

Preliminary Site Assessment Albright Properties, LLC Property

**Parcel 30
Charlotte
Mecklenburg County, North Carolina**

**H&H Job No. ROW-501
State Project P-3800
WBS Element #49999.1.STR8
October 24, 2014**



**Preliminary Site Assessment
Albright Properties, LLC Property- Parcel 30
Charlotte, Mecklenburg County, North Carolina
H&H Project ROW-501**

Table of Contents

<u>Section</u>	<u>Page No.</u>
1.0 Introduction and Background	1
2.0 Geophysical Survey and Soil Assessment	2
2.1 Geophysical Survey	2
2.2 Soil Sampling.....	3
2.3 Soil Analytical Results.....	4
3.0 Groundwater Assessment.....	5
3.1 Temporary Monitoring Well Sampling	5
3.2 Groundwater Analytical Results	6
4.0 Summary and Regulatory Considerations	7
5.0 Signature Page.....	8

List of Tables

- Table 1 Soil Boring GPS Coordinate Data
Table 2 Soil Analytical Results
Table 3 Groundwater Analytical Results

List of Figures

- Figure 1 Site Location Map
Figure 2 Site Map and Soil Analytical Results

List of Appendices

- Appendix A NC DOT Preliminary Plan
Appendix B EDR Documents and Adjacent Property TCE Map
Appendix C GEL Geophysics, LLC Geophysical Survey Report
Appendix D Soil Boring Logs and Temporary Well Boring Log
Appendix E Laboratory Analytical Reports
Appendix F Subsurface Investigation Permit and Well Abandonment Record

**Preliminary Site Assessment
Albright Properties, LLC Property - Parcel 30
Charlotte, Mecklenburg County, North Carolina
H&H Project ROW-501**

1.0 Introduction and Background

Hart & Hickman, PC (H&H) has prepared this Preliminary Site Assessment (PSA) report documenting assessment activities performed at the Albright Properties, LLC (Albright) property located at 1200 S. Graham Street in Charlotte, Mecklenburg County, North Carolina. This assessment was conducted on behalf of the North Carolina Department of Transportation (NC DOT) in accordance with H&H's July 14, 2014 proposal. This parcel is part of a proposed North Carolina Brownfields site.

The purpose of this assessment was to collect data to evaluate the presence or absence of impacted soil on the subject property in the proposed construction areas related to the proposed Charlotte Locomotive and Railcar Maintenance Facility for the Charlotte Railroad Improvement and Safety Program (CRISP) (State Project P-3800). The Albright property currently operates as the Charlotte Church. A site location map is included as Figure 1, and a site map is presented as Figure 2. The NC DOT preliminary plan of the locomotive and railcar maintenance facility area near the Albright property is attached as Appendix A.

Based on information provided by NC DOT, the Albright property is currently occupied by the Charlotte Church. The NC DOT Parcel 30 property is comprised of three tax parcels. H&H previously used Environmental Data Resources, Inc. (EDR), an environmental database search service, for a cursory review of Federal and State environmental database files for the Albright property and requested publicly available underground storage tank (UST) compliance files and groundwater incident files from NC DENR's Mooresville Regional Office (MRO). No NC DENR files were identified for this property. Review of the City Directory Abstract, Sanborn maps, and aerial photographs provided in the EDR report indicates that the property was previously occupied by residences, an outboard motor sales and service facility, and a wholesale electrical fixture warehouse. The EDR report was previously provided to NC DOT. The City

Directory Abstract, select Sanborn maps, and aerial photographs from the EDR report are included in Appendix B.

H&H also reviewed a *Comprehensive Site Assessment* (CSA) report dated February 1997 prepared by Geraghty & Miller, Inc. for the Former Dexter Facility located at 1201 S. Graham Street, which is adjacent and to the south of the Albright property. Based on the CSA, the facility formerly manufactured a water treatment chemical for cooling towers and fuel oil additives. The CSA report indicates that groundwater is impacted at the site and beneath the Albright property. Groundwater is impacted primarily with trichloroethene (TCE), likely from an off-site source further to the west. Several monitoring wells associated with the former Dexter site appear to have been located on the Albright property. The wells are shown on the Trichloroethene Isoconcentration Contour Map (Figure 5-1) from the CSA (Appendix B). These wells were not identified on the Albright property during the recent PSA activities.

The PSA activities conducted by H&H on the Albright property are discussed below.

2.0 Geophysical Survey and Soil Assessment

2.1 Geophysical Survey

Prior to advancing the soil borings, H&H reviewed the results of a geophysical survey performed at the site by GEL Geophysics, LLC, (GEL) in August 2014. GEL utilized electromagnetic (EM) induction technology and ground penetrating radar (GPR) to identify potential geophysical anomalies and potential USTs at the site. Please note that due to subsurface soil conditions, the GPR signal penetration was limited to approximately 2.5 ft to 3 ft below ground surface (bgs) at the site. The EM/GPR results indicated the presence of multiple anomalies on the Albright property. The anomalies were attributed to metallic objects or utilities that were not characteristic of typical UST signatures.

During assessment activities, H&H identified a potential UST near the center of the northwest side of the building. An approximate two-inch diameter “fill port” type pipe was identified approximately three ft from the building foundation. The cap to the pipe was removed and the pipe

was measured to approximately two ft below ground surface (bgs). The pipe either bends at an angle at two ft bgs or has been fill in place. A slight petroleum like odor was detected in the pipe. Due to interference with the building foundation, utilities, etc. GEL was not able to identify any geophysical anomalies in this area. GEL's report, including a site map depicting the results of the EM and GPR survey is provided in Appendix C.

2.2 Soil Sampling

H&H mobilized to the Albright property on September 3, 2014 and advanced 5 soil borings (30-1 through 30-5) by hand auger and direct push technology (DPT). Prior to conducting soil borings, utilities were marked by the NC 811 public utility locator and by GEL for private underground utilities. Borings were also cleared to a five foot depth by hand auger. H&H utilized Geologic Exploration, Inc. of Statesville, North Carolina to advance the soil borings. The soil borings were advanced to 20 ft bgs. To facilitate the selection of soil samples for laboratory analysis, soil from each boring was screened continuously for the presence of volatile organic compounds (VOCs) with an organic vapor analyzer (OVA). Additionally, H&H observed the soil for visual and olfactory indications of petroleum impacts. During soil screening, there were moderate indications of potential impacts in soil boring 30-1 based on OVA readings. However, no odors were observed in boring 30-1. There were no strong indications of potential impacts in the remaining soil borings based on field screening. Soil samples were collected at depth intervals ranging from 0 to 2 ft bgs to 10 ft to 12 ft bgs. Soil boring logs are included in Appendix D.

Soil borings 30-1 and 30-2 were advanced in the parking lot area on the western portion of the site. Soil boring 30-3 was advanced on the northern side of the building near a geophysical anomaly identified by GEL. Soil boring 30-4 was advanced near the potential UST identified by H&H, and soil boring 30-5 was advanced near the northeast downgradient corner of the property near the former outboard and motor sales and service facility. GPS coordinate data for the soil borings are provided in Table 1. Soil boring locations are shown on Figure 2.

H&H submitted a total of five soil samples from borings 30-1 through 30-5 for laboratory analysis. The soil samples were placed into laboratory supplied sample containers using nitrile glove-covered hands. The containers were then labeled as to content, analyses requested, sample date and time, and sampler's name. The samples were placed in an iced cooler upon collection and were subsequently submitted to Pace Analytical Services, Inc. under standard chain-of-custody protocol.

Soil samples were submitted for analysis of total petroleum hydrocarbons (TPH) as gasoline-range organics (GRO) and diesel-range organics (DRO) by EPA Method 8015. Soil sample 30-5 collected near the former outboard and motor sales and service area was also analyzed for VOCs by EPA Method 8260, semi-VOCs (SVOCs) by EPA Method 8270, and Hazardous Substance List (HSL) metals using EPA Method 6010/7471 (for mercury). Sample depths and analytical results are summarized in Table 2. Laboratory analytical data sheets and chain-of-custody documentation are provided in Appendix E. The analytical results are discussed below.

2.3 Soil Analytical Results

Concentrations of TPH DRO (67.4 mg/kg and 33.2 mg/kg) were detected in soil samples 30-2 and 30-5, respectively, above the DENR Action Level of 10 mg/kg. A low level concentration of manganese (851 mg/kg) was detected in soil sample 30-5 above the IHSB Health-Based Soil Remediation Goal (SRG) and the IHSB Protection of Groundwater (POG) SRG. Based on the background range values (8.0 mg/kg to 3,394 mg/kg) for manganese, the detected manganese concentration is within background levels. Concentrations of beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc were also detected in 30-5 below the IHSB SRGs. Based on the background levels for NC or Southeast soils, these metals also appear to be naturally occurring. No other target constituents were detected in the soil samples collected at the site. Analytical results for the TPH DRO impacts are shown on Figure 2.

The TPH DRO impacted soils are located beneath the parking lot area in the central portion of the property (near soil boring 30-2) and beneath the parking lot area near the former outboard and motor sales and service in the northeast portion of the property (near soil boring 30-5). Based on

laboratory analytical results and OVA readings, petroleum impacted soils are present on the Albright property. H&H estimates that:

- there are roughly 80 cubic yards (120 tons) of impacted soil between the surface and 4 ft near the center of the property near soil boring 30-2; and
- there are roughly 80 cubic yards (120 tons) of impacted soil between the surface and 4 ft beneath the parking lot area in the northeast portion of the property near soil boring 30-5.

The estimated depth of petroleum impacted soils is based on field screening results and limited soil analytical data. However, field screening did not provide information that defines the impacted soil interval in all boring locations. Therefore, impacts may extend beyond the depths indicated above. The approximate areas of TPH impacted soil are shown on Figure 2.

3.0 Groundwater Assessment

3.1 Temporary Monitoring Well Sampling

Because previous assessment activities associated with the adjacent property to the south indicate that groundwater is impacted with chlorinated solvents near the Albright property, one temporary monitoring well (TW-1) was installed in soil boring 30-5 on the downgradient northeast portion of the Albright property. The temporary monitoring well location is shown on Figure 2.

Prior to the well installation, a Subsurface Investigation Permit (SIP) was obtained for the temporary well as required by Mecklenburg County. The well was installed by Geologic Exploration using the DPT drilling rig. The temporary monitoring well was installed with a one-inch diameter PVC riser with 10 feet of 0.010-inch slotted screen to a depth of 40 ft bgs. The annulus around the well screen was filled with sand to approximately two ft above the well screen. The annulus around the well casing above the sand was filled with approximately two ft of hydrated bentonite. The temporary well boring log is included in Appendix D. The SIP is included in Appendix F.

Upon completion of the monitoring well installation, H&H developed the well using a bailer to remove residual fines. Once development was complete and the water table equilibrated, H&H measured depth to water using an electronic meter. The depth to water was measured at 34.5 ft bgs. The well was then purged until field measurements including pH, specific conductivity, and temperature stabilized. A groundwater sample was then collected using nitrile glove-covered hands and placed into laboratory-supplied sample containers for analysis of VOCs using EPA Method 8260. For the VOC analysis, the groundwater sample was purged and trapped prior to the pump head, and then poured into the sample containers. The containers were then labeled as to content, analyses requested, sample date and time, and sampler's name. The sample was placed in an iced cooler upon collection and was subsequently submitted to Pace Analytical Services, Inc. under standard chain-of-custody protocol. Analytical results are summarized in Table 3. Laboratory analytical data sheets for the groundwater sample and chain-of-custody documentation are provided in Appendix E. The analytical results are discussed below.

After completion of groundwater sampling activities, temporary monitoring well TW-1 was properly abandoned in accordance with DENR regulations by Geologic Exploration. The well abandonment record was provided to Mecklenburg County to close out the SIP. The well abandonment record is included in Appendix F.

3.2 Groundwater Analytical Results

Trichloroethene (TCE) (0.0576 mg/L) was detected in the groundwater sample collected from temporary monitoring well TW-1 above the 15A NCAC 2L.0202 Groundwater Quality Standard (2L Standard) (0.003 mg/L). Concentrations of cis-1,2,-dichloroethene, trans-1,2-dichloroethene, and chloroform were also detected in the groundwater sample collected from TW-1 below the 2L Standard. No other target constituents were detected in the groundwater sample collected from TW-1.

The depth to groundwater is in the range of 34 ft in this area of the property. If dewatering of groundwater will be required during site work, a National Pollutant Discharge Elimination System

(NPDES) permit will be required by DENR for potential discharge of the impacted water to surface waters during construction activities. If removal of saturated soil in this area is required for site work, this soil should be sampled for potential impacts prior to construction activities. Impacted soil that is removed should be properly managed and disposed at a permitted facility.

4.0 Summary and Regulatory Considerations

H&H has reviewed the EDR report, DENR incident files, geophysical survey results, and analytical results of soil and groundwater samples collected at the Albright property. Groundwater beneath the Albright property is impacted with chlorinated solvents, primarily TCE from an off-site source. A fill port type pipe was identified at the site indicating a potential UST near the site building. No potential USTs were identified at the site using EM/GPR. The UST (if present), and its contents should be removed in accordance with DENR regulations.

Analytical results of soil samples collected by H&H indicate TPH DRO at concentrations above DENR Action Levels in two soil boring locations advanced on the Albright property. H&H estimates that there are roughly 80 cubic yards (120 tons) of impacted soil between the surface and 4 ft in the central portion of the property near soil boring 30-2 and roughly 80 cubic yards (120 tons) of impacted soil between the surface and 4 ft beneath the parking lot area in the northeast portion of the property near soil boring 30-5. Impacted soil that is removed during the NC DOT construction activities should be properly managed via the Brownfields Agreement and/or disposed at a permitted facility.

Analytical results of a groundwater sample collected by H&H indicate that groundwater is impacted with TCE above the 2L Standard beneath the Albright property. If dewatering of groundwater will be required during site work, a NPDES permit may be required by DENR for potential discharge of the impacted water to surface waters during construction activities. If removal of saturated soil in this area is required for site work, this soil should be sampled for potential impacts prior to construction activities. Impacted soil that is removed from the saturated zone should be properly managed via the Brownfields Agreement and/or disposed at a permitted facility.

5.0 Signature Page

This report was prepared by:



David Graham
Senior Project Geologist for
Hart and Hickman, PC

This report was reviewed by:



Matt Bramblett, PE
Principal and Project Manager for
Hart and Hickman, PC

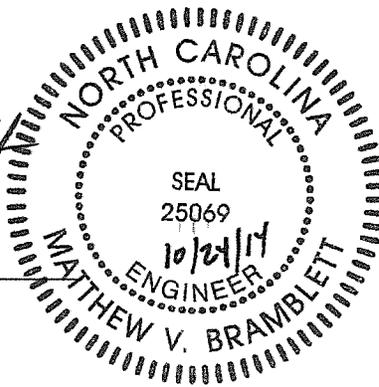


Table 1
Soil Boring GPS Coordinate Data
Albright Properties, LLC (Parcel 30)
Charlotte, Mecklenburg County, North Carolina
H&H Job No. ROW-501

Sample ID	Latitude	Longitude
30-1	35.222616	-80.857804
30-2	35.222670	-80.857648
30-3	35.222805	-80.857555
30-4	35.222840	-80.857448
30-5/TW-1	35.223005	-80.857491

Notes:

GPS coordinate data points collected using a Trimble GeoExplorer 6000 series unit with external satellite for increased accuracy.

Table 2
Soil Analytical Results
Albright Properties, LLC - Parcel 30
Charlotte, Mecklenburg County, North Carolina
H&H Job No. ROW-501

Sample ID Sample Depth (ft) Sample Date	30-1	30-2	30-3	30-4	30-5	Regulatory Standard			
	4-6 9/3/2014	0-2 9/3/2014	10-12 9/3/2014	4-6 9/3/2014	0-2 9/3/2014				
<u>VOCs (8260) (mg/kg)</u>	NA	NA	NA	NA	BRL	IHSB SRG ¹ (mg/kg) --	IHSB POG ² (mg/kg) --		
<u>SVOCs (8270)(mg/kg)</u>	NA	NA	NA	NA	BRL	IHSB SRG ¹ (mg/kg) --	IHSB POG ² (mg/kg) --		
<u>HSL Metals (6010/7471) (mg/kg)</u>						IHSB SRG ¹ (mg/kg)	IHSB POG ² (mg/kg)	Range ³ (mg/kg)	Mean ³ (mg/kg)
Beryllium	NA	NA	NA	NA	0.66	460	63	ND-2.0	0.11
Cadmium	NA	NA	NA	NA	0.65	200	3	1.0-10	4.3
Chromium	NA	NA	NA	NA	114	110,000	360,000	7.0-300	65
Copper	NA	NA	NA	NA	63.6	9,400	700	3.0-100	34
Lead	NA	NA	NA	NA	7.2	800	270	ND - 50	16
Manganese	NA	NA	NA	NA	851	5,200	65	8.0-3,394	594
Mercury	NA	NA	NA	NA	0.062	3.1	1.0	0.03-0.52	0.121
Nickel	NA	NA	NA	NA	20.0	4,400	130	ND-150	23
Selenium	NA	NA	NA	NA	1.7	1,200	2.1	<0.1-0.8	0.42
Zinc	NA	NA	NA	NA	32.0	70,000	1,200	25-124	56
<u>TPH-DRO/GRO (8015) (mg/kg)</u>						NCDENR Action Level (mg/kg)			
Diesel-Range Organics (DRO)	<6.7	67.4	<5.5	<7.1	33.2	10			
Gasoline-Range Organics (GRO)	<10.2	<4.9	<6.8	<8.5	<6.9	10			

Notes:

1. NC DENR Inactive Hazardous Sites Branch (IHSB) Industrial Health Based Soil Remediation Goals (SRGs) - September 2014
 2. NC DENR IHSB Protection of Groundwater (POG) Soil Remediation Goals - September 2014
 3. Range and Mean background values for North Carolina or Southeast soils taken from *Elements in North American Soils* by Dragun and Chekiri, 2005
- Only compounds detected in at least one sample shown above
EPA Method follows parameter in parenthesis; NA= Not analyzed
BRL=Below laboratory reporting limit; VOCs=volatile organic compounds
SVOCs=semi-volatile organic compounds; TPH=total petroleum hydrocarbons; HSL = Hazardous Substance List
Bold indicates above potential target level (and twice the mean background levels in the case of metals).

Table 3
Groundwater Analytical Results
Albright Properties, LLC - Parcel 30
Charlotte, Mecklenburg County, North Carolina
H&H Job No. ROW-501

Sample ID	30-TW1	Screening Criteria
		NC DENR 2L Standard ¹
Sample Date	9/4/2014	mg/L
Units	mg/L	mg/L
<u>VOCs (8260)</u>		
Chloroform	0.0012	0.070
cis-1,2-Dichloroethene	0.0122	0.070
trans-1,2-Dichloroethene	0.0037	0.100
Trichloroethene	0.0576	0.003

Notes:

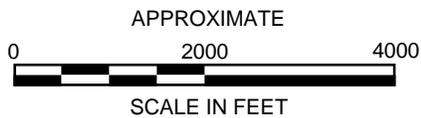
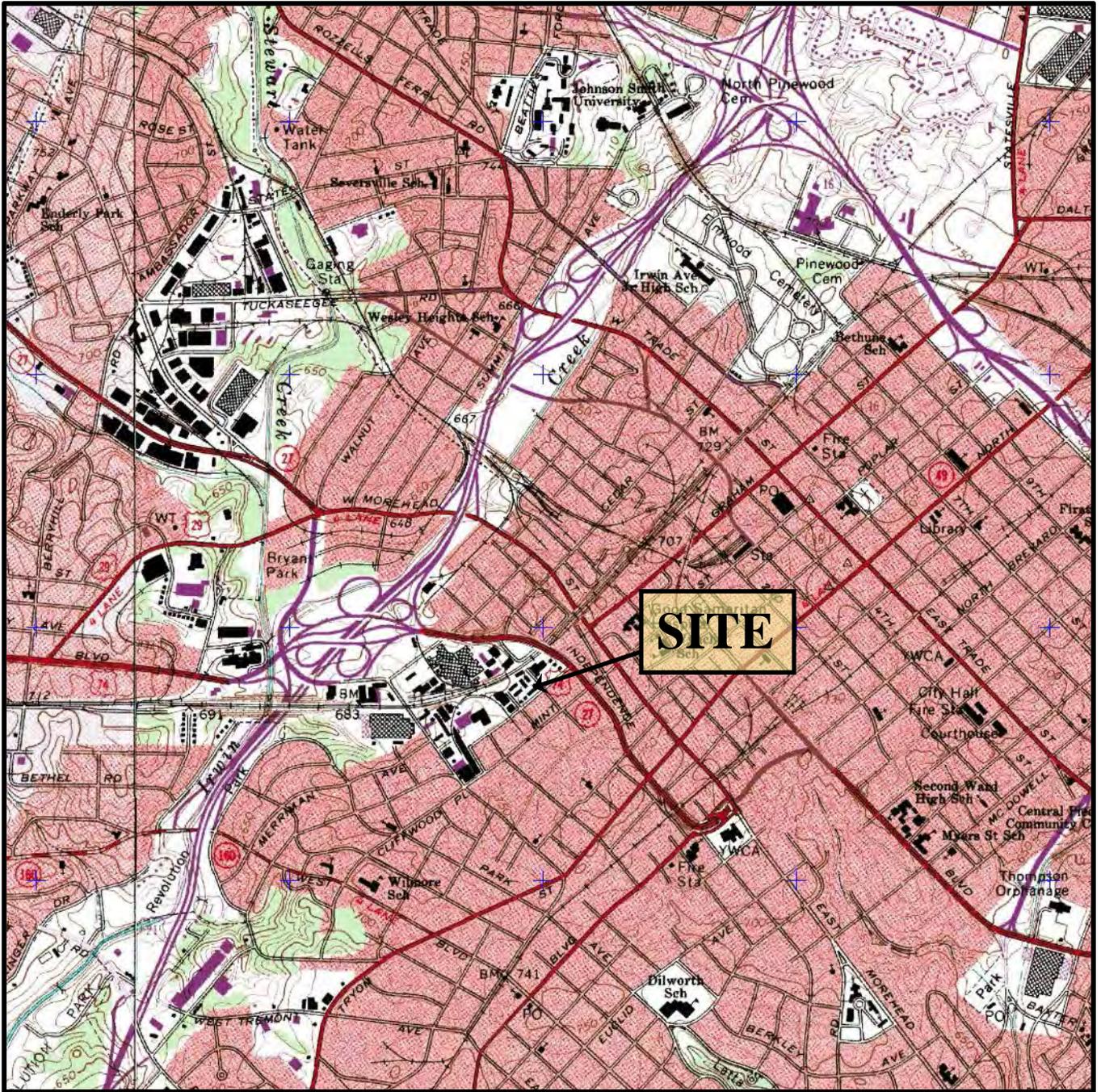
1. NC DENR 15A NCAC 2L .0202 Groundwater Quality Standards - April 2013

Only compounds detected in at least one sample shown above

EPA Method follows parameter in parenthesis

VOCs=volatile organic compounds

Bold indicates above target screening level.



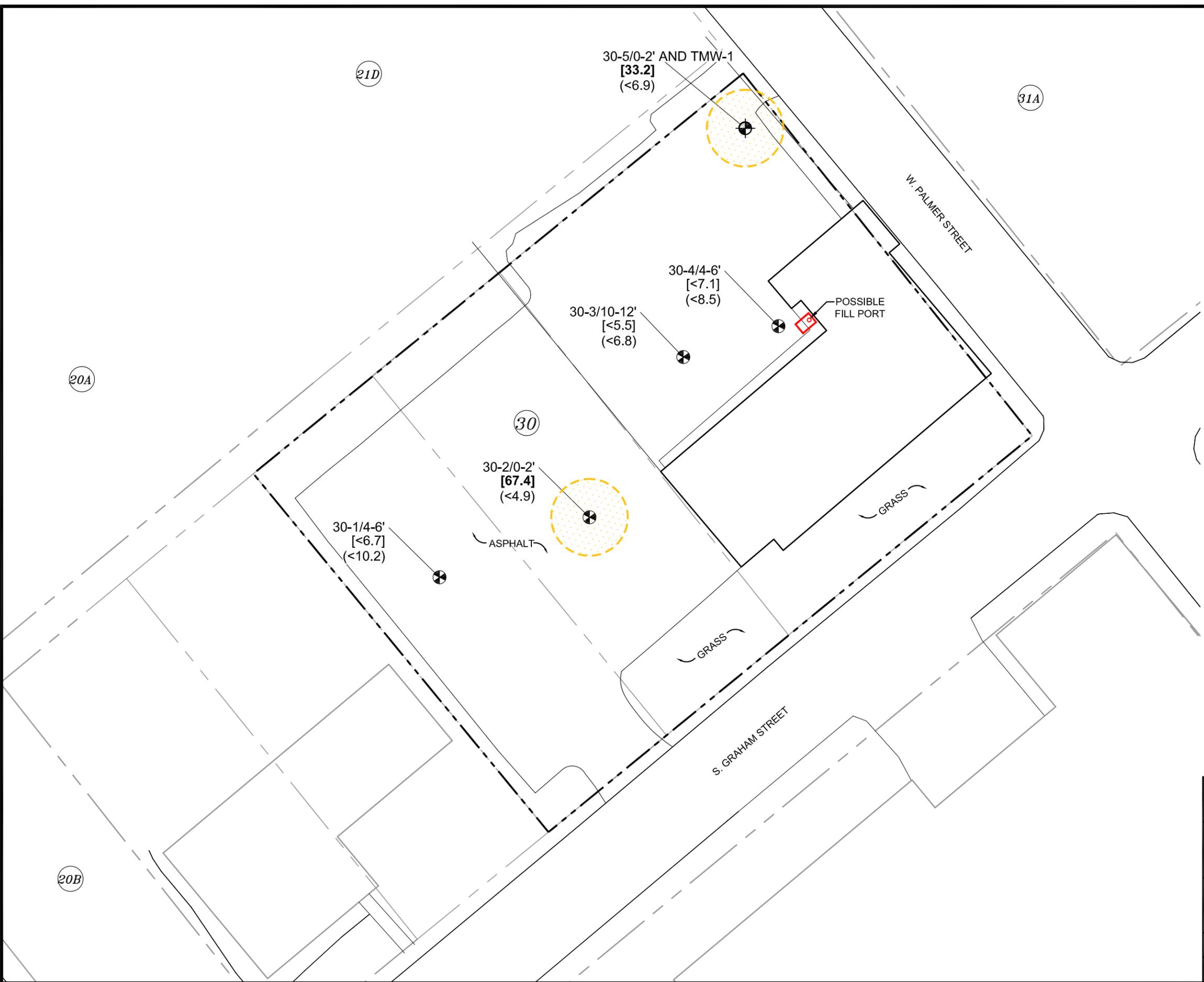
U.S.G.S. QUADRANGLE MAP

Charlotte East, NC 1991

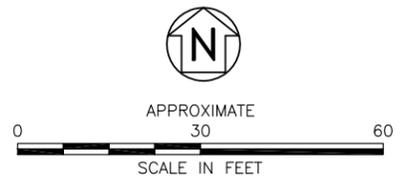
QUADRANGLE
7.5 MINUTE SERIES (TOPOGRAPHIC)

TITLE	SITE LOCATION MAP		
PROJECT	ALBRIGHT PROPERTIES – PARCEL 30 1200 S. GRAHAM STREET, CHARLOTTE MECKLENBURG COUNTY, NORTH CAROLINA		
			2923 South Tryon Street Suite 100 Charlotte, North Carolina 28203 704-586-0007 (p) 704-586-0373 (f)
DATE:	10-10-14	REVISION NO:	0
JOB NO:	ROW-501	FIGURE:	1

S:\AAA-Master Projects\NC DOT Right-of-Way -ROW\ROW-500s\ROW-501 P-3800 Charlotte Rail PS&S\Reports\ROW-501R.dwg, parcel 30_10/24/2014 10:03:12 AM.



