

GEOENVIRONMENTAL PHASE II INVESTIGATION

**CIRCLE K STORES, INC.
1816-1818 N. BERKELEY BLVD.
GOLDSBORO, NORTH CAROLINA**

**TIP NUMBER: U-3609B
WBS NUMBER: 39026.1.2
COUNTY: WAYNE**

**DESCRIPTION: GOLDSBORO - US 13 (BERKELEY BLVD)
FROM SR 1003 (NEW HOPE RD) TO SR 1572 (SAULSTON RD)**

PREPARED FOR:



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

JANUARY 27, 2020

PREPARED BY:

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**CATLIN PROJECT NO. 219139
CORPORATE GEOLOGY LICENSE CERTIFICATION NO. C-118
CORPORATE LICENSURE NO. FOR ENGINEERING SERVICES C-0585**

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**GEOENVIRONMENTAL PHASE II INVESTIGATION
CIRCLE K STORES, INC.
1816-1818 N. BERKELEY BLVD.,
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**TIP NUMBER: U-3609B
WBS NUMBER: 39026.1.2**

JANUARY 27, 2020

1.0 INTRODUCTION

Acquisition of the right-of-way (ROW) and/or easement is necessary for the US 13 improvements (including drainage) in Goldsboro, North Carolina. The North Carolina Department of Transportation (NCDOT) has indicated a site investigation is necessary to determine if underground storage tanks (UST), contaminated groundwater and/or contaminated soils are present.

2.0 PURPOSE OF INVESTIGATION AND DESCRIPTION

CATLIN Engineers and Scientists (CATLIN) was retained by the NCDOT Geotechnical Engineering Unit to provide field investigations concluding with GeoEnvironmental Phase II Investigation reports for nine (9) sites. In response to a request for proposal by Mr. John Pilipchuk, L.G., P.E. dated November 12, 2019 and subsequent work scope discussions with Mr. Craig Haden, CATLIN submitted a proposal for conducting an investigation at 1816-1818 N. Berkeley Blvd. – Circle K Stores, Inc., along the NCDOT Project “Goldsboro – US 13 (Berkeley Blvd) from SR 1003 (New Hope Rd) to SR 1572 (Saulston Rd)” in Goldsboro, North Carolina. Figure 1 illustrates the general site location. The NCDOT Conventional Plan Sheet Symbols are provided on Figure 2.

According to NCDOT, ROW and/or easement acquisition is necessary for the roadway construction (TIP Number U-3609B) and specifically at the above referenced address (1816-1818 N. Berkeley Blvd.). A site investigation was requested before parcel acquisition and roadway construction. The work scope as requested includes:

- Notify property owners/occupants of schedule and scope of work.
- Locate all drums and/or USTs, determine approximate size and contents (if any).
- Determine if contaminated soils are present.
- Test soil for contaminants relevant to the site's past use and/or possible release(s). For petroleum contaminants, Ultra-Violet Fluorescence (UVF) analysis is the preferred method.
- Advance six (6) borings and collect one (1) soil sample from each boring to determine if contaminated soils are present.

- Submit six (6) soil samples for UVF analyses.
- Collect one (1) groundwater sample and submit for volatile and semi-volatile organics analyses per Standard Method 6200B and Environmental Protection Agency (EPA) Method 625.
- Include (as a standard delivery item) the RED Lab, LLC (RED Lab) graphs in reports and send the GeoEnvironmental Section a copy of the RED Lab Excel file(s).
- If soil and groundwater contamination are evident, estimate the quantity of impacted soils and indicate the approximate area of soil and groundwater contamination on report figures.
- Provide a MicroStation file with the location of soil borings, USTs, soil contamination and monitoring wells.
- Prepare a report including field activities, findings, and recommendations and submit one electronic copy to the NCDOT GeoEnvironmental Section.

This report documents our activities and findings for the Circle K. Stores, Inc. property at 1816-1818 N. Berkeley Blvd., Goldsboro, North Carolina.

3.0 METHODS

Proposed boring/sample locations were discussed and agreed upon before boring advancement.

CATLIN coordinated geophysical activities with Pyramid Geophysical Services (Pyramid). The geophysical investigation methods and site photographs are detailed in the Pyramid Geophysical Survey provided in Appendix A.

CATLIN proposed utilizing QROS On-Site Rapid Measurement Techniques and Tools (QED™ Analyzer) by RED Lab to evaluate potential for petroleum and Poly Aromatic Hydrocarbon (PAH) impacts to soil in a cost-effective manner. Soil samples collected from above the approximate water table depth with total petroleum hydrocarbon (TPH) concentrations greater than the North Carolina Department of Environmental Quality (NCDEQ) Action Levels [100 milligrams per kilogram (mg/kg) diesel range organics (DRO) or 50 mg/kg gasoline range organics (GRO)] will be considered contaminated for estimated impacted vadose soil volume calculations. Contaminated soil volume is estimated from the surface to the water table and/or the midpoint distance between a “clean” sample location and contaminated sample location or the property line/easement.

