PRELIMINARY SITE ASSESSMENT
FOR
PARCEL 117
MICHAEL & CAROLE RICHARDS PROPERTY
(MIDWAY TRADING POST)
3296 SOUTHPORT SUPPLY ROAD
BOLIVIA, BRUNSWICK COUNTY, NORTH CAROLINA

NC 211 FROM SR 1500 (MIDWAY ROAD) TO NC 87

WBS ELEMENT: 41582.1.1
STATE PROJECT: R-5021

CATLIN PROJECT NO. 213100

PREPARED FOR:

NCDOT GEOTECHNICAL ENGINEERING UNIT-GEOENVIRONMENTAL SECTION
1589 MSC
RALEIGH, NORTH CAROLINA 27699-1589

SEPTEMBER 26, 2013

PREPARED BY:

CATLIN ENGINEERS AND SCIENTISTS
P. O. BOX 10279
WILMINGTON, NORTH CAROLINA 28404-0279
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1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning roadway construction activities along NC 211 and Midway Road. Catlin Engineers & Scientists (CATLIN) originally completed a Limited Preliminary Site Assessment within the proposed right of way (ROW) surrounding this property in June 2005 under TIP R-2245 for proposed drainage and roadway construction. The entire parcel will now be acquired for interchange construction. A site investigation is necessary to determine the presence of contaminated soil across the site.

2.0 PURPOSE OF INVESTIGATION AND DESCRIPTION

CATLIN was retained by the NCDOT Geotechnical Engineering Unit to provide a field investigation concluding with a Preliminary Site Assessment (PSA) for the above referenced property. In response to a Request for Technical and Cost Proposal (RFP) dated July 26, 2013, CATLIN submitted a proposal for conducting a PSA at the Michael and Carole Richards Property, located at 3296 Southport Supply Road in Bolivia, North Carolina 28422. The site currently operates as the Midway Trading Post convenience store for retail fuel sales and convenience items. CATLIN personnel conducted a field investigation at the property on August 15, 2013. This PSA report documents activities and findings.

According to the RFP, the active gas station currently operates two (2) underground storage tanks (USTs) at the site.

The NCDOT has requested an investigation to determine if contamination is present at the site. The purpose of this investigation was to:

- Locate all USTs and determine approximate size and contents (if any) within the parcel boundaries.
- Determine if contaminated soils are present.

- If contamination is evident, estimate the quantity of impacted soils and indicate the approximate area of soil contamination on a site map.
- Provide a MicroStation file with the location of USTs, soil contamination and monitoring wells.
- Prepare a report combining the results with the Catlin PSA, dated June 8, 2005, including field activities, findings, and recommendations for this site and submit to this office in triplicate.

3.0 METHODS

According to NCDENR file review information, On April 17, 2007, Applied Resource Management (ARM) installed one Type II monitoring well (AMW-1) south of temporary wells installed by others on the adjacent property north of the site. Groundwater was found to be at a depth of 4.87 feet by ARM. Based on this information, vadose zone soils are assumed to be above four (4) feet below land surface (BLS). Soil samples collected from less than four (4) feet deep with laboratory Total Petroleum Hydrocarbon (TPH concentrations greater than 10 milligrams per kilogram (mg/kg) will be considered contaminated for estimated contaminated vadose soil volume calculations. This includes data from the current and 2005 investigations. Contaminated soil volume is estimated from the midpoint distance between a clean sample location and dirty sample location or the property line and right of way / easement.

3.1 FIELD METHODS

CATLIN personnel gathered subsurface soil data by Direct Push Technology boring advancement using an AMS PowerProbe™ 9600D (PowerProbe). When using the PowerProbe, the borings are advanced to depth by static force and a 90-pound hydraulic percussion hammer. Two and one-quarter inch diameter by four-foot length steel is used as casing. Soil samples are continuously collected in one and one-half inch clear liners. Liners are removed from the casing and then cut in half longitudinally to allow for visual/manual classification utilizing the Unified Soil Classification System (USCS). Soil samples were collected and packed in appropriate glassware for laboratory analysis.

New disposable nitrile gloves were worn during sampling activities. All samples were placed into the appropriately labeled glassware and packed on ice in an insulated cooler for transportation to the laboratory. Sample integrity was maintained by following proper chain of custody procedures.

Boreholes were abandoned to the surface in grassy areas and just below existing asphalt in asphalt areas using three-eighth inch

bentonite chips. Bentonite and water were poured into the borehole simultaneously to facilitate hydration. Boreholes in asphalt were finished with asphalt patch to the surface. Refer to Appendix A for Boring Logs.

3.2 LABORATORY TESTING

Samples were transported to Pace Analytical Services, Inc. (Pace) in Huntersville, NC under proper chain of custody protocol (see Appendix B).

In an attempt to provide information regarding petroleum impacts to soils and estimated volumes with reasonable analytical expense, soil samples were analyzed for TPH by Environmental Protection Agency (EPA) Method 8015 Modified. Any soil samples revealing detectable laboratory concentrations are considered petroleum impacted. The North Carolina Department of Environment and Natural Resources (NCDENR) guidance documents propose analysis by risk based laboratory methods and site ranking by NCDENR to determine exceedances of action levels.

4.0 FIELD ACTIVITIES

4.1 CURRENT SITE CONDITIONS AND FIELD OBSERVATIONS

As previously mentioned, the site currently operates as a convenience store with retail fuel sales. Two USTs (one ethanol gasoline and one ethanol free gasoline) and associated dispensers are located at the site. Two (2) monitoring wells were observed at the site, one (1) on the north side of the UST basin and one (1) on the south side of the UST basin. Photographs taken during the recent soil sampling are provided in Appendix C.

A geophysical survey was conducted by Schnabel Engineering. The complete geophysical report is included in Appendix D. As indicated in the Schnabel report, the tanks were found to be approximately three (3) to four (4) feet BLS, eight (8) feet in diameter, approximately 21.5 feet long, and roughly 8,000 gallons in volume.

The NCDOT Conventional Plan Sheet Symbols are provided on Sheet 1, the site vicinity is illustrated on Sheet 2, and Sheet 3 illustrates the current site map with soil boring and sample locations.

4.2 SOIL SAMPLING

A total of 10 borings were installed as part of the investigation. During the 2005 assessment activities 13 borings were advanced. A soil

sample was collected from each boring and submitted for laboratory analysis. Recent and historical boring/sample locations are illustrated on Sheet 3. The recent boring logs are included in Appendix A.

Borings advanced during the current PSA are identified as "DPT2-##" to distinguish current from previous ("DPT-##") boring nomenclatures. Soils were collected continuously to approximately eight feet BLS from borings DPT2-01, DPT2-02, DPT2-07, DPT2-09, and DPT2-10. The remaining borings were advanced to four (4) feet BLS. After retrieving the drive, soil was visually/manually classified for USCS classification. One (1) soil sample was collected from each boring for laboratory analysis. Soil samples collected from each boring for laboratory analysis were packed in the appropriate glassware, labeled, and placed in a cooler on ice. A total of 11 soil samples were submitted to Pace for total petroleum hydrocarbon diesel and gasoline range organics (TPH DRO and GRO) analysis per EPA Method 8015 Modified. Chain of Custody documentation is included in Appendix B.

4.3 SURVEYING

Boring/sample locations were recorded utilizing a Trimble® global positioning survey instrument and data collector. Boring coordinates are shown on the Boring Logs provided in Appendix A. Borings locations are indicated on plan sheets provided by NCDOT and are included as Sheet 3.

5.0 RESULTS

5.1 SOIL RESULTS

Soil sample results from the recent assessment activities are illustrated on Table 1. Historical (2005) soil sample results are summarized on Table 2.

The soil sample collected from borings DPT2-04, -05, -08, and -10 were collected from above four (4) feet BLS and indicate DRO impacts ranging from 6.5 mg/kg to 10.3 mg/kg. The sample collected from DPT-09 at five (5) to (6) feet BLS revealed 13.5 mg/kg DRO but is below the approximate water table depth of four (4) feet BLS.

Recent and 2005 soil sample locations, summarized results and estimated extent of TPH impacted soils less than four (4) feet BLS are illustrated on Sheet 3. The complete recent laboratory analytical report is provided in Appendix B.

The estimated volume of petroleum impacted soils as illustrated on Sheet 3 includes approximately 450 feet^2 of soils around the southeast

corner of the UST basin (and boring DPT2-05) and approximately 970 feet^2 around the 2005 boring DPT-12. The total estimated soil volume is 210 yards^3.

5.2 HISTORICAL GROUNDWATER RESULTS

Following retrieval of the soil samples from DPT-02 during the 2005 investigation, a piezometer was installed to gauge the depth to water. The piezometer was located in the Midway Rd. SE (SR 1500) ROW near the northeast property corner. The following day, the well was gauged for depth to water. Groundwater measurements collected on April 20, 2005 (24 hours after installing DPT-02 boring) indicated depth to water was 1.49 feet BLS. A temporary well was subsequently constructed and a groundwater sample was collected for volatile and semi-volatile organics analysis per EPA Methods 602 and 625 Base Neutrals. Analytical results indicated no contaminant concentrations above the laboratory reporting limits.

According to NCDENR file review information, On April 17, 2007, Applied ARM installed one Type II monitoring well (AMW-1) south of temporary wells installed by others on the adjacent property north of the site. The adjacent property temporary wells had revealed groundwater sample results of MTBE contamination exceeding the State action limit of 200 parts per billion (ppb).

Groundwater was found to be at a depth of 4.87 feet by ARM. A groundwater sample was collected from the well (by ARM), packed on ice, and transported to SGS Laboratory for analysis per EPA Method 602 with MTBE. Based on laboratory results, all target compounds were found to be below quantitation limits.

6.0 SUMMARY AND CONCLUSIONS

The site operates two (2) 8,000 gallon gasoline USTs and associated dispensers as part of a convenience store with retail gasoline sales. Two (2) monitoring wells were identified, one (1) on the north side and one (1) on the south side of the UST basin.

Minor petroleum impact was discovered in the proposed drainage area during the 2005 PSA. Analytical results for soil sample DPT-02 indicated a TPH DRO concentration of 52.8 ppm at a depth of six feet BLS; however the sample collected from this boring at two feet BLS revealed no detectable concentrations. These results would appear to represent smear zone petroleum impacts by contaminated groundwater; however, groundwater analytical results for a sample collected from this same boring location were below laboratory quantitation limits. Additionally, shallow (1' BLS) soil contamination was detected in the 2005 borings DPT-11 and DPT-12 with

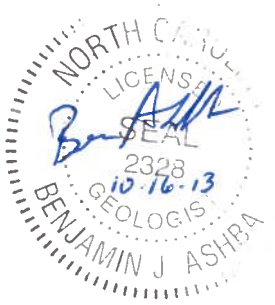
TPH DRO concentrations of 9.41 ppm and 24.6 ppm, respectively. Soil contamination was not present above detectable levels in the six foot samples from these borings. The TPH impacted soil in the vicinity of DPT-11 and DPT-12 is along the existing ROW and should not be impacted during roadway construction unless a cut is required.