- LEGEND**
- SITE PROPERTY BOUNDARY
 - - - PARCEL BOUNDARY
 - SITE BUILDING
 - OFF-SITE BUILDING
 - POSSIBLE UST
 - ③ NCDOT PARCEL NUMBER
 - ⊗ SOIL BORING
 - ⊕ SOIL BORING AND TEMPORARY MONITORING WELL
 - 30-5 0-2' SAMPLE ID/ DEPTH
 - [33.2]** TPH DRO (mg/kg)
 - (<6.9) TPH GRO (mg/kg)
 - ⊗ ESTIMATED AREA OF IMPACTED SOIL ABOVE DENR ACTION LEVEL
 - BOLD INDICATES EXCEEDANCE OF DENR ACTION LEVEL**



TITLE SITE MAP AND SOIL ANALYTICAL RESULTS	
PROJECT ALBRIGHT PROPERTIES - PARCEL 30 1200 S. GRAHAM STREET, CHARLOTTE MECKLENBURG COUNTY, NORTH CAROLINA	
 2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007(p) 704-586-0373(f) License # C-1269 / #C-245 Geology	
DATE: 10-20-14	REVISION NO. 0
JOB NO. ROW-501	FIGURE NO. 2

Appendix A
NC DOT Preliminary Plan

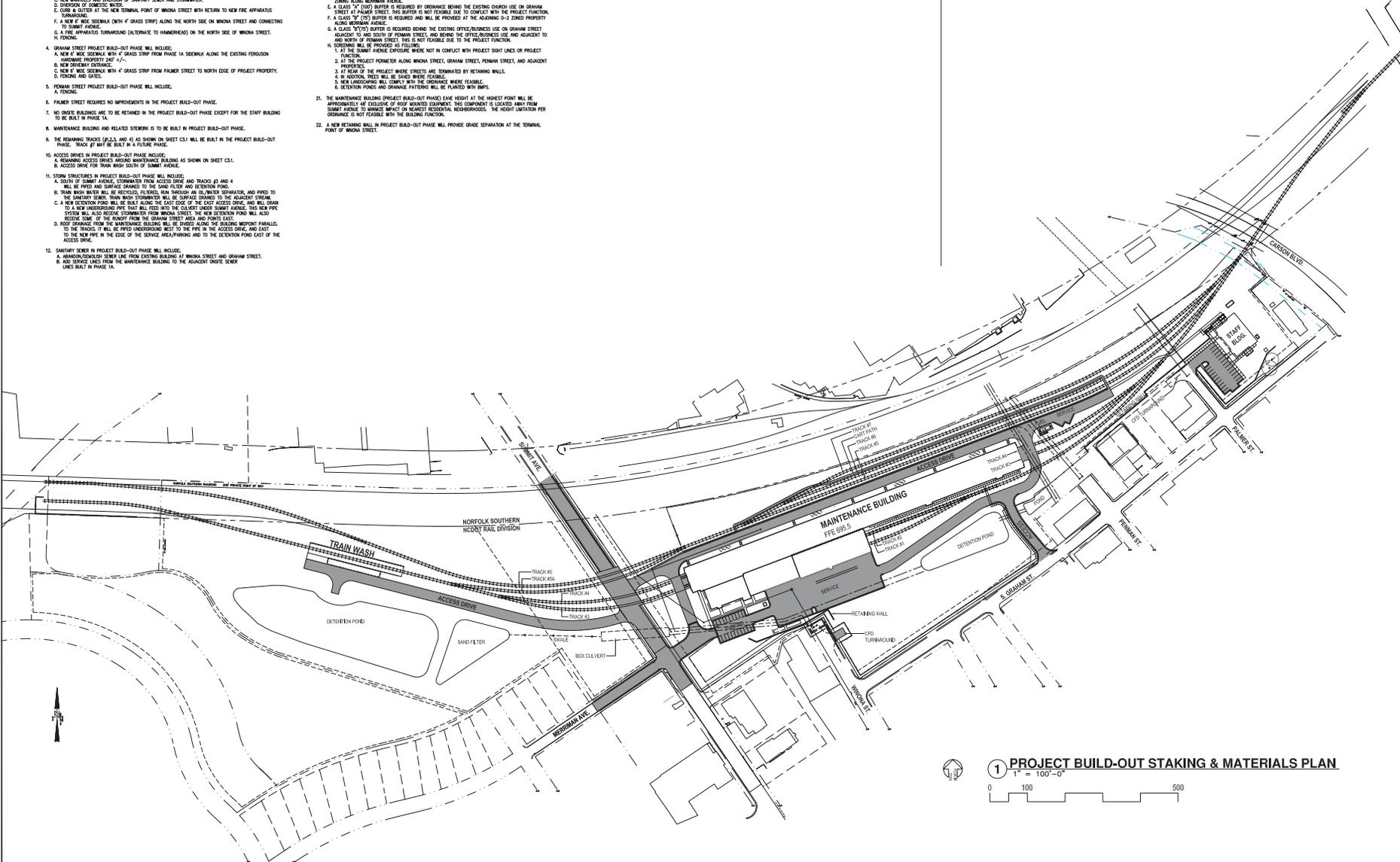
REFERENCE NOTES

- SUMMIT AVENUE PROJECT BUILD-OUT PHASE WILL INCLUDE:**
 - INSTALLATION OF TRACKS 14A AND 14B WITH ASSOCIATED DIMENSION OF IMPROVEMENTS FROM PHASE 1A FOR PARKING, CURB AND GUTTER, AND GRASS STRIPS ON BOTH SIDES OF THE STREET.
 - INSTALLATION OF SIDEWALK THROUGHOUT ACCESS FROM MERRIMAN AVENUE.
 - INSTALLATION OF CURB AND GUTTER, EXISTING PREVIOUSLY CONNECTING, RETAINING WALLS, REPAIRING, UTILITY REPAIRS, UNDERGROUND SERVICES.
 - REPAIRING FROM TRACK 10 TO END OF STREET IMPROVEMENTS EAST OF MERRIMAN AVENUE.
 - UTILITY REPAIRS AND GUTTER AT REARDED AREA.
 - NEW CURB AND GUTTER AT REARDED AREA.
 - NEW SIDEWALK WITH GRASS STRIPS.
 - NEW PAVING.
- MERRIMAN AVENUE PROJECT BUILD-OUT PHASE WILL INCLUDE:**
 - REPAIRING OF CURB AND GUTTER, PARKING GRASS STRIPS, SIDEWALKS, EXISTING UNDERWAY CONNECTIONS.
 - REPAIRING TO BE INTO REARDED SUMMIT AVENUE GRASSES.
 - REPAIRS UTILITIES AND STORM DRAINAGE.
 - NEW CURB AND GUTTER.
 - NEW SIDEWALK WITH GRASS STRIPS ON BOTH SIDES.
 - NEW PAVING.
- WINONA STREET PROJECT BUILD-OUT PHASE WILL INCLUDE:**
 - REPAIRING OF PART OF STREET AND AMENDMENT OF PART OF RIGHT-OF-WAY.
 - NEW RETAINING WALL WITH GUARD RAIL.
 - NEW MANHOLE AND DIVERSION OF SANITARY SEWER AND STORMWATER.
 - DIVERSION OF DOMESTIC WATER.
 - CURB & GUTTER AT THE NEW TERMINAL POINT OF WINONA STREET WITH RETURN TO NEW FIRE APPARATUS TURNAROUND.
 - NEW 4" WIDE SIDEWALK (WITH 4" GRASS STRIP) ALONG THE NORTH SIDE ON WINONA STREET AND CONNECTING TO SUMMIT AVENUE.
 - A FIRE APPARATUS TURNAROUND (ALTERNATE TO HAMMERHEAD) ON THE NORTH SIDE OF WINONA STREET.
 - NEW PAVING.
- GRAHAM STREET PROJECT BUILD-OUT PHASE WILL INCLUDE:**
 - NEW 4" WIDE SIDEWALK WITH 4" GRASS STRIP FROM PHASE 1A SIDEWALK ALONG THE EXISTING FERDINAND MAINTENANCE PROPERTY OF 4'-0".
 - NEW DRIVEWAY APPROXIMATELY 10'-0".
 - NEW 4" WIDE SIDEWALK WITH 4" GRASS STRIP FROM PALMER STREET TO NORTH EDGE OF PROJECT PROPERTY, DETOURING AND GATES.
- FERDINAND STREET PROJECT BUILD-OUT PHASE WILL INCLUDE:**
 - PAVING.
- PALMER STREET REQUIRES NO IMPROVEMENTS IN THE PROJECT BUILD-OUT PHASE.**
- NO EXISTING BUILDINGS ARE TO BE RETAINED IN THE PROJECT BUILD-OUT PHASE EXCEPT FOR THE STAFF BUILDING TO BE BUILT IN PHASE 1A.**
- MAINTENANCE BUILDING AND RELATED SIDEWALK IS TO BE BUILT IN PROJECT BUILD-OUT PHASE.**
- THE REMAINING TRACKS (2,3,4 AND 4) AS SHOWN ON SHEET C01 WILL BE BUILT IN THE PROJECT BUILD-OUT PHASE. TRACK 47 MAY BE BUILT IN A FUTURE PHASE.**
- ACCESS DRIVES IN PROJECT BUILD-OUT PHASE WILL INCLUDE:**
 - REARDED ACCESS DRIVES AROUND MAINTENANCE BUILDING AS SHOWN ON SHEET C01.
 - ACCESS DRIVE FOR TRAIN WASH SOUTH OF SUMMIT AVENUE.
- STORM STRUCTURES IN PROJECT BUILD-OUT PHASE WILL INCLUDE:**
 - SOUTH OF SUMMIT AVENUE: STORMWATER FROM ACCESS DRIVE AND TRACKS 47 AND 48 WILL BE PAVED AND SURFACE DRAINAGE TO THE SAND FILTER AND DETENTION POND.
 - TRAIN WASH: WATER WILL BE RECEIVED FROM TRACKS THROUGH AN OIL/WATER SEPARATOR, AND Piped TO THE SANITARY SEWER. TRAIN WASH STORMWATER WILL BE SURFACE DRAINAGE TO THE ADJACENT STREAM.
 - A NEW DETENTION POND WILL BE BUILT ALONG THE EAST EDGE OF THE NEW DETENTION POND. THIS NEW POND WILL RECEIVE STORMWATER FROM THE SANITARY SEWER AND THE NEW DETENTION POND WILL ALSO RECEIVE STORMWATER FROM THE MAINTENANCE BUILDING AND PAVED DRIVE.
 - ROOF DRAINAGE FROM THE MAINTENANCE BUILDING WILL BE STAVED ALONG THE BUILDING IMPACT PARALLEL TO THE TRACKS. IT WILL BE OVERHUNG DRAINAGE TO THE PIPE IN THE ACCESS DRIVE, AND EAST TO THE NEW PIPE IN THE EDGE OF THE SERVICE AREA/PARKING AND TO THE DETENTION POND EAST OF THE ACCESS DRIVE.
- SANITARY SEWER IN PROJECT BUILD-OUT PHASE WILL INCLUDE:**
 - ADDITION/REPAIRS SEWER LINE FROM EXISTING BUILDING AT WINONA STREET AND GRAHAM STREET.
 - ADD SERVICE LINES FROM THE MAINTENANCE BUILDING TO THE ADJACENT DRIVE. SERVICE LINES BUILT IN PHASE 1A.

- DOMESTIC WATER AND FIRE LINES IN PROJECT BUILD-OUT PHASE WILL INCLUDE:**
 - DOMESTIC WATER AND FIRE LINES WILL BE EXTENDED FROM SUMMIT AVENUE TO THE MAINTENANCE BUILDING.
- ELECTRICAL SERVICE FOR PROJECT BUILD-OUT PHASE IS AVAILABLE FROM OVERHEAD LINES IN STREET RIGHTS-OF-WAY IN SUMMIT AVENUE, WINONA STREET, FERDINAND STREET, AND PALMER STREET, AND WITHIN THE PROJECT PROPERTY. NEW POWER SERVICE WILL BE UNDERGROUND.**
- TELEPHONE SERVICE FOR PROJECT BUILD-OUT PHASE IS AVAILABLE FROM UNDERGROUND LINES IN SUMMIT AVENUE.**
- NATURAL GAS SERVICE FOR PROJECT BUILD-OUT PHASE IS AVAILABLE FROM LINES IN SUMMIT AVENUE AND/OR GRAHAM STREET.**
- FIBER-OPTIC CABLE FOR PROJECT BUILD-OUT PHASE IS AVAILABLE FROM GRAHAM STREET BETWEEN COMMERCIAL STREET AND FERDINAND STREET.**
- SITE LIGHTING FOR PROJECT BUILD-OUT PHASE WILL INCLUDE:**
 - WALL-MOUNTED LIGHTS ON MAINTENANCE BUILDING.
 - POLL LIGHTS ON PERIMETER OF SERVICE AREA, PARKING AREA, AND NEW ACCESS DRIVES.
- FUEL FACILITY IN PROJECT BUILD-OUT PHASE WILL BE PAID MOUNTED ABOVE GROUND TANK WITH DISPENSER, AND WILL BE LOCATED ADJACENT TO THE ACCESS DRIVE.**
- RETAINING WALLS/SCREENING ARE REQUIRED BY ORDINANCE AS FOLLOWS:**
 - 2' HIGH V-MAT SEEDBANKS ALONG BOTH SIDES OF SUMMIT AVENUE, MERRIMAN AVENUE, WINONA STREET AND GRAHAM STREET. BUILDING SEEDBANK IS REQUIRED TO EXCEED THIS.
 - 1/2" SIDE V-MAT SEEDBANKS ALONG PALMER STREET AND PROPERTIES ADJOINING THE PROJECT.
 - 2' HIGH V-MAT SEEDBANKS ALONG FERDINAND ZONED PROPERTIES.
 - A CLASS "A" (100') BUFFER IS REQUIRED BY ORDINANCE AND WILL BE PROVIDED ADJACENT TO THE 8-8 DRIVE ALONG MERRIMAN AVENUE.
 - A CLASS "A" (100') BUFFER IS REQUIRED BY ORDINANCE BEHIND THE EXISTING CHURCH USE ON GRAHAM STREET AT PALMER STREET. THIS BUFFER IS NOT FEASIBLE DUE TO CONFLICT WITH THE PROJECT FUNCTION.
 - A CLASS "B" (75') BUFFER IS REQUIRED AND WILL BE PROVIDED AT THE ADJOINING G-2 ZONED PROPERTY ALONG MERRIMAN AVENUE.
 - A CLASS "B" (75') BUFFER IS REQUIRED BEHIND THE EXISTING OFFICE/BUSINESS USE ON GRAHAM STREET ADJACENT TO AND SOUTH OF FERDINAND STREET, AND BEHIND THE OFFICE/BUSINESS USE AND ADJACENT TO AND NORTH OF FERDINAND STREET. THIS IS NOT FEASIBLE DUE TO THE PROJECT FUNCTION.
 - SCREENING WILL BE PROVIDED AS FOLLOWS:
 - AT THE SUMMIT AVENUE EXPOSURE, WHERE NOT IN CONFLICT WITH PROJECT RIGHT LINES OR PROJECT FUNCTION.
 - AT THE PROJECT PERIMETER ALONG WINONA STREET, GRAHAM STREET, FERDINAND STREET, AND ADJACENT PROPERTY.
 - AT THE END OF THE PROJECT WHERE STREETS ARE TERMINATED BY RETAINING WALLS.
 - IN ADDITION, TREES WILL BE PLANTED WHERE FEASIBLE.
 - NEW LANDSCAPING WILL COMPLY WITH THE ORDINANCE WHERE FEASIBLE.
 - DETENTION POND AND DRAINAGE PATTERNS WILL BE PLANTED WITH TREES.
- THE MAINTENANCE BUILDING PROJECT BUILD-OUT PHASE SHALL BE BUILT AT THE HIGHEST POINT THAT WILL BE APPROXIMATELY AN EXCLUSIVE OF ROOF MOUNTED EQUIPMENT. THIS COMPONENT IS LOCATED AWAY FROM SUMMIT AVENUE TO AVOID IMPACT ON NEARBY RESIDENTIAL NEIGHBORHOODS. THE HEIGHT LIMITATION PER ORDINANCE IS NOT FEASIBLE WITH THE BUILDING FUNCTION.**
- A NEW RETAINING WALL IN PROJECT BUILD-OUT PHASE WILL PROVIDE GRADE SEPARATION AT THE TERMINAL POINT OF WINONA STREET.**

GENERAL NOTES

- SHEET C03 IS FOR PHASE 1A (A SCOPE REDUCED TO ALLOW FOR FUTURE CONSTRUCTION OF THE PROJECT BUILD-OUT PHASE WITHOUT DISRUPTION OF OPERATIONS OR UNNECESSARY COST DUE TO CONSTRUCTION PHASING). SHEET C02 IS FOR INFORMATION ONLY AND IS TO COORDINATE WITH THE FUTURE PROJECT BUILD-OUT PHASE. THIS DRAWING WILL NOT BE INCLUDED IN THE BID PACKAGE.**
- THE OVERALL SITE IS DESIGNED TO FACILITATE COORDINATION OF MULTIPLE SYSTEMS INCLUDING:**
 - STORMWATER DRAINAGE AND DETENTION ARE SHOWN IN PHASE 1A TO COORDINATE WITH THE TOTAL PROJECT BUILD-OUT TO AVOID ADDITIONAL COSTS IN FUTURE PHASES. IT ALSO LIMITS DRAINAGE AND STORM DRAINAGE TO THE MINIMUM REQUIRED FOR PHASE 1A, PLUS BOX CULVERT AND AREA SOUTH OF SUMMIT AVENUE.
 - SANITARY SEWER UNDERGROUND (THIS APPROACH RELOCATES SANITARY SEWER LINES OUT OF THE FUTURE DEVELOPMENT AREA AND IN LOCATIONS TO SERVE THE PROJECT BUILD-OUT PHASE.)
- STREET IMPROVEMENTS/AMENDMENTS (THIS APPROACH IS TO SECURE APPROVALS SIMULTANEOUSLY FOR STREET REPAIRS FOR CURRENT AND FUTURE PHASES, AND INCLUDES TURNAROUNDS FOR FIRE APPARATUS PER NC STATE BUILDING CODE).**
- MAJOR ISSUES INCLUDE:**
 - EXISTING STORMWATER SYSTEM IS NOT IN COMPLIANCE WITH APPLICABLE REGULATIONS.
 - SOME ZONING REGULATIONS ARE NOT FEASIBLE WITH THE REQUIRED PROJECT FUNCTIONS.
- REFER TO OTHER CIVIL DRAWINGS FOR RELATED SITE INFORMATION.**



PROJECT BUILD-OUT STAKING & MATERIALS PLAN
1" = 100'-0"
0 100 500

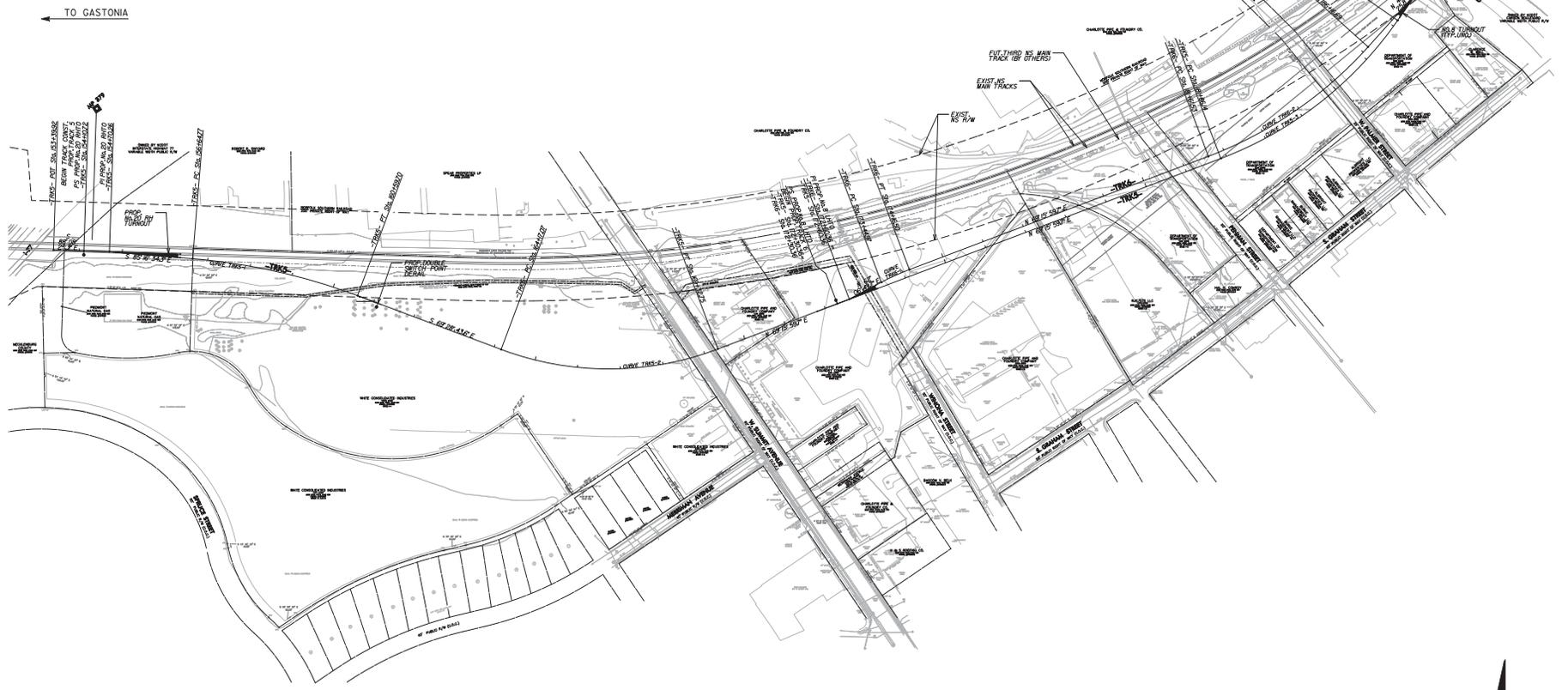
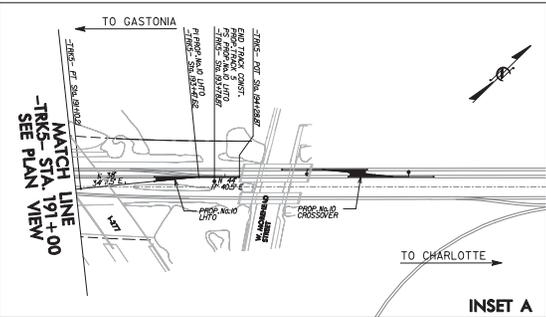
DATE:	NO SCALE
DESIGNED BY:	
CHECKED BY:	
PROJECT NUMBER:	
PROJECT NAME:	
PROJECT LOCATION:	
PROJECT STATUS:	
PROJECT OWNER:	
PROJECT CONTACT:	
PROJECT PHONE:	
PROJECT FAX:	
PROJECT EMAIL:	
PROJECT WEBSITE:	

RAIL DIVISION
LOCOMOTIVE & RAILCAR
MAINTENANCE FACILITY
Phase 1A
Charlotte, North Carolina

PROJECT NUMBER: 100863403
PROJECT NUMBER: 1102
SHEET TITLE: PROJECT BUILD-OUT STKG. & MAT.
SHEET NUMBER: C3.1
PROJECT CONTACT: SITE

DATE:	2016.08.04
DESIGNER:	STV
CHECKER:	STV
PROJECT:	RAIL STAKING

CURVE DATA		
CURVE TRKS-1 (TRACK 5)	CURVE TRKS-2 (TRACK 5)	CURVE TRKS-3 (TRACK 5)
PI STA 158+63.54	PI STA 166+86.58	PI STA 184+59.67
$\Delta = 15^{\circ}41'53.07$ (RT)	$\Delta = 4^{\circ}15'30.17$ (LT)	$\Delta = 54^{\circ}27'43.51$ (LT)
D = 4'00'00.00"	D = 6'30'00.00"	D = 6'30'00.00"
L = 39.64'	L = 55.68'	L = 53.00'
T = 58.77'	T = 98.81'	T = 273.53'
R = 1432.28'	R = 747.07'	R = 985.97'
E = 13.73'	E = 49.07'	E = 46.44'
CURVE TRKS-4 (TRACK 5)	CURVE TRKS-1 (TRACK 6)	CURVE TRKS-2 (TRACK 6)
PI STA 190+12.58	PI STA 173+83.83	PI STA 183+13.62
$\Delta = 3^{\circ}42'52.71$ (RT)	$\Delta = 7^{\circ}09'10.21$ (RT)	$\Delta = 27^{\circ}28'53.91$ (LT)
D = 5'00'00.00"	D = 10'00'00.00"	D = 5'00'00.00"
L = 75.37'	L = 71.53'	L = 45.83'
T = 57.64'	T = 55.68'	T = 23.00'
R = 1482.28'	R = 573.69'	R = 995.57'
E = 0.62'	E = 1.12'	E = 27.79'



Appendix B

EDR Documents and Adjacent Property TCE Map

P-3800 Locomotive & Rail Car Maintenance Facility

Multiple Parcels
Charlotte, NC 28203

Inquiry Number: 3874775.5
April 29, 2014

The EDR-City Directory Abstract

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

BLAND/GRAHAM

BLAND/GRAHAM

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1964	BLAND/GRAHAM	Hill's City Directory

BLAND/GRAHAM ST

BLAND/GRAHAM ST

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1994	BLAND/GRAHAM ST	R. L. Polk & Co.
1989	BLAND/GRAHAM ST	R. L. Polk & Co.
1984	BLAND/GRAHAM ST	R. L. Polk & Co.
1979	BLAND/GRAHAM ST	Hill's City Directory
1974	BLAND/GRAHAM ST	Hill's City Directory
1969	BLAND/GRAHAM ST	Hill's City Directory

BLAND/S GRAHAM

BLAND/S GRAHAM

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1959	BLAND/S GRAHAM	Hill's City Directory
1953	BLAND/S GRAHAM	Hill's City Directory
1949	BLAND/S GRAHAM	Hill's City Directory
1944	BLAND/S GRAHAM	Hill's City Directory

