

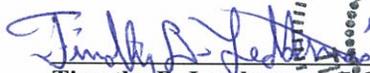
Pyramid Environmental & Engineering, P.C. Project # 2013-131
Preliminary Site Assessment (PSA) – Parcel 72, Ken Hamby & Mark Bare

PRELIMINARY SITE ASSESSMENT
PARCEL 72, KEN HAMBY & MARK BARE
725 ELKIN HIGHWAY (NC 268)
NORTH WILKESBORO, WILKES COUNTY, NORTH CAROLINA
STATE PROJECT: R-2603
WBS ELEMENT: 36001.1.2
July 22, 2013

Report prepared for:

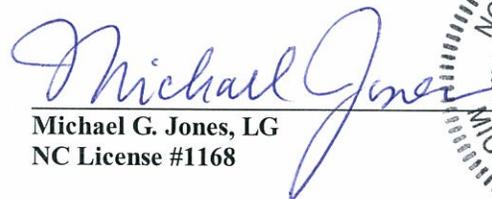
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C-257 –Geology
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**PRELIMINARY SITE ASSESSMENT
PARCEL 72, KEN HAMBY & MARK BARE
725 ELKIN HIGHWAY (NC 286)
NORTH WILKESBORO, WILKES COUNTY, NORTH CAROLINA**

EXECUTIVE SUMMARY OF RESULTS

Pyramid Environmental & Engineering P.C. (Pyramid) has prepared this Preliminary Site Assessment (PSA) report documenting background information, field activities, assessment activities, findings, conclusions, and recommendations for the Parcel 72, Ken Hamby and Mark Bare. The purpose of this assessment was to determine the presence or absence of underground storage tanks (USTs) and impacted soils at the subject property within the proposed easement and between the existing right of way (ROW) and edge of pavement with emphasis on the areas of proposed drainage structures (State Project R-2603). This preliminary site assessment was conducted on behalf of the North Carolina Department of Transportation (NCDOT) in accordance with Pyramid's May 7, 2013, technical proposal.

The following statements summarize the results of the PSA:

- **Site History:** A review of the North Carolina Department of Environment and Natural Resources (NC DENR) registered UST database and incident database indicated no incidents for the Ken Hamby and Mark Bare property (Parcel 72). On May 22, 2013, Pyramid emailed the Wilkes County parcel addresses to Ms. Carin Kromm, the Winston-Salem Regional Office Supervisor for the NC DENR UST Section, with a request to investigate any incidents associated with the parcels. On June 6, 2013, Ms. Kromm responded to the email and stated that site address 725 Elkin Highway does not have any environmental incidents in the DENR database.
- **Geophysical Survey:** The geophysical investigation suggests that no evidence of metallic USTs was recorded within the proposed ROW and/ or easement.
- **Limited Soil Assessment:** A total of four borings were performed across the property and one soil sample from each boring was analyzed with the QED UVF HC-1 Analyzer system from QROS-US for total petroleum hydrocarbons (TPH) petroleum contamination. The QED results for soil samples 72-1(10), 72-2(10), 72-3(5), and 72-4(7.5) did not detect TPH gasoline range organics (GRO) or TPH diesel range organics (DRO) concentrations above detection limits.

- **Limited Groundwater Assessment:** The depth to groundwater in the temporary well (TW) at boring 72-3(TW) on the property was approximately 6.65 feet below land surface (BLS). One groundwater sample was obtained for laboratory analysis. No volatile organic compounds by EPA Method 6200B were detected above laboratory detection limits in the 72-3(TW) groundwater sample.
- **Contaminated Soil Volumes:** No petroleum-impacted soils were encountered during the PSA investigation at Parcel 72, nor were any probable or possible USTs encountered within the proposed right of way or easement. Therefore, no recommendations are necessary for the treatment or disposal of such materials. It should be noted that, if impacted soil is encountered during road construction outside of the area analyzed by this investigation, the impacted soil should be managed according to NC DENR Division of Waste Management (DWM) UST Section Guidelines and disposed of at a permitted facility.

1.0 Introduction

Pyramid Environmental & Engineering P.C. (Pyramid) has prepared this Preliminary Site Assessment (PSA) report documenting background information, field activities, assessment activities, findings, conclusions, and recommendations for the parcel of Ken Hamby and Mark Bare. The Ken Hamby and Mark Bare property is currently a vacant commercial property (Parcel 72) located at 725 Elkin Highway (NC 268) in North Wilkesboro, NC. This preliminary site assessment was conducted on behalf of the NCDOT in accordance with Pyramid's May 7, 2013, technical proposal.

The purpose of this assessment was to determine the presence or absence of underground storage tanks (USTs) and impacted soils at the subject properties in the proposed easement and existing right of way and edge of pavement (State Project R-2603). The location of the subject site is shown on **Figure 1**.

1.1 Background Information

Based on the NCDOT's March 22, 2013, *Request for Technical and Cost Proposal*, the PSA was conducted in the proposed easement and the area between the existing NCDOT right of way and the edge of pavement with emphasis on the areas of proposed drainage features, in accordance with the computer-aided design and drafting (CADD) files provided to Pyramid by the NCDOT. The PSA included the following:

- Research the properties for past uses and possible releases.
- Conduct a preliminary geophysical site assessment and limited soil assessment in the proposed easement and the area between the existing ROW and the edge of pavement with emphasis on the proposed drainage features.
- Report the depth to groundwater for each site and attempt to obtain one groundwater sample for each site for laboratory analysis by installing one temporary monitoring wells.

1.2 Project Information

Prior to field activities, a Health and Safety Plan was prepared. Prior to drilling activities, the public underground utilities were located and marked by the North Carolina One-Call Service. A private utility locator, Northstate Utility Locating Incorporated of Colfax, North Carolina was used to mark the on-site private, buried utilities.

2.0 Site History

Pyramid completed a records review of the NC DENR file, interviewed NC DENR personnel, and reviewed aerial photographs in order to determine past uses of the property. It should be noted that the NCDOT directed Pyramid to not obtain a First Search radius report detailing the history of the site and surrounding area. For this reason, Pyramid reviewed historical aerial photographs dating back to 1958 available from Wilkes Soil and Water Conservation office in Wilkesboro and on Google Earth for

past uses. The 1958, 1966, 1993, 2006, 2008, and 2012 aerial photographs are included in **Appendix A**. Historical information reviewed as part of the PSA indicated that the Ken Hamby and Mark Bare property was first developed for use before 1958. The earliest aerial to show the building was the 1958 aerial.

On May 22, 2013, Pyramid e-mailed the Wilkes County parcel addresses to Ms. Carin Kromm, the Winston-Salem Regional Office Supervisor for the NC DENR UST Section, with a request to investigate any incidents associated with the parcels. On June 6, 2013, Ms. Kromm responded to the e-mail and stated that site address 725 Elkin Highway does not have any environmental incidents in the DENR database.

3.0 Geophysical Investigation

Pyramid performed electromagnetic (EM) and ground penetrating radar (GPR) surveys across the accessible portions of the Parcel. The majority of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as fences and drainage features. The GPR surveys across remaining areas at the property indicated that non-cultural anomalies were likely due to buried metallic debris or utilities. No evidence was observed to indicate the presence of metallic USTs within the survey area.

The geophysical investigation suggests that no evidence of metallic USTs was recorded within the proposed ROW and/or easement.

The full details of the geophysical investigation are included in the Geophysical Investigation Report as **Appendix B**.

4.0 Soil Sampling Activities & Results

4.1 Soil Assessment Field Activities

On June 10, 2013, Pyramid mobilized to the site and drilled soil borings, installed one temporary monitoring well (TW), and collected the proposed soil samples and groundwater sample for the PSA. The first three feet of each soil boring was completed using a hand-auger. After each soil boring was cleared with a hand-auger, the soil borings and temporary well were completed using a track mounted Geoprobe® Direct-Push rig. Four (4) soil borings (72-1, 72-2, 72-3, and 72-4) were advanced on the subject property between the NCDOT proposed easement, existing ROW and edge of pavement. The selected locations were chosen to avoid public utilities along Elkin Highway, and private utilities associated with the business while remaining in the proposed right of way area. Soil borings 72-1, 72-2, 72-3, and 72-4 were installed at or near proposed drainage features 0950, 0954, 0956, and 0930, respectfully. The locations of the borings are shown on **Figure 2**.

Soil samples were continuously collected in five foot long disposable sleeves from each boring for geologic description, and visual examination for signs of contamination. Soil recovered from each sleeve was screened in the field using an Organic Vapor Analyzer (OVA) every 2 to 2.5 feet depending on the soil recovery of each sleeve. In general, the soil sample with the highest OVA reading was selected from each boring for laboratory analysis. The soil boring logs with the soil descriptions, visual examination, and OVA screening results are included in **Appendix C**. The OVA field screening results are summarized in **Table 1**. To prevent cross contamination, new disposable nitrile gloves were worn by the sampling technician during the sampling activities, and were changed between samples.

The soil samples selected for Total Petroleum Hydrocarbon (TPH) analyses were analyzed utilizing the QED UVF HC-1 Analyzer system from QROS-US. The NCDOT has indicated that this instrument is an acceptable method to provide total petroleum hydrocarbon (TPH) results for soil analysis for the PSA projects. Pyramid's QED-certified technician worked with Pyramid's on-site staff geologist to perform soil contaminant analysis. The soil samples selected for analysis using the QED Analyzer were analyzed for TPH as diesel range organics (DRO) and TPH as gasoline range organics (GRO). The soil samples selected for analysis using the QED were preserved in the field with methanol and were analyzed at the end of each day using the QED. No duplicate soil samples were selected for laboratory analysis for Parcel 72.

4.2 Soil Sample Analytical Results

The QED analysis for soil samples 72-1(10), 72-2(10), 72-3(5), and 72-4(7.5) did not detect TPH-GRO or TPH-DRO concentrations above detection limits. Detection limits for GRO are <0.7 mg/kg (milligram-per-kilogram) and for DRO are <0.6 mg/kg. The NC DENR action levels for TPH-GRO and TPH-DRO is 10 mg/kg. The soil sample QED results are summarized in **Table 2**. A copy of the QED analysis report is included in **Appendix D**.

4.3 Temporary Monitoring Well Installation

On June 10, 2013, Pyramid converted soil boring 72-3 into a 1-inch diameter temporary monitoring well (TW). Soil boring 72-3(TW) was completed to a total depth of 20 feet below land surface (BLS). The temporary well at 72-3 was constructed with 10 feet of 1-inch diameter of schedule 80 PVC casing and 10 feet of 1-inch diameter of schedule 80 PVC slotted screen. The temporary well was set in the boring with 10 feet of slotted screen at the bottom of the well.

On June 10, 2013, well 72-3(TW) was gauged using a properly decontaminated electric water level probe. The depth-to-groundwater was measured at 6.65 feet BLS. The

temporary monitoring well was sampled using new 0.5-inch disposable bailers. Upon completion of the gauging and sampling, the temporary monitoring well was properly abandoned by the drillers by removing the casing, and filling the borehole with bentonite chips and portland cement.

