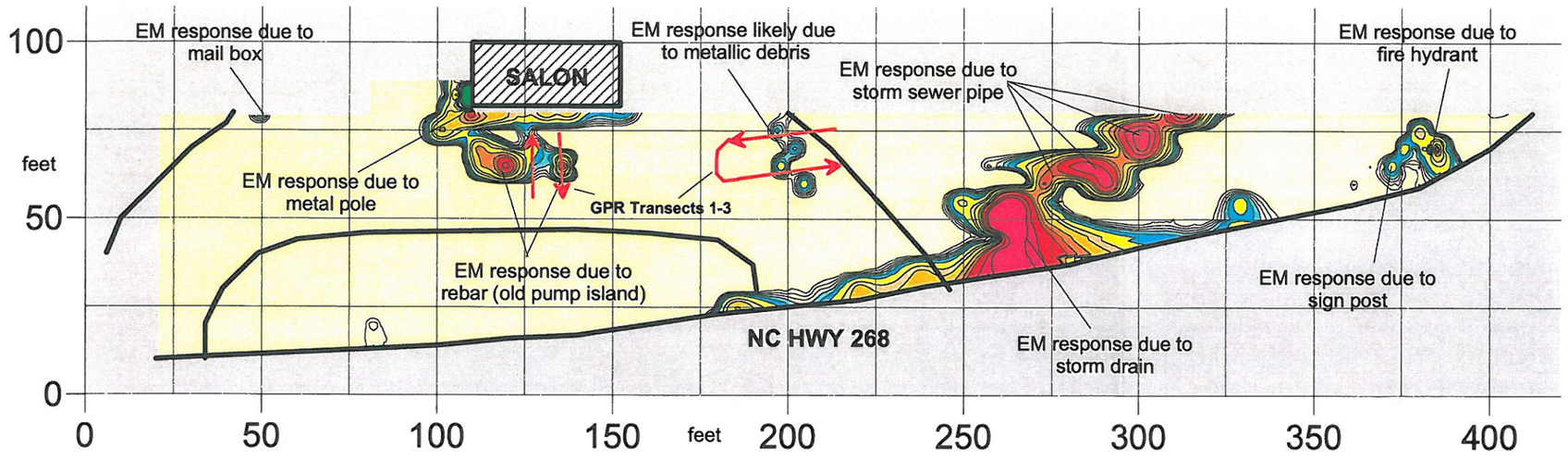
PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	KLEINFELDER	DATE	05/16/13	DRWN	ECC
SITE	PARCEL 45, WILKES COUNTY (NCDOT ROW PROJECT)	LAT		GRID	
CITY	NORTH WILKESBORO	STATE	NORTH CAROLINA	DWG	
TITLE	GEOPHYSICAL RESULTS	JOB	2013-131	FIGURE	