The depth to groundwater at the site as determined by ARM during monitoring well construction and sampling was approximately four (4) feet BLS. No groundwater impacts were revealed by ARM or during CATLIN's 2005 investigation.

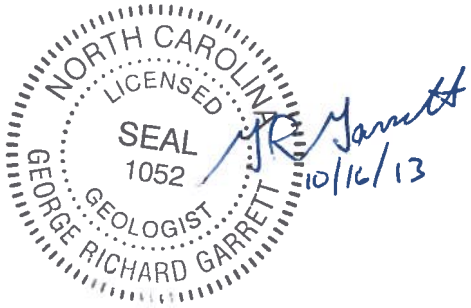
Recent soil samples collected by CATLIN revealed minor TPH DRO impacts (10.3 mg/kg or less) near the east side of the USTs, west of the existing dispenser islands, and behind the western portion of the building. Also, one sample collected beneath the water table [sample ID: DPT2-09 (5-6')] revealed 13.5 mg/kg TPH DRO. However, a second, deeper sample, DPT2-09 (7-8') did not reveal detectable TPH concentrations.

The total estimated volume of petroleum impacted soil (assumed from the surface to four (4) feet BLS) greater than 10 mg/kg TPH DRO or TPH GRO is 210 yards^3. This volume includes the two areas illustrated on Sheet 3 around borings DPT-12 (2005 boring location) and DPT2-05.

7.0 SIGNATURES



Benjamin J. Ashba, P.G.
Project Manager



G. Richard Garrett, P.G.
Contract Manager

TABLES

TABLE 1

SUMMARY OF SOIL LABORATORY RESULTS - TOTAL PETROLEUM HYDROCARBON DIESEL AND GASOLINE RANGE ORGANICS - EPA METHOD 8015 MODIFIED

Parcel 117 - Michael & Carole Richards Property
3296 Southport Supply Rd., Bolivia

Sample ID	Contaminant of Concern →		Diesel Range Organics (DRO)	Gasoline Range Organics (GRO)
	Date Collected	Location		
DPT2-01 (7-8')	8/15/13	Near northern property line, west of former "Barn"	<5.9	<5.1
DPT2-02 (1-2')	8/15/13	Near northern property line, east of former "Barn"	<5.7	<5.3
DPT2-03 (1-2')	8/15/13	Near former Kerosene tank and dispenser	<5.7	<5.4
DPT2-04 (2.5-3.5')	8/15/13	Northern corner of UST basin	8.4	<5.3
DPT2-05 (3-4')	8/15/13	Eastern corner of UST basin	**10.3**	<5.0
DPT2-06 (2-3.5')	8/15/13	Near western corner of UST basin, north of dispensers	<5.8	<4.9
DPT2-07 (5-6')	8/15/13	Near southern corner of UST basin, south of dispensers	<6.5	<6.4
DPT2-08 (3-4')	8/15/13	Western corner of dispenser canopy	8.1	5.5
*DPT2-09 (5-6')	8/15/13	Southern corner of dispenser canopy	***13.5**	<7.0
DPT2-09 (7-8')	8/15/13	Southern corner of dispenser canopy	<5.9	<5.1
DPT2-10 (3-4')	8/15/13	Behind building, western portion of parcel	6.5	<4.7

All results in milligrams per kilogram (mg/kg).
Sample depth below land surface provided in parenthesis as part of the sample identification.
< = Below Reporting Limit
* = Soil sample collected beneath the water table. Result not considered reflective of vadose soil conditions.
Results in bold exceed 10 mg/kg.

TABLE 2

HISTORICAL SUMMARY OF SOIL LABORATORY RESULTS - TOTAL PETROLEUM HYDROCARBON DIESEL AND GASOLINE RANGE ORGANICS - EPA METHOD 8015 MODIFIED

Parcel 117 - Michael & Carole Richards Property
3296 Southport Supply Rd., Bolivia

Sample ID	Contaminant of Concern →		Diesel Range Organics (DRO)	Gasoline Range Organics (GRO)
	Date Collected	Location		
DPT-01 (2')	4/19/05	Along drainage ditch	<7.37	<7.16
DPT-01 (6')	4/19/05		<8.38	<7.79
DPT-02 (2')	4/19/05	Catch Basin 152	<7	<6.85
*DPT-02 (6')	4/19/05		***52.8**	<7.88
DPT-03 (1')	4/20/05	East of former Kerosene tank and dispenser at existing Right of Way	<7.11	<6.85
DPT-03 (6')	4/20/05		<7.95	<7.69
DPT-04 (1')	4/20/05	Catch Basin 150	<6.71	<6.89
DPT-04 (6')	4/20/05		<7.26	<7.25
DPT-05 (1')	4/20/05	East of USTs at existing Right of Way	<7	<6.86
DPT-05 (6')	4/20/05		<7.71	<7.4
DPT-06 (1')	4/20/05	Catch Basin 149	<6.92	<7.15
DPT-06 (6')	4/20/05		<7.57	<7.39
DPT-07 (1')	4/20/05	South of USTs at existing Right of Way	<6.91	<6.57
DPT-07 (6')	4/20/05		<6.84	<6.99
DPT-08 (1')	4/20/05	Catch Basin 148	<7.01	<6.85
DPT-08 (6')	4/20/05		<7.51	<7.37
DPT-09 (1')	4/20/05	Catch Basin 147	<6.59	<6.42
DPT-09 (6')	4/20/05		<7.85	<7.75
DPT-10 (1')	4/20/05	Catch Basin 146	<7.08	<6.69
DPT-10 (6')	4/20/05		<9.76	<9.4
DPT-11 (1')	4/20/05	West of Dispensers at existing Right of Way	9.41	<7
DPT-11 (6')	4/20/05		<7.28	<7.11
DPT-12 (1')	4/20/05	West of DPT-11 at existing Right of Way	**24.6**	<6.86
DPT-12 (6')	4/20/05		<7.85	<7.66
DPT-13 (2')	4/20/05	Catch Basin 145	<6.47	<6.52
DPT-13 (6')	4/20/05		<7.52	<7.45

All results in milligrams per kilogram (mg/kg).
Sample depth below land surface provided in parenthesis as part of the sample identification.
< = Below Reporting Limit
* = Soil sample collected beneath the water table. Result not considered reflective of vadose soil conditions.
Results in bold exceed 10 mg/kg.

SHEETS

04/16/21

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-3601	1

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin
- Property Corner
- Property Monument
- Parcel/Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream
- Buffer Zone 1
- Buffer Zone 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch
- False Sump

RAILROADS:

- Standard Gauge
- RR Signal Milepost
- Switch
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite R/W Marker
- Proposed Control of Access Line with Concrete C/A Marker
- Existing Control of Access
- Proposed Control of Access
- Existing Easement Line
- Proposed Temporary Construction Easement
- Proposed Temporary Drainage Easement
- Proposed Permanent Drainage Easement
- Proposed Permanent Drainage / Utility Easement
- Proposed Permanent Utility Easement
- Proposed Temporary Utility Easement
- Proposed Aerial Utility Easement
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard

EXISTING STRUCTURES:

MAJOR:
- Bridge, Tunnel or Box Culvert
- Bridge Wing Wall, Head Wall and End Wall

MINOR:
- Head and End Wall
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB
- Paved Ditch Gutter
- Storm Sewer Manhole
- Storm Sewer

UTILITIES:

POWER:
- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- Recorded U/G Power Line
- Designated U/G Power Line (S.U.E.*)

TELEPHONE:
- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole
- Telephone Booth
- Telephone Pedestal
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- Recorded U/G Telephone Cable
- Designated U/G Telephone Cable (S.U.E.*)
- Recorded U/G Telephone Conduit
- Designated U/G Telephone Conduit (S.U.E.*)
- Recorded U/G Fiber Optics Cable
- Designated U/G Fiber Optics Cable (S.U.E.*)

WATER:
- Water Manhole
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line
- Designated U/G Water Line (S.U.E.*)
- Above Ground Water Line

TV:
- TV Satellite Dish
- TV Pedestal
- TV Tower
- U/G TV Cable Hand Hole
- Recorded U/G TV Cable
- Designated U/G TV Cable (S.U.E.*)
- Recorded U/G Fiber Optic Cable
- Designated U/G Fiber Optic Cable (S.U.E.*)

GAS:
- Gas Valve
- Gas Meter
- Recorded U/G Gas Line
- Designated U/G Gas Line (S.U.E.*)
- Above Ground Gas Line

SANITARY SEWER:
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line
- Above Ground Sanitary Sewer
- Recorded SS Forced Main Line
- Designated SS Forced Main Line (S.U.E.*)

MISCELLANEOUS:
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc.
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PREPARED BY:
CATLIN
Engineers and Scientists
Wilmington, North Carolina
PROJ #: 213100

WBS NO.:	41582.1.1	*SHEET* 2
TIP NO.:	R-5021	
COUNTY:	Brunswick	

2,000 1,000 0 2,000
SCALE IN FEET

GENERAL LOCATION
USCS TOPOGRAPHIC
QUADRANGLES

SITE VICINITY

NOTES:
- LOCKWOODS FOLLY AND SOUTHPORT USGS TOPOGRAPHIC QUADRANGLES OBTAINED FROM TERRAIN NAVIGATOR PRO.