4.4 Groundwater Analytical Results

The groundwater sample from 72-3(TW) was placed in laboratory prepared containers for analysis of volatile organic compounds (VOCs) by EPA Method 6200B, and the samples were shipped to Pace Analytical in Huntersville, NC. The laboratory analysis did not detect any volatile organic compounds above laboratory detection limits in the groundwater sample. The groundwater results for sample 72-3(TW) are summarized in **Table 3**. A copy of the laboratory report and chain-of-custody is included in **Appendix E**.

5.0 Conclusions and Recommendations

As requested by NCDOT, Pyramid has completed a PSA at the Ken Hamby and Mark Bare property (Parcel 72) located 725 at Elkin Highway, North Wilkesboro, NC. The following is a summary of the assessment activities and results.

5.1 Geophysical Investigation

The geophysical investigation suggests that no evidence of metallic USTs was recorded within the proposed ROW and/or easement.

5.2 Limited Soil Assessment

The QED analyses for soil samples 72-1(10), 72-2(10), 72-3(5), and 72-4(7.5) did not detect TPH-GRO or TPH-DRO concentrations above detection limits (<0.7 mg/kg for GRO and <0.6 mg/kg for DRO). The NC DENR action Levels for TPH-GRO and TPH-DRO are both 10 mg/kg.

5.3 Limited Groundwater Assessment

Soil boring 71-3 was converted into a 1-inch diameter temporary monitoring well to a total depth of 20 feet BLS. The depth-to-groundwater was gauged to be at 6.65 feet BLS. The laboratory analyses did not detect any volatile organic compounds above laboratory detection limits in the groundwater sample.

5.4 Recommendations

No petroleum-impacted soils were encountered during the PSA investigation at Parcel 72, nor were any probable or possible USTs encountered within the proposed right of way or easement. Therefore, no recommendations are necessary for the treatment or disposal of such materials.

It should be noted that, if impacted soil is encountered during road construction outside of the area analyzed by this investigation, the impacted soil should be managed according to NC DENR DWM UST Section Guidelines and disposed of at a permitted facility.

6.0 Limitations

The results of this preliminary investigation are limited to the boring locations completed during this limited assessment and presented in this report. The laboratory results only reflect the current conditions at the locations sampled on the date this PSA was performed.

7.0 Closure

This report was prepared for, and is available solely for use by NCDOT and their designees. The contents thereof may not be used or relied upon by any other person without the express written consent and authorization of Pyramid Environmental & Engineering, P.C. (Pyramid). The observations, conclusions, and recommendations documented in this report are based on site conditions and information reviewed at the time of Pyramid's investigation. Pyramid appreciates the opportunity to provide this environmental service.

FIGURES

USGS TOPOGRAPHIC MAP

SITE:

725 ELKIN HIGHWAY

LOCATION:

N. WILKESBORO, NORTH CAROLINA



USGS IDENTIFICATION

SCALES

USGS 7.5 MINUTE MAP

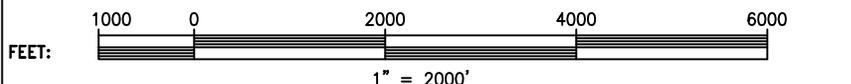
ROARING RIVER, N.C.

ORIGINAL DATE:

1966

PHOTOREVISION DATE:

NA

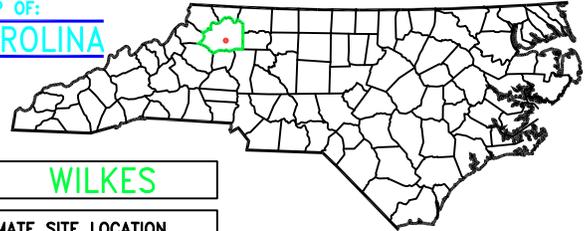


	PRIMARY HIGHWAY, HARD SURFACE
	SECONDARY HIGHWAY, HARD SURFACE
	LIGHT-DUTY ROAD HARD OR IMPROVED SURFACE
	UNIMPROVED ROAD
	STATE ROAD
	U.S. ROUTE
	INTERSTATE ROUTE

NOTES: TOPOGRAPHICAL CONTOUR INTERVAL = 20 FEET
 PHOTOREVISIONS DENOTED IN PURPLE



COUNTY MAP OF:
NORTH CAROLINA



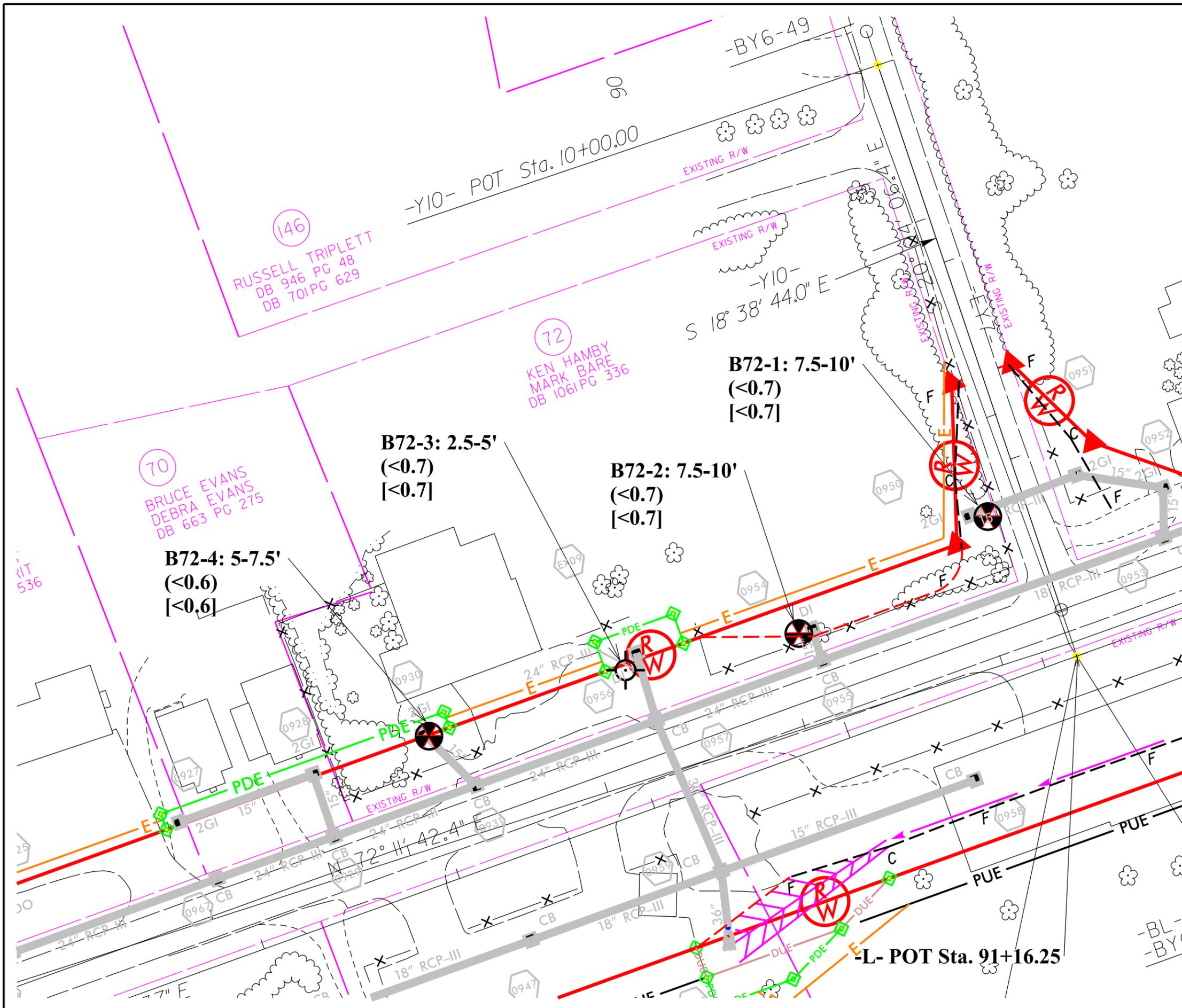
	COUNTY: WILKES
	APPROXIMATE SITE LOCATION



CLIENT:	NCDOT R-2603
PROPERTY NAME:	PARCEL 72, KEN HAMBY, MARK BARE
CITY:	N. WILKESBORO
STATE:	NORTH CAROLINA
TITLE:	TOPOGRAPHIC MAP

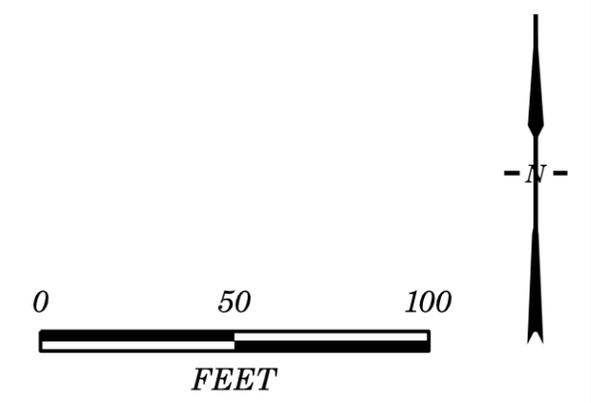
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DATE:	7/9/13
DRAWING NAME:	USGSTOPO
DRAWN BY:	KAM
CHECK BY:	TDL
JOB NO.:	2013-131
TYPE:	PSA
FIGURE NUMBER:	1

NOTES
 TOPOGRAPHIC MAP USED IN THIS GRAPHIC IS MAPPED, EDITED, AND PUBLISHED BY THE UNITED STATES GEOLOGIC SURVEY, DEPARTMENT OF THE INTERIOR, RESTON VIRGINIA.
 THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.