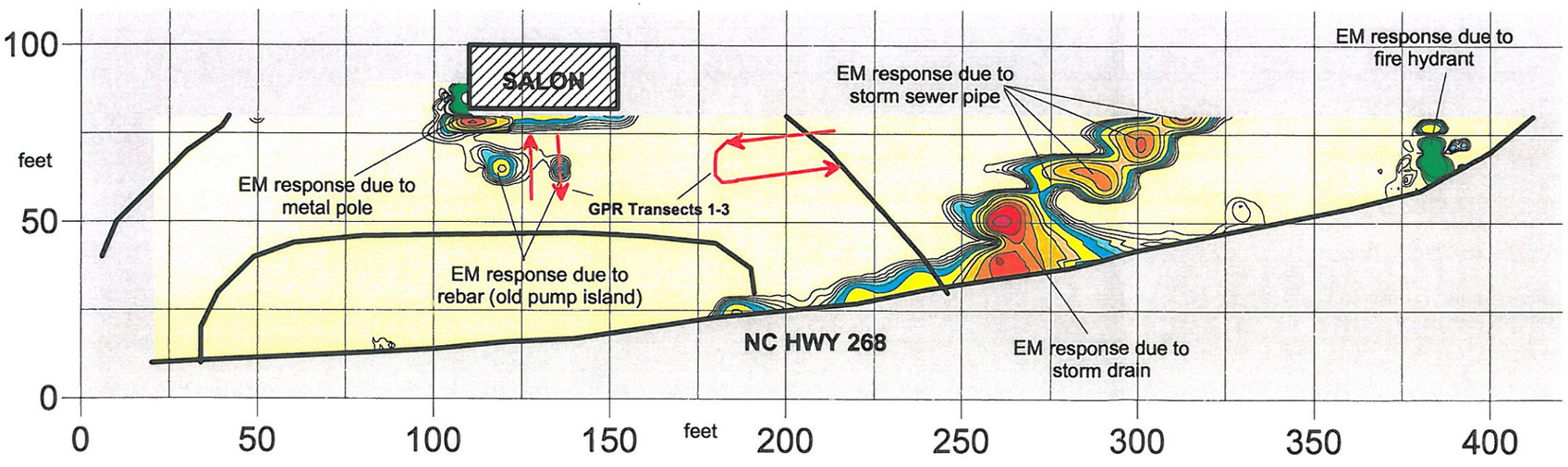
SURVEY BOUNDARIES &
SITE PHOTOGRAPHS

FIGURE 1

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 16, 2013 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were collected on May 20, 2013, using a GSSI SIR 2000 coupled to a 400 MHz antennae.

EM61 Metal Detection Response (millivolts)

N

TITLE

PARCEL 45 WEST GRID - EM61 BOTTOM COIL & DIFFERENTIAL RESULTS CONTOUR MAP

PROJECT

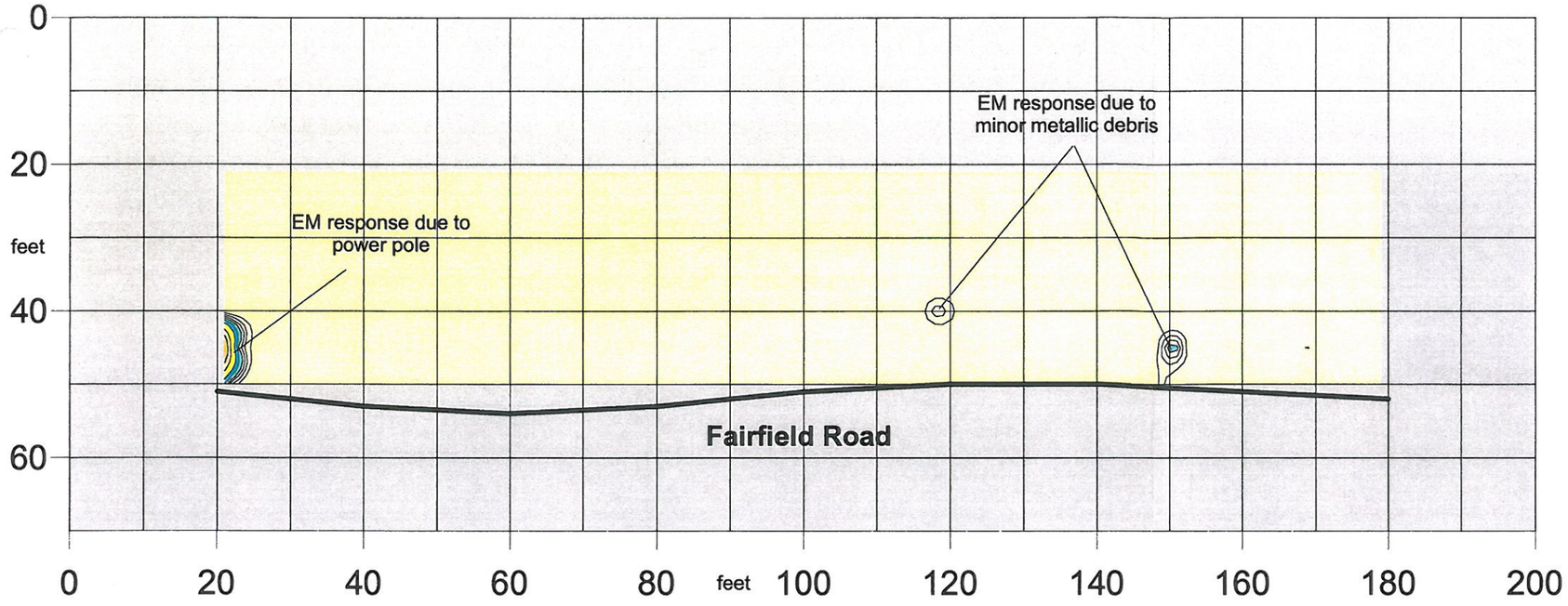
NC DEPARTMENT OF TRANSPORTATION
ROW IMPROVEMENT PROJECT
NORTH WILKESBORO, WILKES COUNTY, NC