COMMERCE/S GRAHAM

COMMERCE/S GRAHAM

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1959	COMMERCE/S GRAHAM	Hill's City Directory
1953	COMMERCE/S GRAHAM	Hill's City Directory
1949	COMMERCE/S GRAHAM	Hill's City Directory

FINDINGS

GRAHAM ST S

1336 GRAHAM ST S

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1999	Mid South Air Cleaning Systems	City Publishing Company Inc.
	Sds Millwork	City Publishing Company Inc.
	Songs From The Wood Ltd	City Publishing Company Inc.
	Southern Door Supply	City Publishing Company Inc.
1994	RAMCON INC antiques & collectables	R. L. Polk & Co.
1989	Ramcon Inc frt consolidation	R. L. Polk & Co.
1984	Ramcon Inc frt consolidation	R. L. Polk & Co.
	United Computer Service Inc	R. L. Polk & Co.
1979	Ramcon Inc frt consolidation	Hill's City Directory
	M & M Film Distributors	Hill's City Directory
	United Computer Service Inc	Hill's City Directory
1974	Ramcon Inc frt consolidation	Hill's City Directory
	M & M Film Distributors	Hill's City Directory
1969	CAROLINA DELIVERY SERVICE CO INC TRUCKING	Hill's City Directory
	CAROLINA FILM SERVICE INC	Hill's City Directory
	C D S PACKAGE EXPRESS INC	Hill's City Directory
1964	Caro Del Serv Inc	Hill's City Directory
1959	Curo Del Serv Inc whse	Hill's City Directory
1953	Carolina Film Serv Inc	Hill's City Directory

GRAHAM/BLAND ST

GRAHAM/BLAND ST

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1994	GRAHAM/BLAND ST	R. L. Polk & Co.
1989	GRAHAM/BLAND ST	R. L. Polk & Co.
1984	GRAHAM/BLAND ST	R. L. Polk & Co.
1979	GRAHAM/BLAND ST	Hill's City Directory
1974	GRAHAM/BLAND ST	Hill's City Directory
1969	GRAHAM/BLAND ST	Hill's City Directory

GRAHAM/COMMERCE

GRAHAM/COMMERCE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1964	GRAHAM/COMMERCE	Hill's City Directory

FINDINGS

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1959	GRAHAM/COMMERCE	Hill's City Directory
1953	GRAHAM/COMMERCE	Hill's City Directory
1949	GRAHAM/COMMERCE	Hill's City Directory
1944	GRAHAM/COMMERCE	Hill's City Directory

GRAHAM/COMMERCE ST

GRAHAM/COMMERCE ST

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1994	GRAHAM/COMMERCE ST	R. L. Polk & Co.
1989	GRAHAM/COMMERCE ST	R. L. Polk & Co.
1984	GRAHAM/COMMERCE ST	R. L. Polk & Co.
1979	GRAHAM/COMMERCE ST	Hill's City Directory
1974	GRAHAM/COMMERCE ST	Hill's City Directory
1969	GRAHAM/COMMERCE ST	Hill's City Directory

GRAHAM/W BLAND

GRAHAM/W BLAND

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1964	GRAHAM/W BLAND	Hill's City Directory
1959	GRAHAM/W BLAND	Hill's City Directory
1953	GRAHAM/W BLAND	Hill's City Directory
1949	GRAHAM/W BLAND	Hill's City Directory
1944	GRAHAM/W BLAND	Hill's City Directory

GRAHAM/WINONA

GRAHAM/WINONA

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1964	GRAHAM/WINONA	Hill's City Directory
1959	GRAHAM/WINONA	Hill's City Directory
1953	GRAHAM/WINONA	Hill's City Directory
1949	GRAHAM/WINONA	Hill's City Directory
1944	GRAHAM/WINONA	Hill's City Directory

FINDINGS

GRAHAM/WINONA ST

GRAHAM/WINONA ST

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1994	GRAHAM/WINONA ST	R. L. Polk & Co.
1989	GRAHAM/WINONA ST	R. L. Polk & Co.
1984	GRAHAM/WINONA ST	R. L. Polk & Co.
1979	GRAHAM/WINONA ST	Hill's City Directory
1974	GRAHAM/WINONA ST	Hill's City Directory
1969	GRAHAM/WINONA ST	Hill's City Directory

MERRIMAN AVE

1510 MERRIMAN AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1953	Hollard Clyde L	Hill's City Directory

1513 MERRIMAN AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1984	Vacant	R. L. Polk & Co.
1979	Vacant	Hill's City Directory
1964	1513 15 M & S Drapery Co mfrs	Hill's City Directory
1959	Wilmore Coin Laundromat	Hill's City Directory

1515 MERRIMAN AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1984	1/2 Vacant	R. L. Polk & Co.
	Vacant	R. L. Polk & Co.
1979	Vacant	Hill's City Directory
1974	Vacant	Hill's City Directory
1969	ACE APPLIANCE SERVICE INC REPRS	Hill's City Directory
1964	1513 15 M & S Drapery Co mfrs	Hill's City Directory
1959	Wrede Roland B Industries pillow mfrs	Hill's City Directory
	1/2 Watkins Quality Products extracts	Hill's City Directory

1516 MERRIMAN AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1964	Courtney Ophelia res	Hill's City Directory
1959	Courtney Ophelia res	Hill's City Directory
	Howell Robt G	Hill's City Directory
1953	Jones Robt H	Hill's City Directory

FINDINGS

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1949	Jones Robt H	Hill's City Directory
1944	Jones Robt H	Hill's City Directory
1937	Hamm Jas H	Hill's City Directory
1931	1416 Walker C C	Piedmont Directory Company

1517 MERRIMAN AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1994	Partlow Clyde	R. L. Polk & Co.
1989	new Gilbert Wm	R. L. Polk & Co.
1984	White C V	R. L. Polk & Co.
1979	Boulding Louis	Hill's City Directory
1974	Adams Clarence H	Hill's City Directory
1969	ADAMS CLARENCE H	Hill's City Directory
1964	Stewart H Allen	Hill's City Directory
1959	Stewart H Allen	Hill's City Directory

1519 MERRIMAN AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2005	H Undsley 3 S V as	Hill-Donnelly Information Services

1520 MERRIMAN AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1974	Shaird Thos	Hill's City Directory
1969	CLIFTON CHARLES T	Hill's City Directory
1964	Parker James S	Hill's City Directory
1959	Tilley Marvin J	Hill's City Directory
1953	Tilley Marvin J	Hill's City Directory
1949	Wilson Saml P jr	Hill's City Directory
	Anderson Wm A	Hill's City Directory
1944	Anderson Wm A	Hill's City Directory
1937	Berryhill Jos E Rev	Hill's City Directory
1931	1420 Mc Coy R L	Piedmont Directory Company

1523 MERRIMAN AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2005	Wright Carolyn C	Hill-Donnelly Information Services
1994	Partlow Jas W & Leeomia	R. L. Polk & Co.
	Partlow James H	R. L. Polk & Co.
1989	Partlow Clyde	R. L. Polk & Co.
1984	new Partlow Clyde	R. L. Polk & Co.

FINDINGS

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1979	Ragin Le Roy	Hill's City Directory
1969	ADAMS HAMPTON	Hill's City Directory
1964	Beacham Geo L res	Hill's City Directory
1959	Moss L Norman	Hill's City Directory
	Beacham Geo L	Hill's City Directory
1953	Beacham Geo L res	Hill's City Directory
1949	rhyne Loy C res	Hill's City Directory
1944	rhyne Loy C res	Hill's City Directory

1524 MERRIMAN AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2005	h Farris Rosa AV	Hill-Donnelly Information Services
1999	Farris Rosa	City Publishing Company Inc.
1994	new Howard Terry & Janet K	R. L. Polk & Co.
1989	Vacant	R. L. Polk & Co.
1984	Vacant	R. L. Polk & Co.
1979	Hinton Thos	Hill's City Directory
1974	new Hinton Thos	Hill's City Directory
1969	CROWLEY LABORDE C	Hill's City Directory
1964	Shivar Saidee L Mrs res	Hill's City Directory
1959	Shivar Thos r res	Hill's City Directory
1953	Shivar Thos r res	Hill's City Directory
1949	Shivar Thos R	Hill's City Directory
1944	Goodman Robt D	Hill's City Directory
1937	White Gilbert L	Hill's City Directory
1931	1424 Mullis M H	Piedmont Directory Company

1525 MERRIMAN AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2005	No Current Listing	Hill-Donnelly Information Services
1994	Vacant	R. L. Polk & Co.
1989	Mc Cain Dorothy A	R. L. Polk & Co.
1984	Mc Cain Dorothy A	R. L. Polk & Co.
1979	Mc Cain Dorothy	Hill's City Directory
1974	No Return	Hill's City Directory
1969	ADAMS BOWELL	Hill's City Directory
1964	Phillips ralph W res	Hill's City Directory
1959	Phillips ralph W res	Hill's City Directory
1953	Phillips ralph W res	Hill's City Directory

FINDINGS

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1949	Carriker Wm E res	Hill's City Directory

MERRIMAN/W SUMMIT AV

MERRIMAN/W SUMMIT AV

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1994	MERRIMAN/W SUMMIT AV	R. L. Polk & Co.

N GRAHAM ST

601 N GRAHAM ST

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2013	LIFESPAN CIRCLE SCHOOL	Cole Information Services
2008	LIFESTAN CIRCLE SCHOOL	Cole Information Services

Penman St

521 Penman St

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1989	Char Pipe & Fdry whse	R. L. Polk & Co.
1984	Char Pipe & Fdry whse	R. L. Polk & Co.
1979	Char Pipe & Fdry whse	Hill's City Directory
1974	Char Pipe & Fdry whse	Hill's City Directory
1969	CHAR PIPE & FDRY WHSE	Hill's City Directory
1964	Consolidater Color & Chem Co dyes	Hill's City Directory
	Fowler R DMtr Lines Inc	Hill's City Directory
	Lowther Trucking Co	Hill's City Directory
	Sou Industries Inc mfrs agts	Hill's City Directory
1959	Caro Tarpaulin Co	Hill's City Directory
	Fowler R D Mtr Lines Inc	Hill's City Directory
	Lowther Trucking Co	Hill's City Directory
	Little Marvin L & Assocs appraisers	Hill's City Directory

522 Penman St

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2005	Resident	Hill-Donnelly Information Services
1999	Carolina Film Service	City Publishing Company Inc.
1994	CAROLINA FILM SERVICE INC motion pictures film exch	R. L. Polk & Co.
1989	Carolina Film Service Inc motion pictures film exch	R. L. Polk & Co.

FINDINGS

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1984	Media Express Inc trucking mtr frt	R. L. Polk & Co.
	Carolina Film Service Inc motion pictures film exch	R. L. Polk & Co.
1974	Vacant	Hill's City Directory
1969	STATE AUTOMOTIVE DISTRIBUTORS WHOL AUTO PARTS	Hill's City Directory
1964	Caro Tile Distributing Inc	Hill's City Directory

S Graham St

1128 S Graham St

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1949	Morrison Jack	Hill's City Directory
1944	Kyaw W Paul Jr	Hill's City Directory
1937	Rheaths Lonnie L	Hill's City Directory
1931	1016 Mitchem J T	Piedmont Directory Company

1224 S Graham St

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1964	Gutmonis Fredk	Hill's City Directory
1959	CutmonIs Fredk	Hill's City Directory
1953	Simmons Besse B Mrs baby sitter	Hill's City Directory
1949	Simmons Bessie Mrs	Hill's City Directory
1944	Simmons Bessie mrs	Hill's City Directory
1937	Helms Jack R	Hill's City Directory
	Barnes Robt T	Hill's City Directory
1931	1112 Seabrooks J T	Piedmont Directory Company

S GRAHAM ST

1320 S GRAHAM ST

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2013	FERGUSON	Cole Information Services
2008	MECKCO SUPPLYINC	Cole Information Services

S Graham St

1320 S Graham St

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2005	Meckco Supply Co Inc	Hill-Donnelly Information Services
1999	Meckco Supply Co	City Publishing Company Inc.

FINDINGS

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1999	Watermark	City Publishing Company Inc.
1994	MECKCO SUPPLY CO INC wholesale plumbing fixtures	R. L. Polk & Co.
1979	Vacant	Hill's City Directory
1974	Smith Metal & Iron Co junk	Hill's City Directory
1969	SMITH METAL & IRON CO JUNK	Hill's City Directory
1964	Smith Mtl & Iron Co junk	Hill's City Directory
1959	Smith Mill & Iron Co Junk	Hill's City Directory

1336 S Graham St

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1999	Mid South Air Cleaning Systems	City Publishing Company Inc.
	Sds Millwork	City Publishing Company Inc.
	Songs From The Wood Ltd	City Publishing Company Inc.
	Southern Door Supply	City Publishing Company Inc.
1994	RAMCON INC antiques & collectables	R. L. Polk & Co.
1989	Ramcon Inc frt consolidation	R. L. Polk & Co.
1984	Ramcon Inc frt consolidation	R. L. Polk & Co.
	United Computer Service Inc	R. L. Polk & Co.
1979	Ramcon Inc frt consolidation	Hill's City Directory
	M & M Film Distributors	Hill's City Directory
	United Computer Service Inc	Hill's City Directory
1974	Ramcon Inc frt consolidation	Hill's City Directory
	M & M Film Distributors	Hill's City Directory
1969	CAROLINA FILM SERVICE INC	Hill's City Directory
	CAROLINA DELIVERY SERVICE CO INC TRUCKING	Hill's City Directory
	C D S PACKAGE EXPRESS INC	Hill's City Directory
1964	Caro Del Serv Inc	Hill's City Directory
1959	Curo Del Serv Inc whse	Hill's City Directory
1953	Carolina Film Serv Inc	Hill's City Directory

SUMMIT AVE W

600 SUMMIT AVE W

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1994	H & S ROOFING CO INC	R. L. Polk & Co.
1989	H & S Roofing Co	R. L. Polk & Co.
1984	H & S Roofing Co	R. L. Polk & Co.
1979	Vacant	Hill's City Directory

FINDINGS

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1974	Vacant	Hill's City Directory
1969	NORMAN FESSOR L MRS	Hill's City Directory
1964	Peeler Leidy Y	Hill's City Directory

601 SUMMIT AVE W

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1999	Innovative Building Products Inc Gleaning Up Carocraft Cabinets Inc	City Publishing Company Inc. City Publishing Company Inc. City Publishing Company Inc.
1994	Vacant	R. L. Polk & Co.
1989	Copes Vulcan Of Charlotte tex mach	R. L. Polk & Co.
1984	Copes Vulcan Of Charlotte tex mach	R. L. Polk & Co.
1979	Whitin Roberts Co	Hill's City Directory
1974	Whitin Machine Works Inc	Hill's City Directory
1969	WHITIN MACHINE WORKS	Hill's City Directory
1964	Whitin Mach Wks mfrs	Hill's City Directory

606 SUMMIT AVE W

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1979	Vacant	Hill's City Directory
1974	Ross Eliza B Mrs	Hill's City Directory
1969	ROSS ELIZA B	Hill's City Directory
1964	Freeman Baxter N res	Hill's City Directory

610 SUMMIT AVE W

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1969	MASSEY WILLIE	Hill's City Directory
1964	610 14 Vacant	Hill's City Directory

614 SUMMIT AVE W

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1969	NO RETURN	Hill's City Directory
1964	610 14 Vacant	Hill's City Directory

620 SUMMIT AVE W

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1994	Vacant	R. L. Polk & Co.
1989	H & S Lumber Co overflow	R. L. Polk & Co.
1984	H & S Lumber Co overflow	R. L. Polk & Co.
1979	H & S Lumber Co overflow	Hill's City Directory

FINDINGS

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1974	H & S Lumber Co overflow	Hill's City Directory
1969	H & S LUMBER CO OVERFLOW	Hill's City Directory
1964	Caro Bidrs Servs designers	Hill's City Directory

624 SUMMIT AVE W

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1964	Vacant	Hill's City Directory

630 SUMMIT AVE W

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1969	MITCHELL TOBE	Hill's City Directory
1964	Privette Clegg J	Hill's City Directory

SUMMIT/MERRIMAN AV

SUMMIT/MERRIMAN AV

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1994	SUMMIT/MERRIMAN AV	R. L. Polk & Co.
1989	SUMMIT/MERRIMAN AV	R. L. Polk & Co.
1984	SUMMIT/MERRIMAN AV	R. L. Polk & Co.
1979	SUMMIT/MERRIMAN AV	Hill's City Directory
1974	SUMMIT/MERRIMAN AV	Hill's City Directory
1969	SUMMIT/MERRIMAN AV	Hill's City Directory
1964	SUMMIT/MERRIMAN AV	Hill's City Directory

SUMMIT/MERRIMAN AVE

SUMMIT/MERRIMAN AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1999	SUMMIT/MERRIMAN AVE	City Publishing Company Inc.

W SUMMIT AVE

601 W SUMMIT AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2005	Carocraft Cabinets Inc	Hill-Donnelly Information Services

FINDINGS

W Summit Ave

606 W Summit Ave

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1979	Vacant	Hill's City Directory
1974	Ross Eliza B Mrs	Hill's City Directory
1969	ROSS ELIZA B	Hill's City Directory
1964	Freeman Baxter N res	Hill's City Directory

624 W Summit Ave

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1964	Vacant	Hill's City Directory

W SUMMIT AVE

632 W SUMMIT AVE

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2008	SOUTH END SIGNS	Cole Information Services

W Summit Ave

632 W Summit Ave

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2005	Gallery Works	Hill-Donnelly Information Services
1999	Corporate Media Svcs	City Publishing Company Inc.
	National Foodservice Marketing	City Publishing Company Inc.
1994	CORPORATE MEDIA SERVICE video production	R. L. Polk & Co.
1989	Corporate Media Service	R. L. Polk & Co.
1984	Kemex Inc chems	R. L. Polk & Co.
1979	Hunter Supply Co Inc p 1mb sups	Hill's City Directory
1974	Hunter Supply Co Inc pimbs sups	Hill's City Directory
1969	HUNTER SUPPLY CO INC PLMB SUPS	Hill's City Directory
1964	Hunter Sup Co Inc whol p 1mb sups	Hill's City Directory

WINONA ST

500 WINONA ST

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1969	CAROLINA DEL SERV REPR SHOP	Hill's City Directory
1931	Wearn Field Ball Park	Piedmont Directory Company

FINDINGS

WINONA/GRAHAM ST

WINONA/GRAHAM ST

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1994	WINONA/GRAHAM ST	R. L. Polk & Co.
1989	WINONA/GRAHAM ST	R. L. Polk & Co.
1984	WINONA/GRAHAM ST	R. L. Polk & Co.
1979	WINONA/GRAHAM ST	Hill's City Directory
1974	WINONA/GRAHAM ST	Hill's City Directory
1969	WINONA/GRAHAM ST	Hill's City Directory

WINONA/S GRAHAM

WINONA/S GRAHAM

<u>Year</u>	<u>Uses</u>	<u>Source</u>
1964	WINONA/S GRAHAM	Hill's City Directory
1959	WINONA/S GRAHAM	Hill's City Directory
1953	WINONA/S GRAHAM	Hill's City Directory
1949	WINONA/S GRAHAM	Hill's City Directory
1944	WINONA/S GRAHAM	Hill's City Directory

P-3800 Locomotive & Rail Car Maintenance Facility

Multiple Parcels

Charlotte, NC 28203

Inquiry Number: 3874775.3

March 12, 2014

Certified Sanborn® Map Report



6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

1963 Certified Sanborn Map

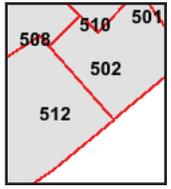
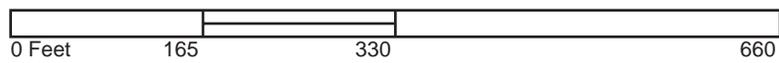
The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

Certification # C614-46FE-90A4

Site Name: P-3800 Locomotive & Rail Car Maintenance Facility
 Address: Main St
 City, ST, ZIP: Charlotte NC 28203
 Client: Hart & Hickman, PC
 EDR Inquiry: 3874775.3
 Order Date: 3/12/2014 5:46:02 PM
 Certification #: C614-46FE-90A4



This Certified Sanborn Map combines the following sheets. Outlined areas indicate map sheets within the collection.



- Volume 4, Sheet 502
- Volume 4, Sheet 508
- Volume 4, Sheet 510
- Volume 4, Sheet 512



1953 Certified Sanborn Map

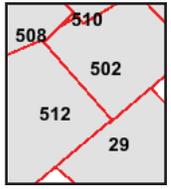
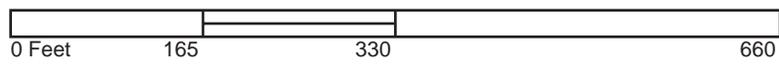
The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

Certification # C614-46FE-90A4

Site Name: P-3800 Locomotive & Rail Car
 Address: Mainline Pipe Facility
 City, ST, ZIP: Charlotte NC 28203
 Client: Hart & Hickman, PC
 EDR Inquiry: 3874775.3
 Order Date: 3/12/2014 5:46:02 PM
 Certification #: C614-46FE-90A4
 Copyright: 1953



This Certified Sanborn Map combines the following sheets. Outlined areas indicate map sheets within the collection.



- Volume 1, Sheet 29
- Volume 3, Sheet 502
- Volume 3, Sheet 508
- Volume 3, Sheet 510
- Volume 3, Sheet 512



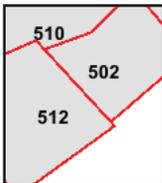
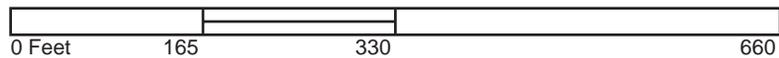
1950 Certified Sanborn Map



Site Name: P-3800 Locomotive & Rail Car
 Address: Mainline Facility
 City, ST, ZIP: Charlotte NC 28203
 Client: Hart & Hickman, PC
 EDR Inquiry: 3874775.3
 Order Date: 3/12/2014 5:46:02 PM
 Certification #: C614-46FE-90A4
 Copyright: 1950



This Certified Sanborn Map combines the following sheets.
 Outlined areas indicate map sheets within the collection.



Volume 3, Sheet 502
 Volume 3, Sheet 510
 Volume 3, Sheet 512



1929 Certified Sanborn Map



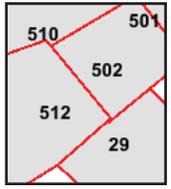
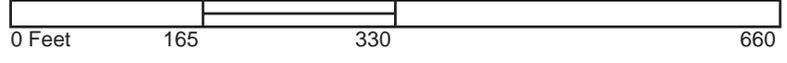
The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

Certification #
C614-46FE-90A4

Site Name: P-3800 Locomotive & Rail Car
 Address: Maintenance Facility
 City, ST, ZIP: Charlotte NC 28203
 Client: Hart & Hickman, PC
 EDR Inquiry: 3874775.3
 Order Date: 3/12/2014 5:46:02 PM
 Certification #: C614-46FE-90A4
 Copyright: 1929



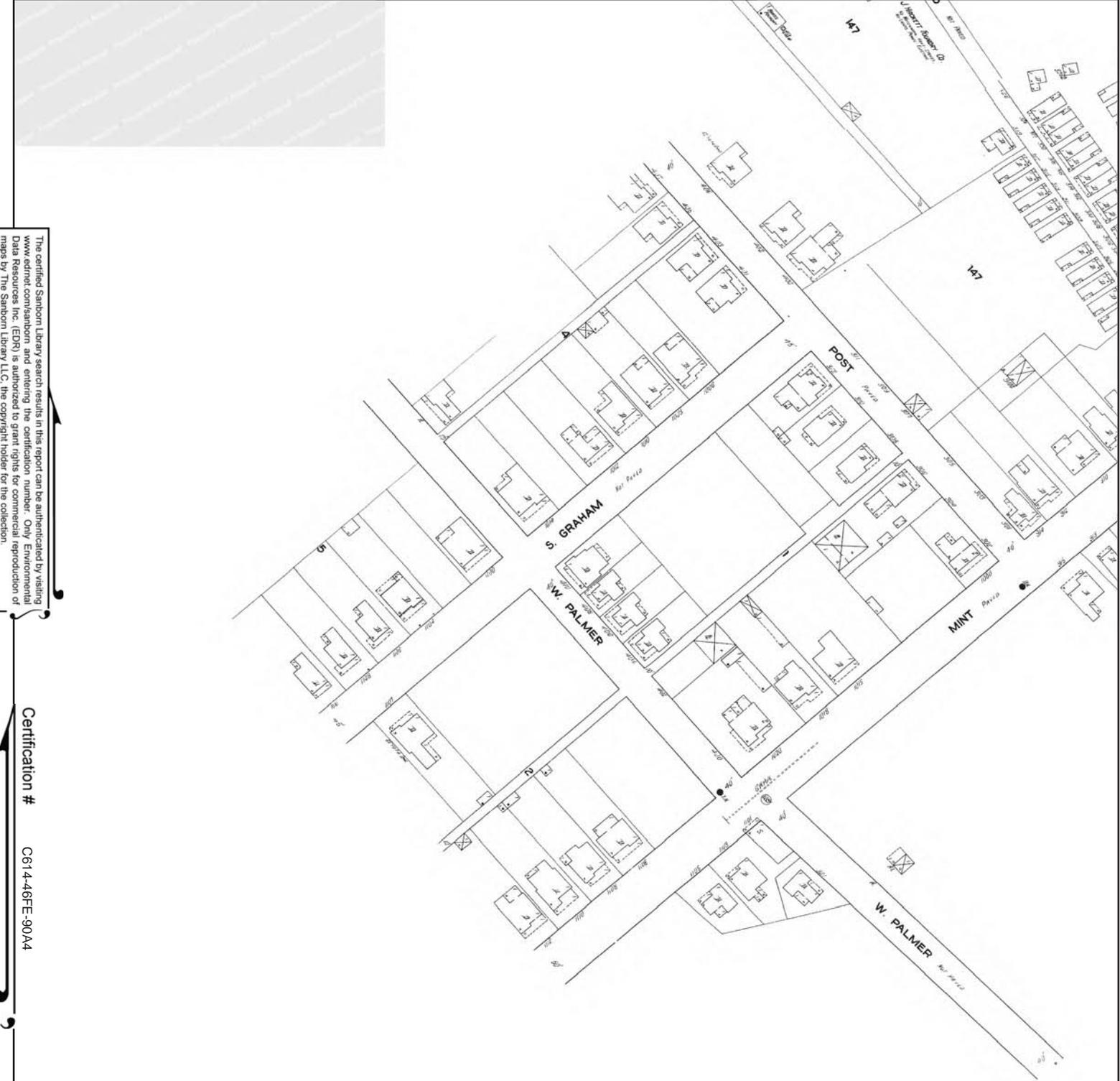
This Certified Sanborn Map combines the following sheets. Outlined areas indicate map sheets within the collection.