- ### LEGEND
- PUE PROPOSED UTILITY EASEMENT
 - EXISTING ROW
 - EXISTING PROPERTY BOUNDARY
 - PROPOSED ROW
 - PROPOSED CONST. EASEMENT
 - PROP. DRAINAGE UTIL. EASEMENT
 - PROPOSED SS CUT LINE
 - PROPOSED SS FILL LINE
 - PROPOSED SS TRANSITION LINE
 - PROPOSED DRAINAGE PIPING
 - PROPOSED DRAINAGE EASEMENT
 - PROPOSED CATCH BASIN
 - SOIL SAMPLE BORING LOCATION
 - BORING CONVERTED TO MW

(<6.1) TPH-DRO concentration (mg/kg)
[<6.1] TPH-GRO concentration (mg/kg)
(Analytical data obtained by the method of QROS, QED Analyzer)



TITLE SOIL BORING LOCATIONS AND ESTIMATED AREA OF CONTAMINATION	
PROJECT NCDOT ROW PROJECT R-2603 (36001.1.2) Ken Hamby, Mark Bare - PARCEL 072 NC 268, WILKE'S COUNTY, NORTH CAROLINA	
503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 336.335.3174 (p) 336.691.0648 (f) License # C1251 Eng. / #C257 Geology	
DATE: 7-2-2013	REVISION NO. 0
PYRAMID PROJECT NO. 2013-131	FIGURE NO. 2

TABLES

TABLE 1
Summary of Soil Field Screening Results
 NCDOT Project R-2603
 725 Elkin Highway (NC268) - Parcel 72
 North Wilkesboro, Wilkes County, North Carolina

SOIL BORING	SAMPLE ID	DEPTH (feet bgs)	OVA/FID READINGS (PPM)
72-1	72-1(2.5)	0 to 2.5	<1
	72-1(5)	2.5 to 5	2.0
	72-1(7.5)	5 to 7.5	1.5
	72-1(10)	7.5 to 10	2.5
72-2	72-2(2.5)	2.5 to 5	<1
	72-2(5.0)	2.5 to 5	1.0
	72-2(7.5)	5 to 7.5	1.5
	72-2(10)	7.5 to 10	2.0
72-3	72-3(2.5)	0 to 2.5	<1
	72-3(5.0)	2.5 to 5	1.5
	72-3(7.5)	5 to 7.5	<1
	72-3(10)	7.5 to 10	<1
72-4	72-4(2.5)	0 to 2.5	1.0
	72-4(5)	2.5 to 5	1.5
	72-4(7.5)	5 to 7.5	2.0
	72-4(10)	7.5 to 10	1.5

bgs= below ground surface

FID= flame-ionization detector

PPM= parts-per-million

= sampled for lab analysis &/or QROS-QED analysis

OVA= Organic Vapor Analyzer

TABLE 2
Summary of Soil Sample Analytical Results
 NCDOT State Project R-2603
 725 Elkin Highway (NC 268) - Parcel 72
 North Wilkesboro, Wilkes County, North Carolina

SAMPLE ID	DATE	DEPTH (feet)	FID/OVA (ppm)	QROS - QED Analysis			Laboratory Analysis (Pace)	
				GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)	TPH (mg/kg) (C5-C35)	EPA Method 3550 DRO (mg/kg)	EPA Method 5035 GRO (mg/kg)
72-1(10)	6/10/2013	7.5 to 10	1.0	<0.7	<0.7	<0.7	-----	-----
72-2(10)	6/10/2013	7.5 to 10	2.0	<0.7	<0.7	<0.7	-----	-----
72-3(5)	6/10/2013	2.5 to 5	1.5	<0.7	<0.7	<0.7	-----	-----
72-4(7.5)	6/10/2013	5 to 7.5	2.0	<0.6	<0.6	<0.6	-----	-----
NC Initial Action Level - UST Section for 5035/5030-GRO; 3550-DRO				10	10	NA	10	10

FID= flame-ionization detector
 PPM= parts-per-million

GRO= Gasoline Range Organics
 DRO= Diesel Range Organics
 mg/kg= milligrams-per-kilogram

TPH= Total Petroleum
 Hydrocarbons (GRO + DRO)

NA= Not Applicable
 "-----" = No Laboratory Analysis

* Bold values indicate concentrations above initial action levels

TABLE 3
Summary of Groundwater Analytical Results
 NCDOT State Project R-2603
 725 Elkin Highway (NC 268) - Parcel 72
 North Wilkesboro, Wilkes County, North Carolina

PARAMETER	UNITS	SAMPLE ID	NCAC 2L GROUNDWATER STANDARD
		72-3(TW)	
EPA Method 6200B; Sample Collection Date: 6/10/13			
Benzene	ug/L	ND	1
Chloroform	ug/L	ND	70
Diisopropyl Ether (IPE)	ug/L	ND	70
Ethyl Benzene	ug/L	ND	600
Isopropylbenzene (Cumene)	ug/L	ND	70
Naphthalene	ug/L	ND	6
Styrene	ug/L	ND	70
Toluene	ug/L	ND	600
Total Xylenes	ug/L	ND	500
n-Propylbenzene	ug/L	ND	70
sec-Butylbenzene	ug/L	ND	70
tert-Butyl methyl ether (MTBE)	ug/L	ND	20
tert-Butylbenzene	ug/L	ND	70
1,2,4-Trimethylbenzene	ug/L	ND	400
1,2-Dichloroethane	ug/L	ND	0.4
1,3,5-Trimethylbenzene	ug/L	ND	400
4-Isopropyltoluene	ug/L	ND	25
All Other Parameters	ug/L	ND	NA