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

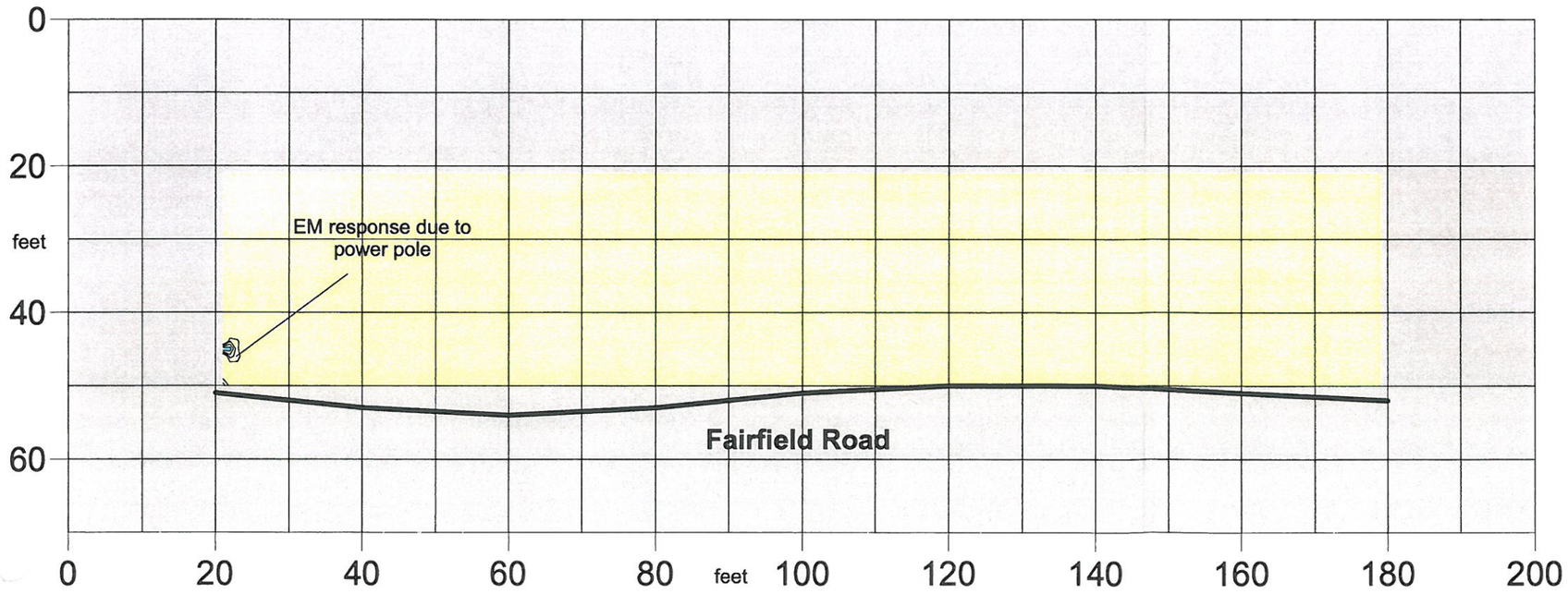
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE 06/05/2013	CLIENT KLEINFELDER
PYRAMID PROJECT #: 2013-124	**FIGURE 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 16, 2013 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were not collected due to the lack of any unexplained anomalies in the EM survey.

EM61 Metal Detection Response (millivolts)