- Volume 2, Sheet 502
- Volume 2, Sheet 510
- Volume 2, Sheet 512
- Volume 1, Sheet 29



1911 Certified Sanborn Map



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Certification #

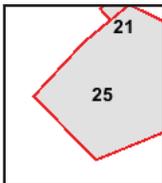
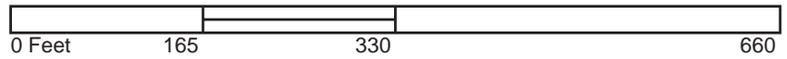
C614-46FE-90A4

Site Name: P-3800 Locomotive & Rail Car
 Address: Main Office Facility
 City, ST, ZIP: Charlotte NC 28203
 Client: Hart & Hickman, PC
 EDR Inquiry: 3874775.3
 Order Date: 3/12/2014 5:46:02 PM
 Certification # C614-46FE-90A4



Copyright: 1911

This Certified Sanborn Map combines the following sheets. Outlined areas indicate map sheets within the collection.



Volume 1, Sheet 25



P-3800 Locomotive & Rail Car Maintenance Facility

Multiple Parcels

Charlotte, NC 28203

Inquiry Number: 3874775.8

March 12, 2014

The EDR Aerial Photo Decade Package



6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com



INQUIRY #: 3874775.8

YEAR: 1938

| = 500'





10891

INQUIRY #: 3874775.8

YEAR: 1950

| = 500'



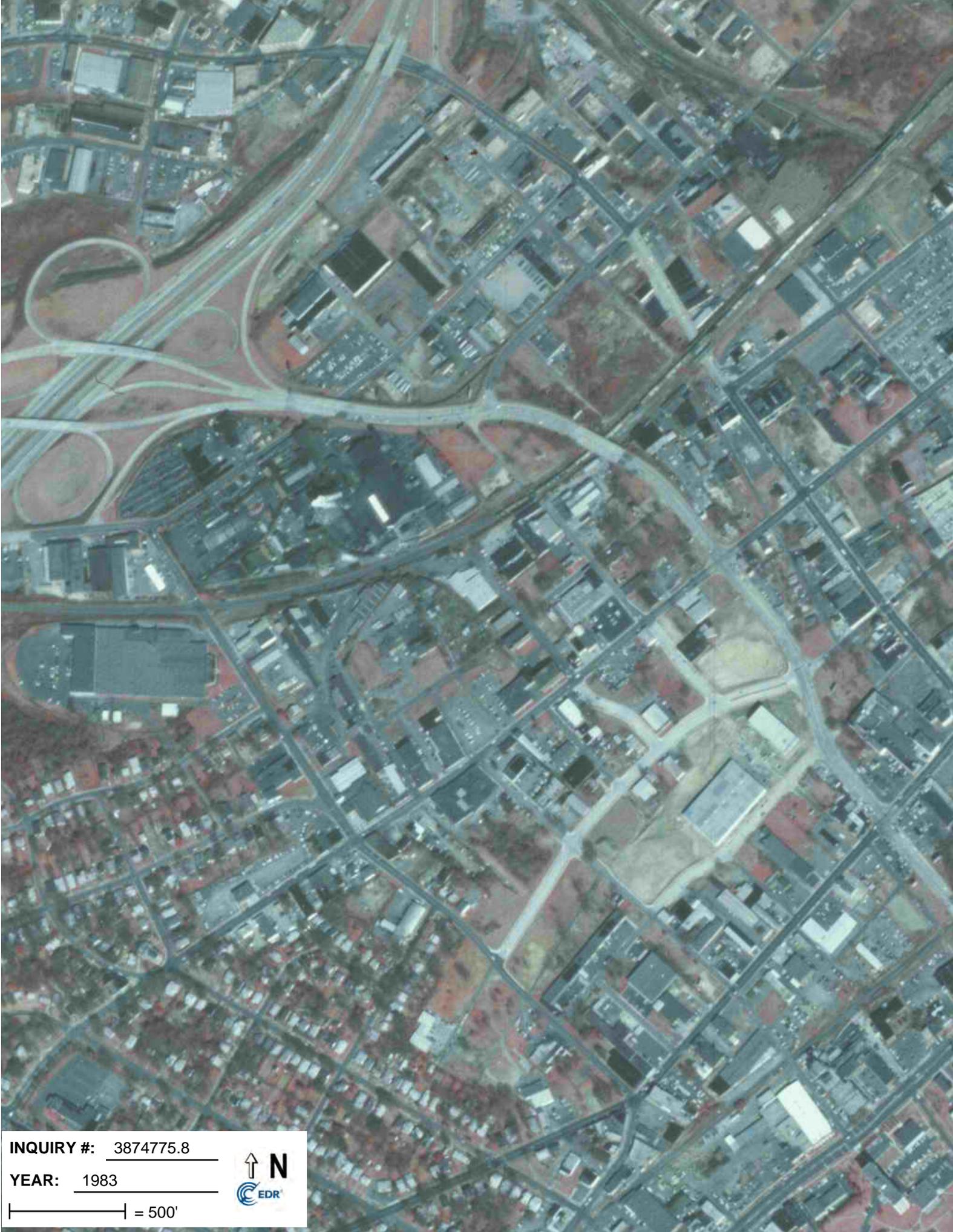


INQUIRY #: 3874775.8

YEAR: 1968

| = 500'





INQUIRY #: 3874775.8

YEAR: 1983

|—————| = 500'



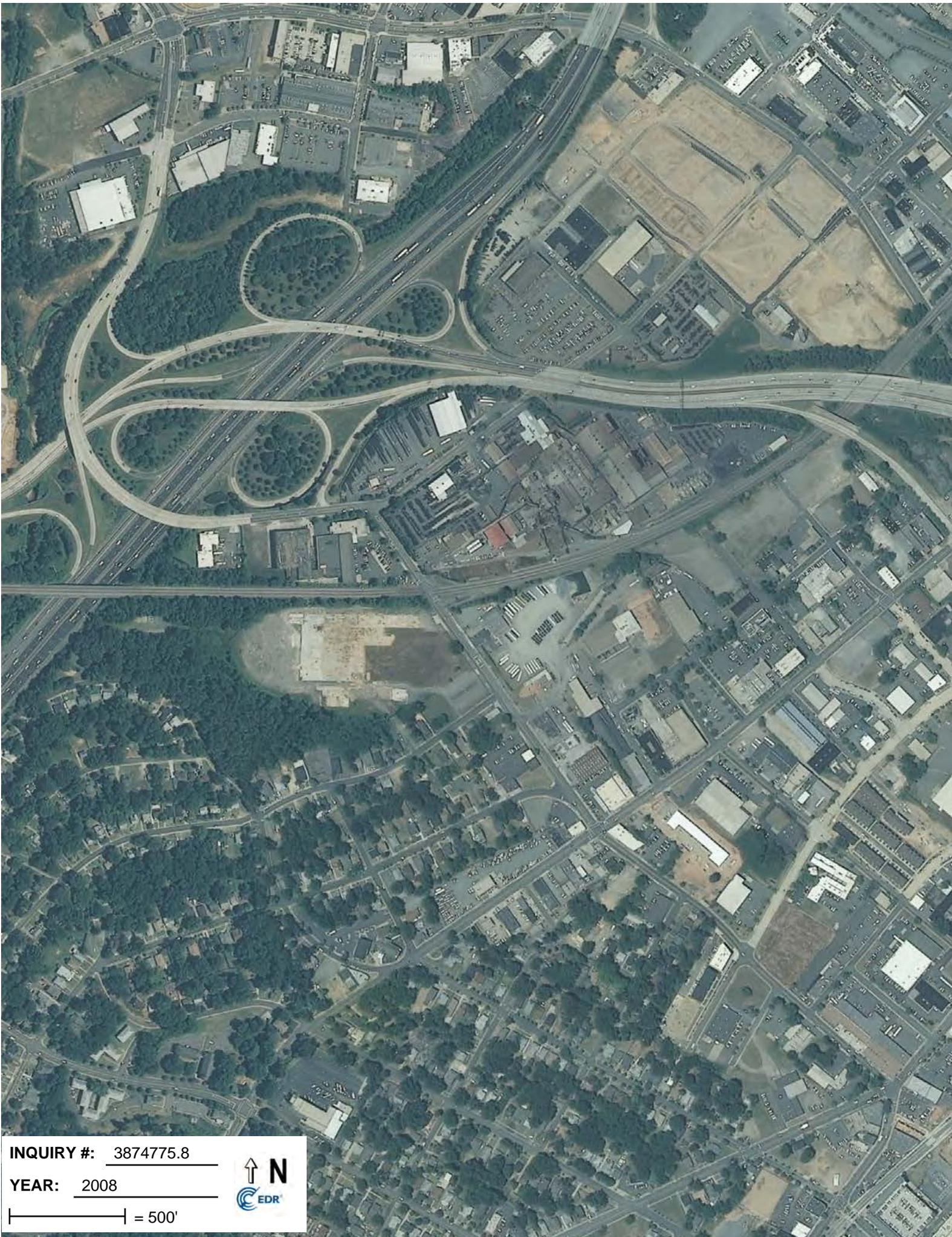


INQUIRY #: 3874775.8

YEAR: 1993

| = 500'



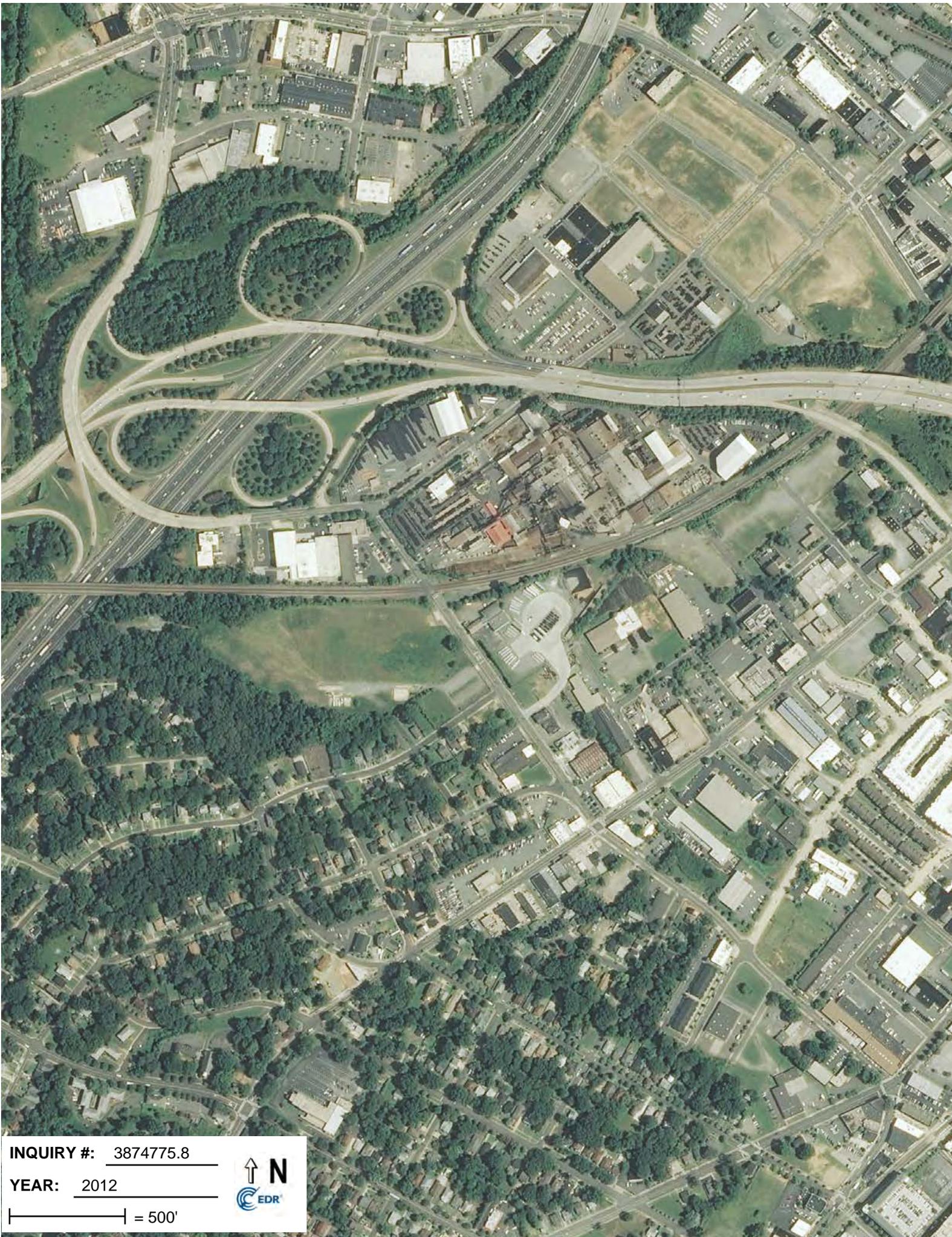


INQUIRY #: 3874775.8

YEAR: 2008

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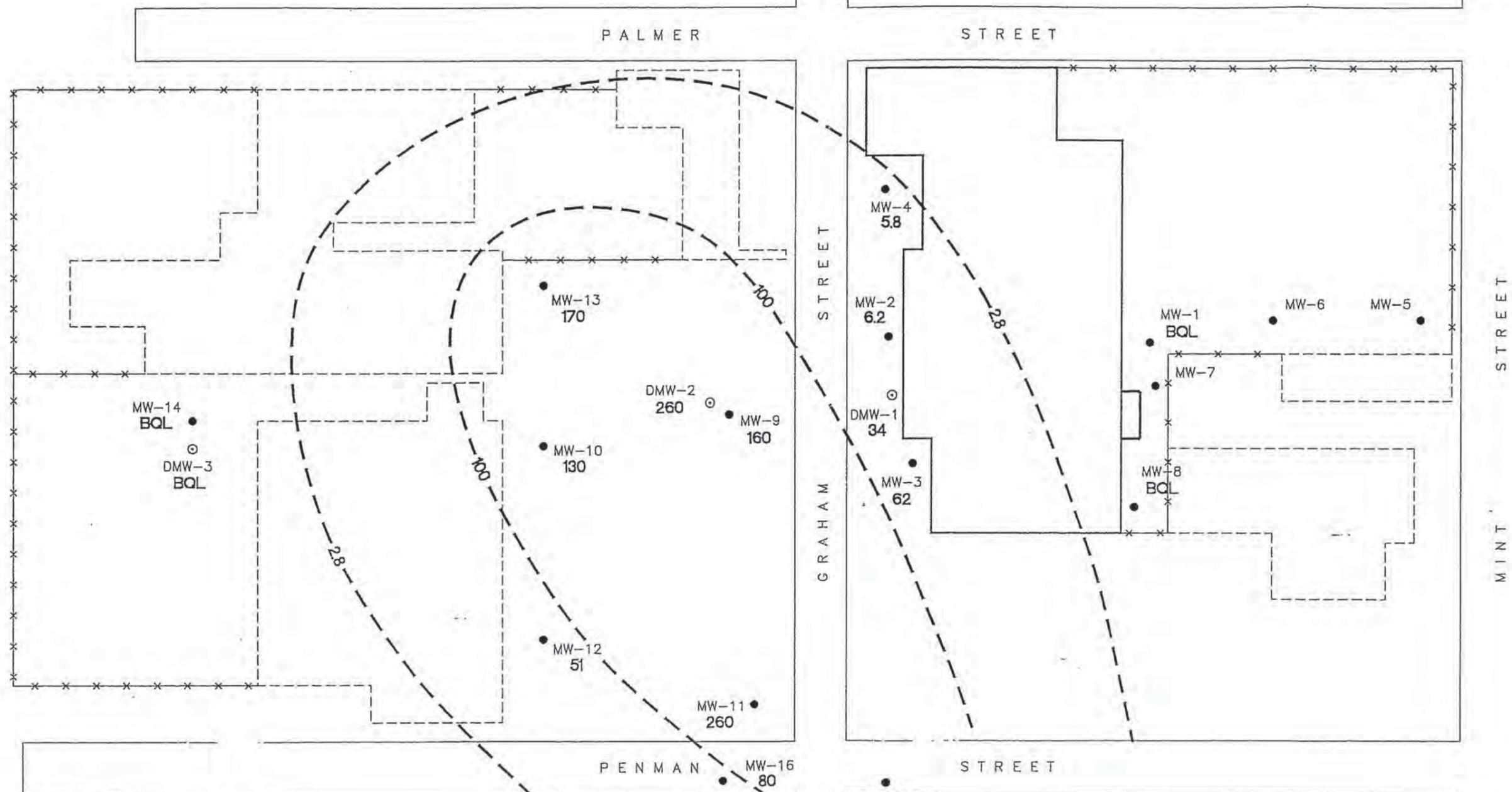
INQUIRY #: 3874775.8

YEAR: 2012

| = 500'

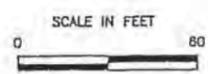


DWG DATE: 25JUN96 | PRJCT NO.: NC0259.001 | FILE NO.: DEXTER | DRAWING: DW-003 | CHECKED: J. SHILLIDAY | APPROVED: J. SHILLIDAY | DRAFTER: A. WARREN



LEGEND

- SHALLOW MONITOR WELL
 - ⊙ DEEP MONITOR WELL
 - 51 TRICHLOROETHENE CONCENTRATION (ug/L)
 - BQL BELOW QUANTITATION LIMIT
 - WALS OF NEIGHBORING BUILDING
 - x-x- FENCE
 - 100- ISOCONCENTRATION CONTOUR (ug/L)
- NOTE: WATER QUALITY DATA FROM JUNE 1995 AND MAY 1996 SAMPLING EVENTS



TRICHLOROETHENE ISOCONCENTRATION CONTOUR MAP

FORMER DEXTER FACILITY
CHARLOTTE, NORTH CAROLINA

FIGURE
5-1

Appendix C

GEL Geophysics, LLC Geophysical Survey Report

September 29, 2014

Mr. David Graham
Hart & Hickman, PC
2923 South Tryon Street, Suite 100
Charlotte, NC 28203

Re: Report for Geophysical Survey to Identify Underground
Utilities and Potential Underground Storage Tanks
DOT Parcel 30-1200 S. Graham Street
Charlotte, North Carolina

Dear Mr. Graham,

GEL Geophysics, LLC appreciates the opportunity to provide Hart & Hickman with this report of our geophysical investigation for the referenced project. This investigation was designed to determine the potential presence of underground storage tanks (USTs) at the site and underground utilities that would obstruct drilling activities at the site. The geophysical field investigation was successfully performed on August 25 through August 28, 2013.

1.0 Summary of Results

Multiple subsurface anomalies were identified in the geophysical data. Figure 1 depicts the approximate location and size of the anomalies as well as the known metallic surface objects present at the time of the investigation. The actual location of 2 GPR anomalies was identified in the field with marking paint. One anomaly was denoted as a "Unlikely UST" while the remaining anomalies were not characteristic of USTs. The anomalies not denoted as USTs in post processed data in Figure 1 are consistent with known metallic surface objects, underground utilities and cultural interference and are not characteristic of UST signatures. Although geophysical methods provide a high level of assurance for the location of subsurface objects, the possibility exists that not all features can or will be identified. Therefore, due caution should be used when performing any subsurface excavation, and GEL Geophysics, LLC will not be liable for any damages that may occur. Descriptions of the technologies employed during this geophysical investigation are provided below.

2.0 Overview of Geophysical Investigation

The geophysical evaluation included the deployment of radio-frequency electromagnetic (EM), ground penetrating radar (GPR) and time-domain electromagnetic (TDEM) technologies to the site. These technologies were used in concert with one another in order to identify the presence of potential underground utilities and USTs at the site. A brief description of each technology is presented in the following paragraphs.

Radio-Frequency Electromagnetic

Radio-Frequency Electromagnetic (EM) utility locating equipment consists of a transmitter and a dual-function receiver. The receiver can be operated in a "passive" mode or in an "active" mode. The two modes of operation provide various levels of detection capabilities depending on the specific target or application.

The EM system is operated in the "active" mode by either inducting or conducting a signal into the underground utility to be traced. A transmitter is placed over and in line with a suspected buried utility. The transmitter induces a signal, which propagates along the buried utility. As the receiver is moved back and forth

across the suspected path of the utility, the trace signal induces a signal into the receiver's coil sensor. A visual and audio response indicates when the receiver is directly over the buried utility.

Another means of detecting in the "active" mode utilizes a method to "conduct" a signal within the buried utility. To accomplish this, a cable from the transmitter is clamped onto an exposed section of the buried utility and a signal propagates along the buried line. This technique minimizes any interference caused by parasitic emissions from adjacent cables in congested areas. When the system is utilized in the "passive" mode, the receiver is responding to a 60 Hertz cycle current energized by underground utilities.

Interference can and may occur when buried utilities intersect or are adjacent to each other. This effect referred to as "bleed-off" may provide a false response to the identification of the tracked utility. "Bleed-off" is caused by utilities that may be energized in the "active" or "passive" mode.

Ground Penetrating Radar Methodology

A RAMAC digital radar control system configured with a 250 Megahertz (MHz) antenna array was used in this investigation. GPR is an electromagnetic geophysical method that detects interfaces between subsurface materials with differing dielectric constants. The GPR system consists of an antenna which houses the transmitter and receiver, a digital control unit which both generates and digitally records the GPR data, and a color video monitor to view data as it is collected in the field.

The transmitter radiates repetitive short-duration electromagnetic waves (at radar frequencies) into the earth from an antenna moving across the ground surface. These radar waves are reflected back to the receiver from the interface of materials with different dielectric constants. The intensity of the reflected signal is a function of the contrast in the dielectric constant between the materials, the conductivity of the material through which the wave is traveling, and the frequency of the signal.

Subsurface features that commonly cause such reflections are: 1) natural geologic conditions, such as changes in sediment composition, bedding, and cementation horizons and voids; or 2) unnatural changes to the subsurface such as disturbed soils, soil backfill, buried debris, tanks, pipelines, and utilities. The digital control unit processes the signal from the receiver and produces a continuous cross-section of the subsurface interface reflection events.

GPR data profiles were collected along transects covering the entire rights of ways. Depth of investigation of the GPR signal is highly site-specific and is limited by signal attenuation (absorption) in the subsurface materials. Signal attenuation is dependent upon the electrical conductivity of the subsurface materials. Signal attenuation is greatest in materials with relatively high electrical conductivities such as clays, brackish groundwater, or groundwater with a high dissolved solid content from natural or manmade sources. Signal attenuation is lowest in relatively low conductivity materials such as dry sand or rock. Depth of investigation is also dependent on the antenna's transmitting frequency. Depth of investigation generally increases as transmitting frequency decreases; however, the ability to resolve smaller subsurface features is diminished as frequency is decreased. The average depth of penetration at this site was limited to approximately two and a half feet below the surface which rendered GPR of very limited value for this project.

The GPR antenna used at this site is internally shielded from aboveground interference sources. Accordingly, the GPR response is not affected by overhead power lines, metallic buildings, or nearby objects.

Time Domain Electromagnetic Methodology

TDEM methods measure the electrical conductivity of subsurface materials. The conductivity is determined by inducing (from a transmitter) a time or frequency-varying magnetic field and measuring (with a receiver) the

amplitude and phase shift of an induced secondary magnetic field. The secondary magnetic field is created by subsurface conductive materials behaving as an inductor as the primary magnetic field is passed through them.

The Geonics EM-61 system used in this investigation operates within these principles. However, the EM-61 TDEM system can discriminate between moderately conductive earth materials and very conductive metallic targets. The EM-61 consists of a portable coincident loop time domain transmitter and receiver with a 1.0-meter x 0.5-meter coil system. The EM-61 generates 150 pulses per second and measures the response from the ground after transmission or between pulses. The secondary EM responses from metallic targets are of longer duration than those created by conductive earth materials. By recording the later time EM arrivals, only the response from metallic targets is measured, rather than the field generated by the earth material.

3.0 Field Procedures and Results

The geophysical field investigation was successfully performed on August 25, 2014, at 1200 S. Graham Street (DOT-Parcel 30) in Charlotte, NC. Interpretation of the GPR data was conducted in the field and any potential anomalies were marked in the field. GPR data processing typically included band pass filtering, background removal, horizontal smoothing, and gain adjustments. TDEM was also used to scan the project site. Any electromagnetic anomalies detected during field activities that were indicative of buried metallic objects were also marked in the field.

Multiple subsurface anomalies were identified in the geophysical data on Figure 1. Figure 1 depicts the approximate location and size of the anomalies as well as the known metallic surface objects present at the time of the investigation. There was one geophysical anomaly detected with TDEM during data processing and is noted in Figure 1. This anomaly thought to be associated with the "unknown" utility adjacent to it. Two anomalies designated with GPR also exist on the site. None of the geophysical anomalies, denoted in Figure 1, were consistent with a "Possible UST", a "Probable UST" or a "Known UST" characterization. GPR signal penetration was limited to approximately 2.5-3 feet below land surface.

Additional TDEM responses were present in the data, but correlated to surface metallic debris and/or above ground metal structures and are not considered to be representative of "Potential USTs."

The locations of underground utilities were designated using EM and GPR equipment, and their locations were marked with paint on the land surface as shown in Figure 1.

Locations of data points were obtained using a Trimble R6 GPS antenna, which obtained sub-meter accuracy using corrections provided by the North Carolina RTN network.

4.0 Closing

GEL Geophysics appreciates the opportunity to assist Hart & Hickman with this project. If you have any questions or need further information regarding the project, please do not hesitate to call me at (843) 697-1571.

Yours very truly,



William S. Dovell
Project Manager

enclosures
fc: hahi00114_Parel 30.rpt.doc



Parcel-30: Looking to the south from the north corner of the parcel.



Parcel 30: Looking to the west from the north corner of the parcel, showing GPR anomaly.



Parcel 30: Looking east toward building showing GPR anomaly.



Parcel 30: Looking south from center of parcel.