PREPARED BY:
CATLIN
Engineers and Scientists
Wilmington, North Carolina
PROJ #: 213100

WBS NO.:	41582.1.1
TIP NO.:	R-5021
COUNTY:	Brunswick
SHEET	3

30 15 0 30
SCALE IN FEET

SITE MAP WITH SOIL BORING LOCATIONS AND SOIL SAMPLE RESULTS

Sample ID	Contaminant of Concern → Date Collected	Location	Diesel Range Organics (DRO)	Gasoline Range Organics (GRO)
DPT-01 (2')	4/19/05	Along drainage ditch	<7.37	<7.16
DPT-01 (6')	4/19/05		<8.38	<7.79
DPT-02 (2')	4/19/05	Catch Basin 152	<7	<6.85
*DPT-02 (6')	4/19/05		**52.8**	<7.88
DPT-03 (1')	4/20/05	East of former Kerosene tank and dispenser at existing Right of Way	<7.11	<6.85
DPT-03 (6')	4/20/05		<7.95	<7.69
DPT-04 (1')	4/20/05	Catch Basin 150	<6.71	<6.89
DPT-04 (6')	4/20/05		<7.26	<7.25
DPT-05 (1')	4/20/05	East of USTs at existing Right of Way	<7	<6.86
DPT-05 (6')	4/20/05		<7.71	<7.4
DPT-06 (1')	4/20/05	Catch Basin 149	<6.92	<7.15
DPT-06 (6')	4/20/05		<7.57	<7.39
DPT-07 (1')	4/20/05	South of USTs at existing Right of Way	<6.91	<6.57
DPT-07 (6')	4/20/05		<6.84	<6.99
DPT-08 (1')	4/20/05	Catch Basin 148	<7.01	<6.85
DPT-08 (6')	4/20/05		<7.51	<7.37
DPT-09 (1')	4/20/05	Catch Basin 147	<6.59	<6.42
DPT-09 (6')	4/20/05		<7.85	<7.75
DPT-10 (1')	4/20/05	Catch Basin 146	<7.08	<6.69
DPT-10 (6')	4/20/05		<9.76	<9.4
DPT-11 (1')	4/20/05	West of Dispensers at existing Right of Way	9.41	<7
DPT-11 (6')	4/20/05		<7.28	<7.11
DPT-12 (1')	4/20/05	West of DPT-11 at existing Right of Way	**24.6**	<6.86
DPT-12 (6')	4/20/05		<7.85	<7.66
DPT-13 (2')	4/20/05	Catch Basin 145	<6.47	<6.52
DPT-13 (6')	4/20/05		<7.52	<7.45

Sample ID	Contaminant of Concern → Date Collected	Location	Diesel Range Organics (DRO)	Gasoline Range Organics (GRO)
DPT2-01 (7-8')	8/15/13	Near northern property line, west of former "Barn"	<5.9	<5.1
DPT2-02 (1-2')	8/15/13	Near northern property line, east of former "Barn"	<5.7	<5.3
DPT2-03 (1-2')	8/15/13	Near former Kerosene tank and dispenser	<5.7	<5.4
DPT2-04 (2.5-3.5')	8/15/13	Northern corner of UST basin	8.4	<5.3
DPT2-05 (3-4')	8/15/13	Eastern corner of UST basin	**10.3**	<5.0
DPT2-06 (2-3.5')	8/15/13	Near western corner of UST basin, north of dispensers	<5.8	<4.9
DPT2-07 (5-6')	8/15/13	Near southern corner of UST basin, south of dispensers	<6.5	<6.4
DPT2-08 (3-4')	8/15/13	Western corner of dispenser canopy	8.1	5.5
*DPT2-09 (5-6')	8/15/13	Southern corner of dispenser canopy	**13.5**	<7.0
DPT2-09 (7-8')	8/15/13	Southern corner of dispenser canopy	<5.9	<5.1
DPT2-10 (3-4')	8/15/13	Behind building, western portion of parcel	6.5	<4.7

LEGEND

SYMBOL	DESCRIPTION
	2013 DPT SOIL SAMPLE
	2005 DPT SOIL SAMPLE
( )	SAMPLE DEPTH IN FEET
	EXISTING MONITORING WELL
	EXISTING ON-SITE DRAINAGE FEATURE AND CATCH BASIN

ESTIMATED EXTENT OF PETROLEUM IMPACTED SOIL GREATER THAN 10 MG/KG ABOVE THE WATER TABLE (APPROXIMATELY 4 FEET BLS)

NOTES:
- Site plan adapted from NCDOT provided plans
- All locations are approximate
- TPH = Total Petroleum Hydrocarbon
- All results in milligrams per kilogram (mg/kg)
- < = Below Reporting Limit
- * = Soil sample collected beneath water table. Result not considered reflective of vadose soil conditions
- Results in bold exceed 10 mg/kg
- BLS = Below Land Surface

APPENDIX A

BORING LOGS

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 41582.1.1
State Project: R-5021

PROJECT NO.: 213100	**STATE:** N.C.	**COUNTY:** Brunswick		**LOCATION:** Bolivia	
PROJECT NAME: Parcel 117 Michael & Carole Richars Property		**LOGGED BY:** Ben Ashba		**BORING ID:** DPT2-01	
		DRILLER: D.T. Chalmers, Jr.			
NORTHING:	**EASTING:**	**CREW:** CATLIN			
SYSTEM:	**BORING LOCATION:** Near prop. line - West of former shed.			**LAND ELEV.:** NM	
DRILL MACHINE: Power Probe	**METHOD:** CPT / DPT		**0 HOUR DTW:** N/A	**BORING DEPTH:** 8.0	
START DATE: 8/15/13	**FINISH DATE:** 8/15/13		**24 HOUR DTW:** N/A	**WATER DEPTH:** --	

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 250 500 750 1,000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	G R A B				SC			Sandy Topsoil and surface Clay increasing and grading to CLAY at 2ft.	
2.0	G R A B						2.0		
4.0	G R A B				CL			Brown to grayish brown, Sandy CLAY.	
6.0	G R A B								
7.0	G R A B			DPT-2 -01 (7-8')	SP		7.0	Dark brown, f. SAND. Wet @ 8'.	
8.0							8.0	Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 41582.1.1
State Project: R-5021

PROJECT NO.: 213100	**STATE:** N.C.	**COUNTY:** Brunswick		**LOCATION:** Bolivia	
PROJECT NAME: Parcel 117 Michael & Carole Richars Property		**LOGGED BY:** Ben Ashba		**BORING ID:** DPT2-02	
		DRILLER: D.T. Chalmers, Jr.			
NORTHING:	**EASTING:**	**CREW:** CATLIN			
SYSTEM:	**BORING LOCATION:** Near prop. line - Eest of former shed.			**LAND ELEV.:** NM	
DRILL MACHINE: Power Probe	**METHOD:** CPT / DPT		**0 HOUR DTW:** N/A	**BORING DEPTH:** 8.0	
START DATE: 8/15/13	**FINISH DATE:** 8/15/13		**24 HOUR DTW:** N/A	**WATER DEPTH:** --	

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 250 500 750 1,000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	G R A B				SM		0.3	Topsoil.	
1.0	G R A B			DPT2 -02 (1-2')	SC			Clayey SAND. Varying browns.	
2.0	G R A B						2.0		
4.0	G R A B				CL			Sandy CLAY. Damp at 7'.	
6.0	G R A B						7.0		
					SP			SAND. Brown. Wet @ 8'.	
8.0							8.0	Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC

WBS Element: 41582.1.1
State Project: R-5021

PROJECT NO.:	213100	**STATE:** N.C.	**COUNTY:**	Brunswick	**LOCATION:** Bolivia
PROJECT NAME:	Parcel 117 Michael & Carole Richars Property		**LOGGED BY:**	Ben Ashba	**BORING ID:** DPT2-03
			DRILLER:	D.T. Chalmers, Jr.	
NORTHING:		**EASTING:**	**CREW:**	CATLIN	
SYSTEM:		**BORING LOCATION:** Near former kerosene AST.			**LAND ELEV.:** NM
DRILL MACHINE:	Power Probe	**METHOD:**	CPT / DPT	**0 HOUR DTW:** N/A	**BORING DEPTH:** 4.0
START DATE:	8/15/13	**FINISH DATE:**	8/15/13	**24 HOUR DTW:** N/A	**WATER DEPTH:** --

DEPTH	BLOW COUNT (0.5 0.5 0.5 0.5)	MOI.	PID RESULTS (ppm) 0 250 500 750 1,000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	GRAB						0.2	Asphalt	
					GW		0.5	Gravel	
1.0	GRAB			DPT2-03 (1-2')	SC			Clayey SAND grading to Sandy CLAY. Varying browns and grayish brown.	
2.0							2.5		
	GRAB				CL				
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 213100 NCDOT-MIDWAY-TRADING-POST.GPJ CATLIN.GDT 9/6/13

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 41582.1.1
State Project: R-5021

PROJECT NO.:	213100	**STATE:**	N.C.	**COUNTY:**	Brunswick	**LOCATION:**	Bolivia
PROJECT NAME:	Parcel 117 Michael & Carole Richars Property			**LOGGED BY:**	Ben Ashba	**BORING ID:**	DPT2-04
				DRILLER:	D.T. Chalmers, Jr.		
NORTHING:		**EASTING:**		**CREW:**	CATLIN		
SYSTEM:		**BORING LOCATION:**	NE corner of UST basin.			**LAND ELEV.:**	NM
DRILL MACHINE:	Power Probe	**METHOD:**	CPT / DPT	**0 HOUR DTW:**	N/A	**BORING DEPTH:**	4.0
START DATE:	8/15/13	**FINISH DATE:**	8/15/13	**24 HOUR DTW:**	N/A	**WATER DEPTH:**	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 250 500 750 1,000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	GRAB						0.2	Asphalt	
					GW		0.5	Gravel	
1.0	GRAB				SC			Clayey SAND. Grayish brown.	
1.5							1.5		
2.5	GRAB			DPT2-04 (2.5-3.5')	SP			Very fine SAND. Dark brown. Wet at 3.5'.	
3.5	GRAB								
4.0							4.0		
								Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO_LOG_213100_NCDOT-MIDWAY-TRADING-POST.GPJ_CATLIN.GDT_9/6/13

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 41582.1.1
State Project: R-5021

PROJECT NO.: 213100	**STATE:** N.C.	**COUNTY:** Brunswick		**LOCATION:** Bolivia	
PROJECT NAME: Parcel 117 Michael & Carole Richars Property		**LOGGED BY:** Ben Ashba		**BORING ID:** DPT2-05	
		DRILLER: D.T. Chalmers, Jr.			
NORTHING:	**EASTING:**	**CREW:** CATLIN			
SYSTEM:	**BORING LOCATION:** SE corner of UST basin.			**LAND ELEV.:** NM	
DRILL MACHINE: Power Probe	**METHOD:** CPT / DPT		**0 HOUR DTW:** N/A	**BORING DEPTH:** 4.0	
START DATE: 8/15/13	**FINISH DATE:** 8/15/13		**24 HOUR DTW:** N/A	**WATER DEPTH:** --	

DEPTH	BLOW COUNT (0.5 0.5 0.5 0.5)	MOI.	PID RESULTS (ppm) 0 250 500 750 1,000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	GRAB						0.2	Asphalt	
					GW		0.5	Gravel	
1.0	GRAB				SP			Very fine to fine SAND. Greenish gray to 1.5' then sharp color change to dark brown.	
2.0	GRAB								
3.0	GRAB			DPT2-05 (3-4')			3.5		
					SW		4.0	Dark brown, v.f. to f. SAND w/minor to tr. shell hash. HCO at base.	
4.0								Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 41582.1.1
State Project: R-5021