ug/L= micrograms-per-liter

ND= Not Detected

NA= Not Applicable

APPENDIX A



Parcel 72

268

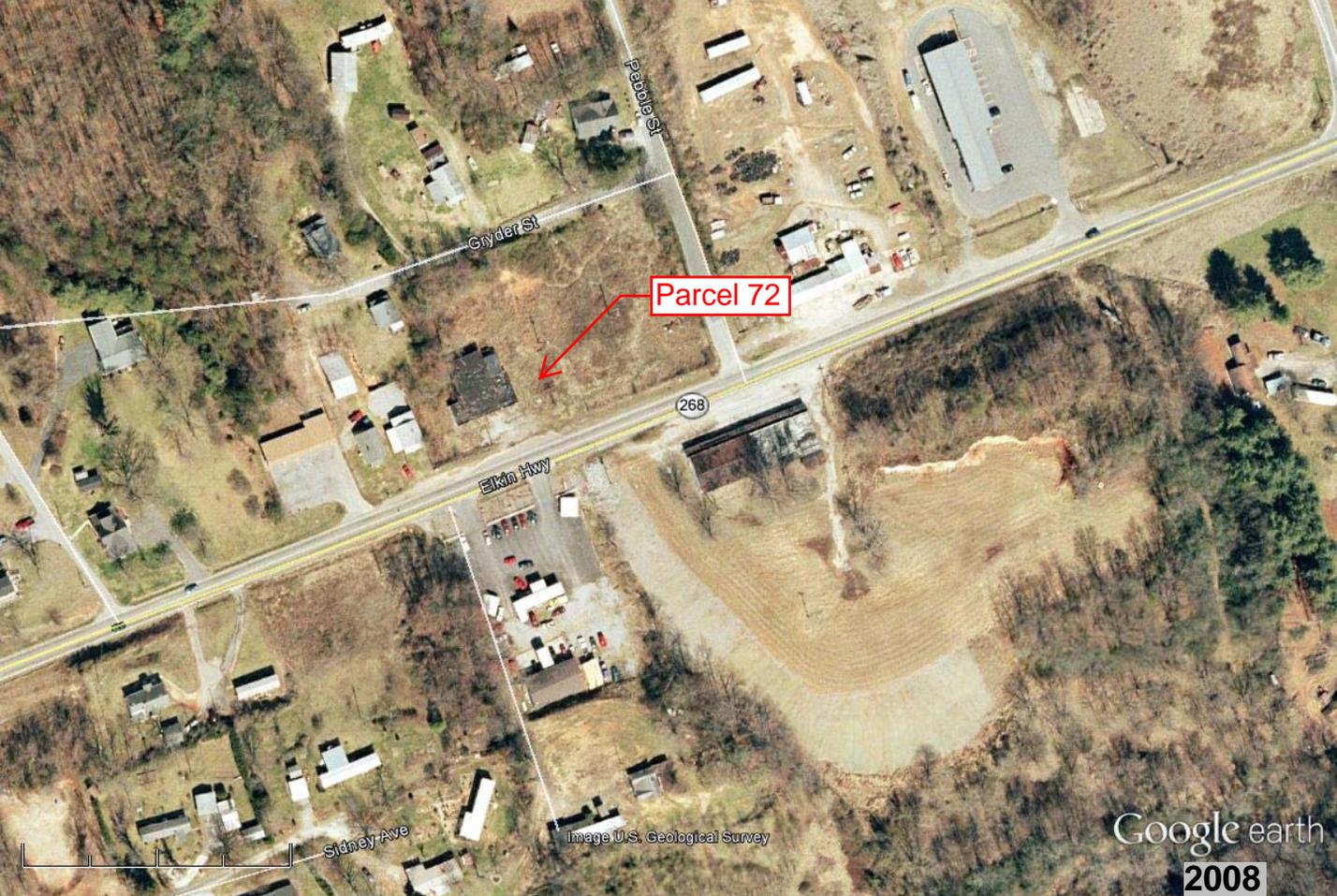
© 2013 Google

Google earth
2012

Google earth

feet
meters





Parcel 72

268

Elkin Hwy

Peabody St

Gylden St

Sidney Ave

Image U.S. Geological Survey

Google earth

2008

Google earth

feet
meters





Parcel 72

Clonch Dr

Sidney Ave

Elkin Hwy

268

Gryder St

Peabler St

Aaron Call Rd

Image USDA Farm Service Agency

Google earth

2006

Google earth

feet
meters





Parcel 72

Cryder St

Pebble St

268

Elkin Hwy

Sidney Ave

272 ft

Image U.S. Geological Survey

Google earth

1993

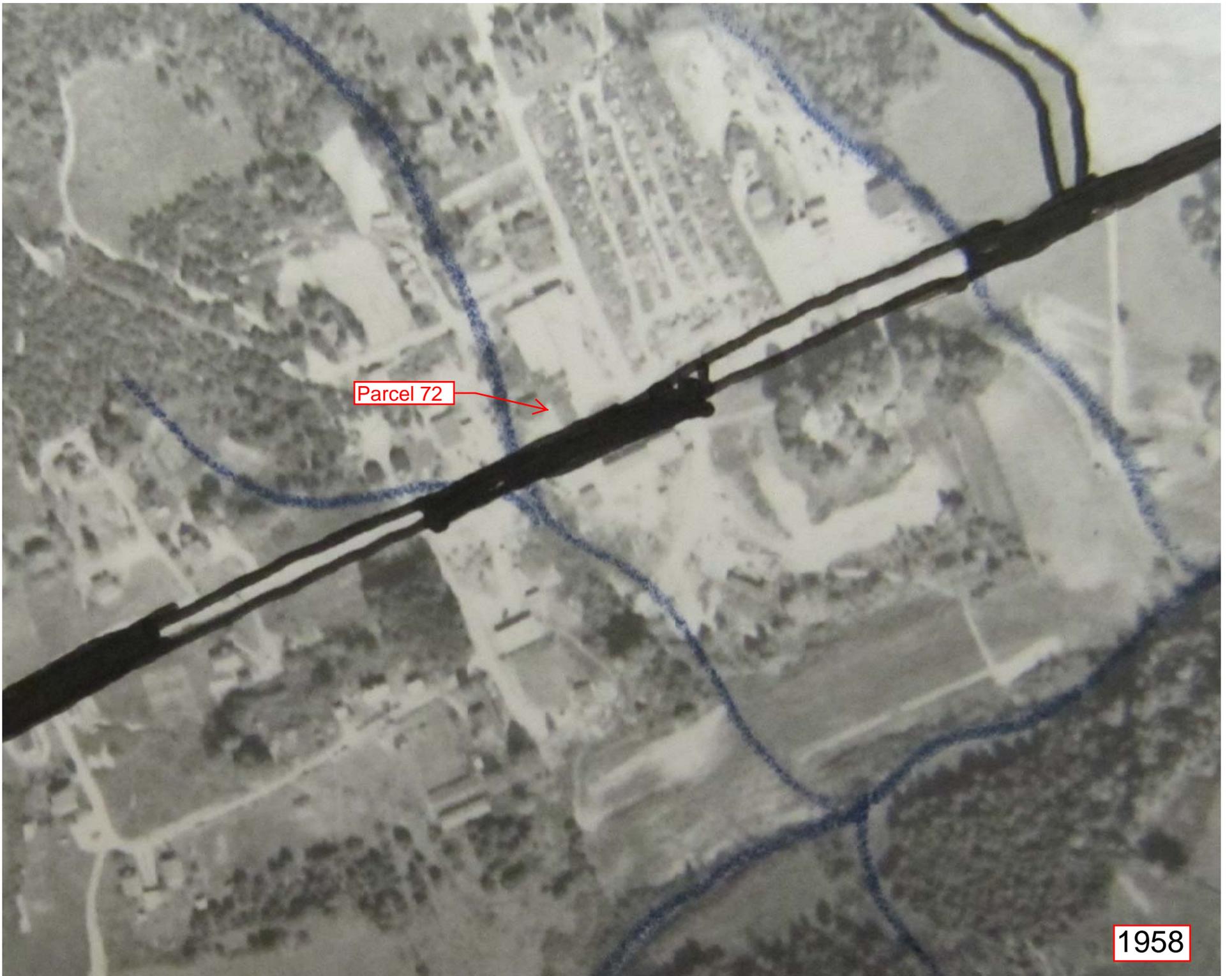
Google earth

feet
meters





1966



Parcel 72

1958

APPENDIX B



PYRAMID ENVIRONMENTAL & ENGINEERING
(PROJECT 2013-131)

NCDOT PROJECT R-2603 (WBS 36000.1.1)

GEOPHYSICAL SURVEYS OF PARCEL 72 – UNDERGROUND STORAGE TANK INVESTIGATION

NORTH WILKESBORO, WILKES COUNTY, NC

JULY 10, 2013

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C257: GEOLOGY C1251: ENGINEERING

**GEOPHYSICAL INVESTIGATION REPORT
NCDOT PRELIMINARY SITE ASSESSMENT
PARCEL 72 – 725 ELKIN HIGHWAY
North Wilkesboro, Wilkes County, North Carolina**

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- Figure 3 – Parcel 72 GPR Transect Locations and Images

EXECUTIVE SUMMARY

- Electromagnetic (EM) and Ground Penetrating Radar (GPR) surveys were performed across the accessible portions of the Parcel.
- The majority of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as fences and drainage features. The GPR surveys across remaining areas at the property indicated that non-cultural anomalies were likely due to buried metallic debris or utilities. No evidence was observed to indicate the presence of metallic USTs within the survey area.
- The geophysical investigation suggests that no evidence of metallic USTs was recorded within the proposed ROW and/or easement.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for the North Carolina Department of Transportation (NCDOT) at Parcel 72 (Ken Hamby/Mark Bare, Long Agricultural Equipment, Jordan Motor Company), located at 725 Elkin Highway, North Wilkesboro, NC. The geophysical investigation was performed as part of the Preliminary Site Assessment (PSA) conducted by Pyramid at nine separate parcels along NC 268, and focused on the area between the current edge of pavement along NC 268 and the proposed right of way (ROW) and/or easement, whichever was greater. The survey area extended across the southern portion of the parcel, spanning a distance of approximately 320 feet along NC 268, and extending approximately 45 feet at its maximum north/south distance from NC 268 north into the property. Conducted on May 22 and June 3, 2013, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site consisted of a combination of gravel parking space and grassy open to heavily vegetated areas. Aerial photographs showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

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 22, 2013, using a Geonics EM61 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. The EM61 data were digitally collected at approximately 0.8 foot intervals along north-south trending or east-west trending, parallel survey lines spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics DAT61 and Surfer for Windows Version 11.0 software programs.

GPR data were acquired on June 3, 2013, across selected EM61 differential anomalies using a Geophysical Survey Systems, Inc. (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. 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.

DISCUSSION OF RESULTS

Contour plots of the EM61 bottom coil and differential results obtained across the survey areas at the property are presented in **Figure 2**. 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.

Discussion of EM Anomalies: The anomaly at X=55, Y=45 was the result of exposed rebar in the ground. The large anomaly surrounding this feature was due to a metal fence in this area, expressed on the contour map as a black dashed line. The anomaly at X=160, Y=60 was the result of a power pole. The anomaly at X=165, 30 was the result of a storm drain. The north/south anomaly at X=200 was associated with a metal fence across this area, expressed by a black dashed line on the contour map. The east/west oriented feature extending across the base of the profile from X=190 to X=320 was associated with a storm drain pipe, expressed on the contour map by a yellow dashed line. The anomaly at the east edge of the survey area was also the result of a metal fence. The remaining anomalies were mostly minor, and were concluded to be the result of isolated buried debris.

High amplitude anomalies that could not be directly attributed to visible objects at the ground surface were investigated further with the GPR. Specifically, the anomaly centered at X=40, Y=55 was analyzed with the GPR. 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 post-processing in the office. **Figure 3** presents an aerial photograph showing the location of the GPR transects performed across the anomaly as well as the GPR images that were collected.

GPR Transects 1 and 2 were performed from east to west and north to south, respectively, across the anomaly at X=40, Y=55. These scans did not record any distinguishable features in the subsurface, suggesting the response was due to minor debris. Reconnaissance transects were performed across the debris field in the eastern portion of the survey area, represented by the intermittent minor EM anomalies observed on **Figure 2**. No significant features were recorded by the GPR that would be indicative of any large objects below the ground surface, such as metallic USTs.

The geophysical investigation did not record evidence of metallic USTs within the proposed ROW and/or easement in the accessible areas of the parcel property.

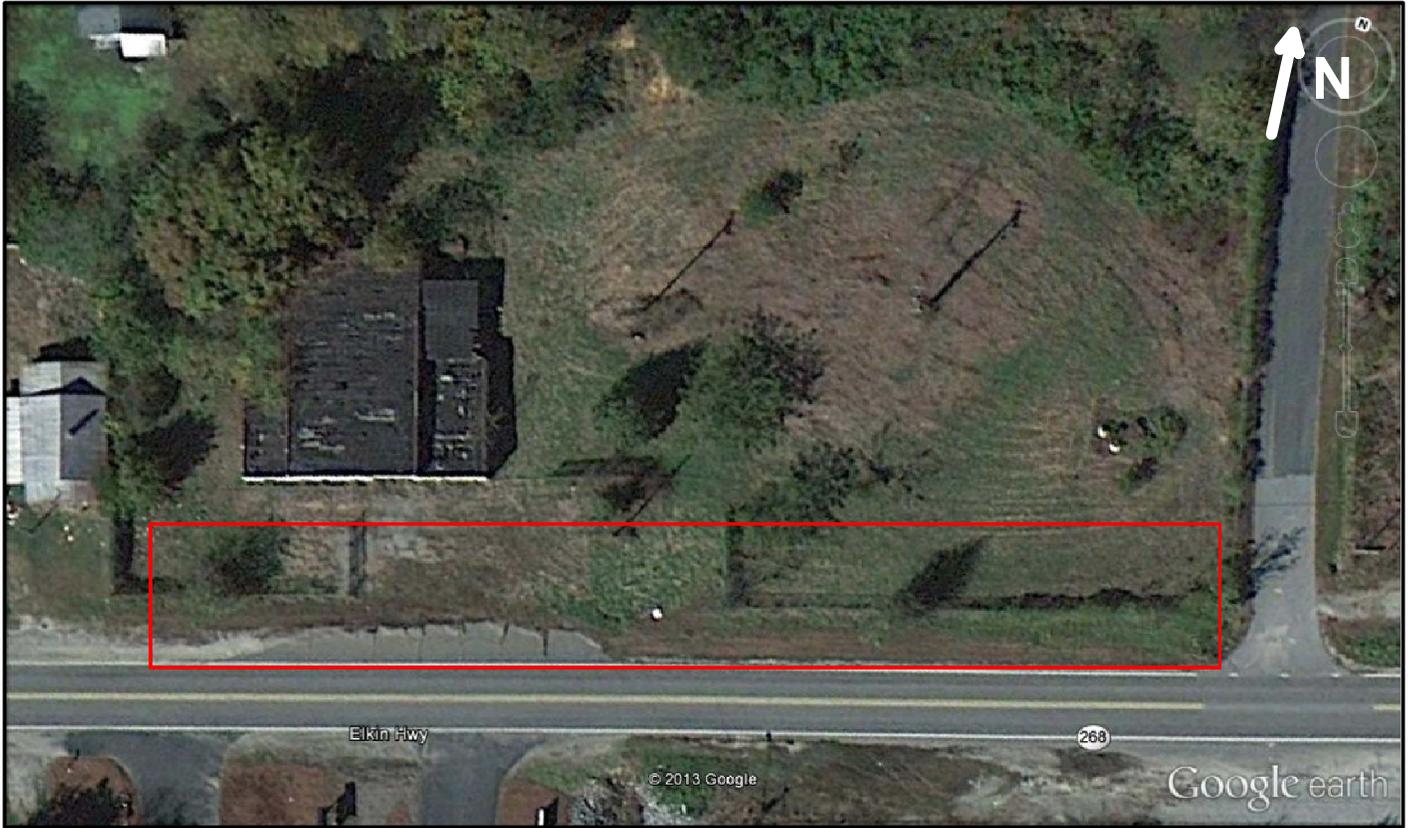
SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across Parcel 72, 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 fences and drainage features. The GPR surveys across remaining areas at the property indicated that non-cultural anomalies were likely due to buried metallic debris. No evidence was observed to indicate the presence of metallic USTs within the survey area.
- The geophysical investigation suggests that no evidence of metallic USTs was recorded within the proposed ROW and/or easement.

LIMITATIONS

Geophysical surveys have been performed and this report prepared for the NCDOT 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 survey 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.