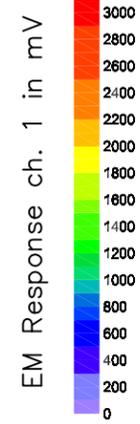
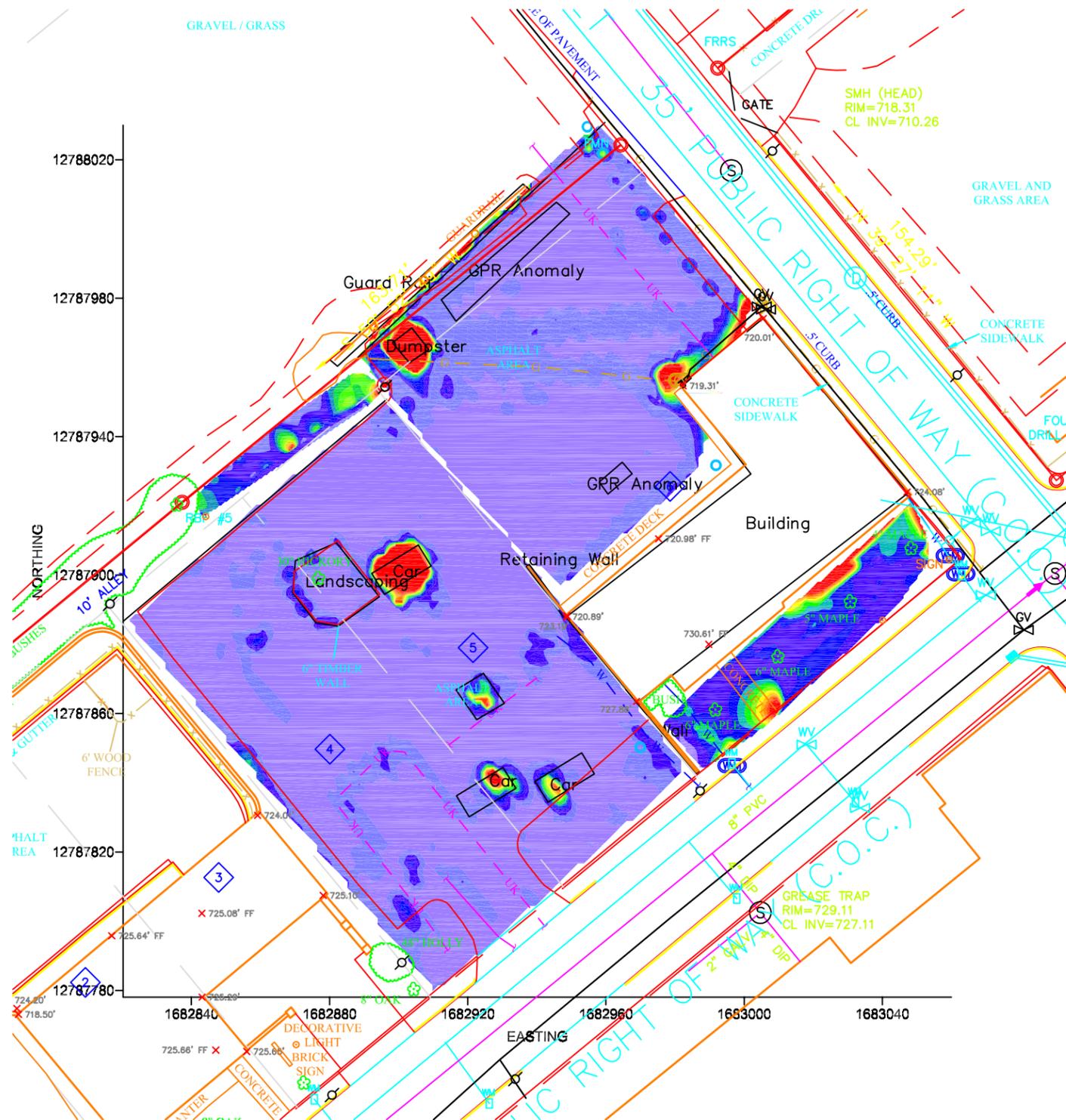
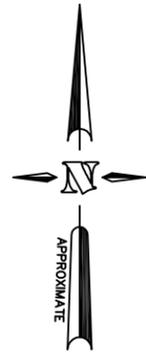
Parcel 30: Looking southeast from center of parcel.



Parcel 30: Looking north from S Graham St.



Parcel 30: Looking west from east corner of parcel.

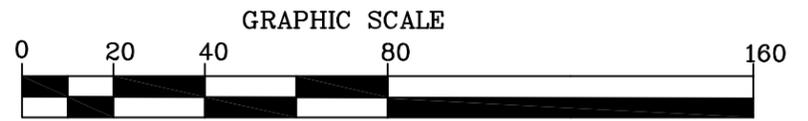


LEGEND

- UK --- APPROXIMATE LOCATION OF SUSPECTED UNDERGROUND UNKNOWN UTILITY LINE
- W --- APPROXIMATE LOCATION OF SUSPECTED UNDERGROUND WATER LINE
- SD --- APPROXIMATE LOCATION OF SUSPECTED STORMWATER DRAIN LINE
- G --- APPROXIMATE LOCATION OF SUSPECTED UNDERGROUND GAS LINE
- E --- APPROXIMATE LOCATION OF SUSPECTED UNDERGROUND ELECTRICAL POWER LINE
- x x x CHAIN LINK FENCE
- END OF DESIGNATION OR UNKNOWN DESIGNATION
- POWER POLE
- METALLIC SURFACE FEATURE
- ⊙ STORM DRAIN MANHOLE
- ⊞ STORM DRAIN DROP INLET
- ⊗ WATER VALVE
- ⊕ WATER METER
- ⊗ GAS VALVE
- ⊕ GAS METER

NOTES

- 1) UNDERGROUND FEATURES WERE LOCATED USING VISUAL EVIDENCE, GROUND PENETRATING RADAR (GPR), AND TIME DOMAIN ELECTROMAGNETIC (TDEM) METHODS. OTHER BURIED UTILITIES AND STRUCTURES MAY EXIST BUT WERE NOT DETECTED DUE TO LIMITATIONS OF THE GEOPHYSICAL METHODS, SITE ACCESS, AND/OR HIGH TARGET CONGESTION. THEREFORE, DUE CAUTION SHOULD BE USED WHEN PERFORMING SUBSURFACE EXCAVATION ACTIVITIES WHERE POTENTIAL CONFLICTS EXIST. GEL GEOPHYSICS, LLC. IS NOT RESPONSIBLE FOR DAMAGES THAT MAY OCCUR. IDENTIFYING THE LOCATION OF SOME UTILITIES AND STRUCTURES MAY ONLY BE POSSIBLE WITH VACUUM OR OTHER EXCAVATION METHODS.
- 2) FIELD SURVEY CONDUCTED ON 8.25.2014-8.28.2014.
- 3) DATA FROM GEONICS, LTD. EM-61 MKII AND MALA GEOSCIENCE GROUND PENETRATING RADAR.
- 4) GEL GEOPHYSICS, LLC. IS NOT RESPONSIBLE FOR ACCURACY OF BASE MAP PROVIDED BY HART & HICKMAN.



(IN FEET)
1 INCH = 40 ft.

GEL GEOPHYSICS, LLC
a Member of THE GEL GROUP, INC.
P.O. BOX 30712 CHARLESTON, SC 29417
2040 SAVAGE ROAD 29407
(843) 769-7379 FAX (843) 769-7397
WWW.GELGEOPHYSICS.COM

PROJECT: HAH00114
PARCEL 30
1200 GRAHAM STREET
CHARLOTTE, NORTH CAROLINA
NCDOT RAIL PSA PROJECT

DATE: SEPTEMBER 29, 2014

RESULTS OF GEOPHYSICAL INVESTIGATION

DRAWN BY: WSD APPRV. BY: WSD

FIGURE
1

Appendix D

Soil Boring Logs and Temporary Well Boring Log

BORING NUMBER 30-1

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT Project P-3800 - Parcel 30
JOB NUMBER: ROW-501
LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
				BKG.	SAMP.				
0							ASPHALT		0
				1.5	6.5		Slightly moist, slightly stiff, red, silty CLAY		
				0	0.5				
5		GB		0	249.8		Dry, slightly stiff, red, clayey SILT with manganese deposits		5
				0	216		Dry, stiff, tanish red, clayey SILT		
				0	161				
10				0.1	240.8		Slightly moist, stiff, tanish red, clayey SILT		10
				0.5	236.7				
15				0.3	226.5		Moist, stiff, tan, clayey SILT		15
				0	197				
20				1.4	182				20
							Bottom of borehole at 20.0 feet.		

WELL LOG - HART HICKMAN.GDT - 10/9/14 14:40 - S:\AAA-MASTER GINT PROJECTS\ROW-501\PARCEL_30 & 32.GPJ

DRILLING CONTRACTOR: Geologic Exploration
DRILL RIG/ METHOD: 6620DT / DPT
SAMPLING METHOD: DPT Sleeves
LOGGED BY: MLO
DRAWN BY: CDO

BORING STARTED: 9/3/14
BORING COMPLETED: 9/3/14
TOTAL DEPTH: 20 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 4-6 ft bgs for laboratory analysis.

BORING NUMBER 30-2

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT Project P-3800 - Parcel 30
JOB NUMBER: ROW-501
LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
				BKG.	SAMP.				
0		GB		0	1.7	ASPHALT	Slightly moist, slightly stiff, red, silty CLAY		0
				0	0.2				
5				0	0.5		Slightly moist, stiff, red with black mottling, clayey SILT		5
				0	0.7				
10				0	0.6		Slightly moist, very stiff, red and light tan with black mottling, clayey SILT		10
				0	2.3				
15				0	7.2				15
				0	5.9				
20				0	3.6				20
							Bottom of borehole at 20.0 feet.		

WELL LOG - HART HICKMAN.GDT - 10/9/14 14:40 - S:\AAA-MASTER GINT PROJECTS\ROW-501\PARCEL_30 & 32.GPJ

DRILLING CONTRACTOR: Geologic Exploration
DRILL RIG/ METHOD: 6620DT / DPT
SAMPLING METHOD: DPT Sleeves
LOGGED BY: MLO
DRAWN BY: CDO

BORING STARTED: 9/3/14
BORING COMPLETED: 9/3/14
TOTAL DEPTH: 20 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 0-2 ft bgs for laboratory analysis.

BORING NUMBER 30-3

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT Project P-3800 - Parcel 30
JOB NUMBER: ROW-501
LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
				BKG.	SAMP.				
0							ASPHALT		0
				0	1.2		Dry, red brown, silty CLAY with aggregate		
				0	0.9				
				0	1.1		Dry, white, light brown, clayey SILT with some aggregate		5
				0	2.4		Slightly moist to dry, white, silty CLAY with aggregate and partially weathered rock		
				0	3.3		Slightly moist, stiff, red with black mottling, silty CLAY		
				0	6.9		Slightly moist to dry, white, silty CLAY with aggregate and partially weathered rock		10
		GB		0	5.3		Slightly moist, very stiff, red brown with black mottling, clayey SILT		
				0	4.9		Slightly moist to dry, white, silty CLAY with aggregate and partially weathered rock		15
				0	6.4		Moist, very stiff, red brown, clayey SILT with trace white and black mottling		
				0	6.5		Moist, white, red, clayey SILT with partially weathered rock		
20							Bottom of borehole at 20.0 feet.		20

WELL LOG - HART HICKMAN.GDT - 10/9/14 14:40 - S:\AAA-MASTER GINT PROJECTS\ROW-501\PARCEL_30 & 32.GPJ

DRILLING CONTRACTOR: Geologic Exploration
DRILL RIG/ METHOD: 6620DT / DPT
SAMPLING METHOD: DPT Sleeves
LOGGED BY: MLO
DRAWN BY: CDO

BORING STARTED: 9/3/14
BORING COMPLETED: 9/3/14
TOTAL DEPTH: 20 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 10-12 ft bgs for laboratory analysis.

BORING NUMBER 30-4

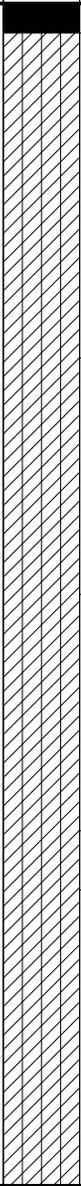
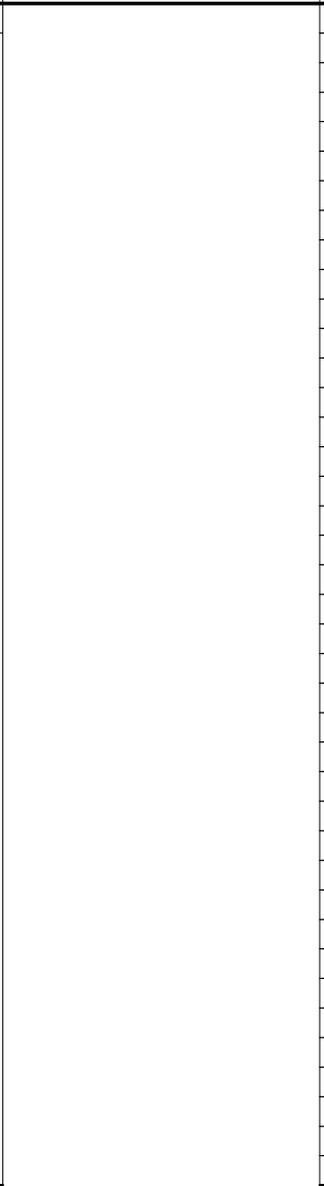
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT Project P-3800 - Parcel 30

JOB NUMBER: ROW-501

LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
				BKG.	SAMP.				
0							ASPHALT		0
				0	1.4		Dry, slightly stiff, red, tan, clayey SILT		
				0	1.3				
5		GB		0	1.2				
				0	1.1		Dry, slightly stiff, red, tan with black mottling, clayey SILT		
				0	1.8				
10				0	1.5		Moist to slightly moist, slightly stiff, tan with black mottling, clayey SILT		
				0	2.7				
				0	3.3		Slightly moist, red, grey, clayey SILT with partially weathered rock		
15				0	2.4		Moist, stiff, brown, black, grey, clayey SILT		
				0	2.5				
20							Bottom of borehole at 20.0 feet.		20

WELL LOG - HART HICKMAN.GDT - 10/9/14 14:40 - S:\AAA-MASTER GINT PROJECTS\ROW-501\PARCEL_30 & 32.GPJ

DRILLING CONTRACTOR: Geologic Exploration
DRILL RIG/ METHOD: 6620DT / DPT
SAMPLING METHOD: DPT Sleeves
LOGGED BY: MLO
DRAWN BY: CDO

BORING STARTED: 9/3/14
BORING COMPLETED: 9/3/14
TOTAL DEPTH: 20 ft.
TOP OF CASING ELEV:
DEPTH TO WATER:

Remarks:
Soil sample collected from 4-6 ft bgs for laboratory analysis.

BORING NUMBER 30-5/TW-1

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: NC DOT Project P-3800 - Parcel 30

JOB NUMBER: ROW-501

LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
				BKG.	SAMP.				
0		GB		0	1	ASPHALT			0
0-2				0	2.8		Slightly moist, stiff, red, clayey SILT		0-2
2-5				0	0.7				5
5-10				0	2.1		Slightly moist, stiff, red with blackish tan mottling, clayey SILT		10
10-15				0	3.2				15
15-20				0	1.1		Moist, stiff, tan and black, clayey SILT		20
20-25				0	3				25
25-30				0	4.6				30
30-35				0	4.7			1-inch PVC riser	35
35-40				0	3.2		Moist, brown and black, clayey SILT	Bentonite seal	40
								Filter sand	
								0.01-inch slot PVC screen	
							Bottom of borehole at 40.0 feet.		

WELL LOG - HART HICKMAN.GDT - 10/15/14 16:00 - S:\AAA-MASTER GINT PROJECTS\ROW-501\PARCEL 30.GPJ

DRILLING CONTRACTOR: Geologic Exploration
DRILL RIG/ METHOD: 6620DT / DPT
SAMPLING METHOD: DPT Sleeves
LOGGED BY: MLO
DRAWN BY: CDO

BORING STARTED: 9/3/14
BORING COMPLETED: 9/4/14
TOTAL DEPTH: 40 ft.
TOP OF CASING ELEV:
DEPTH TO WATER: 34.5 ft.

Remarks:
Soil sample collected from 0-2 ft bgs for laboratory analysis. One inch diameter temporary well set at 40 ft bgs

Appendix E
Laboratory Analytical Reports

September 13, 2014

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

RE: Project: WBS #49999.1 STR8 Row-501 30
Pace Project No.: 92216153

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on September 04, 2014. 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: David Graham, Hart & Hickman



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

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

Asheville Certification IDs

2225 Riverside Dr., Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: WBS #49999.1 STR8 Row-501 30
Pace Project No.: 92216153

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92216153001	30-1 (4-6')	EPA 8015 Modified	JDW1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	ACS	1	PASI-C
92216153002	30-2 (0-2')	EPA 8015 Modified	JDW1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	ACS	1	PASI-C
92216153003	30-3 (10-12')	EPA 8015 Modified	JDW1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	ACS	1	PASI-C
92216153004	30-4 (4-6')	EPA 8015 Modified	JDW1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	ACS	1	PASI-C
92216153005	30-5 (0-2')	EPA 8015 Modified	JDW1	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		EPA 6010	SH1	13	PASI-A
		EPA 7471	HVK	1	PASI-A
		EPA 8270	RES	74	PASI-C
		EPA 8260	MCK	70	PASI-C
		ASTM D2974-87	ACS	1	PASI-C

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

Sample: 30-1 (4-6') **Lab ID: 92216153001** Collected: 09/03/14 10:00 Received: 09/04/14 17:25 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 Range Organics(C10-C28)	ND	mg/kg	6.7	1	09/05/14 13:20	09/08/14 12:45		
Surrogates								
n-Pentacosane (S)	63	%	41-119	1	09/05/14 13:20	09/08/14 12:45	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gas Range Organics (C6-C10)	ND	mg/kg	10.2	1	09/05/14 10:50	09/05/14 15:10		
Surrogates								
4-Bromofluorobenzene (S)	87	%	70-167	1	09/05/14 10:50	09/05/14 15:10	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	25.7	%	0.10	1		09/08/14 09:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

Sample: 30-2 (0-2') **Lab ID: 92216153002** Collected: 09/03/14 10:40 Received: 09/04/14 17:25 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 Range Organics(C10-C28)	67.4	mg/kg	5.9	1	09/05/14 13:20	09/08/14 12:45		
Surrogates								
n-Pentacosane (S)	86 %		41-119	1	09/05/14 13:20	09/08/14 12:45	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gas Range Organics (C6-C10)	ND	mg/kg	4.9	1	09/05/14 10:50	09/05/14 15:33		
Surrogates								
4-Bromofluorobenzene (S)	86 %		70-167	1	09/05/14 10:50	09/05/14 15:33	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	15.4	%	0.10	1		09/08/14 09:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

Sample: 30-3 (10-12') **Lab ID: 92216153003** Collected: 09/03/14 11:30 Received: 09/04/14 17:25 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 Range Organics(C10-C28)	ND	mg/kg	5.5	1	09/05/14 13:20	09/08/14 13:57		
Surrogates								
n-Pentacosane (S)	62	%	41-119	1	09/05/14 13:20	09/08/14 13:57	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gas Range Organics (C6-C10)	ND	mg/kg	6.8	1	09/05/14 10:50	09/05/14 15:56		
Surrogates								
4-Bromofluorobenzene (S)	90	%	70-167	1	09/05/14 10:50	09/05/14 15:56	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	8.6	%	0.10	1		09/08/14 09:46		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

Sample: 30-4 (4-6') **Lab ID: 92216153004** Collected: 09/03/14 12:30 Received: 09/04/14 17:25 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 Range Organics(C10-C28)	ND	mg/kg	7.1	1	09/05/14 13:20	09/08/14 14:21		
Surrogates								
n-Pentacosane (S)	56	%	41-119	1	09/05/14 13:20	09/08/14 14:21	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gas Range Organics (C6-C10)	ND	mg/kg	8.5	1	09/05/14 10:50	09/05/14 16:19		
Surrogates								
4-Bromofluorobenzene (S)	86	%	70-167	1	09/05/14 10:50	09/05/14 16:19	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	30.0	%	0.10	1		09/08/14 09:46		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

Sample: 30-5 (0-2') **Lab ID: 92216153005** Collected: 09/03/14 13:40 Received: 09/04/14 17:25 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 Range Organics(C10-C28)	33.2	mg/kg	6.9	1	09/05/14 13:20	09/08/14 14:45		
Surrogates								
n-Pentacosane (S)	78 %		41-119	1	09/05/14 13:20	09/08/14 14:45	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gas Range Organics (C6-C10)	ND	mg/kg	6.9	1	09/05/14 10:50	09/05/14 16:42		
Surrogates								
4-Bromofluorobenzene (S)	89 %		70-167	1	09/05/14 10:50	09/05/14 16:42	460-00-4	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3050						
Antimony	ND	mg/kg	0.50	1	09/05/14 16:25	09/08/14 21:02	7440-36-0	
Arsenic	ND	mg/kg	0.99	1	09/05/14 16:25	09/08/14 21:02	7440-38-2	
Beryllium	0.66	mg/kg	0.099	1	09/05/14 16:25	09/08/14 21:02	7440-41-7	
Cadmium	0.65	mg/kg	0.099	1	09/05/14 16:25	09/08/14 21:02	7440-43-9	
Chromium	114	mg/kg	0.50	1	09/05/14 16:25	09/08/14 21:02	7440-47-3	
Copper	63.6	mg/kg	0.50	1	09/05/14 16:25	09/08/14 21:02	7440-50-8	
Lead	7.2	mg/kg	0.50	1	09/05/14 16:25	09/08/14 21:02	7439-92-1	
Manganese	851	mg/kg	0.50	1	09/05/14 16:25	09/08/14 21:02	7439-96-5	
Nickel	20.0	mg/kg	0.50	1	09/05/14 16:25	09/08/14 21:02	7440-02-0	
Selenium	1.7	mg/kg	0.99	1	09/05/14 16:25	09/08/14 21:02	7782-49-2	
Silver	ND	mg/kg	0.50	1	09/05/14 16:25	09/08/14 21:02	7440-22-4	
Thallium	ND	mg/kg	0.99	1	09/05/14 16:25	09/08/14 21:02	7440-28-0	
Zinc	32.0	mg/kg	0.99	1	09/05/14 16:25	09/08/14 21:02	7440-66-6	
7471 Mercury		Analytical Method: EPA 7471 Preparation Method: EPA 7471						
Mercury	0.062	mg/kg	0.0049	1	09/05/14 16:40	09/09/14 13:20	7439-97-6	
8270 MSSV Microwave		Analytical Method: EPA 8270 Preparation Method: EPA 3546						
Acenaphthene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	83-32-9	
Acenaphthylene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	208-96-8	
Aniline	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	62-53-3	
Anthracene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	120-12-7	
Benzo(a)anthracene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	56-55-3	
Benzo(a)pyrene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	207-08-9	
Benzoic Acid	ND	ug/kg	22600	10	09/05/14 09:07	09/06/14 02:30	65-85-0	
Benzyl alcohol	ND	ug/kg	9050	10	09/05/14 09:07	09/06/14 02:30	100-51-6	
4-Bromophenylphenyl ether	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	101-55-3	
Butylbenzylphthalate	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	85-68-7	
4-Chloro-3-methylphenol	ND	ug/kg	9050	10	09/05/14 09:07	09/06/14 02:30	59-50-7	
4-Chloroaniline	ND	ug/kg	22600	10	09/05/14 09:07	09/06/14 02:30	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	111-44-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

Sample: 30-5 (0-2') **Lab ID: 92216153005** Collected: 09/03/14 13:40 Received: 09/04/14 17:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave		Analytical Method: EPA 8270 Preparation Method: EPA 3546						
bis(2-Chloroisopropyl) ether	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	108-60-1	
2-Chloronaphthalene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	91-58-7	
2-Chlorophenol	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	7005-72-3	
Chrysene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	53-70-3	
Dibenzofuran	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	22600	10	09/05/14 09:07	09/06/14 02:30	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	120-83-2	
Diethylphthalate	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	105-67-9	
Dimethylphthalate	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	131-11-3	
Di-n-butylphthalate	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	9050	10	09/05/14 09:07	09/06/14 02:30	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	22600	10	09/05/14 09:07	09/06/14 02:30	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	606-20-2	
Di-n-octylphthalate	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	117-81-7	
Fluoranthene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	206-44-0	
Fluorene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	87-68-3	
Hexachlorobenzene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	118-74-1	
Hexachlorocyclopentadiene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	77-47-4	
Hexachloroethane	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	193-39-5	
Isophorone	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	78-59-1	
1-Methylnaphthalene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	90-12-0	
2-Methylnaphthalene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30		
Naphthalene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	91-20-3	
2-Nitroaniline	ND	ug/kg	22600	10	09/05/14 09:07	09/06/14 02:30	88-74-4	
3-Nitroaniline	ND	ug/kg	22600	10	09/05/14 09:07	09/06/14 02:30	99-09-2	
4-Nitroaniline	ND	ug/kg	9050	10	09/05/14 09:07	09/06/14 02:30	100-01-6	
Nitrobenzene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	98-95-3	
2-Nitrophenol	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	88-75-5	
4-Nitrophenol	ND	ug/kg	22600	10	09/05/14 09:07	09/06/14 02:30	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	86-30-6	
Pentachlorophenol	ND	ug/kg	22600	10	09/05/14 09:07	09/06/14 02:30	87-86-5	
Phenanthrene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	85-01-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

Sample: 30-5 (0-2') **Lab ID: 92216153005** Collected: 09/03/14 13:40 Received: 09/04/14 17:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave		Analytical Method: EPA 8270 Preparation Method: EPA 3546						
Phenol	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	108-95-2	
Pyrene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	4520	10	09/05/14 09:07	09/06/14 02:30	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0 %		23-110	10	09/05/14 09:07	09/06/14 02:30	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0 %		30-110	10	09/05/14 09:07	09/06/14 02:30	321-60-8	
Terphenyl-d14 (S)	0 %		28-110	10	09/05/14 09:07	09/06/14 02:30	1718-51-0	
Phenol-d6 (S)	0 %		22-110	10	09/05/14 09:07	09/06/14 02:30	13127-88-3	
2-Fluorophenol (S)	0 %		13-110	10	09/05/14 09:07	09/06/14 02:30	367-12-4	
2,4,6-Tribromophenol (S)	0 %		27-110	10	09/05/14 09:07	09/06/14 02:30	118-79-6	
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
Acetone	ND	ug/kg	125	1		09/10/14 23:16	67-64-1	
Benzene	ND	ug/kg	6.2	1		09/10/14 23:16	71-43-2	
Bromobenzene	ND	ug/kg	6.2	1		09/10/14 23:16	108-86-1	
Bromochloromethane	ND	ug/kg	6.2	1		09/10/14 23:16	74-97-5	
Bromodichloromethane	ND	ug/kg	6.2	1		09/10/14 23:16	75-27-4	
Bromoform	ND	ug/kg	6.2	1		09/10/14 23:16	75-25-2	
Bromomethane	ND	ug/kg	12.5	1		09/10/14 23:16	74-83-9	
2-Butanone (MEK)	ND	ug/kg	125	1		09/10/14 23:16	78-93-3	
n-Butylbenzene	ND	ug/kg	6.2	1		09/10/14 23:16	104-51-8	
sec-Butylbenzene	ND	ug/kg	6.2	1		09/10/14 23:16	135-98-8	
tert-Butylbenzene	ND	ug/kg	6.2	1		09/10/14 23:16	98-06-6	
Carbon tetrachloride	ND	ug/kg	6.2	1		09/10/14 23:16	56-23-5	
Chlorobenzene	ND	ug/kg	6.2	1		09/10/14 23:16	108-90-7	
Chloroethane	ND	ug/kg	12.5	1		09/10/14 23:16	75-00-3	
Chloroform	ND	ug/kg	6.2	1		09/10/14 23:16	67-66-3	
Chloromethane	ND	ug/kg	12.5	1		09/10/14 23:16	74-87-3	
2-Chlorotoluene	ND	ug/kg	6.2	1		09/10/14 23:16	95-49-8	
4-Chlorotoluene	ND	ug/kg	6.2	1		09/10/14 23:16	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	6.2	1		09/10/14 23:16	96-12-8	
Dibromochloromethane	ND	ug/kg	6.2	1		09/10/14 23:16	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	6.2	1		09/10/14 23:16	106-93-4	
Dibromomethane	ND	ug/kg	6.2	1		09/10/14 23:16	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	6.2	1		09/10/14 23:16	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	6.2	1		09/10/14 23:16	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	6.2	1		09/10/14 23:16	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	12.5	1		09/10/14 23:16	75-71-8	
1,1-Dichloroethane	ND	ug/kg	6.2	1		09/10/14 23:16	75-34-3	
1,2-Dichloroethane	ND	ug/kg	6.2	1		09/10/14 23:16	107-06-2	
1,1-Dichloroethene	ND	ug/kg	6.2	1		09/10/14 23:16	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	6.2	1		09/10/14 23:16	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	6.2	1		09/10/14 23:16	156-60-5	
1,2-Dichloropropane	ND	ug/kg	6.2	1		09/10/14 23:16	78-87-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