PROJECT NO.: 213100	**STATE:** N.C.	**COUNTY:** Brunswick		**LOCATION:** Bolivia	
PROJECT NAME: Parcel 117 Michael & Carole Richars Property		**LOGGED BY:** Ben Ashba		**BORING ID:** DPT2-06	
		DRILLER: D.T. Chalmers, Jr.			
NORTHING:	**EASTING:**	**CREW:** CATLIN			
SYSTEM:	**BORING LOCATION:** North side center of canpoy.			**LAND ELEV.:** NM	
DRILL MACHINE: Power Probe	**METHOD:** CPT / DPT		**0 HOUR DTW:** N/A	**BORING DEPTH:** 4.0	
START DATE: 8/15/13	**FINISH DATE:** 8/15/13		**24 HOUR DTW:** N/A	**WATER DEPTH:** --	

DEPTH	BLOW COUNT (0.5 0.5 0.5 0.5)	MOI.	PID RESULTS (ppm) 0 250 500 750 1,000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	GRAB						0.2	Asphalt	
					GW		0.5	Gravel	
1.0	GRAB				SC		1.5	Clayey SAND. Grayish brown.	
2.0	GRAB				SP			Very fine SAND. Dark brown. Wet at 3.5'.	
3.0	GRAB			DPT2-06 (3-4')					
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 41582.1.1
State Project: R-5021

PROJECT NO.: 213100	**STATE:** N.C.	**COUNTY:** Brunswick		**LOCATION:** Bolivia	
PROJECT NAME: Parcel 117 Michael & Carole Richars Property		**LOGGED BY:** Ben Ashba		**BORING ID:** DPT2-07	
		DRILLER: D.T. Chalmers, Jr.			
NORTHING:	**EASTING:**	**CREW:** CATLIN			
SYSTEM:	**BORING LOCATION:** South central dispenser canopy.			**LAND ELEV.:** NM	
DRILL MACHINE: Power Probe	**METHOD:** CPT / DPT		**0 HOUR DTW:** N/A	**BORING DEPTH:** 8.0	
START DATE: 8/15/13	**FINISH DATE:** 8/15/13		**24 HOUR DTW:** N/A	**WATER DEPTH:** --	

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 250 500 750 1,000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	GRAB						0.2	Asphalt	
					GW		0.5	Sandy GRAVEL.	
1.0	GRAB				SC			Slightly Clayey SAND. Grayish brown. Increase of Clay w/depth.	
2.0	GRAB						2.5		
3.0	GRAB								
4.0	GRAB				CL			Sandy CLAY. Gray. Soft. Gradational change from above.	
5.0	GRAB			DPT2-07 (5-6')					
6.0	GRAB						6.5		
7.0	GRAB				SP			Dark brown, SAND. Poorly graded.	
8.0							8.0		
								Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 41582.1.1
State Project: R-5021

PROJECT NO.: 213100	STATE: N.C.	COUNTY: Brunswick		LOCATION: Bolivia	
PROJECT NAME: Parcel 117 Michael & Carole Richars Property		LOGGED BY: Ben Ashba		BORING ID: DPT2-08	
		DRILLER: D.T. Chalmers, Jr.			
NORTHING:	EASTING:	CREW: CATLIN			
SYSTEM:	BORING LOCATION: NW corner of canopy.			LAND ELEV.: NM	
DRILL MACHINE: Power Probe	METHOD: CPT / DPT		0 HOUR DTW: N/A	BORING DEPTH: 4.0	
START DATE: 8/15/13	FINISH DATE: 8/15/13		24 HOUR DTW: N/A	WATER DEPTH: --	

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 250 500 750 1,000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	GRAB						0.2	Asphalt	
					GW		0.5	GRAVEL	
1.0	GRAB				SP			Gray, f. SAND.	
							1.5		
2.0	GRAB				SC			Clayey SAND grading to Sandy CLAY. V. soft from 3-4'. Slight HCO @ 4'.	
3.0	GRAB			DPT2-08 (3-4')	CL		3.0		
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 213100 NCDOT-MIDWAY-TRADING-POST.GPJ CATLIN.GDT 9/6/13

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 41582.1.1
State Project: R-5021

PROJECT NO.:	213100	**STATE:**	N.C.	**COUNTY:**	Brunswick	**LOCATION:**	Bolivia
PROJECT NAME:	Parcel 117 Michael & Carole Richars Property			**LOGGED BY:**	Ben Ashba	**BORING ID:**	**DPT2-09**
				DRILLER:	D.T. Chalmers, Jr.		
NORTHING:		**EASTING:**		**CREW:**	CATLIN		
SYSTEM:		**BORING LOCATION:**	SW corner of canopy.			**LAND ELEV.:**	NM
DRILL MACHINE:	Power Probe	**METHOD:**	CPT / DPT	**0 HOUR DTW:**	N/A	**BORING DEPTH:**	8.0
START DATE:	8/15/13	**FINISH DATE:**	8/15/13	**24 HOUR DTW:**	N/A	**WATER DEPTH:**	--

DEPTH	BLOW COUNT (0.5 0.5 0.5 0.5)	MOI.	PID RESULTS (ppm) (0 250 500 750 1,000)	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	GRAB						0.2	Asphalt	
					GW		0.5	Sandy GRAVEL	
1.0	GRAB				SC			Brown, Clayey SAND.	
2.0	GRAB						2.0		
3.0	GRAB								
4.0	GRAB				CL			Dark brown grading to gray grading to grayish brown, v.f. Sandy CLAY. Gradational contact with above.	
5.0	GRAB			DPT2-09 (5-6')					
6.0	GRAB				SC		6.0	Clayey SAND.	
7.0	GRAB			DPT2-09 (7-8')	SP		7.0	Poorly graded SAND. Possible HCO or organics.	
8.0							8.0	Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO_LOG 213100 NCDOT-MIDWAY-TRADING-POST.GPJ CATLIN.GDT 9/6/13

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 41582.1.1
State Project: R-5021

PROJECT NO.:	213100	**STATE:** N.C.	**COUNTY:** Brunswick	**LOCATION:**	Bolivia
PROJECT NAME:	Parcel 117 Michael & Carole Richars Property		**LOGGED BY:** Ben Ashba	**BORING ID:**	DPT2-10
			DRILLER: D.T. Chalmers, Jr.		
NORTHING:		**EASTING:**	**CREW:** CATLIN		
SYSTEM:		**BORING LOCATION:** NW of store.		**LAND ELEV.:**	NM
DRILL MACHINE:	Power Probe	**METHOD:** CPT / DPT	**0 HOUR DTW:** N/A	**BORING DEPTH:**	8.0
START DATE:	8/15/13	**FINISH DATE:** 8/15/13	**24 HOUR DTW:** N/A	**WATER DEPTH:**	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 250 500 750 1,000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	GRAB				SC/CL			Clayey SAND grading to Sandy CLAY. Very soft and damp at 8'.	
2.0	GRAB								
3.0	GRAB			DPT2-10 (3-4')					
4.0	GRAB				CL		4.0		
	GRAB						5.0		
6.0	GRAB				CH				
8.0							8.0	Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO_LOG_213100_NCDOT-MIDWAY-TRADING-POST.GPJ_CATLIN.GDT_9/6/13

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

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 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

August 22, 2013

Ben Ashba
NCDOT South East
220 Old Dairy Road
Wilmington, NC 28405

RE: Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Dear Ben Ashba:
Enclosed are the analytical results for sample(s) received by the laboratory on August 16, 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, Materials and Tests Unit

Pace Analytical Services, Inc.
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Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

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

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
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Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92169157001	**DPT2-01 (7-8')**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92169157002	**DPT2-02 (1-2')**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92169157003	**DPT2-03 (1-2')**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92169157004	**DPT2-04 (2.5-3.5')**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92169157005	**DPT2-05 (3-4')**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92169157006	**DPT2-06 (2-3.5')**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92169157007	**DPT2-07 (5-6')**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92169157008	**DPT2-08 (3-4')**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92169157009	**DPT2-09 (5-6')**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92169157010	**DPT2-09 (7-8')**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92169157011	**DPT2-10 (3-4')**	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Sample: DPT2-01 (7-8') **Lab ID: 92169157001** Collected: 08/15/13 12:30 Received: 08/16/13 14:35 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	ND	mg/kg	5.9	1	08/16/13 16:33	08/19/13 21:11	68334-30-5	
Surrogates								
n-Pentacosane (S)	85	%	41-119	1	08/16/13 16:33	08/19/13 21:11	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	5.1	1	08/21/13 09:38	08/21/13 23:23	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	89	%	70-167	1	08/21/13 09:38	08/21/13 23:23	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**15.2**	%	0.10	1		08/20/13 08:59		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Sample: DPT2-02 (1-2') **Lab ID: 92169157002** Collected: 08/15/13 13:00 Received: 08/16/13 14:35 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	ND	mg/kg	5.7	1	08/16/13 16:33	08/19/13 21:35	68334-30-5	
Surrogates								
n-Pentacosane (S)	87	%	41-119	1	08/16/13 16:33	08/19/13 21:35	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	5.3	1	08/21/13 09:38	08/21/13 23:45	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	86	%	70-167	1	08/21/13 09:38	08/21/13 23:45	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**11.5**	%	0.10	1		08/20/13 08:59		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Sample: DPT2-03 (1-2') **Lab ID: 92169157003** Collected: 08/15/13 13:30 Received: 08/16/13 14:35 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	ND	mg/kg	5.7	1	08/16/13 16:33	08/19/13 21:35	68334-30-5	
Surrogates								
n-Pentacosane (S)	87	%	41-119	1	08/16/13 16:33	08/19/13 21:35	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	5.4	1	08/21/13 09:38	08/22/13 00:54	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	89	%	70-167	1	08/21/13 09:38	08/22/13 00:54	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**12.9**	%	0.10	1		08/20/13 09:00		

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ANALYTICAL RESULTS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Sample: DPT2-04 (2.5-3.5') **Lab ID: 92169157004** Collected: 08/15/13 15:00 Received: 08/16/13 14:35 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	**8.4**	mg/kg	5.9	1	08/16/13 16:33	08/20/13 21:41	68334-30-5	
Surrogates								
n-Pentacosane (S)	83	%	41-119	1	08/16/13 16:33	08/20/13 21:41	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	5.3	1	08/21/13 09:38	08/22/13 01:16	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	94	%	70-167	1	08/21/13 09:38	08/22/13 01:16	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**15.4**	%	0.10	1		08/20/13 09:00		

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ANALYTICAL RESULTS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Sample: DPT2-05 (3-4') **Lab ID: 92169157005** Collected: 08/15/13 14:45 Received: 08/16/13 14:35 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	**10.3**	mg/kg	5.8	1	08/16/13 16:33	08/19/13 21:58	68334-30-5	
Surrogates								
n-Pentacosane (S)	89	%	41-119	1	08/16/13 16:33	08/19/13 21:58	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	5.0	1	08/21/13 09:38	08/22/13 01:39	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	93	%	70-167	1	08/21/13 09:38	08/22/13 01:39	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**14.1**	%	0.10	1		08/20/13 09:00		