Aerial Photograph Showing Approximate Geophysical Survey Boundaries



Photograph of Abandoned Building
(Facing Approximately North)



Geophysical Survey Area
(Facing Approximately West)

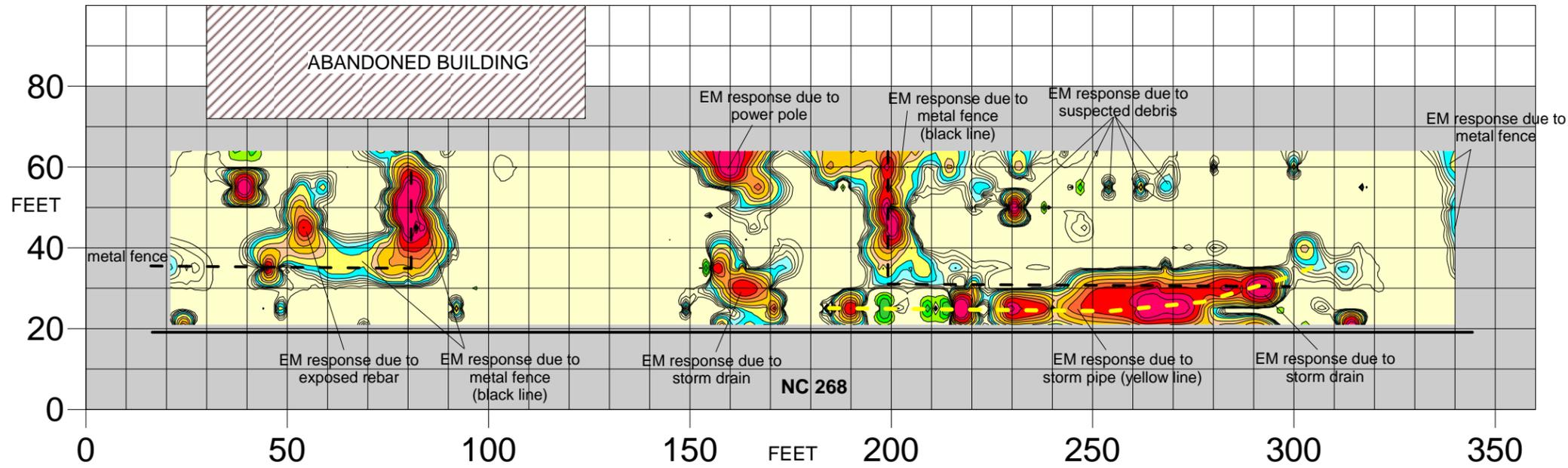


CLIENT	NC DEPARTMENT OF TRANSPORTATION		DATE	07/04/13	DRAWN	ECC
SITE	PARCEL 72, WILKES COUNTY (DOT ROW PROJECT)		LAY		CHKD	
CITY	N. WILKESBORO	STATE	NORTH CAROLINA	ENGR		
TITLE	GEOPHYSICAL RESULTS		NO.	2013-131	PROJ#	

GEOPHYSICAL
SURVEY BOUNDARIES &
SITE PHOTOGRAPHS

FIGURE 1

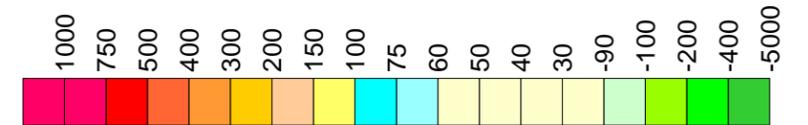
EM61 Bottom Coil Results



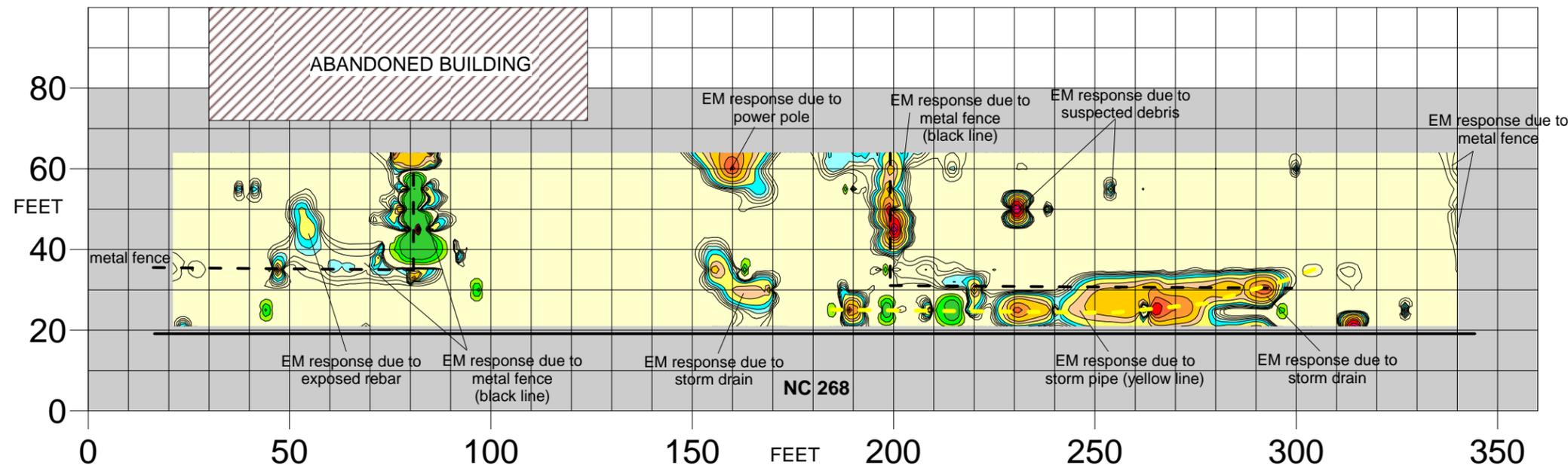
NO EVIDENCE OF METALLIC USTs OBSERVED

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 22, 2013 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were collected on June 3, 2013, using a GSSI SIR 2000 unit coupled to a 400 MHz antennae.

EM61 Metal Detection Response (millivolts)



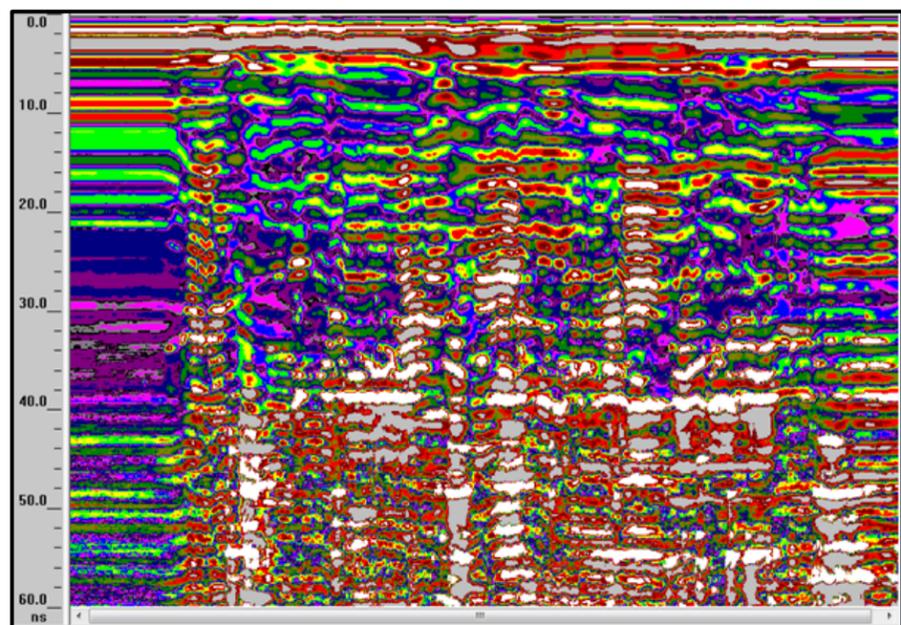
EM61 Differential Results



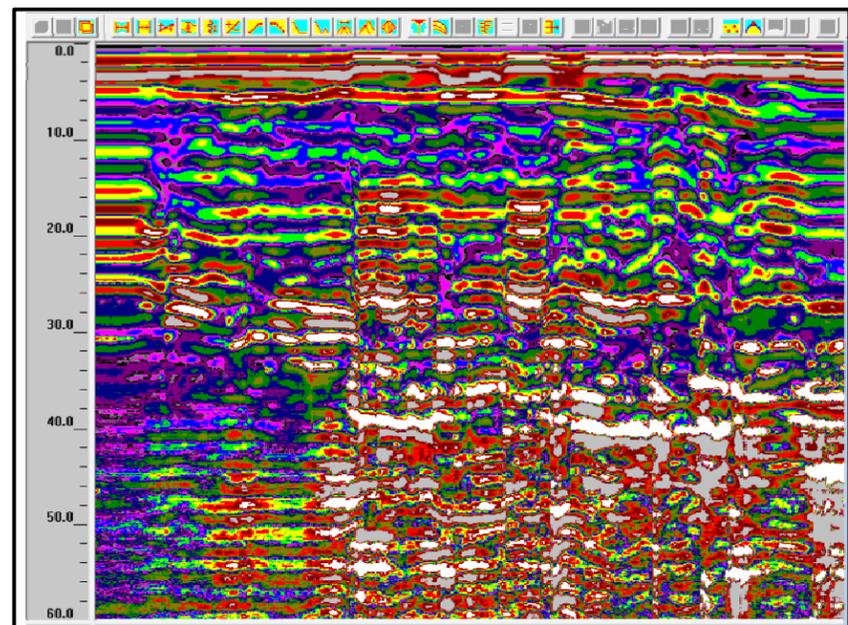
TITLE	PARCEL 72 - EM61 BOTTOM COIL & DIFFERENTIAL RESULTS CONTOUR MAP	
PROJECT	NC DEPARTMENT OF TRANSPORTATION ROW IMPROVEMENT PROJECT N. WILKESBORO, WILKES COUNTY, NC	
	 503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	07/04/2013	CLIENT NCDOT
PYRAMID PROJECT #:	2013-131	FIGURE 2



GPR Transects 1 and 2 were performed across the EM anomaly located at X=40, Y=50. The GPR results did not record any significant features, suggesting the anomaly was the result of isolated buried metallic debris. No evidence of a UST was observed. The remaining anomalies were attributed to visible objects at the ground surface or utilities.