Sample: 30-5 (0-2') **Lab ID: 92216153005** Collected: 09/03/14 13:40 Received: 09/04/14 17:25 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics		Analytical Method: EPA 8260						
1,3-Dichloropropane	ND	ug/kg	6.2	1		09/10/14 23:16	142-28-9	
2,2-Dichloropropane	ND	ug/kg	6.2	1		09/10/14 23:16	594-20-7	
1,1-Dichloropropene	ND	ug/kg	6.2	1		09/10/14 23:16	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	6.2	1		09/10/14 23:16	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	6.2	1		09/10/14 23:16	10061-02-6	
Diisopropyl ether	ND	ug/kg	6.2	1		09/10/14 23:16	108-20-3	
Ethylbenzene	ND	ug/kg	6.2	1		09/10/14 23:16	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	6.2	1		09/10/14 23:16	87-68-3	
2-Hexanone	ND	ug/kg	62.3	1		09/10/14 23:16	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	6.2	1		09/10/14 23:16	98-82-8	
p-Isopropyltoluene	ND	ug/kg	6.2	1		09/10/14 23:16	99-87-6	
Methylene Chloride	ND	ug/kg	24.9	1		09/10/14 23:16	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	62.3	1		09/10/14 23:16	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	6.2	1		09/10/14 23:16	1634-04-4	
Naphthalene	ND	ug/kg	6.2	1		09/10/14 23:16	91-20-3	
n-Propylbenzene	ND	ug/kg	6.2	1		09/10/14 23:16	103-65-1	
Styrene	ND	ug/kg	6.2	1		09/10/14 23:16	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	6.2	1		09/10/14 23:16	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	6.2	1		09/10/14 23:16	79-34-5	
Tetrachloroethene	ND	ug/kg	6.2	1		09/10/14 23:16	127-18-4	
Toluene	ND	ug/kg	6.2	1		09/10/14 23:16	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	6.2	1		09/10/14 23:16	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	6.2	1		09/10/14 23:16	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	6.2	1		09/10/14 23:16	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	6.2	1		09/10/14 23:16	79-00-5	
Trichloroethene	ND	ug/kg	6.2	1		09/10/14 23:16	79-01-6	
Trichlorofluoromethane	ND	ug/kg	6.2	1		09/10/14 23:16	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	6.2	1		09/10/14 23:16	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	6.2	1		09/10/14 23:16	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/kg	6.2	1		09/10/14 23:16	108-67-8	
Vinyl acetate	ND	ug/kg	62.3	1		09/10/14 23:16	108-05-4	
Vinyl chloride	ND	ug/kg	12.5	1		09/10/14 23:16	75-01-4	
Xylene (Total)	ND	ug/kg	12.5	1		09/10/14 23:16	1330-20-7	
m&p-Xylene	ND	ug/kg	12.5	1		09/10/14 23:16	179601-23-1	
o-Xylene	ND	ug/kg	6.2	1		09/10/14 23:16	95-47-6	
Surrogates								
Toluene-d8 (S)	104	%	70-130	1		09/10/14 23:16	2037-26-5	
4-Bromofluorobenzene (S)	90	%	70-130	1		09/10/14 23:16	460-00-4	
1,2-Dichloroethane-d4 (S)	116	%	70-132	1		09/10/14 23:16	17060-07-0	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	27.1	%	0.10	1		09/08/14 09:46		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

QC Batch: GCV/8515 Analysis Method: EPA 8015 Modified
 QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
 Associated Lab Samples: 92216153001, 92216153002, 92216153003, 92216153004, 92216153005

METHOD BLANK: 1279134 Matrix: Solid
 Associated Lab Samples: 92216153001, 92216153002, 92216153003, 92216153004, 92216153005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gas Range Organics (C6-C10)	mg/kg	ND	6.0	09/05/14 11:44	
4-Bromofluorobenzene (S)	%	84	70-167	09/05/14 11:44	

LABORATORY CONTROL SAMPLE: 1279135

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gas Range Organics (C6-C10)	mg/kg	49.9	42.3	85	70-165	
4-Bromofluorobenzene (S)	%			85	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1279136 1279137

Parameter	Units	92215555001		1279136		1279137		% Rec Limits	RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec			
Gas Range Organics (C6-C10)	mg/kg	ND	38	38	37.6	42.2	98	111	47-187	12
4-Bromofluorobenzene (S)	%						82	83	70-167	

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

QC Batch:	MERP/7051	Analysis Method:	EPA 7471
QC Batch Method:	EPA 7471	Analysis Description:	7471 Mercury
Associated Lab Samples:	92216153005		

METHOD BLANK: 1279506 Matrix: Solid

Associated Lab Samples: 92216153005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.0050	09/09/14 12:29	

LABORATORY CONTROL SAMPLE: 1279507

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	.067	0.053	80	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1279508 1279509

Parameter	Units	92215470001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
			Spike Conc.	Conc.	Spike Conc.	Conc.					
Mercury	mg/kg	0.0057	.053	.052	0.031	0.030	48	48	75-125	2	M1

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

QC Batch:	MPRP/16833	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3050	Analysis Description:	6010 MET
Associated Lab Samples:	92216153005		

METHOD BLANK: 1279613 Matrix: Solid

Associated Lab Samples: 92216153005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	0.50	09/08/14 20:35	
Arsenic	mg/kg	ND	1.0	09/08/14 20:35	
Beryllium	mg/kg	ND	0.10	09/08/14 20:35	
Cadmium	mg/kg	ND	0.10	09/08/14 20:35	
Chromium	mg/kg	ND	0.50	09/08/14 20:35	
Copper	mg/kg	ND	0.50	09/08/14 20:35	
Lead	mg/kg	ND	0.50	09/08/14 20:35	
Manganese	mg/kg	ND	0.50	09/08/14 20:35	
Nickel	mg/kg	ND	0.50	09/08/14 20:35	
Selenium	mg/kg	ND	1.0	09/08/14 20:35	
Silver	mg/kg	ND	0.50	09/08/14 20:35	
Thallium	mg/kg	ND	1.0	09/08/14 20:35	
Zinc	mg/kg	ND	1.0	09/08/14 20:35	

LABORATORY CONTROL SAMPLE: 1279614

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	50	48.2	96	80-120	
Arsenic	mg/kg	50	48.0	96	80-120	
Beryllium	mg/kg	50	50.2	100	80-120	
Cadmium	mg/kg	50	48.9	98	80-120	
Chromium	mg/kg	50	49.3	99	80-120	
Copper	mg/kg	50	48.4	97	80-120	
Lead	mg/kg	50	49.0	98	80-120	
Manganese	mg/kg	50	49.5	99	80-120	
Nickel	mg/kg	50	48.8	98	80-120	
Selenium	mg/kg	50	47.6	95	80-120	
Silver	mg/kg	25	24.1	96	80-120	
Thallium	mg/kg	50	47.6	95	80-120	
Zinc	mg/kg	50	48.7	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1279615 1279616

Parameter	Units	92216009002 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
			Spike Conc.	MS Result	MSD Spike Conc.	MSD Result					
Antimony	mg/kg	ND	48.1	47.2	46.0	44.9	96	95	75-125	2	
Arsenic	mg/kg	ND	48.1	47.2	46.4	44.8	96	94	75-125	4	
Beryllium	mg/kg	ND	48.1	47.2	47.9	46.6	100	99	75-125	3	

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

Parameter	Units	1279615		1279616		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		92216009002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Cadmium	mg/kg	ND	48.1	47.2	46.5	45.6	97	97	75-125	2		
Chromium	mg/kg	ND	48.1	47.2	47.3	45.9	98	97	75-125	3		
Copper	mg/kg	0.51	48.1	47.2	47.0	45.8	97	96	75-125	3		
Lead	mg/kg	ND	48.1	47.2	47.1	45.8	98	97	75-125	3		
Manganese	mg/kg	ND	48.1	47.2	47.6	46.3	98	98	75-125	3		
Nickel	mg/kg	0.56	48.1	47.2	47.3	45.8	97	96	75-125	3		
Selenium	mg/kg	ND	48.1	47.2	46.1	44.5	95	94	75-125	3		
Silver	mg/kg	ND	24	23.6	23.0	22.4	96	95	75-125	3		
Thallium	mg/kg	ND	48.1	47.2	36.5	35.3	76	75	75-125	3		
Zinc	mg/kg	1.9	48.1	47.2	48.0	46.7	96	95	75-125	3		

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

QC Batch:	MSV/28280	Analysis Method:	EPA 8260
QC Batch Method:	EPA 8260	Analysis Description:	8260 MSV 5035A Volatile Organics
Associated Lab Samples:	92216153005		

METHOD BLANK: 1282337 Matrix: Solid

Associated Lab Samples: 92216153005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.9	09/10/14 15:41	
1,1,1-Trichloroethane	ug/kg	ND	5.9	09/10/14 15:41	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.9	09/10/14 15:41	
1,1,2-Trichloroethane	ug/kg	ND	5.9	09/10/14 15:41	
1,1-Dichloroethane	ug/kg	ND	5.9	09/10/14 15:41	
1,1-Dichloroethene	ug/kg	ND	5.9	09/10/14 15:41	
1,1-Dichloropropene	ug/kg	ND	5.9	09/10/14 15:41	
1,2,3-Trichlorobenzene	ug/kg	ND	5.9	09/10/14 15:41	
1,2,3-Trichloropropane	ug/kg	ND	5.9	09/10/14 15:41	
1,2,4-Trichlorobenzene	ug/kg	ND	5.9	09/10/14 15:41	
1,2,4-Trimethylbenzene	ug/kg	ND	5.9	09/10/14 15:41	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.9	09/10/14 15:41	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.9	09/10/14 15:41	
1,2-Dichlorobenzene	ug/kg	ND	5.9	09/10/14 15:41	
1,2-Dichloroethane	ug/kg	ND	5.9	09/10/14 15:41	
1,2-Dichloropropane	ug/kg	ND	5.9	09/10/14 15:41	
1,3,5-Trimethylbenzene	ug/kg	ND	5.9	09/10/14 15:41	
1,3-Dichlorobenzene	ug/kg	ND	5.9	09/10/14 15:41	
1,3-Dichloropropane	ug/kg	ND	5.9	09/10/14 15:41	
1,4-Dichlorobenzene	ug/kg	ND	5.9	09/10/14 15:41	
2,2-Dichloropropane	ug/kg	ND	5.9	09/10/14 15:41	
2-Butanone (MEK)	ug/kg	ND	118	09/10/14 15:41	
2-Chlorotoluene	ug/kg	ND	5.9	09/10/14 15:41	
2-Hexanone	ug/kg	ND	58.8	09/10/14 15:41	
4-Chlorotoluene	ug/kg	ND	5.9	09/10/14 15:41	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	58.8	09/10/14 15:41	
Acetone	ug/kg	ND	118	09/10/14 15:41	
Benzene	ug/kg	ND	5.9	09/10/14 15:41	
Bromobenzene	ug/kg	ND	5.9	09/10/14 15:41	
Bromochloromethane	ug/kg	ND	5.9	09/10/14 15:41	
Bromodichloromethane	ug/kg	ND	5.9	09/10/14 15:41	
Bromoform	ug/kg	ND	5.9	09/10/14 15:41	
Bromomethane	ug/kg	ND	11.8	09/10/14 15:41	
Carbon tetrachloride	ug/kg	ND	5.9	09/10/14 15:41	
Chlorobenzene	ug/kg	ND	5.9	09/10/14 15:41	
Chloroethane	ug/kg	ND	11.8	09/10/14 15:41	
Chloroform	ug/kg	ND	5.9	09/10/14 15:41	
Chloromethane	ug/kg	ND	11.8	09/10/14 15:41	
cis-1,2-Dichloroethene	ug/kg	ND	5.9	09/10/14 15:41	
cis-1,3-Dichloropropene	ug/kg	ND	5.9	09/10/14 15:41	
Dibromochloromethane	ug/kg	ND	5.9	09/10/14 15:41	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

METHOD BLANK: 1282337

Matrix: Solid

Associated Lab Samples: 92216153005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dibromomethane	ug/kg	ND	5.9	09/10/14 15:41	
Dichlorodifluoromethane	ug/kg	ND	11.8	09/10/14 15:41	
Diisopropyl ether	ug/kg	ND	5.9	09/10/14 15:41	
Ethylbenzene	ug/kg	ND	5.9	09/10/14 15:41	
Hexachloro-1,3-butadiene	ug/kg	ND	5.9	09/10/14 15:41	
Isopropylbenzene (Cumene)	ug/kg	ND	5.9	09/10/14 15:41	
m&p-Xylene	ug/kg	ND	11.8	09/10/14 15:41	
Methyl-tert-butyl ether	ug/kg	ND	5.9	09/10/14 15:41	
Methylene Chloride	ug/kg	ND	23.5	09/10/14 15:41	
n-Butylbenzene	ug/kg	ND	5.9	09/10/14 15:41	
n-Propylbenzene	ug/kg	ND	5.9	09/10/14 15:41	
Naphthalene	ug/kg	ND	5.9	09/10/14 15:41	
o-Xylene	ug/kg	ND	5.9	09/10/14 15:41	
p-Isopropyltoluene	ug/kg	ND	5.9	09/10/14 15:41	
sec-Butylbenzene	ug/kg	ND	5.9	09/10/14 15:41	
Styrene	ug/kg	ND	5.9	09/10/14 15:41	
tert-Butylbenzene	ug/kg	ND	5.9	09/10/14 15:41	
Tetrachloroethene	ug/kg	ND	5.9	09/10/14 15:41	
Toluene	ug/kg	ND	5.9	09/10/14 15:41	
trans-1,2-Dichloroethene	ug/kg	ND	5.9	09/10/14 15:41	
trans-1,3-Dichloropropene	ug/kg	ND	5.9	09/10/14 15:41	
Trichloroethene	ug/kg	ND	5.9	09/10/14 15:41	
Trichlorofluoromethane	ug/kg	ND	5.9	09/10/14 15:41	
Vinyl acetate	ug/kg	ND	58.8	09/10/14 15:41	
Vinyl chloride	ug/kg	ND	11.8	09/10/14 15:41	
Xylene (Total)	ug/kg	ND	11.8	09/10/14 15:41	
1,2-Dichloroethane-d4 (S)	%	109	70-132	09/10/14 15:41	
4-Bromofluorobenzene (S)	%	88	70-130	09/10/14 15:41	
Toluene-d8 (S)	%	103	70-130	09/10/14 15:41	

LABORATORY CONTROL SAMPLE: 1282338

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	56.7	52.0	92	74-137	
1,1,1-Trichloroethane	ug/kg	56.7	56.2	99	67-140	
1,1,2,2-Tetrachloroethane	ug/kg	56.7	43.2	76	72-141	F3
1,1,2-Trichloroethane	ug/kg	56.7	51.7	91	78-138	
1,1-Dichloroethane	ug/kg	56.7	55.7	98	69-134	
1,1-Dichloroethene	ug/kg	56.7	52.8	93	67-138	
1,1-Dichloropropene	ug/kg	56.7	55.9	99	69-139	
1,2,3-Trichlorobenzene	ug/kg	56.7	51.4	91	70-146	
1,2,3-Trichloropropane	ug/kg	56.7	47.8	84	69-144	
1,2,4-Trichlorobenzene	ug/kg	56.7	51.2	90	68-148	
1,2,4-Trimethylbenzene	ug/kg	56.7	77.5	137	74-137	

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

LABORATORY CONTROL SAMPLE: 1282338

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dibromo-3-chloropropane	ug/kg	56.7	48.0	85	65-140	
1,2-Dibromoethane (EDB)	ug/kg	56.7	49.9	88	77-135	
1,2-Dichlorobenzene	ug/kg	56.7	52.8	93	77-141	
1,2-Dichloroethane	ug/kg	56.7	53.6	94	65-137	
1,2-Dichloropropane	ug/kg	56.7	56.2	99	72-136	
1,3,5-Trimethylbenzene	ug/kg	56.7	64.3	113	76-133	
1,3-Dichlorobenzene	ug/kg	56.7	52.5	93	74-138	
1,3-Dichloropropane	ug/kg	56.7	51.5	91	71-139	
1,4-Dichlorobenzene	ug/kg	56.7	60.8	107	76-138	
2,2-Dichloropropane	ug/kg	56.7	57.3	101	68-137	
2-Butanone (MEK)	ug/kg	113	108J	95	58-147	
2-Chlorotoluene	ug/kg	56.7	62.9	111	73-139	
2-Hexanone	ug/kg	113	94.7	84	62-145	
4-Chlorotoluene	ug/kg	56.7	65.1	115	76-141	
4-Methyl-2-pentanone (MIBK)	ug/kg	113	96.1	85	64-149	
Acetone	ug/kg	113	81.4J	72	53-153	
Benzene	ug/kg	56.7	53.7	95	73-135	
Bromobenzene	ug/kg	56.7	59.0	104	75-133	
Bromochloromethane	ug/kg	56.7	52.6	93	73-134	
Bromodichloromethane	ug/kg	56.7	58.4	103	71-135	
Bromoform	ug/kg	56.7	51.2	90	66-141	
Bromomethane	ug/kg	56.7	65.2	115	53-160	
Carbon tetrachloride	ug/kg	56.7	54.4	96	60-145	
Chlorobenzene	ug/kg	56.7	58.0	102	78-130	
Chloroethane	ug/kg	56.7	54.2	96	64-149	
Chloroform	ug/kg	56.7	61.9	109	70-134	
Chloromethane	ug/kg	56.7	66.3	117	52-150	
cis-1,2-Dichloroethene	ug/kg	56.7	59.4	105	70-133	
cis-1,3-Dichloropropene	ug/kg	56.7	53.4	94	68-134	
Dibromochloromethane	ug/kg	56.7	57.2	101	71-138	
Dibromomethane	ug/kg	56.7	54.9	97	74-130	
Dichlorodifluoromethane	ug/kg	56.7	62.2	110	40-160	
Diisopropyl ether	ug/kg	56.7	51.6	91	69-141	
Ethylbenzene	ug/kg	56.7	62.7	111	75-133	
Hexachloro-1,3-butadiene	ug/kg	56.7	52.9	93	68-143	
Isopropylbenzene (Cumene)	ug/kg	56.7	63.2	112	76-143	
m&p-Xylene	ug/kg	113	119	105	75-136	
Methyl-tert-butyl ether	ug/kg	56.7	45.2	80	68-144	
Methylene Chloride	ug/kg	56.7	51.5	91	45-154	
n-Butylbenzene	ug/kg	56.7	68.3	120	72-137	
n-Propylbenzene	ug/kg	56.7	61.3	108	76-136	
Naphthalene	ug/kg	56.7	49.9	88	68-151	
o-Xylene	ug/kg	56.7	52.9	93	76-141	
p-Isopropyltoluene	ug/kg	56.7	52.9	93	76-140	
sec-Butylbenzene	ug/kg	56.7	60.6	107	79-139	
Styrene	ug/kg	56.7	55.3	98	79-137	
tert-Butylbenzene	ug/kg	56.7	62.0	109	74-143	

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

LABORATORY CONTROL SAMPLE: 1282338

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tetrachloroethene	ug/kg	56.7	52.2	92	71-138	
Toluene	ug/kg	56.7	53.8	95	74-131	
trans-1,2-Dichloroethene	ug/kg	56.7	53.8	95	67-135	
trans-1,3-Dichloropropene	ug/kg	56.7	53.1	94	65-146	
Trichloroethene	ug/kg	56.7	55.9	99	67-135	F3
Trichlorofluoromethane	ug/kg	56.7	52.9	93	59-144	
Vinyl acetate	ug/kg	113	58.2	51	40-160	F3
Vinyl chloride	ug/kg	56.7	56.9	100	56-141	
Xylene (Total)	ug/kg	170	172	101	76-137	
1,2-Dichloroethane-d4 (S)	%			100	70-132	
4-Bromofluorobenzene (S)	%			94	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE SAMPLE: 1283035

Parameter	Units	92215518010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	19.3	19.5	101	70-130	
1,1,1-Trichloroethane	ug/kg	ND	19.3	20.5	106	70-130	
1,1,2,2-Tetrachloroethane	ug/kg	ND	19.3	18.8	97	70-130	
1,1,2-Trichloroethane	ug/kg	ND	19.3	18.7	96	70-130	
1,1-Dichloroethane	ug/kg	ND	19.3	21.3	110	70-130	
1,1-Dichloroethene	ug/kg	ND	19.3	20.5	106	49-180	
1,1-Dichloropropene	ug/kg	ND	19.3	21.2	110	70-130	
1,2,3-Trichlorobenzene	ug/kg	ND	19.3	20.2	105	70-130	
1,2,3-Trichloropropane	ug/kg	ND	19.3	20.1	104	70-130	
1,2,4-Trichlorobenzene	ug/kg	ND	19.3	19.5	101	70-130	
1,2,4-Trimethylbenzene	ug/kg	ND	19.3	21.5	111	70-130	
1,2-Dibromo-3-chloropropane	ug/kg	ND	19.3	18.0	93	70-130	
1,2-Dibromoethane (EDB)	ug/kg	ND	19.3	20.0	103	70-130	
1,2-Dichlorobenzene	ug/kg	ND	19.3	19.7	102	70-130	
1,2-Dichloroethane	ug/kg	ND	19.3	20.7	107	70-130	
1,2-Dichloropropane	ug/kg	ND	19.3	20.4	105	70-130	
1,3,5-Trimethylbenzene	ug/kg	ND	19.3	20.9	108	70-130	
1,3-Dichlorobenzene	ug/kg	ND	19.3	20.1	104	70-130	
1,3-Dichloropropane	ug/kg	ND	19.3	20.5	106	70-130	
1,4-Dichlorobenzene	ug/kg	ND	19.3	20.0	103	70-130	
2,2-Dichloropropane	ug/kg	ND	19.3	21.0	108	70-130	
2-Butanone (MEK)	ug/kg	ND	38.6	41J	106	70-130	
2-Chlorotoluene	ug/kg	ND	19.3	20.7	107	70-130	
2-Hexanone	ug/kg	ND	38.6	37.4J	97	70-130	
4-Chlorotoluene	ug/kg	ND	19.3	21.2	109	70-130	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	38.6	37.3J	96	70-130	
Acetone	ug/kg	ND	38.6	28J	72	70-130	
Benzene	ug/kg	ND	19.3	20.2	105	50-166	
Bromobenzene	ug/kg	ND	19.3	21.5	111	70-130	

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

MATRIX SPIKE SAMPLE: 1283035		92215518010	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Bromochloromethane	ug/kg	ND	19.3	20.0	104	70-130	
Bromodichloromethane	ug/kg	ND	19.3	21.7	112	70-130	
Bromoform	ug/kg	ND	19.3	19.8	102	70-130	
Bromomethane	ug/kg	ND	19.3	21.7	112	70-130	
Carbon tetrachloride	ug/kg	ND	19.3	20.0	103	70-130	
Chlorobenzene	ug/kg	ND	19.3	19.5	101	43-169	
Chloroethane	ug/kg	ND	19.3	20.8	108	70-130	
Chloroform	ug/kg	ND	19.3	23.1	119	70-130	
Chloromethane	ug/kg	ND	19.3	24.3	126	70-130	
cis-1,2-Dichloroethene	ug/kg	ND	19.3	22.6	117	70-130	
cis-1,3-Dichloropropene	ug/kg	ND	19.3	19.8	103	70-130	
Dibromochloromethane	ug/kg	ND	19.3	21.9	113	70-130	
Dibromomethane	ug/kg	ND	19.3	20.7	107	70-130	
Dichlorodifluoromethane	ug/kg	ND	19.3	21.3	110	70-130	
Diisopropyl ether	ug/kg	ND	19.3	19.3	100	70-130	
Ethylbenzene	ug/kg	ND	19.3	20.4	105	70-130	
Hexachloro-1,3-butadiene	ug/kg	ND	19.3	19.4	100	70-130	
Isopropylbenzene (Cumene)	ug/kg	ND	19.3	20.3	105	70-130	
m&p-Xylene	ug/kg	ND	38.6	43.1	111	70-130	
Methyl-tert-butyl ether	ug/kg	ND	19.3	18.0	93	70-130	
Methylene Chloride	ug/kg	ND	19.3	21.2	109	70-130	
n-Butylbenzene	ug/kg	ND	19.3	21.6	111	70-130	
n-Propylbenzene	ug/kg	ND	19.3	21.8	113	70-130	
Naphthalene	ug/kg	ND	19.3	19.7	102	70-130	
o-Xylene	ug/kg	ND	19.3	19.8	103	70-130	
p-Isopropyltoluene	ug/kg	ND	19.3	19.6	101	70-130	
sec-Butylbenzene	ug/kg	ND	19.3	21.5	111	70-130	
Styrene	ug/kg	ND	19.3	20.6	107	70-130	
tert-Butylbenzene	ug/kg	ND	19.3	19.2	99	70-130	
Tetrachloroethene	ug/kg	ND	19.3	20.1	104	70-130	
Toluene	ug/kg	ND	19.3	20.2	104	52-163	
trans-1,2-Dichloroethene	ug/kg	ND	19.3	20.2	104	70-130	
trans-1,3-Dichloropropene	ug/kg	ND	19.3	19.7	102	70-130	
Trichloroethene	ug/kg	ND	19.3	18.9	98	49-167	
Trichlorofluoromethane	ug/kg	ND	19.3	20.1	104	70-130	
Vinyl acetate	ug/kg	ND	38.6	39.7J	103	70-130	
Vinyl chloride	ug/kg	ND	19.3	22.0	114	70-130	
1,2-Dichloroethane-d4 (S)	%				101	70-132	
4-Bromofluorobenzene (S)	%				99	70-130	
Toluene-d8 (S)	%				102	70-130	

SAMPLE DUPLICATE: 1283036

Parameter	Units	92215518011 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