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ANALYTICAL RESULTS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Sample: DPT2-06 (2-3.5') **Lab ID: 92169157006** Collected: 08/15/13 15:15 Received: 08/16/13 14:35 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	ND	mg/kg	5.8	1	08/16/13 16:33	08/19/13 22:22	68334-30-5	
Surrogates								
n-Pentacosane (S)	94	%	41-119	1	08/16/13 16:33	08/19/13 22:22	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	4.9	1	08/21/13 09:38	08/22/13 02:02	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	96	%	70-167	1	08/21/13 09:38	08/22/13 02:02	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**13.2**	%	0.10	1		08/20/13 09:00		

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ANALYTICAL RESULTS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Sample: DPT2-07 (5-6') **Lab ID: 92169157007** Collected: 08/15/13 14:30 Received: 08/16/13 14:35 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	ND	mg/kg	6.5	1	08/16/13 16:33	08/19/13 22:22	68334-30-5	
Surrogates								
n-Pentacosane (S)	86	%	41-119	1	08/16/13 16:33	08/19/13 22:22	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	6.4	1	08/21/13 09:38	08/22/13 02:25	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	90	%	70-167	1	08/21/13 09:38	08/22/13 02:25	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**22.6**	%	0.10	1		08/20/13 09:01		

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ANALYTICAL RESULTS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Sample: DPT2-08 (3-4') **Lab ID: 92169157008** Collected: 08/15/13 15:30 Received: 08/16/13 14:35 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	**8.1**	mg/kg	6.2	1	08/16/13 16:33	08/20/13 21:41	68334-30-5	
Surrogates								
n-Pentacosane (S)	88	%	41-119	1	08/16/13 16:33	08/20/13 21:41	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	**5.5**	mg/kg	5.3	1	08/21/13 09:38	08/22/13 02:48	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-167	1	08/21/13 09:38	08/22/13 02:48	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**19.1**	%	0.10	1		08/20/13 09:01		

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ANALYTICAL RESULTS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Sample: DPT2-09 (5-6') **Lab ID: 92169157009** Collected: 08/15/13 14:00 Received: 08/16/13 14:35 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	**13.5**	mg/kg	6.3	1	08/16/13 16:33	08/19/13 22:45	68334-30-5	
Surrogates								
n-Pentacosane (S)	83	%	41-119	1	08/16/13 16:33	08/19/13 22:45	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	7.0	1	08/21/13 09:38	08/22/13 03:11	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-167	1	08/21/13 09:38	08/22/13 03:11	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.1**	%	0.10	1		08/20/13 09:02		

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ANALYTICAL RESULTS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Sample: DPT2-09 (7-8') **Lab ID: 92169157010** Collected: 08/15/13 14:10 Received: 08/16/13 14:35 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	ND	mg/kg	5.9	1	08/16/13 16:33	08/19/13 23:09	68334-30-5	
Surrogates								
n-Pentacosane (S)	79	%	41-119	1	08/16/13 16:33	08/19/13 23:09	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	5.1	1	08/21/13 09:38	08/22/13 03:34	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	95	%	70-167	1	08/21/13 09:38	08/22/13 03:34	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**15.8**	%	0.10	1		08/20/13 09:02		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Sample: DPT2-10 (3-4') **Lab ID: 92169157011** Collected: 08/15/13 12:00 Received: 08/16/13 14:35 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	**6.5**	mg/kg	5.8	1	08/16/13 16:33	08/19/13 23:09	68334-30-5	
Surrogates								
n-Pentacosane (S)	85	%	41-119	1	08/16/13 16:33	08/19/13 23:09	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B							
Gasoline Range Organics	ND	mg/kg	4.7	1	08/21/13 09:38	08/22/13 03:57	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-167	1	08/21/13 09:38	08/22/13 03:57	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**14.2**	%	0.10	1		08/20/13 09:03		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

QC Batch: GCV/7220 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92169157001, 92169157002, 92169157003, 92169157004, 92169157005, 92169157006, 92169157007, 92169157008, 92169157009, 92169157010, 92169157011

METHOD BLANK: 1033464 Matrix: Solid
Associated Lab Samples: 92169157001, 92169157002, 92169157003, 92169157004, 92169157005, 92169157006, 92169157007, 92169157008, 92169157009, 92169157010, 92169157011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	08/21/13 23:00	
4-Bromofluorobenzene (S)	%	87	70-167	08/21/13 23:00	

LABORATORY CONTROL SAMPLE: 1033465

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	49.7	55.2	111	70-165	
4-Bromofluorobenzene (S)	%			90	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1033466 1033467

Parameter	Units	92169157002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	mg/kg	ND	43.9	43.9	49.4	50.1	113	114	47-187	1	
4-Bromofluorobenzene (S)	%						95	88	70-167		

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QUALITY CONTROL DATA

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

QC Batch: OEXT/23489 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92169157001, 92169157002, 92169157003, 92169157004, 92169157005, 92169157006, 92169157007, 92169157008, 92169157009, 92169157010, 92169157011

METHOD BLANK: 1031122 Matrix: Solid
Associated Lab Samples: 92169157001, 92169157002, 92169157003, 92169157004, 92169157005, 92169157006, 92169157007, 92169157008, 92169157009, 92169157010, 92169157011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	08/19/13 18:51	
n-Pentacosane (S)	%	86	41-119	08/19/13 18:51	

LABORATORY CONTROL SAMPLE: 1031123

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	56.9	85	49-113	
n-Pentacosane (S)	%			86	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1031124 1031125

Parameter	Units	92169131001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Diesel Components	mg/kg	ND	73.6	73.6	60.1	59.7	79	78	10-146	1	
n-Pentacosane (S)	%						90	85	41-119		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

QC Batch: PMST/5774 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92169157001, 92169157002, 92169157003, 92169157004, 92169157005, 92169157006, 92169157007, 92169157008, 92169157009, 92169157010, 92169157011

SAMPLE DUPLICATE: 1031636

Parameter	Units	92169203001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	24.7	24.7	0	

SAMPLE DUPLICATE: 1031637

Parameter	Units	92169070010 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	10.1	10	1	

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QUALIFIERS

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Midway Trading WBS: 41582.1.1
Pace Project No.: 92169157

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92169157001	**DPT2-01 (7-8')**	EPA 3546	OEXT/23489	EPA 8015 Modified	GCSV/15353
92169157002	**DPT2-02 (1-2')**	EPA 3546	OEXT/23489	EPA 8015 Modified	GCSV/15353
92169157003	**DPT2-03 (1-2')**	EPA 3546	OEXT/23489	EPA 8015 Modified	GCSV/15353
92169157004	**DPT2-04 (2.5-3.5')**	EPA 3546	OEXT/23489	EPA 8015 Modified	GCSV/15353
92169157005	**DPT2-05 (3-4')**	EPA 3546	OEXT/23489	EPA 8015 Modified	GCSV/15353
92169157006	**DPT2-06 (2-3.5')**	EPA 3546	OEXT/23489	EPA 8015 Modified	GCSV/15353
92169157007	**DPT2-07 (5-6')**	EPA 3546	OEXT/23489	EPA 8015 Modified	GCSV/15353
92169157008	**DPT2-08 (3-4')**	EPA 3546	OEXT/23489	EPA 8015 Modified	GCSV/15353
92169157009	**DPT2-09 (5-6')**	EPA 3546	OEXT/23489	EPA 8015 Modified	GCSV/15353
92169157010	**DPT2-09 (7-8')**	EPA 3546	OEXT/23489	EPA 8015 Modified	GCSV/15353
92169157011	**DPT2-10 (3-4')**	EPA 3546	OEXT/23489	EPA 8015 Modified	GCSV/15353
92169157001	**DPT2-01 (7-8')**	EPA 5035A/5030B	GCV/7220	EPA 8015 Modified	GCV/7223
92169157002	**DPT2-02 (1-2')**	EPA 5035A/5030B	GCV/7220	EPA 8015 Modified	GCV/7223
92169157003	**DPT2-03 (1-2')**	EPA 5035A/5030B	GCV/7220	EPA 8015 Modified	GCV/7223
92169157004	**DPT2-04 (2.5-3.5')**	EPA 5035A/5030B	GCV/7220	EPA 8015 Modified	GCV/7223
92169157005	**DPT2-05 (3-4')**	EPA 5035A/5030B	GCV/7220	EPA 8015 Modified	GCV/7223
92169157006	**DPT2-06 (2-3.5')**	EPA 5035A/5030B	GCV/7220	EPA 8015 Modified	GCV/7223
92169157007	**DPT2-07 (5-6')**	EPA 5035A/5030B	GCV/7220	EPA 8015 Modified	GCV/7223
92169157008	**DPT2-08 (3-4')**	EPA 5035A/5030B	GCV/7220	EPA 8015 Modified	GCV/7223
92169157009	**DPT2-09 (5-6')**	EPA 5035A/5030B	GCV/7220	EPA 8015 Modified	GCV/7223
92169157010	**DPT2-09 (7-8')**	EPA 5035A/5030B	GCV/7220	EPA 8015 Modified	GCV/7223
92169157011	**DPT2-10 (3-4')**	EPA 5035A/5030B	GCV/7220	EPA 8015 Modified	GCV/7223
92169157001	**DPT2-01 (7-8')**	ASTM D2974-87	PMST/5774		
92169157002	**DPT2-02 (1-2')**	ASTM D2974-87	PMST/5774		
92169157003	**DPT2-03 (1-2')**	ASTM D2974-87	PMST/5774		
92169157004	**DPT2-04 (2.5-3.5')**	ASTM D2974-87	PMST/5774		
92169157005	**DPT2-05 (3-4')**	ASTM D2974-87	PMST/5774		
92169157006	**DPT2-06 (2-3.5')**	ASTM D2974-87	PMST/5774		
92169157007	**DPT2-07 (5-6')**	ASTM D2974-87	PMST/5774		
92169157008	**DPT2-08 (3-4')**	ASTM D2974-87	PMST/5774		
92169157009	**DPT2-09 (5-6')**	ASTM D2974-87	PMST/5774		
92169157010	**DPT2-09 (7-8')**	ASTM D2974-87	PMST/5774		
92169157011	**DPT2-10 (3-4')**	ASTM D2974-87	PMST/5774		

Pace Analytical	Sample Condition Upon Receipt (SCUR)	Page 1 of 2
	Document Number: F-CHR-CS-03-rev.11	Issuing Authority: Pace Huntersville Quality Office