GPR Transect 1



GPR Transect 2



TITLE		PARCEL 72 - GPR TRANSECT LOCATIONS AND IMAGES	
PROJECT		NC DEPARTMENT OF TRANSPORTATION ROW IMPROVEMENT PROJECT N. WILKESBORO, WILKES COUNTY, NC	
		503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE	07/04/2013	CLIENT	NCDOT
PYRAMID PROJECT #:	2013-131	FIGURE 3	

APPENDIX C

APPENDIX D



Hydrocarbon Analysis Results

Client: NC Department of Transportation
Address: 725 Elkin Highway

1 Samples analysed

Contact: Operator Tim Leatherman

Project: NCDOT R-2603, Pyramid 2013-131

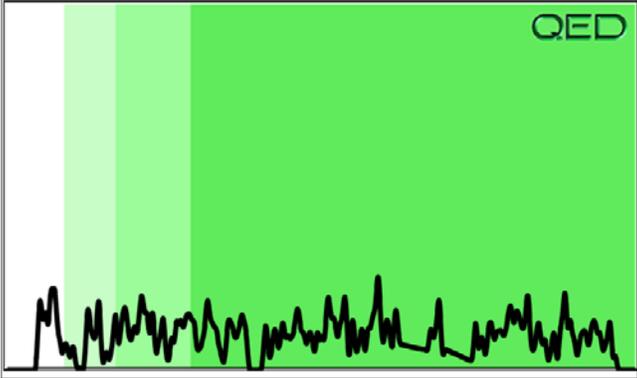
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	72-1(10)	13.7	<0.7	<0.7	<0.7	<0.7	< 0.69	< 0.07	< 0.034	0	0	100	Match not possible

Initial Calibrator QC check	Low Range Calibrator Final check High Range Calibrator Final check
-----------------------------	---

Results generated by a QED HC-1 analyser	Fingerprints provide a tentative hydrocarbon identification based on operator selected library matches	Fingerprints match abbreviations
Concentration values in mg/kg for soil samples and mg/L for water samples.	Est = Specific calibrator not used, result estimated (PFM)= Poor library fingerprint match	(SBS)= site specific background subtracted (LBS)= Library background subtracted
Soil values are not corrected for moisture or stone content	% = match confidence	

Match not possible

72-1(10)





Hydrocarbon Analysis Results

Client: NC Department of Transportation
Address: 725 Elkin Highway

1 Samples analysed

Contact: Operator Tim Leatherman

Project: NCDOT R-2603, Pyramid 2013-131

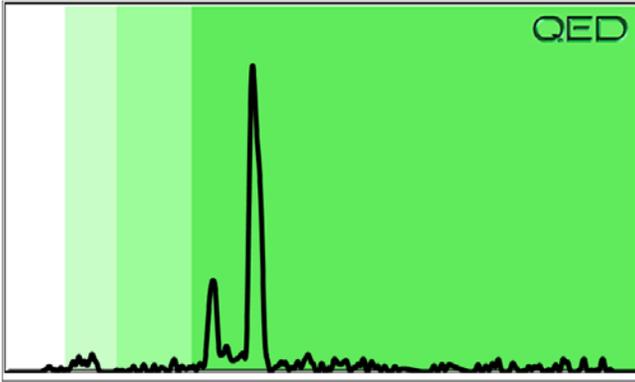
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	72-2(10)	14.4	<0.7	<0.7	<0.7	<0.7	< 0.72	< 0.07	< 0.036	0	0	100	Match not possible

Initial Calibrator QC check **OK** Low Range Calibrator Final check
 High Range Calibrator Final check

Results generated by a QED HC-1 analyser Fingerprints provide a tentative hydrocarbon identification based on operator selected library matches
 Concentration values in mg/kg for soil samples and mg/L for water samples. Fingerprint match abbreviations Est = Specific calibrator not used (PFM)= Poor library fingerprint match
 Soil values are not corrected for moisture or stone content (SBS)= site specific background subtracted (LBS)= Library background subtracted % = match confidence

Match not possible

72-2(10)





Hydrocarbon Analysis Results

Client: NC Department of Transportation
Address: 725 Elkin Highway

2 Samples analysed

Contact: **Operator** Tim Leatherman

Project: NCDOT R-2603, Pyramid 2013-131

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	72-2(7.5)	12.0	<0.6	<0.6	<0.6	<0.6	< 0.6	< 0.06	< 0.03	0	0	100	Match not possible
s	72-3(5)	14.3	<0.7	<0.7	<0.7	<0.7	< 0.71	< 0.07	< 0.036	0	61.7	38.3	Match not possible

Initial Calibrator QC check

Low Range Calibrator Final check

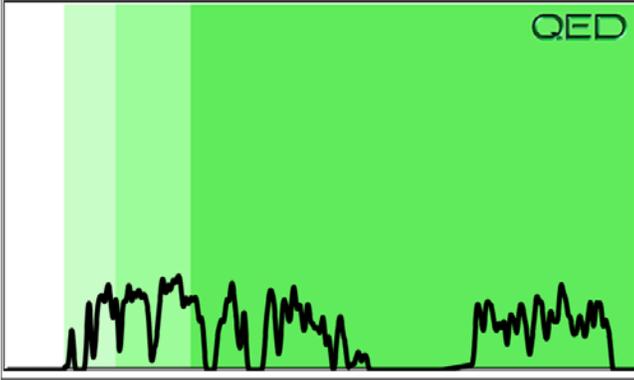
High Range Calibrator Final check

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 subtracted (LBS)= Library background subtracted % = match confidence

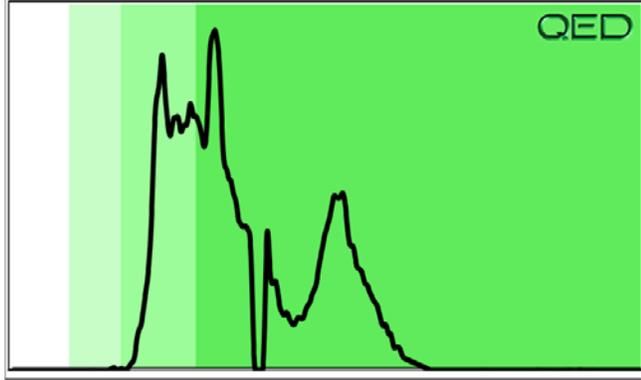
Match not possible

72-2(7.5)



Match not possible

72-3(5)



APPENDIX E



Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
 Eden, NC 27288
 (336)623-8921

Pace Analytical Services, Inc.
 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

June 24, 2013

Chemical Testing Engineer
 NCDOT
 Materials & Tests Unit
 1801 Blue Ridge Road
 Raleigh, NC 27607

RE: Project: R-2603 Parcel 72 36001.1.2
 Pace Project No.: 92161348

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on June 12, 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,

Kevin Godwin

kevin.godwin@pacelabs.com
 Project Manager

Enclosures

cc: Tim Leatherman, Pyramid



REPORT OF LABORATORY ANALYSIS

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Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: R-2603 Parcel 72 36001.1.2
Pace Project No.: 92161348

Charlotte Certification IDs

9800 Kinsey 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

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SAMPLE ANALYTE COUNT

Project: R-2603 Parcel 72 36001.1.2
Pace Project No.: 92161348

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92161348001	72-3 (TW)	SM 6200B	CAH	64	PASI-C

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: R-2603 Parcel 72 36001.1.2
Pace Project No.: 92161348

Method: SM 6200B
Description: 6200B MSV
Client: NCDOT West Central
Date: June 24, 2013

General Information:

1 sample was analyzed for SM 6200B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MSV/23350

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92161461003

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 995346)
 - 1,1-Dichloropropene
 - Carbon tetrachloride
 - Methylene Chloride
- MSD (Lab ID: 995347)
 - 1,1,1-Trichloroethane
 - 1,1-Dichloroethene
 - 1,1-Dichloropropene
 - 1,3-Dichloropropane
 - Carbon tetrachloride
 - Chloroform
 - Methylene Chloride
 - Vinyl chloride
 - trans-1,3-Dichloropropene

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PROJECT NARRATIVE

Project: R-2603 Parcel 72 36001.1.2
Pace Project No.: 92161348

Method: SM 6200B
Description: 6200B MSV
Client: NCDOT West Central
Date: June 24, 2013

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: R-2603 Parcel 72 36001.1.2

Pace Project No.: 92161348

Sample: 72-3 (TW)		Lab ID: 92161348001	Collected: 06/10/13 15:15	Received: 06/12/13 15:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6200B MSV		Analytical Method: SM 6200B						
Benzene	ND ug/L		0.50	1		06/20/13 17:43	71-43-2	
Bromobenzene	ND ug/L		0.50	1		06/20/13 17:43	108-86-1	
Bromochloromethane	ND ug/L		0.50	1		06/20/13 17:43	74-97-5	
Bromodichloromethane	ND ug/L		0.50	1		06/20/13 17:43	75-27-4	
Bromoform	ND ug/L		0.50	1		06/20/13 17:43	75-25-2	
Bromomethane	ND ug/L		5.0	1		06/20/13 17:43	74-83-9	
n-Butylbenzene	ND ug/L		0.50	1		06/20/13 17:43	104-51-8	
sec-Butylbenzene	ND ug/L		0.50	1		06/20/13 17:43	135-98-8	
tert-Butylbenzene	ND ug/L		0.50	1		06/20/13 17:43	98-06-6	
Carbon tetrachloride	ND ug/L		0.50	1		06/20/13 17:43	56-23-5	
Chlorobenzene	ND ug/L		0.50	1		06/20/13 17:43	108-90-7	
Chloroethane	ND ug/L		1.0	1		06/20/13 17:43	75-00-3	
Chloroform	ND ug/L		0.50	1		06/20/13 17:43	67-66-3	
Chloromethane	ND ug/L		1.0	1		06/20/13 17:43	74-87-3	
2-Chlorotoluene	ND ug/L		0.50	1		06/20/13 17:43	95-49-8	
4-Chlorotoluene	ND ug/L		0.50	1		06/20/13 17:43	106-43-4	
1,2-Dibromo-3-chloropropane	ND ug/L		1.0	1		06/20/13 17:43	96-12-8	
Dibromochloromethane	ND ug/L		0.50	1		06/20/13 17:43	124-48-1	
1,2-Dibromoethane (EDB)	ND ug/L		0.50	1		06/20/13 17:43	106-93-4	
Dibromomethane	ND ug/L		0.50	1		06/20/13 17:43	74-95-3	
1,2-Dichlorobenzene	ND ug/L		0.50	1		06/20/13 17:43	95-50-1	
1,3-Dichlorobenzene	ND ug/L		0.50	1		06/20/13 17:43	541-73-1	
1,4-Dichlorobenzene	ND ug/L		0.50	1		06/20/13 17:43	106-46-7	
Dichlorodifluoromethane	ND ug/L		0.50	1		06/20/13 17:43	75-71-8	
1,1-Dichloroethane	ND ug/L		0.50	1		06/20/13 17:43	75-34-3	
1,2-Dichloroethane	ND ug/L		0.50	1		06/20/13 17:43	107-06-2	
1,1-Dichloroethene	ND ug/L		0.50	1		06/20/13 17:43	75-35-4	
cis-1,2-Dichloroethene	ND ug/L		0.50	1		06/20/13 17:43	156-59-2	
trans-1,2-Dichloroethene	ND ug/L		0.50	1		06/20/13 17:43	156-60-5	
1,2-Dichloropropane	ND ug/L		0.50	1		06/20/13 17:43	78-87-5	
1,3-Dichloropropane	ND ug/L		0.50	1		06/20/13 17:43	142-28-9	
2,2-Dichloropropane	ND ug/L		0.50	1		06/20/13 17:43	594-20-7	
1,1-Dichloropropene	ND ug/L		0.50	1		06/20/13 17:43	563-58-6	
cis-1,3-Dichloropropene	ND ug/L		0.50	1		06/20/13 17:43	10061-01-5	
trans-1,3-Dichloropropene	ND ug/L		0.50	1		06/20/13 17:43	10061-02-6	
Diisopropyl ether	ND ug/L		0.50	1		06/20/13 17:43	108-20-3	
Ethylbenzene	ND ug/L		0.50	1		06/20/13 17:43	100-41-4	
Hexachloro-1,3-butadiene	ND ug/L		2.0	1		06/20/13 17:43	87-68-3	
Isopropylbenzene (Cumene)	ND ug/L		0.50	1		06/20/13 17:43	98-82-8	
Methylene Chloride	ND ug/L		2.0	1		06/20/13 17:43	75-09-2	
Methyl-tert-butyl ether	ND ug/L		0.50	1		06/20/13 17:43	1634-04-4	
Naphthalene	ND ug/L		2.0	1		06/20/13 17:43	91-20-3	
n-Propylbenzene	ND ug/L		0.50	1		06/20/13 17:43	103-65-1	
Styrene	ND ug/L		0.50	1		06/20/13 17:43	100-42-5	
1,1,1,2-Tetrachloroethane	ND ug/L		0.50	1		06/20/13 17:43	630-20-6	
1,1,1,2,2-Tetrachloroethane	ND ug/L		0.50	1		06/20/13 17:43	79-34-5	
Tetrachloroethene	ND ug/L		0.50	1		06/20/13 17:43	127-18-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: R-2603 Parcel 72 36001.1.2