SAMPLE DUPLICATE: 1283036

Parameter	Units	92215518011 Result	Dup Result	RPD	Qualifiers
1,1,1-Trichloroethane	ug/kg	ND	ND		
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,2-Trichloroethane	ug/kg	ND	ND		
1,1-Dichloroethane	ug/kg	ND	ND		
1,1-Dichloroethene	ug/kg	ND	ND		
1,1-Dichloropropene	ug/kg	ND	ND		
1,2,3-Trichlorobenzene	ug/kg	ND	ND		
1,2,3-Trichloropropane	ug/kg	ND	ND		
1,2,4-Trichlorobenzene	ug/kg	ND	ND		
1,2,4-Trimethylbenzene	ug/kg	ND	ND		
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		
1,2-Dichlorobenzene	ug/kg	ND	ND		
1,2-Dichloroethane	ug/kg	ND	ND		
1,2-Dichloropropane	ug/kg	ND	ND		
1,3,5-Trimethylbenzene	ug/kg	ND	ND		
1,3-Dichlorobenzene	ug/kg	ND	ND		
1,3-Dichloropropane	ug/kg	ND	ND		
1,4-Dichlorobenzene	ug/kg	ND	ND		
2,2-Dichloropropane	ug/kg	ND	ND		
2-Butanone (MEK)	ug/kg	ND	ND		
2-Chlorotoluene	ug/kg	ND	ND		
2-Hexanone	ug/kg	ND	ND		
4-Chlorotoluene	ug/kg	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		
Acetone	ug/kg	ND	ND		
Benzene	ug/kg	ND	ND		
Bromobenzene	ug/kg	ND	ND		
Bromochloromethane	ug/kg	ND	ND		
Bromodichloromethane	ug/kg	ND	ND		
Bromoform	ug/kg	ND	ND		
Bromomethane	ug/kg	ND	ND		
Carbon tetrachloride	ug/kg	ND	ND		
Chlorobenzene	ug/kg	ND	ND		
Chloroethane	ug/kg	ND	ND		
Chloroform	ug/kg	ND	ND		
Chloromethane	ug/kg	ND	ND		
cis-1,2-Dichloroethene	ug/kg	ND	ND		
cis-1,3-Dichloropropene	ug/kg	ND	ND		
Dibromochloromethane	ug/kg	ND	ND		
Dibromomethane	ug/kg	ND	ND		
Dichlorodifluoromethane	ug/kg	ND	ND		
Diisopropyl ether	ug/kg	ND	ND		
Ethylbenzene	ug/kg	ND	ND		
Hexachloro-1,3-butadiene	ug/kg	ND	ND		
Isopropylbenzene (Cumene)	ug/kg	ND	ND		
m&p-Xylene	ug/kg	ND	ND		

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

SAMPLE DUPLICATE: 1283036

Parameter	Units	92215518011 Result	Dup Result	RPD	Qualifiers
Methyl-tert-butyl ether	ug/kg	ND	ND		
Methylene Chloride	ug/kg	ND	ND		
n-Butylbenzene	ug/kg	ND	ND		
n-Propylbenzene	ug/kg	ND	ND		
Naphthalene	ug/kg	ND	ND		
o-Xylene	ug/kg	ND	ND		
p-Isopropyltoluene	ug/kg	ND	ND		
sec-Butylbenzene	ug/kg	ND	ND		
Styrene	ug/kg	ND	ND		
tert-Butylbenzene	ug/kg	ND	ND		
Tetrachloroethene	ug/kg	ND	ND		
Toluene	ug/kg	ND	ND		
trans-1,2-Dichloroethene	ug/kg	ND	ND		
trans-1,3-Dichloropropene	ug/kg	ND	ND		
Trichloroethene	ug/kg	ND	ND		
Trichlorofluoromethane	ug/kg	ND	ND		
Vinyl acetate	ug/kg	ND	ND		
Vinyl chloride	ug/kg	ND	ND		
Xylene (Total)	ug/kg	ND	ND		
1,2-Dichloroethane-d4 (S)	%	108	111	2	
4-Bromofluorobenzene (S)	%	92	93	4	
Toluene-d8 (S)	%	102	100	7	

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

QC Batch: OEXT/29777 Analysis Method: EPA 8015 Modified

QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV

Associated Lab Samples: 92216153001, 92216153002, 92216153003, 92216153004, 92216153005

METHOD BLANK: 1279312 Matrix: Solid

Associated Lab Samples: 92216153001, 92216153002, 92216153003, 92216153004, 92216153005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Range Organics(C10-C28)	mg/kg	ND	5.0	09/08/14 10:45	
n-Pentacosane (S)	%	73	41-119	09/08/14 10:45	

LABORATORY CONTROL SAMPLE: 1279313

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Range Organics(C10-C28)	mg/kg	66.7	43.4	65	49-113	
n-Pentacosane (S)	%			64	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1279314 1279315

Parameter	Units	92215985002		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	% Rec	% Rec				
Diesel Range Organics(C10-C28)	mg/kg	13500	78.9	78.9	10500	8630	-3883	-6224	10-146	19	M3	
n-Pentacosane (S)	%						143	139	41-119			S5

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

QC Batch: OEXT/29773

Analysis Method: EPA 8270

QC Batch Method: EPA 3546

Analysis Description: 8270 Solid MSSV Microwave

Associated Lab Samples: 92216153005

METHOD BLANK: 1279044

Matrix: Solid

Associated Lab Samples: 92216153005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	09/05/14 15:37	
1,2-Dichlorobenzene	ug/kg	ND	330	09/05/14 15:37	
1,3-Dichlorobenzene	ug/kg	ND	330	09/05/14 15:37	
1,4-Dichlorobenzene	ug/kg	ND	330	09/05/14 15:37	
1-Methylnaphthalene	ug/kg	ND	330	09/05/14 15:37	
2,4,5-Trichlorophenol	ug/kg	ND	330	09/05/14 15:37	
2,4,6-Trichlorophenol	ug/kg	ND	330	09/05/14 15:37	
2,4-Dichlorophenol	ug/kg	ND	330	09/05/14 15:37	
2,4-Dimethylphenol	ug/kg	ND	330	09/05/14 15:37	
2,4-Dinitrophenol	ug/kg	ND	1650	09/05/14 15:37	
2,4-Dinitrotoluene	ug/kg	ND	330	09/05/14 15:37	
2,6-Dinitrotoluene	ug/kg	ND	330	09/05/14 15:37	
2-Chloronaphthalene	ug/kg	ND	330	09/05/14 15:37	
2-Chlorophenol	ug/kg	ND	330	09/05/14 15:37	
2-Methylnaphthalene	ug/kg	ND	330	09/05/14 15:37	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	09/05/14 15:37	
2-Nitroaniline	ug/kg	ND	1650	09/05/14 15:37	
2-Nitrophenol	ug/kg	ND	330	09/05/14 15:37	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	330	09/05/14 15:37	
3,3'-Dichlorobenzidine	ug/kg	ND	1650	09/05/14 15:37	
3-Nitroaniline	ug/kg	ND	1650	09/05/14 15:37	
4,6-Dinitro-2-methylphenol	ug/kg	ND	660	09/05/14 15:37	
4-Bromophenylphenyl ether	ug/kg	ND	330	09/05/14 15:37	
4-Chloro-3-methylphenol	ug/kg	ND	660	09/05/14 15:37	
4-Chloroaniline	ug/kg	ND	1650	09/05/14 15:37	
4-Chlorophenylphenyl ether	ug/kg	ND	330	09/05/14 15:37	
4-Nitroaniline	ug/kg	ND	660	09/05/14 15:37	
4-Nitrophenol	ug/kg	ND	1650	09/05/14 15:37	
Acenaphthene	ug/kg	ND	330	09/05/14 15:37	
Acenaphthylene	ug/kg	ND	330	09/05/14 15:37	
Aniline	ug/kg	ND	330	09/05/14 15:37	
Anthracene	ug/kg	ND	330	09/05/14 15:37	
Benzo(a)anthracene	ug/kg	ND	330	09/05/14 15:37	
Benzo(a)pyrene	ug/kg	ND	330	09/05/14 15:37	
Benzo(b)fluoranthene	ug/kg	ND	330	09/05/14 15:37	
Benzo(g,h,i)perylene	ug/kg	ND	330	09/05/14 15:37	
Benzo(k)fluoranthene	ug/kg	ND	330	09/05/14 15:37	
Benzoic Acid	ug/kg	ND	1650	09/05/14 15:37	
Benzyl alcohol	ug/kg	ND	660	09/05/14 15:37	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	09/05/14 15:37	
bis(2-Chloroethyl) ether	ug/kg	ND	330	09/05/14 15:37	

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

METHOD BLANK: 1279044

Matrix: Solid

Associated Lab Samples: 92216153005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	09/05/14 15:37	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	09/05/14 15:37	
Butylbenzylphthalate	ug/kg	ND	330	09/05/14 15:37	
Chrysene	ug/kg	ND	330	09/05/14 15:37	
Di-n-butylphthalate	ug/kg	ND	330	09/05/14 15:37	
Di-n-octylphthalate	ug/kg	ND	330	09/05/14 15:37	
Dibenz(a,h)anthracene	ug/kg	ND	330	09/05/14 15:37	
Dibenzofuran	ug/kg	ND	330	09/05/14 15:37	
Diethylphthalate	ug/kg	ND	330	09/05/14 15:37	
Dimethylphthalate	ug/kg	ND	330	09/05/14 15:37	
Fluoranthene	ug/kg	ND	330	09/05/14 15:37	
Fluorene	ug/kg	ND	330	09/05/14 15:37	
Hexachloro-1,3-butadiene	ug/kg	ND	330	09/05/14 15:37	
Hexachlorobenzene	ug/kg	ND	330	09/05/14 15:37	
Hexachlorocyclopentadiene	ug/kg	ND	330	09/05/14 15:37	
Hexachloroethane	ug/kg	ND	330	09/05/14 15:37	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	09/05/14 15:37	
Isophorone	ug/kg	ND	330	09/05/14 15:37	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	09/05/14 15:37	
N-Nitrosodimethylamine	ug/kg	ND	330	09/05/14 15:37	
N-Nitrosodiphenylamine	ug/kg	ND	330	09/05/14 15:37	
Naphthalene	ug/kg	ND	330	09/05/14 15:37	
Nitrobenzene	ug/kg	ND	330	09/05/14 15:37	
Pentachlorophenol	ug/kg	ND	1650	09/05/14 15:37	
Phenanthrene	ug/kg	ND	330	09/05/14 15:37	
Phenol	ug/kg	ND	330	09/05/14 15:37	
Pyrene	ug/kg	ND	330	09/05/14 15:37	
2,4,6-Tribromophenol (S)	%	55	27-110	09/05/14 15:37	
2-Fluorobiphenyl (S)	%	57	30-110	09/05/14 15:37	
2-Fluorophenol (S)	%	53	13-110	09/05/14 15:37	
Nitrobenzene-d5 (S)	%	60	23-110	09/05/14 15:37	
Phenol-d6 (S)	%	58	22-110	09/05/14 15:37	
Terphenyl-d14 (S)	%	68	28-110	09/05/14 15:37	

LABORATORY CONTROL SAMPLE: 1279045

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	983	59	36-120	
1,2-Dichlorobenzene	ug/kg	1670	995	60	41-120	
1,3-Dichlorobenzene	ug/kg	1670	959	58	66-120	L2
1,4-Dichlorobenzene	ug/kg	1670	1000	60	42-120	
1-Methylnaphthalene	ug/kg	1670	1100	66	40-120	
2,4,5-Trichlorophenol	ug/kg	1670	1100	66	37-120	
2,4,6-Trichlorophenol	ug/kg	1670	1020	61	40-120	

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

LABORATORY CONTROL SAMPLE: 1279045

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dichlorophenol	ug/kg	1670	1110	66	33-120	
2,4-Dimethylphenol	ug/kg	1670	1200	72	36-120	
2,4-Dinitrophenol	ug/kg	8330	6490	78	22-121	
2,4-Dinitrotoluene	ug/kg	1670	1330	80	60-120	
2,6-Dinitrotoluene	ug/kg	1670	1240	74	54-120	
2-Chloronaphthalene	ug/kg	1670	1000	60	41-120	
2-Chlorophenol	ug/kg	1670	1150	69	39-120	
2-Methylnaphthalene	ug/kg	1670	1100	66	26-120	
2-Methylphenol(o-Cresol)	ug/kg	1670	1150	69	41-120	
2-Nitroaniline	ug/kg	3330	2810	84	45-120	
2-Nitrophenol	ug/kg	1670	1130	68	35-120	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1170	70	35-120	
3,3'-Dichlorobenzidine	ug/kg	3330	2390	72	16-125	
3-Nitroaniline	ug/kg	3330	2460	74	45-120	
4,6-Dinitro-2-methylphenol	ug/kg	3330	2500	75	46-120	
4-Bromophenylphenyl ether	ug/kg	1670	1030	62	36-120	
4-Chloro-3-methylphenol	ug/kg	3330	2620	79	37-120	
4-Chloroaniline	ug/kg	3330	2350	71	35-120	
4-Chlorophenylphenyl ether	ug/kg	1670	1150	69	30-120	
4-Nitroaniline	ug/kg	3330	2740	82	48-120	
4-Nitrophenol	ug/kg	8330	7210	87	43-120	
Acenaphthene	ug/kg	1670	1100	66	46-120	
Acenaphthylene	ug/kg	1670	1110	67	46-120	
Aniline	ug/kg	1670	1060	64	33-120	
Anthracene	ug/kg	1670	1090	65	63-120	
Benzo(a)anthracene	ug/kg	1670	1090	65	61-120	
Benzo(a)pyrene	ug/kg	1670	1080	65	59-120	
Benzo(b)fluoranthene	ug/kg	1670	1080	65	55-120	
Benzo(g,h,i)perylene	ug/kg	1670	1000	60	57-120	
Benzo(k)fluoranthene	ug/kg	1670	1070	64	56-120	
Benzoic Acid	ug/kg	8330	4170	50	13-120	
Benzyl alcohol	ug/kg	3330	2580	77	34-120	
bis(2-Chloroethoxy)methane	ug/kg	1670	1140	68	21-120	
bis(2-Chloroethyl) ether	ug/kg	1670	1110	67	25-120	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1240	74	13-120	
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1310	79	56-123	
Butylbenzylphthalate	ug/kg	1670	1320	79	57-120	
Chrysene	ug/kg	1670	1090	65	64-120	
Di-n-butylphthalate	ug/kg	1670	1250	75	58-120	
Di-n-octylphthalate	ug/kg	1670	1320	79	47-121	
Dibenz(a,h)anthracene	ug/kg	1670	1040	63	56-120	
Dibenzofuran	ug/kg	1670	1220	73	43-120	
Diethylphthalate	ug/kg	1670	1310	79	55-120	
Dimethylphthalate	ug/kg	1670	1240	74	54-120	
Fluoranthene	ug/kg	1670	1170	70	61-120	
Fluorene	ug/kg	1670	1200	72	51-120	
Hexachloro-1,3-butadiene	ug/kg	1670	960	58	22-120	

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

LABORATORY CONTROL SAMPLE: 1279045

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Hexachlorobenzene	ug/kg	1670	976	59	53-120	
Hexachlorocyclopentadiene	ug/kg	1670	907	54	18-150	
Hexachloroethane	ug/kg	1670	1010	61	39-120	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	838	50	58-120	L2
Isophorone	ug/kg	1670	1230	74	38-120	
N-Nitroso-di-n-propylamine	ug/kg	1670	1310	79	30-120	
N-Nitrosodimethylamine	ug/kg	1670	1080	65	32-120	
N-Nitrosodiphenylamine	ug/kg	1670	1070	64	50-120	
Naphthalene	ug/kg	1670	1050	63	38-120	
Nitrobenzene	ug/kg	1670	1150	69	37-120	
Pentachlorophenol	ug/kg	3330	2010	60	10-120	
Phenanthrene	ug/kg	1670	1070	64	62-120	
Phenol	ug/kg	1670	1280	77	37-120	
Pyrene	ug/kg	1670	1140	69	63-120	
2,4,6-Tribromophenol (S)	%			65	27-110	
2-Fluorobiphenyl (S)	%			60	30-110	
2-Fluorophenol (S)	%			65	13-110	
Nitrobenzene-d5 (S)	%			66	23-110	
Phenol-d6 (S)	%			69	22-110	
Terphenyl-d14 (S)	%			68	28-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1279046 1279047

Parameter	Units	92216113001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
			Spike Conc.	Spike Conc.							
1,2,4-Trichlorobenzene	ug/kg	ND	1880	1880	1350	1200	72	64	18-119	12	
1,2-Dichlorobenzene	ug/kg	ND	1880	1880	1270	1190	68	64	50-110	6	
1,3-Dichlorobenzene	ug/kg	ND	1880	1880	1230	1130	66	60	27-110	9	
1,4-Dichlorobenzene	ug/kg	ND	1880	1880	1280	1180	68	63	28-110	8	
1-Methylnaphthalene	ug/kg	ND	1880	1880	1400	1340	75	72	24-116	4	
2,4,5-Trichlorophenol	ug/kg	ND	1880	1880	1490	1350	79	72	28-110	10	
2,4,6-Trichlorophenol	ug/kg	ND	1880	1880	1410	1260	75	67	17-117	11	
2,4-Dichlorophenol	ug/kg	ND	1880	1880	1490	1380	79	73	21-128	8	
2,4-Dimethylphenol	ug/kg	ND	1880	1880	1500	1470	80	78	10-120	2	
2,4-Dinitrophenol	ug/kg	ND	9380	9380	8920	7890	95	84	10-107	12	
2,4-Dinitrotoluene	ug/kg	ND	1880	1880	1820	1650	97	88	36-109	10	
2,6-Dinitrotoluene	ug/kg	ND	1880	1880	1700	1520	91	81	32-110	11	
2-Chloronaphthalene	ug/kg	ND	1880	1880	1370	1220	73	65	30-107	12	
2-Chlorophenol	ug/kg	ND	1880	1880	1440	1400	77	74	14-106	3	
2-Methylnaphthalene	ug/kg	ND	1880	1880	1410	1350	75	72	10-135	4	
2-Methylphenol(o-Cresol)	ug/kg	ND	1880	1880	1390	1430	74	76	10-124	2	
2-Nitroaniline	ug/kg	ND	3750	3750	3730	3380	99	90	26-116	10	
2-Nitrophenol	ug/kg	ND	1880	1880	1510	1340	80	72	28-103	12	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	1880	1880	1360	1460	72	78	10-109	7	

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1279046 1279047												
Parameter	Units	92216113001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Limits	RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec				
3,3'-Dichlorobenzidine	ug/kg	ND	3750	3750	3390	3030	90	81	10-150	11		
3-Nitroaniline	ug/kg	ND	3750	3750	3140	2920	84	78	22-110	7		
4,6-Dinitro-2-methylphenol	ug/kg	ND	3750	3750	3650	3140	97	84	13-121	15		
4-Bromophenylphenyl ether	ug/kg	ND	1880	1880	1460	1260	78	67	31-109	15		
4-Chloro-3-methylphenol	ug/kg	ND	3750	3750	3340	3270	89	87	13-128	2		
4-Chloroaniline	ug/kg	ND	3750	3750	2910	2860	78	76	18-102	2		
4-Chlorophenylphenyl ether	ug/kg	ND	1880	1880	1550	1390	83	74	29-112	11		
4-Nitroaniline	ug/kg	ND	3750	3750	3620	3360	97	89	16-111	8		
4-Nitrophenol	ug/kg	ND	9380	9380	9910	8800	106	94	14-135	12		
Acenaphthene	ug/kg	ND	1880	1880	1480	1310	79	70	26-114	12		
Acenaphthylene	ug/kg	ND	1880	1880	1500	1310	80	70	32-108	13		
Aniline	ug/kg	ND	1880	1880	950	975	51	52	10-107	3		
Anthracene	ug/kg	ND	1880	1880	1520	1320	81	70	32-111	14		
Benzo(a)anthracene	ug/kg	ND	1880	1880	1470	1310	78	70	25-117	12		
Benzo(a)pyrene	ug/kg	ND	1880	1880	1420	1240	76	66	25-106	13		
Benzo(b)fluoranthene	ug/kg	ND	1880	1880	1370	1260	73	67	24-110	8		
Benzo(g,h,i)perylene	ug/kg	ND	1880	1880	1380	1160	74	62	19-112	17		
Benzo(k)fluoranthene	ug/kg	ND	1880	1880	1410	1210	75	65	24-114	15		
Benzoic Acid	ug/kg	ND	9380	9380	4290	4180	46	45	10-110	3		
Benzyl alcohol	ug/kg	ND	3750	3750	3030	3200	81	85	24-106	5		
bis(2-Chloroethoxy)methane	ug/kg	ND	1880	1880	1500	1380	80	73	13-119	8		
bis(2-Chloroethyl) ether	ug/kg	ND	1880	1880	1370	1360	73	73	10-134	1		
bis(2-Chloroisopropyl) ether	ug/kg	ND	1880	1880	1530	1500	82	80	10-113	2		
bis(2-Ethylhexyl)phthalate	ug/kg	ND	1880	1880	1700	1480	90	79	10-125	14		
Butylbenzylphthalate	ug/kg	ND	1880	1880	1710	1540	91	82	18-110	10		
Chrysene	ug/kg	ND	1880	1880	1470	1290	79	69	30-110	13		
Di-n-butylphthalate	ug/kg	ND	1880	1880	1730	1460	92	78	19-112	17		
Di-n-octylphthalate	ug/kg	ND	1880	1880	1740	1430	93	76	17-105	20		
Dibenz(a,h)anthracene	ug/kg	ND	1880	1880	1430	1200	76	64	23-111	17		
Dibenzofuran	ug/kg	ND	1880	1880	1640	1470	88	79	35-103	11		
Diethylphthalate	ug/kg	ND	1880	1880	1810	1610	97	86	27-113	12		
Dimethylphthalate	ug/kg	ND	1880	1880	1730	1560	92	83	26-111	10		
Fluoranthene	ug/kg	ND	1880	1880	1680	1390	89	74	33-109	19		
Fluorene	ug/kg	ND	1880	1880	1600	1430	85	76	32-113	11		
Hexachloro-1,3-butadiene	ug/kg	ND	1880	1880	1320	1150	70	61	16-116	14		
Hexachlorobenzene	ug/kg	ND	1880	1880	1340	1140	71	61	27-120	16		
Hexachlorocyclopentadiene	ug/kg	ND	1880	1880	1340	1030	71	55	10-108	26		
Hexachloroethane	ug/kg	ND	1880	1880	1290	1200	69	64	10-117	8		
Indeno(1,2,3-cd)pyrene	ug/kg	ND	1880	1880	1140	974	61	52	10-122	16		
Isophorone	ug/kg	ND	1880	1880	1530	1500	82	80	28-114	2		
N-Nitroso-di-n-propylamine	ug/kg	ND	1880	1880	1510	1620	80	86	27-113	7		
N-Nitrosodimethylamine	ug/kg	ND	1880	1880	1370	1200	73	64	10-109	14		
N-Nitrosodiphenylamine	ug/kg	ND	1880	1880	1490	1320	79	70	10-128	12		
Naphthalene	ug/kg	ND	1880	1880	1420	1280	76	68	25-110	10		
Nitrobenzene	ug/kg	ND	1880	1880	1550	1390	82	74	18-114	11		
Pentachlorophenol	ug/kg	ND	3750	3750	3030	2500	81	67	10-122	19		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WBS #49999.1 STR8 Row-501 30

Pace Project No.: 92216153

Parameter	Units	1279046		1279047		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		92216113001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Phenanthrene	ug/kg	ND	1880	1880	1480	1290	79	69	30-114	14		
Phenol	ug/kg	ND	1880	1880	1550	1540	83	82	11-102	1		
Pyrene	ug/kg	ND	1880	1880	1450	1350	77	72	25-116	7		
2,4,6-Tribromophenol (S)	%						79	70	27-110			
2-Fluorobiphenyl (S)	%						72	63	30-110			
2-Fluorophenol (S)	%						73	67	13-110			
Nitrobenzene-d5 (S)	%						77	69	23-110			
Phenol-d6 (S)	%						73	73	22-110			
Terphenyl-d14 (S)	%						78	74	28-110			

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: WBS #49999.1 STR8 Row-501 30
Pace Project No.: 92216153

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.

PQL - Practical Quantitation 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-A Pace Analytical Services - Asheville

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

F3 The recovery of the second source standard used to verify the initial calibration curve for this analyte is outside the laboratory's control limits. The result is estimated.

L2 Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M3 Matrix spike recovery was outside laboratory control limits due to matrix interferences.

S4 Surrogate recovery not evaluated against control limits due to sample dilution.

S5 Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).