Client Name: Catlin / NCDOT

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden ☐ Raleigh

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

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

Optional
Proj. Due Date:
Proj. Name:

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.: 3.9 C **Biological Tissue is Frozen:** Yes No (N/A)

Temp should be above freezing to 6°C

Comments:

Date and Initials of person examining contents: TP 8/16/13

Chain of Custody Present:	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☑No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A	7.
Sufficient Volume:	☑Yes	☐No	☐N/A	8.
Correct Containers Used:	☑Yes	☐No	☐N/A	9.
-Pace Containers Used:	☑Yes	☐No	☐N/A	
Containers Intact:	☑Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☑N/A	11.
Sample Labels match COC:	☐Yes	☑No	☐N/A	12. Sample #7 bottle time is 1413
-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: AMB **Date:** 8-16-13

SRF Review: AMB **Date:** 8-16-13

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)

Place label here

WO#: 92169157

92169157

Pace Analytical®
www.pacelabs.com

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

1691657

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: CATLIN/NCDOT	Report To: Ben Ashba @ CATLIN	Attention: NCDOT
Address: 220 Old Dairy	Copy To: NCDOT	Company Name:
Wilmington, NC 28405		Address:
Email To: ben.ashba@catlinusa.com	Purchase Order No.: WBS: 41582.1.1 Brunswick County	Pace Quote Reference: NCDOT
Phone: 910-452-3869 Fax: 910-452-2563	Project Name: DOT Midway Trading Post Parcel 117	Pace Project Manager: Jenny/Angela
Requested Due Date/TAT:	Project Number: CATLIN 213100	Pace Profile #: 5818-2

REGULATORY AGENCY

NPDES ☐ GROUND WATER ☐ DRINKING WATER
UST ☒ RCRA ☐ OTHER ☐

Site Location STATE: NC

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	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	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	TPH DRO 8015	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	DPT2-01 (7-8')	SL	G			8.15.13	1230		4	✓						✓		✓	✓		92169157
2	DPT2-02 (1-2')						1300														W1
3	DPT2-03 (1-2')						1330														W2
4	DPT2-04 (2.5-3.5')						1500														W3
5	DPT2-05 (3-4')						1445														W4
6	DPT2-06 (2-3.5')						1515														W5
7	DPT2-07 (5-6')						1430														W6
8	DPT2-08 (3-4')						1530														W7
9	DPT2-09 (5-6')						1400														W8
10	DPT2-09 (7-8')						1410														W9
11	DPT2-10 (3-4')						1200														W10
12																					W11

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

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
UST Summary EDD	Ben Ashba/CATLIN agent for NCDOT	8.15.13	1600	Rec	8/16/13	925				
	Rec	8/16/13	1435	A.L. Price	8/16/13	14:35	3.9	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ben Ashba

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 08/15/2013

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.

APPENDIX C

PHOTOGRAPHS

Parcel 117, Michael & Carole Richards Property
Midway Trading Post
3296 Southport Supply Rd.
August 15, 2013

From near corner of Southport Supply Rd. (NC 211) and Midway Rd (SR 1500) looking west.

From near corner of Southport Supply Rd. (NC 211) and Midway Rd (SR 1500) looking northwest.

Parcel 117, Michael & Carole Richards Property
Midway Trading Post
3296 Southport Supply Rd.
August 15, 2013

From near corner of Southport Supply Rd. (NC 211) and Midway Rd (SR 1500) looking west.

From near northeast property corner along Midway Rd (SR 1500) looking west along northern property line.

Parcel 117, Michael & Carole Richards Property
Midway Trading Post
3296 Southport Supply Rd.
August 15, 2013

From northeastern portion of site looking south.

From northeastern portion of site looking southwest.

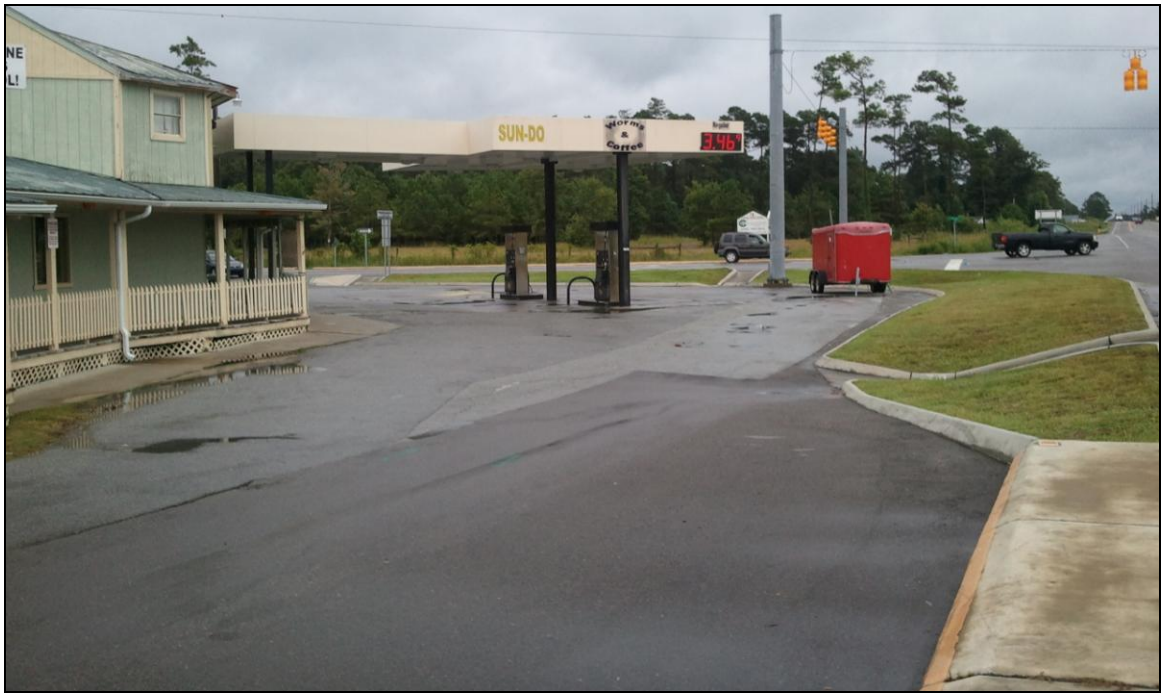
Parcel 117, Michael & Carole Richards Property
Midway Trading Post
3296 Southport Supply Rd.
August 15, 2013

From northeastern portion of site looking west.

From northwestern portion of site looking east.

Parcel 117, Michael & Carole Richards Property
Midway Trading Post
3296 Southport Supply Rd.
August 15, 2013

From northwestern portion of site looking southeast.



From southwestern portion of site near Southport Supply Rd. (NC 211) looking east.

APPENDIX D

SCHNABEL GEOPHYSICAL REPORT

Schnabel ENGINEERING

September 4, 2013

Mr. Richard Garrett, LG
Catlin Engineers and Scientists, Inc.
P.O. Box 10279
Wilmington, NC 28404-0279

RE:	State Project:	R-5021
	WBS Element:	41582.1.1
	County:	Brunswick
	Description:	NC 211 from SR 1500 (Midway Road) to NC 87

Subject: **Project 11821014.31, Report on Geophysical Surveys**
Parcel 117, Michael and Carole Richards Property, Bolivia, North Carolina

Dear Mr. Garrett:

SCHNABEL ENGINEERING SOUTH, PC (Schnabel) is pleased to present this report on the geophysical surveys we performed on the subject property. The report includes two 11x17 color figures and four 8.5x11 color figures. This study was performed in accordance with our proposal for Geophysical Surveys to Locate Possible USTs dated August 5, 2013, as approved by Terry Farr on August 7, 2013, and our agreement dated June 2, 2011. Cyrus Parker provided a verbal notice to proceed on August 6, 2013.

INTRODUCTION

The field work described in this report was performed on August 7 and August 13, 2013, by Schnabel under our 2011 contract with the NCDOT. The purpose of the geophysical surveys is to evaluate the potential presence of metal underground storage tanks (USTs) in the accessible areas of Parcel 117. Photographs of the property are included on Figure 1. The property is located in the northwest quadrant of NC 211 (Southport Supply Road SE) and SR 1500 (Midway Road SE), in Bolivia, NC (3296 Southport Supply Road SE).

The geophysical surveys consisted of an electromagnetic (EM) induction survey and a ground penetrating radar (GPR) survey. The EM survey was performed using a Geonics EM61-MK2 instrument. The EM61 is a time domain metal detector that stores data digitally for later processing and review. Sensitivity to metallic objects is dependent on the size, depth, and orientation of the buried object and the amount of noise (i.e. response from spurious metallic objects) in the area. The EM61 can generally observe a single buried 55 gallon drum at a depth of 10 feet or less. The EM61 makes measurements by creating an

electromagnetic pulse and then measuring the response from metallic objects with time after the pulse is generated. We recorded the response at several times after the pulse to help evaluate relative size and depth of metallic objects in the earth.

The GPR survey was performed over selected EM61 anomalies using a Geophysical Survey Systems SIR-3000 system equipped with a 400 MHz antenna to further evaluate EM responses that could indicate a potential UST.

Photographs of the equipment used are shown on Figure 2.

FIELD METHODOLOGY

Locations of geophysical data points were obtained using a sub-meter Trimble Pro-XRS differential global positioning system (DGPS). References to direction and location in this report are based on the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 83 datum, with units in US survey feet. We recorded the locations of existing site features (metal objects, signs, etc.) with the DGPS for later correlation with the geophysical data and a site plan provided by the NCDOT.

The EM61 data were collected along parallel survey lines spaced approximately 2.5 feet apart. The EM61 and DGPS data were recorded digitally using a field computer and later transferred to a desktop computer for data processing. The GPR data were collected along survey lines spaced approximately one to two feet apart in orthogonal directions over anomalous EM readings not attributed to cultural features. The GPR data were reviewed in the field to evaluate the possible presence of USTs. The GPR data also were recorded digitally and later transferred to a desktop computer for further review.

DISCUSSION OF RESULTS

The contoured EM61 data collected over Parcel 117 and the GPR survey area locations are shown on Figure 3, EM61 Early Time Gate Response, and Figure 4, EM61 Differential Response. Areas outside the colored, contoured EM61 data were not surveyed. Early time data refer to the response measured at a short time after the initial EM pulse is generated. Early time data are sensitive to all metal objects, small or large and shallow or deep, within the sensitivity range of the instrument. Differential data represent the difference in response between the top and bottom coils of the EM61 instrument at a later time after the initial pulse than early time data. Differential data naturally tend to filter out the effect of surface and very shallowly buried metallic objects. Typically, the differential response emphasizes anomalies from deeper and larger objects such as USTs.