Pace Project No.: 92161348

Sample: 72-3 (TW)		Lab ID: 92161348001	Collected: 06/10/13 15:15	Received: 06/12/13 15:42	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6200B MSV		Analytical Method: SM 6200B						
Toluene	ND	ug/L	0.50	1		06/20/13 17:43	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	2.0	1		06/20/13 17:43	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	1		06/20/13 17:43	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/20/13 17:43	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/20/13 17:43	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		06/20/13 17:43	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/20/13 17:43	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	0.50	1		06/20/13 17:43	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/L	0.50	1		06/20/13 17:43	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	0.50	1		06/20/13 17:43	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		06/20/13 17:43	75-01-4	
m&p-Xylene	ND	ug/L	1.0	1		06/20/13 17:43	179601-23-1	
o-Xylene	ND	ug/L	0.50	1		06/20/13 17:43	95-47-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	104 %		70-130	1		06/20/13 17:43	17060-07-0	
Dibromofluoromethane (S)	106 %		70-130	1		06/20/13 17:43	1868-53-7	
4-Bromofluorobenzene (S)	94 %		70-130	1		06/20/13 17:43	460-00-4	
Toluene-d8 (S)	100 %		70-130	1		06/20/13 17:43	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: R-2603 Parcel 72 36001.1.2

Pace Project No.: 92161348

QC Batch: MSV/23350

Analysis Method: SM 6200B

QC Batch Method: SM 6200B

Analysis Description: 6200B MSV

Associated Lab Samples: 92161348001

METHOD BLANK: 995344

Matrix: Water

Associated Lab Samples: 92161348001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,1,1-Trichloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,1-Dichloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,1-Dichloroethene	ug/L	ND	0.50	06/20/13 13:58	
1,1-Dichloropropene	ug/L	ND	0.50	06/20/13 13:58	
1,2,3-Trichlorobenzene	ug/L	ND	2.0	06/20/13 13:58	
1,2,3-Trichloropropane	ug/L	ND	0.50	06/20/13 13:58	
1,2,4-Trichlorobenzene	ug/L	ND	2.0	06/20/13 13:58	
1,2,4-Trimethylbenzene	ug/L	ND	0.50	06/20/13 13:58	
1,2-Dibromo-3-chloropropane	ug/L	ND	1.0	06/20/13 13:58	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	06/20/13 13:58	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/20/13 13:58	
1,2-Dichloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,2-Dichloropropane	ug/L	ND	0.50	06/20/13 13:58	
1,3,5-Trimethylbenzene	ug/L	ND	0.50	06/20/13 13:58	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/20/13 13:58	
1,3-Dichloropropane	ug/L	ND	0.50	06/20/13 13:58	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/20/13 13:58	
2,2-Dichloropropane	ug/L	ND	0.50	06/20/13 13:58	
2-Chlorotoluene	ug/L	ND	0.50	06/20/13 13:58	
4-Chlorotoluene	ug/L	ND	0.50	06/20/13 13:58	
Benzene	ug/L	ND	0.50	06/20/13 13:58	
Bromobenzene	ug/L	ND	0.50	06/20/13 13:58	
Bromochloromethane	ug/L	ND	0.50	06/20/13 13:58	
Bromodichloromethane	ug/L	ND	0.50	06/20/13 13:58	
Bromoform	ug/L	ND	0.50	06/20/13 13:58	
Bromomethane	ug/L	ND	5.0	06/20/13 13:58	
Carbon tetrachloride	ug/L	ND	0.50	06/20/13 13:58	
Chlorobenzene	ug/L	ND	0.50	06/20/13 13:58	
Chloroethane	ug/L	ND	1.0	06/20/13 13:58	
Chloroform	ug/L	ND	0.50	06/20/13 13:58	
Chloromethane	ug/L	ND	1.0	06/20/13 13:58	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/20/13 13:58	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/20/13 13:58	
Dibromochloromethane	ug/L	ND	0.50	06/20/13 13:58	
Dibromomethane	ug/L	ND	0.50	06/20/13 13:58	
Dichlorodifluoromethane	ug/L	ND	0.50	06/20/13 13:58	
Diisopropyl ether	ug/L	ND	0.50	06/20/13 13:58	
Ethylbenzene	ug/L	ND	0.50	06/20/13 13:58	
Hexachloro-1,3-butadiene	ug/L	ND	2.0	06/20/13 13:58	
Isopropylbenzene (Cumene)	ug/L	ND	0.50	06/20/13 13:58	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: R-2603 Parcel 72 36001.1.2

Pace Project No.: 92161348

METHOD BLANK: 995344

Matrix: Water

Associated Lab Samples: 92161348001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
m&p-Xylene	ug/L	ND	1.0	06/20/13 13:58	
Methyl-tert-butyl ether	ug/L	ND	0.50	06/20/13 13:58	
Methylene Chloride	ug/L	ND	2.0	06/20/13 13:58	
n-Butylbenzene	ug/L	ND	0.50	06/20/13 13:58	
n-Propylbenzene	ug/L	ND	0.50	06/20/13 13:58	
Naphthalene	ug/L	ND	2.0	06/20/13 13:58	
o-Xylene	ug/L	ND	0.50	06/20/13 13:58	
sec-Butylbenzene	ug/L	ND	0.50	06/20/13 13:58	
Styrene	ug/L	ND	0.50	06/20/13 13:58	
tert-Butylbenzene	ug/L	ND	0.50	06/20/13 13:58	
Tetrachloroethene	ug/L	ND	0.50	06/20/13 13:58	
Toluene	ug/L	ND	0.50	06/20/13 13:58	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/20/13 13:58	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/20/13 13:58	
Trichloroethene	ug/L	ND	0.50	06/20/13 13:58	
Trichlorofluoromethane	ug/L	ND	1.0	06/20/13 13:58	
Vinyl chloride	ug/L	ND	1.0	06/20/13 13:58	
1,2-Dichloroethane-d4 (S)	%	98	70-130	06/20/13 13:58	
4-Bromofluorobenzene (S)	%	98	70-130	06/20/13 13:58	
Dibromofluoromethane (S)	%	103	70-130	06/20/13 13:58	
Toluene-d8 (S)	%	101	70-130	06/20/13 13:58	

LABORATORY CONTROL SAMPLE: 995345

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	48.8	98	60-140	
1,1,1-Trichloroethane	ug/L	50	49.4	99	60-140	
1,1,2,2-Tetrachloroethane	ug/L	50	49.4	99	60-140	
1,1,2-Trichloroethane	ug/L	50	50.5	101	60-140	
1,1-Dichloroethane	ug/L	50	48.2	96	60-140	
1,1-Dichloroethene	ug/L	50	48.3	97	60-140	
1,1-Dichloropropene	ug/L	50	60.3	121	60-140	
1,2,3-Trichlorobenzene	ug/L	50	52.9	106	60-140	
1,2,3-Trichloropropane	ug/L	50	54.1	108	60-140	
1,2,4-Trichlorobenzene	ug/L	50	52.6	105	60-140	
1,2,4-Trimethylbenzene	ug/L	50	49.0	98	60-140	
1,2-Dibromo-3-chloropropane	ug/L	50	48.7	97	60-140	
1,2-Dibromoethane (EDB)	ug/L	50	56.4	113	60-140	CU
1,2-Dichlorobenzene	ug/L	50	50.5	101	60-140	
1,2-Dichloroethane	ug/L	50	46.4	93	60-140	
1,2-Dichloropropane	ug/L	50	50.1	100	60-140	
1,3,5-Trimethylbenzene	ug/L	50	48.0	96	60-140	
1,3-Dichlorobenzene	ug/L	50	47.7	95	60-140	
1,3-Dichloropropane	ug/L	50	53.3	107	60-140	
1,4-Dichlorobenzene	ug/L	50	52.6	105	60-140	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: R-2603 Parcel 72 36001.1.2

Pace Project No.: 92161348

LABORATORY CONTROL SAMPLE: 995345

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	47.4	95	60-140	
2-Chlorotoluene	ug/L	50	50.5	101	60-140	
4-Chlorotoluene	ug/L	50	46.6	93	60-140	
Benzene	ug/L	50	48.4	97	60-140	
Bromobenzene	ug/L	50	48.9	98	60-140	
Bromochloromethane	ug/L	50	50.8	102	60-140	
Bromodichloromethane	ug/L	50	49.9	100	60-140	
Bromoform	ug/L	50	52.8	106	60-140	
Bromomethane	ug/L	50	47.2	94	60-140	
Carbon tetrachloride	ug/L	50	54.8	110	60-140	
Chlorobenzene	ug/L	50	51.5	103	60-140	
Chloroethane	ug/L	50	45.6	91	60-140	
Chloroform	ug/L	50	49.1	98	60-140	
Chloromethane	ug/L	50	49.3	99	60-140	
cis-1,2-Dichloroethene	ug/L	50	46.9	94	60-140	
cis-1,3-Dichloropropene	ug/L	50	52.6	105	60-140	
Dibromochloromethane	ug/L	50	52.8	106	60-140	
Dibromomethane	ug/L	50	46.4	93	60-140	
Dichlorodifluoromethane	ug/L	50	36.9	74	60-140	
Diisopropyl ether	ug/L	50	50.2	100	60-140	
Ethylbenzene	ug/L	50	51.5	103	60-140	
Hexachloro-1,3-butadiene	ug/L	50	49.5	99	60-140	
Isopropylbenzene (Cumene)	ug/L	50	50.1	100	60-140	
m&p-Xylene	ug/L	100	100	100	60-140	
Methyl-tert-butyl ether	ug/L	50	51.2	102	60-140	
Methylene Chloride	ug/L	50	55.2	110	60-140	
n-Butylbenzene	ug/L	50	49.0	98	60-140	
n-Propylbenzene	ug/L	50	47.7	95	60-140	
Naphthalene	ug/L	50	53.1	106	60-140	
o-Xylene	ug/L	50	47.7	95	60-140	
sec-Butylbenzene	ug/L	50	45.7	91	60-140	
Styrene	ug/L	50	52.7	105	60-140	
tert-Butylbenzene	ug/L	50	45.9	92	60-140	
Tetrachloroethene	ug/L	50	51.1	102	60-140	
Toluene	ug/L	50	45.4	91	60-140	
trans-1,2-Dichloroethene	ug/L	50	49.2	98	60-140	
trans-1,3-Dichloropropene	ug/L	50	56.7	113	60-140	
Trichloroethene	ug/L	50	49.7	99	60-140	
Trichlorofluoromethane	ug/L	50	44.5	89	60-140	
Vinyl chloride	ug/L	50	45.7	91	60-140	
1,2-Dichloroethane-d4 (S)	%			93	70-130	
4-Bromofluorobenzene (S)	%			103	70-130	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			99	70-130	