N

TITLE

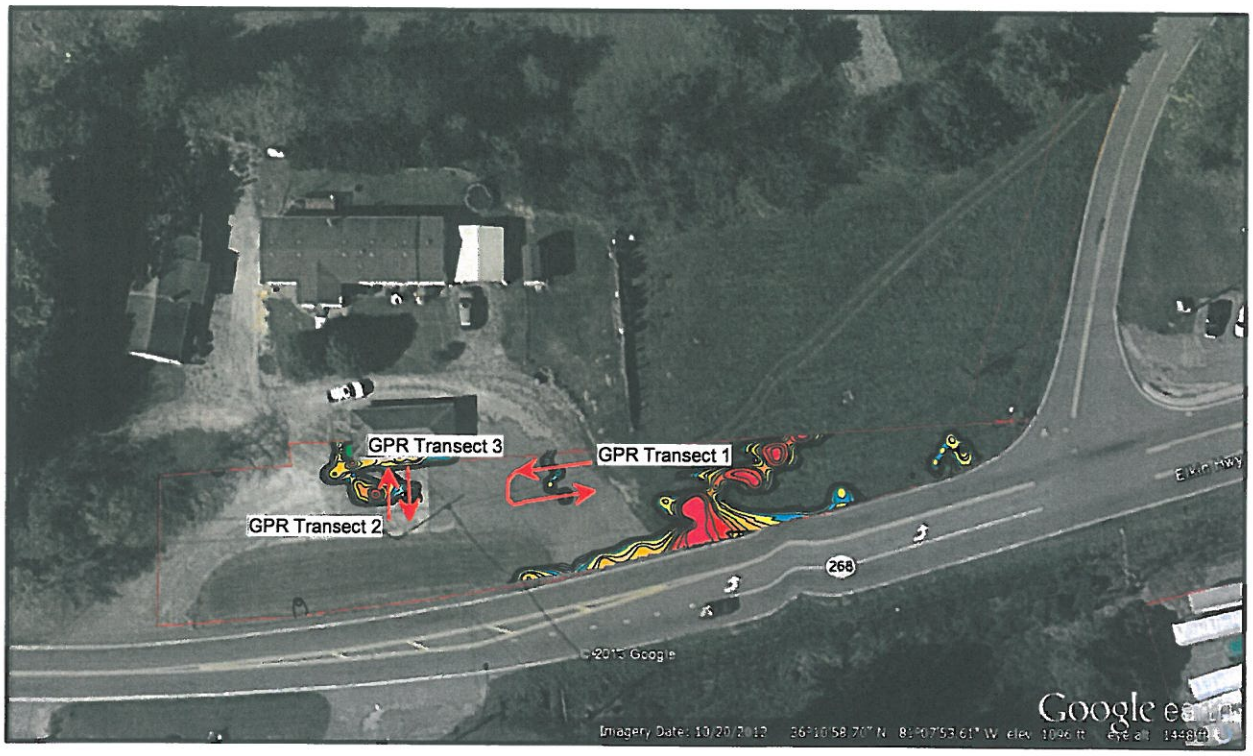
PARCEL 45 EAST GRID - EM61 BOTTOM COIL & DIFFERENTIAL RESULTS CONTOUR MAP

PROJECT

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

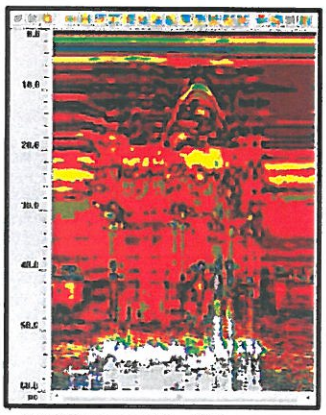
PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE	06/05/2013	CLIENT	KLEINFELDER
PYRAMID PROJECT #:	2013-124		**FIGURE 3**

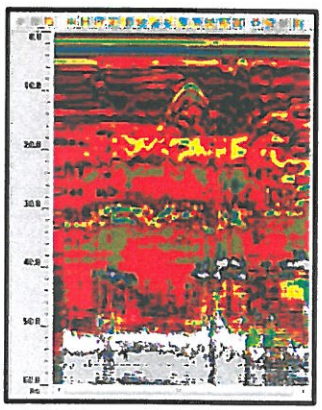


Aerial Photograph Showing the EM Anomalous Areas and the Locations of the GPR Transects

GPR Transect 1 - E/W and W/E across anomaly at X=200
(suspected debris or utility)



GPR Transect 2 - S/N across
suspected former product line



GPR Transect 3 - N/S across
suspected former product line

PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	KLEINFELDER	DATE	05/16/13	DRWN	ECC
SITE	PARCEL 45, WILKES COUNTY (NCDOT ROW PROJECT)	LAY		CHKD	
CITY	NORTH WILKESBORO	STATE	NORTH CAROLINA	PWO	
TITLE	GEOPHYSICAL RESULTS	JOB	2013-131	FIGURE	

GPR Transect Locations and Images

FIGURE 3

APPENDIX C

Date Begin - End:	5/28/2013	**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 P45_SS-1