The EM data contain multiple anomalies on the site, most of which appear to be the result of buried utilities, small pieces of metal at the ground surface or at shallow depths, or metal structures at the ground surface, including signs, guy wires, reinforced concrete slabs, etc. However, we collected GPR data over several EM anomalies of an unknown cause as shown on Figures 3 and 4 to further investigate the EM anomalies. The GPR data collected near the southeastern corner of Parcel 117 over the tank pit area indicated the presence of two known USTs, as shown on Figures 3 and 4. The identification of Known UST Nos. 1 and 2 was selected in accordance with the anomaly categories provided by the NCDOT in their letter, dated May 19, 2009, entitled “Geophysical Surveys to Identify USTs”. Example GPR images from lines oriented over the marked locations of Known UST Nos. 1 and 2 are shown on

Figure 5. The GPR data suggest the tops of Known UST Nos. 1 and 2 are approximately 3.0 to 4.0 feet below ground surface and that the known USTs are about 8 feet in diameter and about 21.5 feet long, equivalent to a capacity of a 8000 gallon UST. Photographs of the approximate locations of the known USTs that were marked in the field are included on Figure 6.

CONCLUSIONS

As shown in Figures 3 and 4, the EM data we collected at Parcel 117 cover most of the planned survey area with the exception of small vegetated areas on the eastern and western portions of the site, in addition to other inaccessible areas where there are buildings and other obstacles. The EM data include responses from several visible metallic objects at grade (e.g. signs and storm sewer inlets) and reinforced concrete.

The geophysical data indicate the presence of two known USTs outside the existing right-of-way on Parcel 117. The EM and GPR data suggest Known UST Nos. 1 and 2 are about the size of a 8000-gallon capacity UST and the tops are about 3.0 to 4.0 feet below ground surface.

LIMITATIONS

These services have been performed and this report prepared for Catlin Engineers and Scientists, Inc. and the North Carolina Department of Transportation in accordance with generally accepted guidelines for conducting geophysical surveys. It is generally recognized that the results of geophysical surveys are non-unique and may not represent actual subsurface conditions.

We appreciate the opportunity to have provided these services. Please call if you need additional information or have any questions.

Sincerely,

SCHNABEL ENGINEERING SOUTH, PC

James W. Whitt, PG
Senior Staff Geophysicist

Gary D. Rogers, PG
Senior Associate

JWW:GDR
Attachments: Figures (6)
CC: NCDOT, Terry Fox
FILE: G:\2011-SDE-JOBS\11821014_00_NCDOT_2011_GEOTECHNICAL_UNIT_SERVICES\11821014_31_R-5021_BRUNSWICK_COUNTY\REPORT\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 117 (R-5021).DOCX

Attachments:

- Figure 1 - Parcel 117 Site Photos
- Figure 2 - Photos of Geophysical Equipment Used
- Figure 3 - Parcel 117 EM61 Early Time Gate Response
- Figure 4 - Parcel 117 EM61 Differential Response
- Figure 5 - Parcel 117 Example GPR Images
- Figure 6 - Parcel 117 Photos of Known UST Locations

Parcel 117 (Michael & Carole Richards Property), looking northeast

Parcel 117 (Michael & Carole Richards Property), looking northwest

Schnabel ENGINEERING	STATE PROJECT R-5021 NC DEPT. OF TRANSPORTATION BRUNSWICK COUNTY, NC PROJECT NO. 11821014.31	PARCEL 117 SITE PHOTOS FIGURE 1

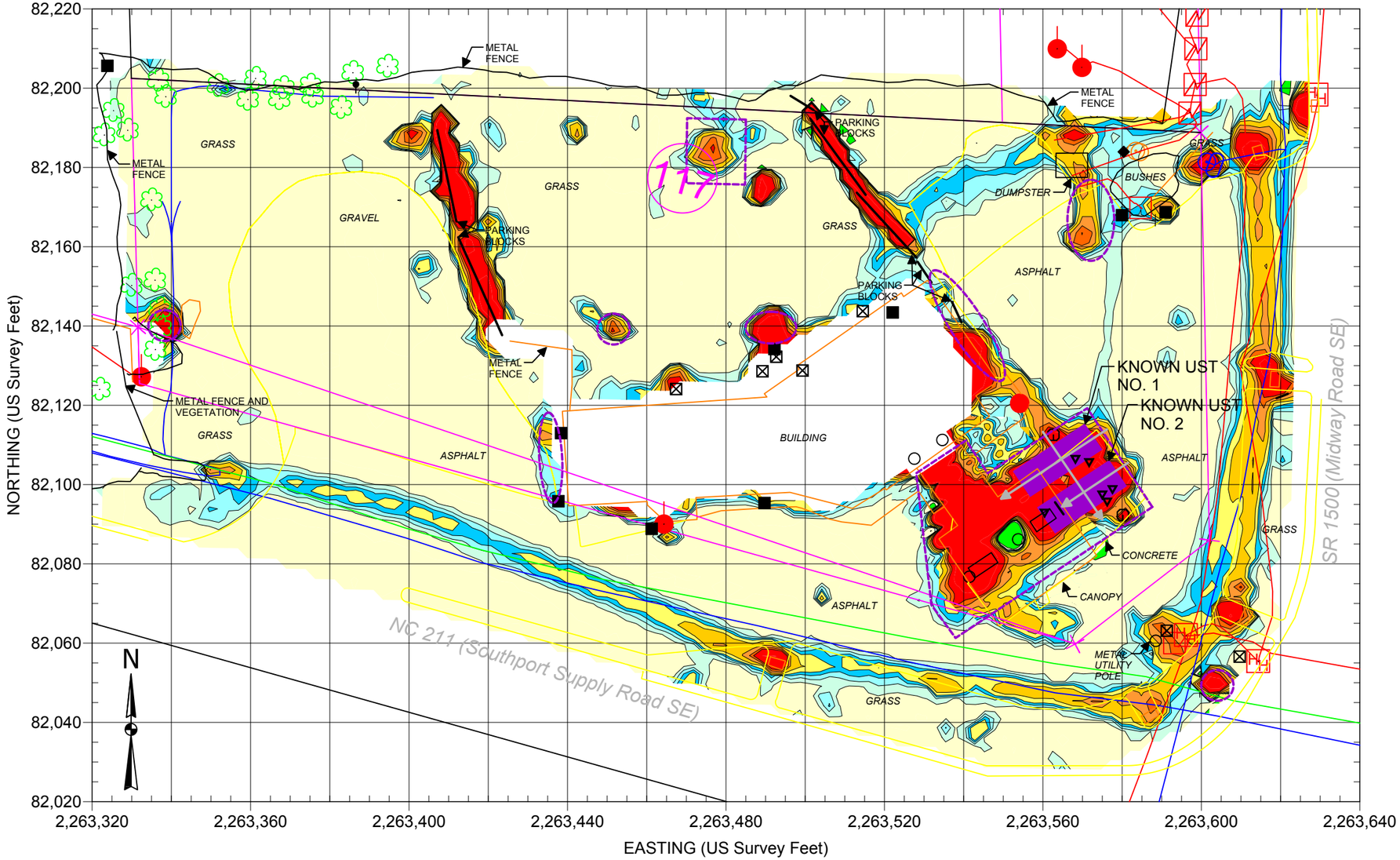
Geonics EM61-MK2 Metal Detector with Trimble DGPS Unit

GSSI SIR-3000 Ground-Penetrating Radar with 400 MHz Antenna

Note: Stock photographs – not taken on site.

Schnabel ENGINEERING	STATE PROJECT R-5021 NC DEPT. OF TRANSPORTATION BRUNSWICK COUNTY, NC PROJECT NO. 11821014.31	PHOTOS OF GEOPHYSICAL EQUIPMENT USED FIGURE 2

PARCEL 117



EXPLANATION

- METAL POLE
- MISCELLANEOUS METALLIC OBJECT
- UTILITY MANHOLE, METER, BOX, ETC.
- MONITORING WELL
- METAL ACCESS LID
- EDGE OF NCDOT PROPOSED R/W
- PROPERTY LINE
- GPR SURVEY AREA
- LOCATION OF SUSPECT USTS MARKED ON SITE
- EXAMPLE GPR LINE LOCATION

BASE PLAN FROM NCDOT FILE:
r5021_ncdot_fs.dgn
(FOR SOME SITE FEATURES)

EM61 Early Time Gate Response (mV)

-15000 -100 0 50 100 150 200 300 500 750 1000 2000

Scale in US Survey Feet: 1 in = 30 ft

0 30 60 90

Note: The contour plot shows the earliest and more sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on August 7 and August 13, 2013, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina Zone 3200, using the NAD 1983 datum. GPR data were acquired on August 13, 2013, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