REPORT OF LABORATORY ANALYSIS

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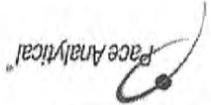
QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WBS #49999.1 STR8 Row-501 30
Pace Project No.: 92216153

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92216153001	30-1 (4-6')	EPA 3546	OEXT/29777	EPA 8015 Modified	GCSV/18800
92216153002	30-2 (0-2')	EPA 3546	OEXT/29777	EPA 8015 Modified	GCSV/18800
92216153003	30-3 (10-12')	EPA 3546	OEXT/29777	EPA 8015 Modified	GCSV/18800
92216153004	30-4 (4-6')	EPA 3546	OEXT/29777	EPA 8015 Modified	GCSV/18800
92216153005	30-5 (0-2')	EPA 3546	OEXT/29777	EPA 8015 Modified	GCSV/18800
92216153001	30-1 (4-6')	EPA 5035A/5030B	GCV/8515	EPA 8015 Modified	GCV/8517
92216153002	30-2 (0-2')	EPA 5035A/5030B	GCV/8515	EPA 8015 Modified	GCV/8517
92216153003	30-3 (10-12')	EPA 5035A/5030B	GCV/8515	EPA 8015 Modified	GCV/8517
92216153004	30-4 (4-6')	EPA 5035A/5030B	GCV/8515	EPA 8015 Modified	GCV/8517
92216153005	30-5 (0-2')	EPA 5035A/5030B	GCV/8515	EPA 8015 Modified	GCV/8517
92216153005	30-5 (0-2')	EPA 3050	MPRP/16833	EPA 6010	ICP/15188
92216153005	30-5 (0-2')	EPA 7471	MERP/7051	EPA 7471	MERC/6785
92216153005	30-5 (0-2')	EPA 3546	OEXT/29773	EPA 8270	MSSV/9620
92216153005	30-5 (0-2')	EPA 8260	MSV/28280		
92216153001	30-1 (4-6')	ASTM D2974-87	PMST/7001		
92216153002	30-2 (0-2')	ASTM D2974-87	PMST/7001		
92216153003	30-3 (10-12')	ASTM D2974-87	PMST/7001		
92216153004	30-4 (4-6')	ASTM D2974-87	PMST/7001		
92216153005	30-5 (0-2')	ASTM D2974-87	PMST/7001		

REPORT OF LABORATORY ANALYSIS

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Document Name: F-CHR-CS-003-rev.14	Document Number: F-CHR-CS-003-rev.14	Document Revised: April 07, 2014
Sample Condition Upon Receipt (SCUR)	Issuing Authority: Pace Huntersville Quality Office	Page 1 of 2

Client Name: Hart & Hickman

Courier: Fed Ex UPS USPS Client Commercial Pace Other

Custody Seal on Cooler/Box Present: yes no

Seals Intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used: IR Gun T1102 T1401 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: 4.8 °C Biological Tissue is Frozen: Yes No N/A

Date and Initials of person examining contents: amo 9/9/14

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

Client Notification/ Resolution:

Person Contacted:

Date/Time:

Field Data Required? Y / N

SCURF Review: jos

Date: 9/14/14

Date: 9/8/14

SRF Review:

MO#: 92216153



92216153

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)

September 12, 2014

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

RE: Project: WBS#49999.1 STR ROW-501 30
Pace Project No.: 92216318

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on September 05, 2014. 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: Kevin Slaughter, Hart & Hickman



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: WBS#49999.1 STR ROW-501 30

Pace Project No.: 92216318

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

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SAMPLE ANALYTE COUNT

Project: WBS#49999.1 STR ROW-501 30

Pace Project No.: 92216318

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92216318001	30-TW1	EPA 8260	GAW	63	PASI-C

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WBS#49999.1 STR ROW-501 30

Pace Project No.: 92216318

Sample: 30-TW1		Lab ID: 92216318001	Collected: 09/04/14 10:40	Received: 09/05/14 15:48	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		09/11/14 18:52	67-64-1	
Benzene	ND	ug/L	1.0	1		09/11/14 18:52	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		09/11/14 18:52	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		09/11/14 18:52	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		09/11/14 18:52	75-27-4	
Bromoform	ND	ug/L	1.0	1		09/11/14 18:52	75-25-2	
Bromomethane	ND	ug/L	2.0	1		09/11/14 18:52	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		09/11/14 18:52	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		09/11/14 18:52	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		09/11/14 18:52	108-90-7	
Chloroethane	ND	ug/L	1.0	1		09/11/14 18:52	75-00-3	
Chloroform	1.2	ug/L	1.0	1		09/11/14 18:52	67-66-3	
Chloromethane	ND	ug/L	1.0	1		09/11/14 18:52	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		09/11/14 18:52	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		09/11/14 18:52	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		09/11/14 18:52	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		09/11/14 18:52	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		09/11/14 18:52	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		09/11/14 18:52	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		09/11/14 18:52	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		09/11/14 18:52	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		09/11/14 18:52	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		09/11/14 18:52	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		09/11/14 18:52	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		09/11/14 18:52	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		09/11/14 18:52	75-35-4	
cis-1,2-Dichloroethene	12.2	ug/L	1.0	1		09/11/14 18:52	156-59-2	
trans-1,2-Dichloroethene	3.7	ug/L	1.0	1		09/11/14 18:52	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		09/11/14 18:52	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		09/11/14 18:52	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		09/11/14 18:52	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		09/11/14 18:52	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		09/11/14 18:52	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		09/11/14 18:52	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		09/11/14 18:52	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		09/11/14 18:52	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		09/11/14 18:52	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		09/11/14 18:52	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		09/11/14 18:52	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		09/11/14 18:52	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		09/11/14 18:52	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		09/11/14 18:52	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		09/11/14 18:52	91-20-3	
Styrene	ND	ug/L	1.0	1		09/11/14 18:52	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		09/11/14 18:52	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		09/11/14 18:52	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		09/11/14 18:52	127-18-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: WBS#49999.1 STR ROW-501 30

Pace Project No.: 92216318

Sample: 30-TW1		Lab ID: 92216318001	Collected: 09/04/14 10:40	Received: 09/05/14 15:48	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Toluene	ND	ug/L	1.0	1		09/11/14 18:52	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		09/11/14 18:52	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		09/11/14 18:52	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		09/11/14 18:52	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		09/11/14 18:52	79-00-5	
Trichloroethene	57.6	ug/L	1.0	1		09/11/14 18:52	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		09/11/14 18:52	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		09/11/14 18:52	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		09/11/14 18:52	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		09/11/14 18:52	75-01-4	
Xylene (Total)	ND	ug/L	2.0	1		09/11/14 18:52	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		09/11/14 18:52	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		09/11/14 18:52	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	100 %		70-130	1		09/11/14 18:52	460-00-4	
1,2-Dichloroethane-d4 (S)	99 %		70-130	1		09/11/14 18:52	17060-07-0	
Toluene-d8 (S)	99 %		70-130	1		09/11/14 18:52	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WBS#49999.1 STR ROW-501 30

Pace Project No.: 92216318

QC Batch:	MSV/28294	Analysis Method:	EPA 8260
QC Batch Method:	EPA 8260	Analysis Description:	8260 MSV Low Level
Associated Lab Samples:	92216318001		

METHOD BLANK: 1283333 Matrix: Water

Associated Lab Samples: 92216318001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	09/11/14 11:16	
1,1,1-Trichloroethane	ug/L	ND	1.0	09/11/14 11:16	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	09/11/14 11:16	
1,1,2-Trichloroethane	ug/L	ND	1.0	09/11/14 11:16	
1,1-Dichloroethane	ug/L	ND	1.0	09/11/14 11:16	
1,1-Dichloroethene	ug/L	ND	1.0	09/11/14 11:16	
1,1-Dichloropropene	ug/L	ND	1.0	09/11/14 11:16	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	09/11/14 11:16	
1,2,3-Trichloropropane	ug/L	ND	1.0	09/11/14 11:16	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	09/11/14 11:16	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	09/11/14 11:16	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	09/11/14 11:16	
1,2-Dichlorobenzene	ug/L	ND	1.0	09/11/14 11:16	
1,2-Dichloroethane	ug/L	ND	1.0	09/11/14 11:16	
1,2-Dichloropropane	ug/L	ND	1.0	09/11/14 11:16	
1,3-Dichlorobenzene	ug/L	ND	1.0	09/11/14 11:16	
1,3-Dichloropropane	ug/L	ND	1.0	09/11/14 11:16	
1,4-Dichlorobenzene	ug/L	ND	1.0	09/11/14 11:16	
2,2-Dichloropropane	ug/L	ND	1.0	09/11/14 11:16	
2-Butanone (MEK)	ug/L	ND	5.0	09/11/14 11:16	
2-Chlorotoluene	ug/L	ND	1.0	09/11/14 11:16	
2-Hexanone	ug/L	ND	5.0	09/11/14 11:16	
4-Chlorotoluene	ug/L	ND	1.0	09/11/14 11:16	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	09/11/14 11:16	
Acetone	ug/L	ND	25.0	09/11/14 11:16	
Benzene	ug/L	ND	1.0	09/11/14 11:16	
Bromobenzene	ug/L	ND	1.0	09/11/14 11:16	
Bromochloromethane	ug/L	ND	1.0	09/11/14 11:16	
Bromodichloromethane	ug/L	ND	1.0	09/11/14 11:16	
Bromoform	ug/L	ND	1.0	09/11/14 11:16	
Bromomethane	ug/L	ND	2.0	09/11/14 11:16	
Carbon tetrachloride	ug/L	ND	1.0	09/11/14 11:16	
Chlorobenzene	ug/L	ND	1.0	09/11/14 11:16	
Chloroethane	ug/L	ND	1.0	09/11/14 11:16	
Chloroform	ug/L	ND	1.0	09/11/14 11:16	
Chloromethane	ug/L	ND	1.0	09/11/14 11:16	
cis-1,2-Dichloroethene	ug/L	ND	1.0	09/11/14 11:16	
cis-1,3-Dichloropropene	ug/L	ND	1.0	09/11/14 11:16	
Dibromochloromethane	ug/L	ND	1.0	09/11/14 11:16	
Dibromomethane	ug/L	ND	1.0	09/11/14 11:16	
Dichlorodifluoromethane	ug/L	ND	1.0	09/11/14 11:16	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WBS#49999.1 STR ROW-501 30

Pace Project No.: 92216318

METHOD BLANK: 1283333

Matrix: Water

Associated Lab Samples: 92216318001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	09/11/14 11:16	
Ethylbenzene	ug/L	ND	1.0	09/11/14 11:16	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	09/11/14 11:16	
m&p-Xylene	ug/L	ND	2.0	09/11/14 11:16	
Methyl-tert-butyl ether	ug/L	ND	1.0	09/11/14 11:16	
Methylene Chloride	ug/L	ND	2.0	09/11/14 11:16	
Naphthalene	ug/L	ND	1.0	09/11/14 11:16	
o-Xylene	ug/L	ND	1.0	09/11/14 11:16	
p-Isopropyltoluene	ug/L	ND	1.0	09/11/14 11:16	
Styrene	ug/L	ND	1.0	09/11/14 11:16	
Tetrachloroethene	ug/L	ND	1.0	09/11/14 11:16	
Toluene	ug/L	ND	1.0	09/11/14 11:16	
trans-1,2-Dichloroethene	ug/L	ND	1.0	09/11/14 11:16	
trans-1,3-Dichloropropene	ug/L	ND	1.0	09/11/14 11:16	
Trichloroethene	ug/L	ND	1.0	09/11/14 11:16	
Trichlorofluoromethane	ug/L	ND	1.0	09/11/14 11:16	
Vinyl acetate	ug/L	ND	2.0	09/11/14 11:16	
Vinyl chloride	ug/L	ND	1.0	09/11/14 11:16	
Xylene (Total)	ug/L	ND	2.0	09/11/14 11:16	
1,2-Dichloroethane-d4 (S)	%	103	70-130	09/11/14 11:16	
4-Bromofluorobenzene (S)	%	101	70-130	09/11/14 11:16	
Toluene-d8 (S)	%	99	70-130	09/11/14 11:16	

LABORATORY CONTROL SAMPLE: 1283334

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	49.2	98	70-130	
1,1,1-Trichloroethane	ug/L	50	49.0	98	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	48.0	96	70-130	
1,1,2-Trichloroethane	ug/L	50	47.9	96	70-130	
1,1-Dichloroethane	ug/L	50	47.9	96	70-130	
1,1-Dichloroethene	ug/L	50	47.3	95	70-132	
1,1-Dichloropropene	ug/L	50	48.5	97	70-130	
1,2,3-Trichlorobenzene	ug/L	50	52.1	104	70-135	
1,2,3-Trichloropropane	ug/L	50	47.5	95	70-130	
1,2,4-Trichlorobenzene	ug/L	50	52.1	104	70-134	
1,2-Dibromo-3-chloropropane	ug/L	50	50.6	101	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	51.3	103	70-130	
1,2-Dichlorobenzene	ug/L	50	48.9	98	70-130	
1,2-Dichloroethane	ug/L	50	45.6	91	70-130	
1,2-Dichloropropane	ug/L	50	47.1	94	70-130	
1,3-Dichlorobenzene	ug/L	50	48.1	96	70-130	
1,3-Dichloropropane	ug/L	50	48.7	97	70-130	
1,4-Dichlorobenzene	ug/L	50	48.0	96	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WBS#49999.1 STR ROW-501 30

Pace Project No.: 92216318

LABORATORY CONTROL SAMPLE: 1283334

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	50.2	100	58-145	
2-Butanone (MEK)	ug/L	100	97.1	97	70-145	
2-Chlorotoluene	ug/L	50	47.1	94	70-130	
2-Hexanone	ug/L	100	101	101	70-144	
4-Chlorotoluene	ug/L	50	47.4	95	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	99.6	100	70-140	
Acetone	ug/L	100	76.1	76	50-175	
Benzene	ug/L	50	45.5	91	70-130	
Bromobenzene	ug/L	50	47.2	94	70-130	
Bromochloromethane	ug/L	50	48.9	98	70-130	
Bromodichloromethane	ug/L	50	44.4	89	70-130	
Bromoform	ug/L	50	44.0	88	70-130	
Bromomethane	ug/L	50	30.5	61	54-130	
Carbon tetrachloride	ug/L	50	49.0	98	70-132	
Chlorobenzene	ug/L	50	47.4	95	70-130	
Chloroethane	ug/L	50	39.7	79	64-134	
Chloroform	ug/L	50	44.4	89	70-130	
Chloromethane	ug/L	50	41.2	82	64-130	
cis-1,2-Dichloroethene	ug/L	50	47.2	94	70-131	
cis-1,3-Dichloropropene	ug/L	50	42.7	85	70-130	
Dibromochloromethane	ug/L	50	46.0	92	70-130	
Dibromomethane	ug/L	50	48.0	96	70-131	
Dichlorodifluoromethane	ug/L	50	57.1	114	56-130	
Diisopropyl ether	ug/L	50	48.1	96	70-130	
Ethylbenzene	ug/L	50	46.3	93	70-130	
Hexachloro-1,3-butadiene	ug/L	50	50.4	101	70-130	
m&p-Xylene	ug/L	100	93.0	93	70-130	
Methyl-tert-butyl ether	ug/L	50	49.4	99	70-130	
Methylene Chloride	ug/L	50	44.9	90	63-130	
Naphthalene	ug/L	50	54.7	109	70-138	
o-Xylene	ug/L	50	47.2	94	70-130	
p-Isopropyltoluene	ug/L	50	51.1	102	70-130	
Styrene	ug/L	50	50.6	101	70-130	
Tetrachloroethene	ug/L	50	50.2	100	70-130	
Toluene	ug/L	50	45.4	91	70-130	
trans-1,2-Dichloroethene	ug/L	50	46.8	94	70-130	
trans-1,3-Dichloropropene	ug/L	50	44.5	89	70-132	
Trichloroethene	ug/L	50	47.7	95	70-130	
Trichlorofluoromethane	ug/L	50	45.3	91	62-133	
Vinyl acetate	ug/L	100	90.6	91	66-157	
Vinyl chloride	ug/L	50	46.7	93	50-150	
Xylene (Total)	ug/L	150	140	94	70-130	
1,2-Dichloroethane-d4 (S)	%			96	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			99	70-130	

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QUALITY CONTROL DATA

Project: WBS#49999.1 STR ROW-501 30

Pace Project No.: 92216318

MATRIX SPIKE SAMPLE:	1283430	92216299001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20.2	101	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	21.2	106	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20.1	100	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	20.1	101	70-130	
1,1-Dichloroethane	ug/L	ND	20	21.4	107	70-130	
1,1-Dichloroethene	ug/L	ND	20	21.0	105	70-166	
1,1-Dichloropropene	ug/L	ND	20	20.6	103	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	20.7	103	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	20.0	100	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	20.5	102	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	18.2	91	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	21.2	106	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	20.8	104	70-130	
1,2-Dichloroethane	ug/L	ND	20	19.3	96	70-130	
1,2-Dichloropropane	ug/L	ND	20	20.3	101	70-130	
1,3-Dichlorobenzene	ug/L	ND	20	20.7	103	70-130	
1,3-Dichloropropane	ug/L	ND	20	20.7	103	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	20.7	103	70-130	
2,2-Dichloropropane	ug/L	ND	20	18.4	92	70-130	
2-Butanone (MEK)	ug/L	ND	40	34.2	86	70-130	
2-Chlorotoluene	ug/L	ND	20	20.8	104	70-130	
2-Hexanone	ug/L	ND	40	40.3	101	70-130	
4-Chlorotoluene	ug/L	ND	20	20.8	104	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	40.2	101	70-130	
Acetone	ug/L	ND	40	31.3	75	70-130	
Benzene	ug/L	ND	20	21.0	105	70-148	
Bromobenzene	ug/L	ND	20	20.1	101	70-130	
Bromochloromethane	ug/L	ND	20	21.0	105	70-130	
Bromodichloromethane	ug/L	ND	20	19.2	96	70-130	
Bromoform	ug/L	ND	20	18.0	90	70-130	
Bromomethane	ug/L	ND	20	11.0	55	70-130	M1
Carbon tetrachloride	ug/L	ND	20	21.4	107	70-130	
Chlorobenzene	ug/L	ND	20	21.2	106	70-146	
Chloroethane	ug/L	ND	20	20.9	105	70-130	
Chloroform	ug/L	ND	20	19.2	96	70-130	
Chloromethane	ug/L	ND	20	17.3	87	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	20.5	103	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	17.2	86	70-130	
Dibromochloromethane	ug/L	ND	20	19.5	98	70-130	
Dibromomethane	ug/L	ND	20	19.4	97	70-130	
Dichlorodifluoromethane	ug/L	ND	20	29.3	147	70-130	M1
Diisopropyl ether	ug/L	ND	20	19.6	98	70-130	
Ethylbenzene	ug/L	ND	20	21.1	105	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	19.5	97	70-130	
m&p-Xylene	ug/L	ND	40	43.2	108	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	19.0	95	70-130	
Methylene Chloride	ug/L	ND	20	18.5	92	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WBS#49999.1 STR ROW-501 30

Pace Project No.: 92216318

MATRIX SPIKE SAMPLE: 1283430		92216299001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Naphthalene	ug/L	ND	20	20.0	100	70-130	
o-Xylene	ug/L	ND	20	21.1	106	70-130	
p-Isopropyltoluene	ug/L	ND	20	21.8	109	70-130	
Styrene	ug/L	ND	20	20.3	102	70-130	
Tetrachloroethene	ug/L	ND	20	22.6	111	70-130	
Toluene	ug/L	ND	20	20.4	102	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	20.5	103	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	18.0	90	70-130	
Trichloroethene	ug/L	ND	20	20.4	102	69-151	
Trichlorofluoromethane	ug/L	ND	20	24.2	121	70-130	
Vinyl acetate	ug/L	ND	40	31.2	78	70-130	
Vinyl chloride	ug/L	ND	20	21.2	106	70-130	
1,2-Dichloroethane-d4 (S)	%				98	70-130	
4-Bromofluorobenzene (S)	%				101	70-130	
Toluene-d8 (S)	%				99	70-130	

SAMPLE DUPLICATE: 1283354

Parameter	Units	92216299002	Dup	RPD	Qualifiers
		Result	Result		
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		
1,1,2-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
1,1-Dichloropropene	ug/L	ND	ND		
1,2,3-Trichlorobenzene	ug/L	ND	ND		
1,2,3-Trichloropropane	ug/L	ND	ND		
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,2-Dichloroethane	ug/L	ND	ND		
1,2-Dichloropropane	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichloropropane	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
2,2-Dichloropropane	ug/L	ND	ND		
2-Butanone (MEK)	ug/L	ND	ND		
2-Chlorotoluene	ug/L	ND	ND		
2-Hexanone	ug/L	ND	ND		
4-Chlorotoluene	ug/L	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		
Acetone	ug/L	ND	ND		
Benzene	ug/L	1610	1630	1	

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QUALITY CONTROL DATA

Project: WBS#49999.1 STR ROW-501 30
Pace Project No.: 92216318

SAMPLE DUPLICATE: 1283354

Parameter	Units	92216299002 Result	Dup Result	RPD	Qualifiers
Bromobenzene	ug/L	ND	ND		
Bromochloromethane	ug/L	ND	ND		
Bromodichloromethane	ug/L	ND	ND		
Bromoform	ug/L	ND	ND		
Bromomethane	ug/L	ND	ND		
Carbon tetrachloride	ug/L	ND	ND		
Chlorobenzene	ug/L	ND	ND		
Chloroethane	ug/L	ND	ND		
Chloroform	ug/L	ND	ND		
Chloromethane	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
cis-1,3-Dichloropropene	ug/L	ND	ND		
Dibromochloromethane	ug/L	ND	ND		
Dibromomethane	ug/L	ND	ND		
Dichlorodifluoromethane	ug/L	ND	ND		
Diisopropyl ether	ug/L	ND	21.9J		
Ethylbenzene	ug/L	2030	2020	0	
Hexachloro-1,3-butadiene	ug/L	ND	ND		
m&p-Xylene	ug/L	5190	5230	1	
Methyl-tert-butyl ether	ug/L	ND	32.1J		
Methylene Chloride	ug/L	116	130	12	
Naphthalene	ug/L	446	467	5	
o-Xylene	ug/L	1950	1950	0	
p-Isopropyltoluene	ug/L	ND	ND		
Styrene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	4860	4920	1	
trans-1,2-Dichloroethene	ug/L	ND	ND		
trans-1,3-Dichloropropene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Trichlorofluoromethane	ug/L	ND	ND		
Vinyl acetate	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
Xylene (Total)	ug/L	7140	7180	1	
1,2-Dichloroethane-d4 (S)	%	99	99	0	
4-Bromofluorobenzene (S)	%	100	99	1	
Toluene-d8 (S)	%	98	99	1	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: WBS#49999.1 STR ROW-501 30
Pace Project No.: 92216318

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.

PQL - Practical Quantitation 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

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WBS#49999.1 STR ROW-501 30

Pace Project No.: 92216318

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92216318001	30-TW1	EPA 8260	MSV/28294		

REPORT OF LABORATORY ANALYSIS

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Document Name:
Sample Condition Upon Receipt (SCUR)

Document Revised: April 07, 2014
Page 1 of 2

Document Number:
F-CHR-CS-003-rev.14

Issuing Authority:
Pace Huntersville Quality Office

Client Name: Hart & Hickman

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

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

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used: IR Gun T1102 T1401 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.: 3.0 °C Biological Tissue is Frozen: Yes No N/A
Temp should be above freezing to 6°C

Optional
Proj. Due Date:
Proj. Name:

Date and Initials of person examining contents: CE 9/5/14

		Comments:
Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>Labels on bottles say 30-TW-4</u>
-Includes date/time/ID/Analysis Matrix:		
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

SCURF Review: JDB Date: 9/5/14
SRF Review: JJ Date: 9/8/14

WO# : 92216318



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)

Appendix F

Subsurface Investigation Permit and Well Abandonment Record



SUBSURFACE INVESTIGATION PERMIT

I. Well Owner Information

Name: NC DOT
Attn: Gordon Box
Phone #: 919-707-6859
Address 1: 1020 Birch Ridge Dr.
Address 2: _____
City: Raleigh State: NC Zip: 27610

II. Agent Information (if applicable)

Name: Hart & Hickman
Attn: David Graham
Phone #: 704-586-0007
Address 1: 2923 S. Tryon St Suite 100
Address 2: _____
City: Charlotte State: NC Zip: 28203

III. Site Information

Site Name: Charlotte Church
Parcel ID Number: 07326225
Address: 1200 S GRAHAM ST
City: CHARLOTTE State: NC Zip: 28203

General Conditions of This Permit:

- This permit shall be VALID for a period not to exceed twelve (12) months from the date of issuance.
- This permit is VALID for the site specified above and a representative must be on-site during the course of the investigation and made available to a Department representative upon request.
- A North Carolina Certified Well Contractor must perform any well contractor activities associated with this permit.
- All wells shall be constructed and abandoned to the standards of Chapter VI, Section V and Section VI of the Mecklenburg County Groundwater Well Regulations.
- All temporary wells, including those installed using Direct Push Technology, must be abandoned to the standards of Chapter VI, Section VI of the Mecklenburg County Groundwater Well Regulations.
- Registration information for all wells must be submitted to the Department within thirty (30) days of well completion. If water samples are collected, it is recommended that the well NOT be registered until the analytical results are received.

WELL ABANDONMENT RECORD

This form can be used for single or multiple wells

1. Well Contractor Information:

DANNY SUMMERS

Well Contractor Name (or well owner personally abandoning well on his/her property)

A - 2579

NC Well Contractor Certification Number

GEOLOGIC EXPLORATION, INC

Company Name

2. Well Construction Permit #:

List all applicable well construction permits (i.e. County, State, Variance, etc.) if known

3. Well use (check well use):

Water Supply Well:	
<input type="checkbox"/> Agricultural	<input type="checkbox"/> Municipal/Public
<input type="checkbox"/> Geothermal (Heating/Cooling Supply)	<input type="checkbox"/> Residential Water Supply (single)
<input type="checkbox"/> Industrial/Commercial	<input type="checkbox"/> Residential Water Supply (shared)
<input type="checkbox"/> Irrigation	
Non-Water Supply Well:	
<input checked="" type="checkbox"/> Monitoring	<input type="checkbox"/> Recovery
Injection Well:	
<input type="checkbox"/> Aquifer Recharge	<input type="checkbox"/> Groundwater Remediation
<input type="checkbox"/> Aquifer Storage and Recovery	<input type="checkbox"/> Salinity Barrier
<input type="checkbox"/> Aquifer Test	<input type="checkbox"/> Stormwater Drainage
<input type="checkbox"/> Experimental Technology	<input type="checkbox"/> Subsidence Control
<input type="checkbox"/> Geothermal (Closed Loop)	<input type="checkbox"/> Tracer
<input type="checkbox"/> Geothermal (Heating/Cooling Return)	<input type="checkbox"/> Other (explain under 7g)

4. Date well(s) abandoned: 09/03/14

5a. Well location:

CHARLOTTE CHURCH

Facility/Owner Name

Facility ID# (if applicable)

1200 SOUTH GRAHAM STREET CHARLOTTE 28203

Physical Address, City, and Zip

MECKLENBURG

County

Parcel Identification No. (PIN)

5b. Latitude and longitude in degrees/minutes/seconds or decimal degrees:

(if well field, one lat/long is sufficient)

35° 13' 22.03" N 80° 51' 26.65" W

CONSTRUCTION DETAILS OF WELLS BEING ABANDONED

Attach well construction record(s) if available. For multiple injection or non-water supply wells ONLY with the same construction/abandonment, you can submit one form.

6a. Well ID#: TW-1

6b. Total well depth: 40.0 (ft.)

6c. Borehole diameter: 1.0 (in.)

6d. Water level below ground surface: (ft.)

6e. Outer casing length (if known): (ft.)

6f. Inner casing/tubing length (if known): (ft.)

6g. Screen length (if known): (ft.)

For Internal Use ONLY:

WELL ABANDONMENT DETAILS

7a. Number of wells being abandoned: 1
For multiple injection or non-water supply wells ONLY with the same construction/abandonment, you can submit one form.

7b. Approximate volume of water remaining in well(s): (gal.)

FOR WATER SUPPLY WELLS ONLY:

7c. Type of disinfectant used:

7d. Amount of disinfectant used:

7e. Sealing materials used (check all that apply):

- | | |
|---|---|
| <input checked="" type="checkbox"/> Neat Cement Grout | <input type="checkbox"/> Bentonite Chips or Pellets |
| <input type="checkbox"/> Sand Cement Grout | <input type="checkbox"/> Dry Clay |
| <input type="checkbox"/> Concrete Grout | <input type="checkbox"/> Drill Cuttings |
| <input type="checkbox"/> Specialty Grout | <input type="checkbox"/> Gravel |
| <input type="checkbox"/> Bentonite Slurry | <input type="checkbox"/> Other (explain under 7g) |

7f. For each material selected above, provide a amount of materials used:

1.5 GALLONS

7g. Provide a brief description of the abandonment procedure:

WELL ABANDONED VIA TREMIE PIPE WITH
PORTLAND BENTONITE SLURRY

8. Certification:

Signature of Certified Well Contractor or Well Owner

Date

By signing this form, I hereby certify that the well(s) was (were) abandoned in accordance with 15A NCAC 02C .0100 or 2C .0200 Well Construction Standards and that a copy of this record has been provided to the well owner.

9. Site diagram or additional well details:

You may use the back of this page to provide additional well site details or well abandonment details. You may also attach additional pages if necessary.

SUBMITTAL INSTRUCTIONS

10a. **For All Wells:** Submit this form within 30 days of completion of well abandonment to the following:

Division of Water Quality, Information Processing Unit,
1617 Mail Service Center, Raleigh, NC 27699-1617

10b. **For Injection Wells:** In addition to sending the form to the address in 10a above, also submit one copy of this form within 30 days of completion of well abandonment to the following:

Division of Water Quality, Underground Injection Control Program,
1636 Mail Service Center, Raleigh, NC 27699-1636

10c. **For Water Supply & Injection Wells:** In addition to sending the form to the address(es) above, also submit one copy of this form within 30 days of completion of well abandonment to the county health department of the county where abandoned.