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					0.0		**CLAY with Silt and Sand:** red, dry, Fill Material
5							
					0.0		**SILT with Clay and Sand:** tan, dry, Fill Material
10							
		SS-1			1.5		**SAND with Silt:** white, dry
					0.0		**SILT with Sand:** tan, dry
15							
20							
25							
30							

The exploration was terminated at approximately 20 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 P45_SS-1

Parcel 45 - James Brown
Total Image Beauty Salon
517 Elkin Highway
Wilkesboro, NC

PLATE 1

GINT FILE: W:\charlotte\environmental\projects\active Projects\134245_ncdot_wilkesboro\134245.gpj R:\KLF_STANDARD_GINT_LIBRARY_SR.1.1.GLB [KLF_ENVIRONMENTAL LOG]

Date Begin - End:	5/28/2013	**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 P45_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					0.0	
5					0.0	
10		SS-2			0.0	
15						
20						
25						
30						

SILT with Sand: tan brown, dry, Fill Material

Sandy SILT with White Beds and Mica: tan, dry

The exploration was terminated at approximately 15 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 P45_SS-2

Parcel 45 - James Brown
Total Image Beauty Salon
517 Elkin Highway
Wilkesboro, NC

PLATE 2

PAGE: 1 of 1

(INT FILE: W:\Natural Environmental\projects\active Projects\134245_ncdot_wilkesboro\134245.gpj R:\KLF_STANDARD_GINT_LIBRARY_SR.1.1.GLB [KLF_ENVIRONMENTAL LOG])

Date Begin - End:	5/28/2013	**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 P45_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	
5					0.0		**SILT with Clay and Sand**: tan brown, dry, Fill Material
10		SS-3			0.0 0.0		**SILT with Sand**: tan brown, dry
15					0.0		**SAND with Silt with beds**: white brown tan, dry
20							
25							
30							

The exploration was terminated at approximately 15 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 P45_SS-3

Parcel 45 - James Brown
Total Image Beauty Salon
517 Elkin Highway
Wilkesboro, NC

PLATE 3

PAGE: 1 of 1

GINT FILE: W:\charlotte\environmental\projects\active Projects\134245_ncdot_wilkesboro\134245.gpj R:\KLF_STANDARD_GINT_LIBRARY_SR.1.1.GLB [KLF_ENVIRONMENTAL LOG]

Date Begin - End:	5/28/2013	**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 P45_SS-4

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							**SILT with Clay**: tannish brown, dry
5					0.0		**SILT with Clay and white silty beddy**: tannish brown, dry
10					0.0		
		SS-4			0.0		**SILT with Clay and Sand and Mica**: tan brown, dry
15					0.0		
20							
25							
30							

The exploration was terminated at approximately 15 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 P45_SS-4

Parcel 45 - James Brown
Total Image Beauty Salon
517 Elkin Highway
Wilkesboro, NC

PLATE 4

PAGE: 1 of 1

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Date Begin - End:	5/28/2013	**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 P45_SS-5

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					0.0	
					0.0	
5						
					0.0	
10		SS-5			0.0	
					0.0	
15						
20						
25						
30						

SILT with Clay and Sand: reddish tan, dry, Fill Material

SILT with Clay and Sand: brown, dry, Fill Material

The exploration was terminated at approximately 15 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 P45_SS-5

Parcel 45 - James Brown
Total Image Beauty Salon
517 Elkin Highway
Wilkesboro, NC

PLATE 5

PAGE: 1 of 1

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Date Begin - End:	5/28/2013	**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 P45_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	
0					0.0		**SILT with Clay and Sand:** red, dry, Fill Material
					0.0		
5					0.0		
10					0.0		
		SS-6			0.0		**SILT with Clay and Sand:** brownish black, dry, Fill Material
15							**SILT with Clay and Sand:** reddish tan, dry
20							
25							
30							

The exploration was terminated at approximately 15 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 P45_SS-6

Parcel 45 - James Brown
Total Image Beauty Salon
517 Elkin Highway
Wilkesboro, NC

PLATE 6

PAGE: 1 of 1

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APPENDIX D

QED

AQROS

Hydrocarbon Analysis Results

Client: NC DOT
Address: North Wilkesboro, NC

Samples taken Tuesday, May 28, 2013
Samples extracted Tuesday, May 28, 2013
Samples analysed Tuesday, May 28, 2013