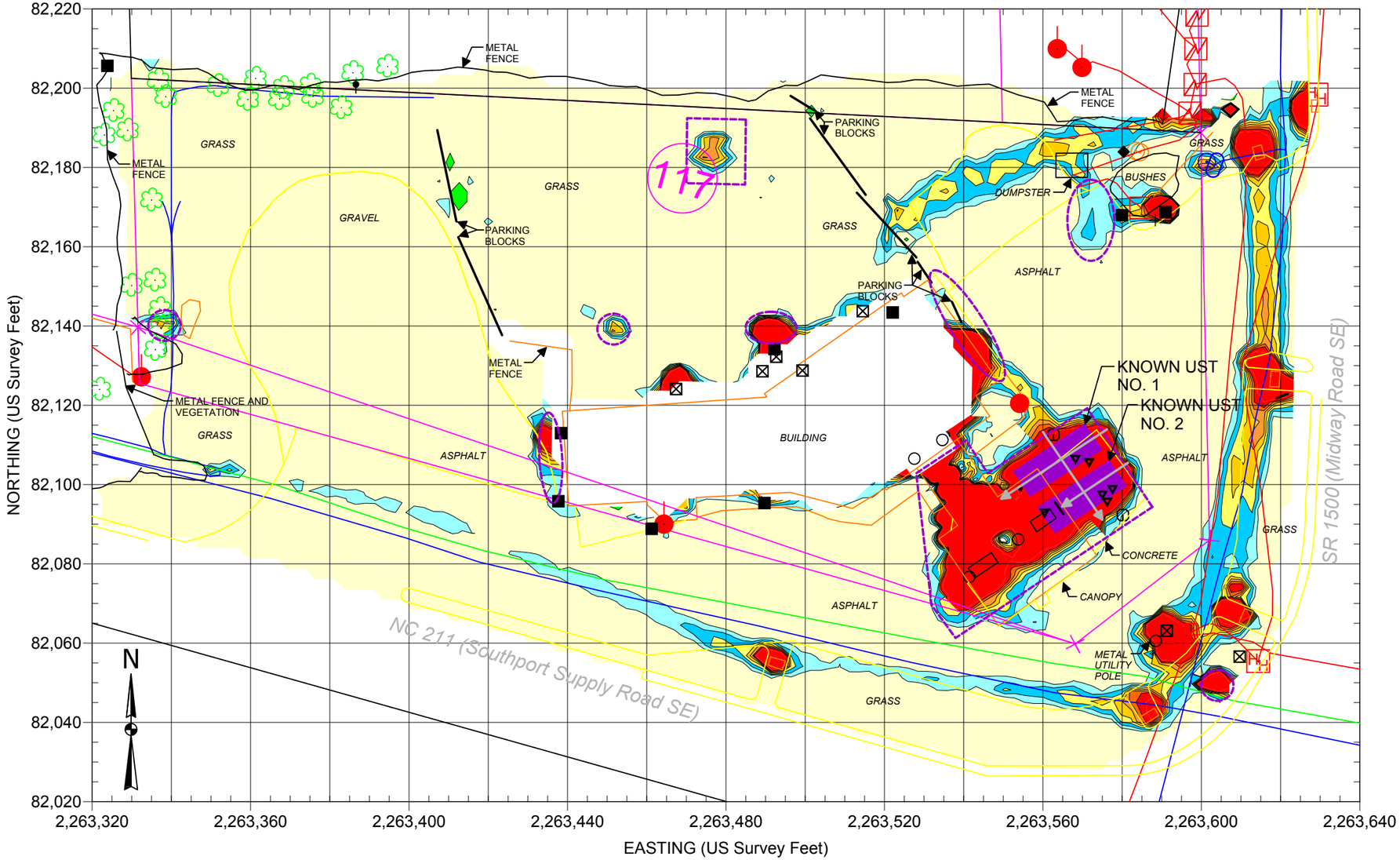
Schnabel ENGINEERING

STATE PROJECT R-5021
NC DEPARTMENT OF TRANSPORTATION
BRUNSWICK COUNTY, NC
PROJECT NO. 11821014.31

EM61
EARLY TIME GATE
RESPONSE

FIGURE 3

PARCEL 117



EXPLANATION

- METAL POLE
- MISCELLANEOUS METALLIC OBJECT
- UTILITY MANHOLE, METER, BOX, ETC.
- MONITORING WELL
- METAL ACCESS LID
- EDGE OF NCDOT PROPOSED R/W
- PROPERTY LINE
- GPR SURVEY AREA
- LOCATION OF SUSPECT USTS MARKED ON SITE
- EXAMPLE GPR LINE LOCATION

BASE PLAN FROM NCDOT FILE:
r5021_ncdot_fs.dgn
(FOR SOME SITE FEATURES)

EM61 Differential Response (mV)

-20000 -100 0 40 60 80 100 120 140 160 200

Scale in US Survey Feet: 1 in = 30 ft

0 30 60 90

Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as drums and tanks. The EM data were collected on August 7 and August 13, 2013, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 1983 datum. GPR data were acquired on August 13, 2013, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

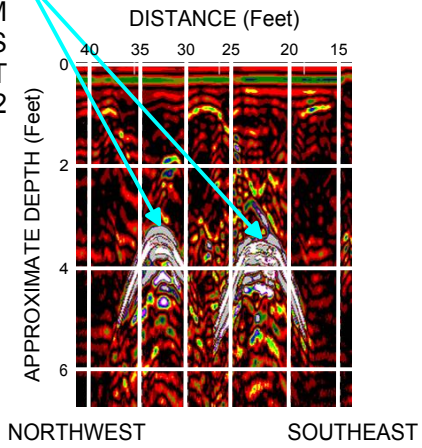
Schnabel ENGINEERING

STATE PROJECT R-5021
NC DEPARTMENT OF TRANSPORTATION
BRUNSWICK COUNTY, NC
PROJECT NO. 11821014.31

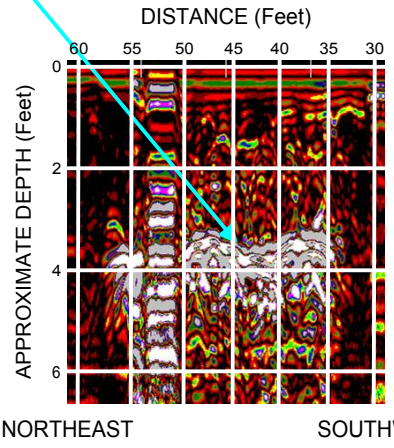
EM61
DIFFERENTIAL
RESPONSE

FIGURE 4

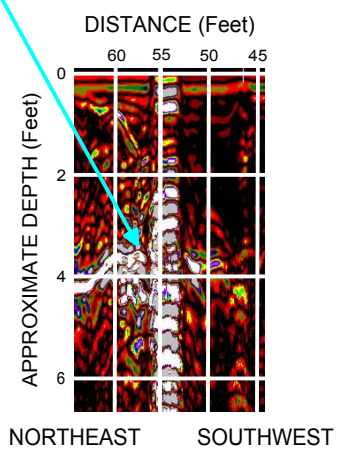
EXAMPLE GPR RESPONSE FROM THE SHORT AXES OF KNOWN UST NOS. 1 & 2



EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF KNOWN UST NO. 1



EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF KNOWN UST NO. 2

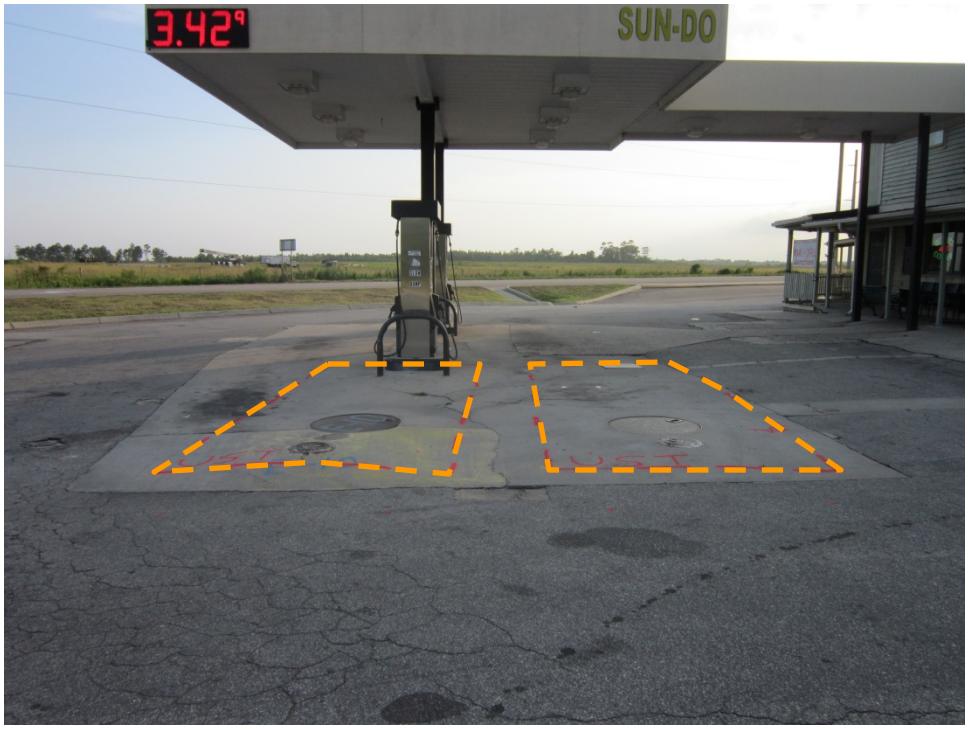


Schnabel ENGINEERING

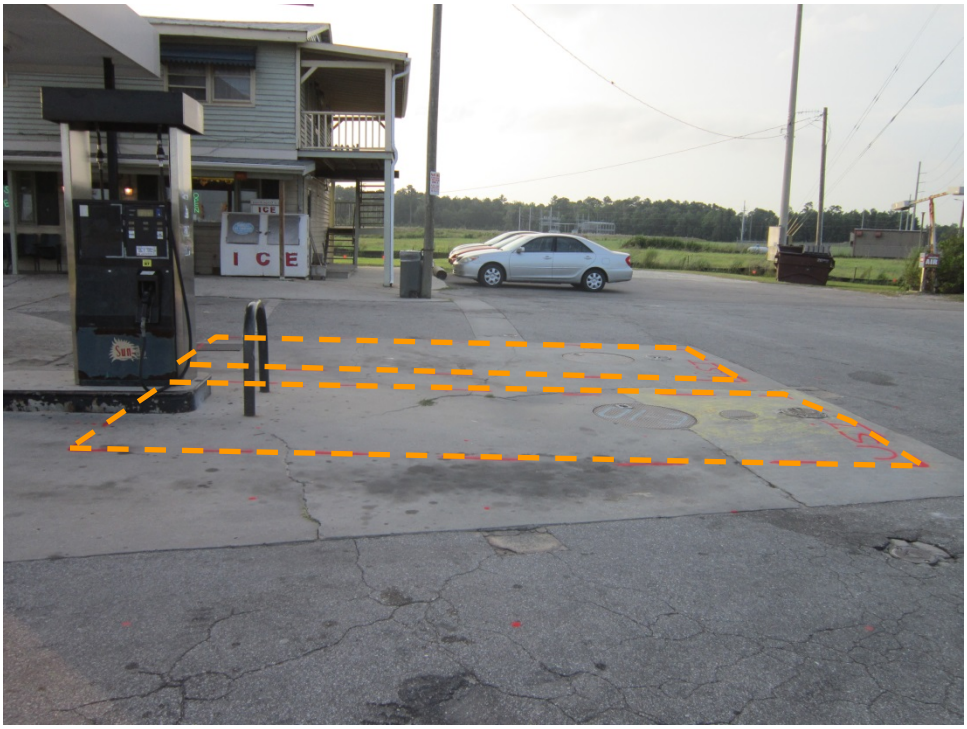
STATE PROJECT R-5021
NC DEPARTMENT OF TRANSPORTATION
BRUNSWICK COUNTY, NC
PROJECT NO. 11821014.31

PARCEL 117
EXAMPLE GPR IMAGES

FIGURE 5



Parcel 117 (Michael & Carole Richards Property), looking southwest. Photo shows approximate marked location of Known USTs Nos. 1 & 2 near the southeast corner of the parcel.



Parcel 117 (Michael & Carole Richards Property), looking northwest. Photo shows approximate marked location of Known USTs Nos. 1 & 2 near the southeast corner of the parcel.

Schnabel ENGINEERING	STATE PROJECT R-5021 NC DEPT. OF TRANSPORTATION BRUNSWICK CO., NORTH CAROLINA PROJECT NO. 11821014.31	PARCEL 117 PHOTOS OF KNOWN UST LOCATIONS FIGURE 6