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QUALITY CONTROL DATA

Project: R-2603 Parcel 72 36001.1.2

Pace Project No.: 92161348

Parameter	92161461003		MS		MSD		MS		MSD		% Rec	Limits	RPD	Qual
	Units	Result	Spike Conc.	MSD Spike Conc.	Result	MSD Result	% Rec	MSD % Rec						
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	23.2	25.0	116	125	60-140	7				
1,1,1-Trichloroethane	ug/L	ND	20	20	25.9	28.7	129	143	60-140	10	M0			
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	24.1	25.4	121	127	60-140	5				
1,1,2-Trichloroethane	ug/L	ND	20	20	24.1	26.4	120	132	60-140	9				
1,1-Dichloroethane	ug/L	ND	20	20	26.1	26.7	130	134	60-140	2				
1,1-Dichloroethene	ug/L	ND	20	20	26.8	29.9	134	150	60-140	11	M0			
1,1-Dichloropropene	ug/L	ND	20	20	30.9	33.3	155	167	60-140	7	M0			
1,2,3-Trichlorobenzene	ug/L	ND	20	20	24.2	25.8	118	126	60-140	6				
1,2,3-Trichloropropane	ug/L	ND	20	20	26.7	27.6	133	138	60-140	4				
1,2,4-Trichlorobenzene	ug/L	ND	20	20	25.8	26.5	127	130	60-140	3				
1,2,4-Trimethylbenzene	ug/L	ND	20	20	24.9	26.4	125	132	60-140	6				
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	25.4	26.0	127	130	60-140	2				
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	27.0	27.2	135	136	60-140	1				
1,2-Dichlorobenzene	ug/L	ND	20	20	25.0	26.3	125	131	60-140	5				
1,2-Dichloroethane	ug/L	ND	20	20	22.0	22.1	110	111	60-140	0				
1,2-Dichloropropane	ug/L	ND	20	20	24.6	28.1	123	140	60-140	13				
1,3,5-Trimethylbenzene	ug/L	ND	20	20	24.4	26.6	122	133	60-140	9				
1,3-Dichlorobenzene	ug/L	ND	20	20	23.9	25.2	120	126	60-140	5				
1,3-Dichloropropane	ug/L	ND	20	20	27.4	28.2	137	141	60-140	3	M0			
1,4-Dichlorobenzene	ug/L	ND	20	20	25.4	27.9	127	140	60-140	10				
2,2-Dichloropropane	ug/L	ND	20	20	24.5	25.3	122	126	60-140	3				
2-Chlorotoluene	ug/L	ND	20	20	26.4	27.8	132	139	60-140	5				
4-Chlorotoluene	ug/L	ND	20	20	23.0	24.6	115	123	60-140	7				
Benzene	ug/L	ND	20	20	24.0	25.8	120	129	60-140	7				
Bromobenzene	ug/L	ND	20	20	25.9	26.9	130	134	60-140	4				
Bromochloromethane	ug/L	ND	20	20	24.2	27.3	121	137	60-140	12				
Bromodichloromethane	ug/L	ND	20	20	24.1	25.7	121	128	60-140	6				
Bromoform	ug/L	ND	20	20	24.8	25.6	124	128	60-140	3				
Bromomethane	ug/L	ND	20	20	21.5	24.4	107	122	60-140	13				
Carbon tetrachloride	ug/L	ND	20	20	28.7	31.5	144	158	60-140	9	M0			
Chlorobenzene	ug/L	ND	20	20	25.5	27.0	128	135	60-140	6				
Chloroethane	ug/L	ND	20	20	27.3	28.1	137	140	60-140	3				
Chloroform	ug/L	ND	20	20	27.0	28.4	135	142	60-140	5	M0			
Chloromethane	ug/L	ND	20	20	23.8	24.6	119	123	60-140	3				
cis-1,2-Dichloroethene	ug/L	ND	20	20	25.6	26.5	128	132	60-140	3				
cis-1,3-Dichloropropene	ug/L	ND	20	20	25.9	26.7	129	133	60-140	3				
Dibromochloromethane	ug/L	ND	20	20	25.0	27.2	125	136	60-140	8				
Dibromomethane	ug/L	ND	20	20	22.8	22.6	114	113	60-140	1				
Dichlorodifluoromethane	ug/L	ND	20	20	20.0	21.6	100	108	60-140	7				
Diisopropyl ether	ug/L	ND	20	20	26.0	27.8	130	139	60-140	7				
Ethylbenzene	ug/L	ND	20	20	25.9	27.1	130	135	60-140	4				
Hexachloro-1,3-butadiene	ug/L	ND	20	20	24.2	25.6	121	128	60-140	6				
Isopropylbenzene (Cumene)	ug/L	ND	20	20	24.7	25.1	123	126	60-140	2				
m&p-Xylene	ug/L	ND	40	40	49.8	52.5	124	131	60-140	5				
Methyl-tert-butyl ether	ug/L	1.9	20	20	28.7	29.3	134	137	60-140	2				
Methylene Chloride	ug/L	ND	20	20	28.1	30.0	141	150	60-140	7	M0			
n-Butylbenzene	ug/L	ND	20	20	25.5	26.5	127	133	60-140	4				

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: R-2603 Parcel 72 36001.1.2

Pace Project No.: 92161348

Parameter	92161461003		MS		MSD		MS		MSD		% Rec Limits	RPD	Qual
	Units	Result	Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	% Rec	MSD % Rec					
n-Propylbenzene	ug/L	ND	20	20	24.9	26.6	124	132	60-140	7			
Naphthalene	ug/L	ND	20	20	24.3	26.4	118	129	60-140	8			
o-Xylene	ug/L	ND	20	20	24.3	25.0	121	125	60-140	3			
sec-Butylbenzene	ug/L	ND	20	20	24.2	25.4	120	126	60-140	5			
Styrene	ug/L	ND	20	20	25.1	25.6	126	128	60-140	2			
tert-Butylbenzene	ug/L	ND	20	20	23.9	26.1	119	131	60-140	9			
Tetrachloroethene	ug/L	ND	20	20	25.6	27.6	126	136	60-140	8			
Toluene	ug/L	ND	20	20	23.2	24.4	116	122	60-140	5			
trans-1,2-Dichloroethene	ug/L	ND	20	20	25.7	28.0	128	140	60-140	9			
trans-1,3-Dichloropropene	ug/L	ND	20	20	26.7	29.0	133	145	60-140	8	M0		
Trichloroethene	ug/L	ND	20	20	24.2	26.2	121	131	60-140	8			
Trichlorofluoromethane	ug/L	ND	20	20	25.9	26.9	130	134	60-140	4			
Vinyl chloride	ug/L	ND	20	20	25.2	28.4	126	142	60-140	12	M0		
1,2-Dichloroethane-d4 (S)	%						99	99	70-130				
4-Bromofluorobenzene (S)	%						100	98	70-130				
Dibromofluoromethane (S)	%						100	99	70-130				
Toluene-d8 (S)	%						96	98	70-130				

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: R-2603 Parcel 72 36001.1.2
Pace Project No.: 92161348

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.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

CU The continuing calibration for this compound is outside of Pace Analytical acceptance limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: R-2603 Parcel 72 36001.1.2
Pace Project No.: 92161348

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92161348001	72-3 (TW)	SM 6200B	MSV/23350		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt (SCUR)

Document Number: F-CHR-CS-03-rev.11

Issuing Authority: Pace Huntersville Quality Office

Client Name: Pyramid

Where Received: [] Huntersville [] Asheville [] Eden [] Raleigh

Courier: [] Fed Ex [] UPS [] USPS [] Client [] Commercial [x] Pace Other

Custody Seal on Cooler/Box Present: [] yes [x] no Seals intact: [] yes [] no

Packing Material: [] Bubble Wrap [] Bubble Bags [] None [] Other

Thermometer Used: IR Gun T1102 T1301 Type of Ice: Wet Blue None [] Samples on ice, cooling process has begun

Temp Correction Factor T1102: No Correction T1301: No Correction

Corrected Cooler Temp.: 1.4 C Biological Tissue is Frozen: Yes No N/A

Temp should be above freezing to 6°C

Date and Initials of person examining contents: mlop

Table with 16 rows of checklist items including Chain of Custody Present, Samples Arrived within Hold Time, and Trip Blank Present.

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

SCURF Review: [Signature] Date: 6/12/13
SRF Review: [Signature] Date: 6/13/13

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#: 92161348
Barcode with number 92161348

CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information:
Company: Pymble Environmental
Address: 503 Industrial Ave - Greensboro NC 27406
Email To: Timothy@pymble.com
Phone: 336-335-3774 Fax: _____
Requested Due Date/TAT: 10/20/12

Section B Required Project Information:
Report To: Tim Leatherman
Copy To: Pymble
Purchase Order No.: WBS 36001.1.2
Project Name: NEOT-R-2603 Parcel 72
Project Number: WBS 36001.1.2

Section C Invoice Information:
Attention: _____
Company Name: NC DOT
Address: _____
Page Quote Reference: WBS 36001.1.2 NEOT
Project Manager: Kevin Gelwin
Page Profile #: 5900-2

REGULATORY AGENCY
 NPDES GROUND WATER DRINKING WATER
 UST RCRA OTHER _____
 Site Location STATE: NC

Page: _____ of _____
1667304

ITEM #	Matrix Codes MATRIX / CODE	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives		Analysis Test ↓	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
		COMPOSITE START	COMPOSITE END/GRAB			H ₂ SO ₄	HNO ₃				
1	Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Tissue Other	WT	GR	6/19/13 1515	4						92161348
2											921
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											

ADDITIONAL COMMENTS
PARCEL # 72

RELINQUISHED BY / AFFILIATION
Ryan Kawer - Pymble
6/12/13 08:00
1512A

ACCEPTED BY / AFFILIATION
[Signature]
6/12/13 11:31
1512

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Ryan Kawer
SIGNATURE of SAMPLER: [Signature]
DATE Signed (MM/DD/YY): 6/12/13

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

ORIGINAL

*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.
F-ALL-Q-020rev.07, 15-May-2007

APPENDIX F