Contact: Craig Neil

Operator Travis O'Quinn

Project: Parcel 45

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	P45 SS3 9-10'	22.8	<1.1	<1.1	8.6	8.6	6.17	0.16	< 0.057	61.6	34.8	3.6	V.Deg.PHC 98.2%
s	P45 SS1 14-15'	20.8	<1	1.4	34.3	35.7	15.82	0.21	< 0.052	88.2	9.7	2.2	V.Deg Kerosene (est) 82.1%
s	P45 SS2 9-10'	17.2	<0.9	<0.9	4.7	4.7	1.96	< 0.09	< 0.043	60.8	29.3	9.9	Degraded Fuel (est) 92.6%
s	P45 SS4 9-10'	12.7	<0.6	<0.6	<0.6	<0.6	< 0.64	< 0.06	< 0.032	0	0	100	Match not possible
s	P45 SS5 9-10'	22.4	<1.1	<1.1	11.6	11.6	3.91	< 0.11	< 0.056	52.8	33	14.2	Degraded Fuel (est) 94.1%
s	P45 SS-6 13-14'	103.4	<5.2	<5.2	203.1	203.1	94.5	1.5	<0.26	57.3	36.4	6.3	Degraded Fuel (est) 83.3%

Initial Calibrator QC check

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

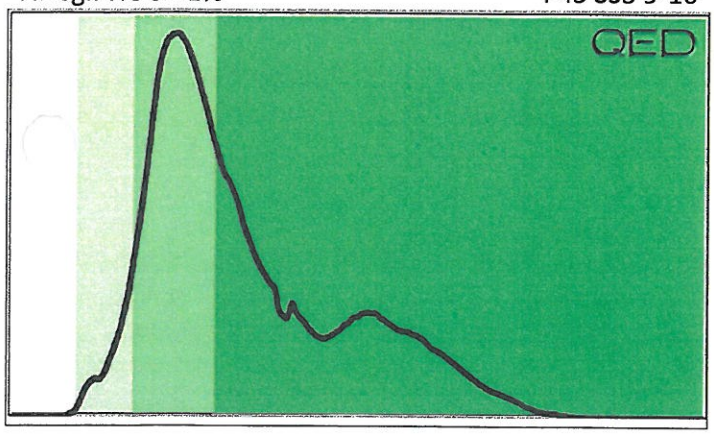
Fingerprints provide a tentative hydrocarbon identification based on operator selected library matches

Fingerprint match abbreviations Est = Specific calibrator not used, result estimated (PFM)= Poor library fingerprint match

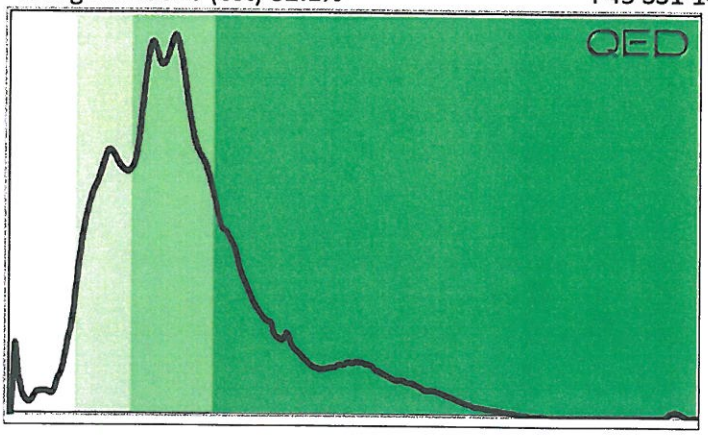
(SBS)= site specific background subracted (LBS)= Library background subtracted % = match confidence

Project Parcel 45 Date Tuesday, May 28, 2013

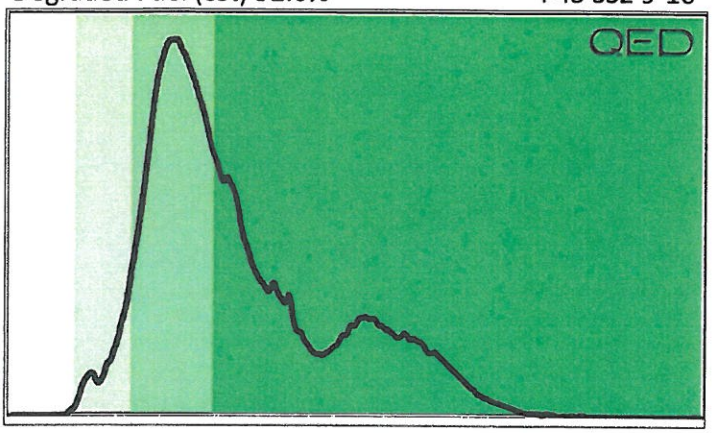
V.Deg.PHC 98.2% P45 SS3 9-10'



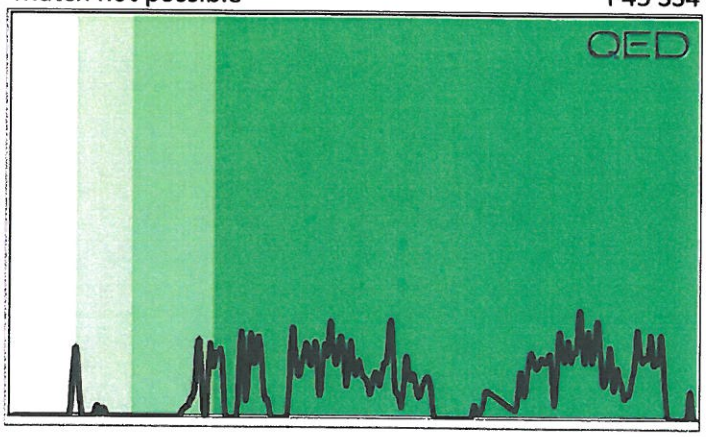
V.Deg Kerosene (est) 82.1% P45 SS1 14-15'



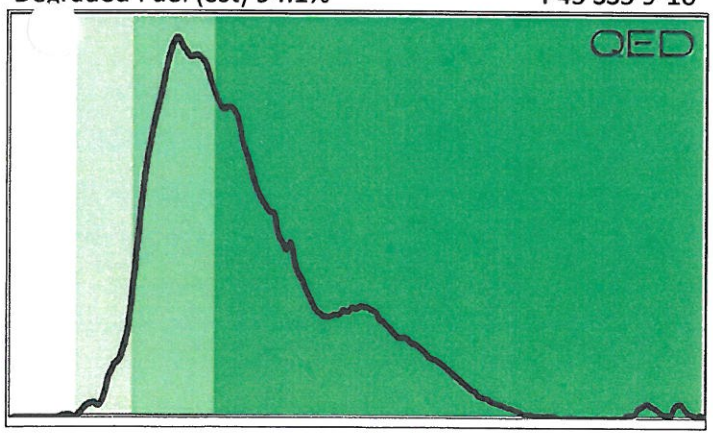
Degraded Fuel (est) 92.6% P45 SS2 9-10'



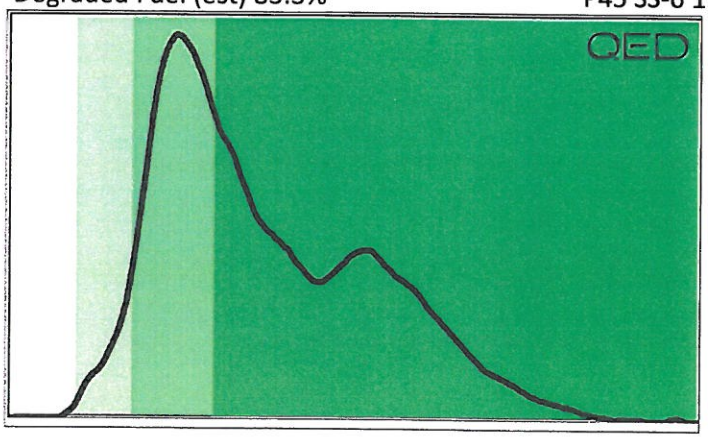
Match not possible P45 SS4 9-10'



Degraded Fuel (est) 94.1% P45 SS5 9-10'



Degraded Fuel (est) 83.3% P45 SS-6 13-14'



APPENDIX E

Pace Analytical®
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Pace Analytical Services, Inc.
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(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

July 09, 2013

Travis O'Quinn
NCDOT West Central

,

RE: Project: P45 SS-1 14-15'
Pace Project No.: 92164233

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: P45 SS-1 14-15'
Pace Project No.: 92164233

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: P45 SS-1 14-15'
Pace Project No.: 92164233

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92159930001	**P45 SS-1 14-15'**	Solid	05/28/13 12:22	05/31/13 13:35

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SAMPLE ANALYTE COUNT

Project: P45 SS-1 14-15'
Pace Project No.: 92164233

Lab ID	Sample ID	Method	Analysts	Analytes Reported
92159930001	**P45 SS-1 14-15'**	EPA 8015 Modified	RES	2
		EPA 8015 Modified	GAW	2
		ASTM D2974-87	TNM	1

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ANALYTICAL RESULTS

Project: P45 SS-1 14-15'
Pace Project No.: 92164233

Sample: P45 SS-1 14-15' **Lab ID: 92159930001** Collected: 05/28/13 12:22 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	**13.6**	mg/kg	6.1	1	06/03/13 09:41	06/05/13 22:43	68334-30-5	
Surrogates								
n-Pentacosane (S)	68	%	41-119	1	06/03/13 09:41	06/05/13 22:43	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	7.2	1	06/05/13 12:11	06/05/13 19:12	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	89	%	70-167	1	06/05/13 12:11	06/05/13 19:12	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**17.5**	%	0.10	1		06/07/13 10:14		

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QUALITY CONTROL DATA

Project: P45 SS-1 14-15'
Pace Project No.: 92164233

QC Batch: GCV/6961
QC Batch Method: EPA 5035A/5030B
Analysis Method: EPA 8015 Modified
Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92159930001

METHOD BLANK: 986894 Matrix: Solid
Associated Lab Samples: 92159930001

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: P45 SS-1 14-15'
Pace Project No.: 92164233

QC Batch: OEXT/22407
QC Batch Method: EPA 3546
Analysis Method: EPA 8015 Modified
Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92159930001

METHOD BLANK: 985352 Matrix: Solid
Associated Lab Samples: 92159930001

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			

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QUALITY CONTROL DATA

Project: P45 SS-1 14-15'
Pace Project No.: 92164233

QC Batch: PMST/5585
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92159930001

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	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: P45 SS-1 14-15'
Pace Project No.: 92164233

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: P45 SS-1 14-15'
Pace Project No.: 92164233

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92159930001	**P45 SS-1 14-15'**	EPA 3546	OEXT/22407	EPA 8015 Modified	GCSV/14790
92159930001	**P45 SS-1 14-15'**	EPA 5035A/5030B	GCV/6961	EPA 8015 Modified	GCV/6962
92159930001	**P45 SS-1 14-15'**	ASTM D2974-87	PMST/5585		

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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

ier: ☐ 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.: 9.5 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: Comm - 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	
ntainers Intact:	☐Yes ☑No ☐N/A	10. RUN vial broken for P59
ltered 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:** 9/31/13

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

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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:

- Company: Kleinfelder
- Address: Charlotte, NC
- Email To: toquinn@kleinfelder.com
- Phone:
- Fax:
- Requested Due Date/TAT: Std

Section B — Required Project Information:

- Report To: Travis O'Quinn
- Copy To: Craig Neil
- Purchase Order No.:
- Project Name: NCDOT - Wilkesboro
- Project Number: 134245

Section C — Invoice Information:

- Attention: Craig Neil
- Company Name: Kleinfelder
- Address:
- Pace Quote Reference: WBS 36000.1.1
- Pace Project Manager: [illegible] 5/31
- Pace Profile #: ~~894~~ 5696-1

REGULATORY AGENCY

- NPDES
- GROUND WATER
- DRINKING WATER
- UST
- RCRA
- OTHER ______

Site Location STATE: NC

Section D — Required Client Information

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

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

Requested Analysis Filtered (Y/N)

SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	DRO	GRO	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 9215993O
P45 SS-1 14-15'	SL	G			5/28/13	1222												X	X		001
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	[signature] - Pace	5-31-13	13:10				
	[signature]	5-31-13	13:35	[signature]	5/31/13	13:35	4.9	Y	~~Y~~ [illegible]	[illegible] 5/31/13
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

ORIGINAL

SAMPLER NAME AND SIGNATURE

- PRINT Name of SAMPLER: Travis O'Quinn
- SIGNATURE of SAMPLER: [signature]
- DATE Signed (MM/DD/YY): 5/30/13

*Important Note: By si[...]his form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoic[...] paid within 30 days.

F-ALL-Q-020rev.07, 15-May-[...]7