Borings advanced during this investigation are identified with “1816DPT-” and numbered sequentially 01 through 06. Soil samples for analysis per QROS QED™ Analyzer were identified by boring number and depth [example: 1816DPT-01 (9’)]. A groundwater sample for analysis per Standard Method 6200B and EPA Method 625 was identified by boring number [example: 1816DPT-04]. CATLIN’s field activities at the site began and concluded on December 9, 2019.

3.1 FIELD METHODS

All field work was conducted in general accordance with state and federal guidelines and industry standards.

Underground utility locating was coordinated by CATLIN personnel. The North Carolina One Call Center (NC-1-Call) was contacted for underground utility location. The areas around the proposed boring locations were checked and underground utilities were indicated by NC-1-Call personnel. Pyramid also marked private underground utilities and cleared the boring locations.

CATLIN personnel gathered subsurface soil data by Direct Push Technology boring advancement using a GeoProbe 5400 (GeoProbe). When using the GeoProbe, the borings are advanced to depth by static force and a hydraulic percussion hammer. Two and one-quarter inch diameter by four-foot length steel is used as casing. Soil samples are continuously collected in one and one-half inch clear liners. Liners are removed from the casing and then cut in half longitudinally to allow for visual/manual classification utilizing the Unified Soil Classification System (USCS). Boring information was recorded on field logs and transferred to boring logs (see Appendix B). Soils were removed from the liner in two (2) foot intervals and placed in sealable polyethylene bags for organic volatile (headspace) analysis (OVA) utilizing a MiniRAE 3000 Photoionization Detector (PID). The OVA results were documented on field logs and are included on the boring logs in Appendix B. Soil samples were selected and packed in appropriate glassware for analysis. One (1) soil sample was collected from each soil boring location.

New disposable nitrile gloves were worn during sampling activities. Soils selected for QROS QED™ analysis were placed into new glassware provided by QROS. All samples were placed on ice in an insulated cooler for transportation to RED Lab in Wilmington, NC. Sample integrity was maintained by following proper Chain of Custody (COC) procedures. A copy of the COC is provided following the analytical report in Appendix C.

Following boring termination and tooling removal, new one-inch slotted poly vinyl chloride (PVC) well screen and casing was installed in a selected borehole for groundwater sampling. A grab groundwater sample was collected utilizing a peristaltic pump and new polyethylene tubing. Groundwater was pumped directly into laboratory provided glassware. New, disposable nitrile gloves were worn when handling well material and while collecting groundwater samples. The samples were packed on ice in an insulated cooler for transportation to the laboratory. Sample integrity was maintained by following proper COC procedures (see Appendix C).

The PVC materials were subsequently removed from the boring. Boreholes were abandoned to the surface in grassy areas and just below existing

asphalt in asphalt areas using three-eighth inch bentonite chips. Bentonite and water were poured into the borehole simultaneously to facilitate hydration. Boreholes in asphalt were finished with asphalt patch to the surface.

3.2 ANALYTICAL TESTING

The QROS QED™ Analyzer methods have been approved by the NCDEQ for petroleum contamination determination. Complete QROS QED™ procedures are on file with the NCDEQ and are available upon request. The QROS QED™ analysis was conducted by RED Lab personnel at their laboratory in Wilmington, North Carolina. QROS QED™ analysis provides Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX), DRO, GRO, TPH, total Aromatics (C10-C35) and 16 EPA PAH concentrations. A total of six (6) soil samples were submitted to RED Lab. The COC documentation is included in Appendix C.

One (1) groundwater sample was submitted to ENCO Laboratories (ENCO) for analysis per EPA Methods 625 and Standard Method 6200B for the presence of semi-volatile and volatile organics (including potential petroleum and chlorinated solvent parameters). The COC documentation is included in Appendix C.

4.0 FIELD ACTIVITIES

4.1 CURRENT SITE CONDITIONS AND FIELD OBSERVATIONS

The site currently operates as a retail fuel station, convenience store, and Subway restaurant. The building and dispenser islands are outside of the proposed ROW and/or easement. There are three (3) USTs registered and in service under Facility ID # 00-0-0000008008, all are 12,000-gallon gasoline tanks. All USTs are outside of the ROW and/or easement. No other evidence of USTs was observed during the geophysical investigation. Eight (8) existing monitoring wells, within or near the proposed ROW and/or easement, were observed during the site investigation.

Photographs taken during the geophysical investigation are included in the geophysical survey provided in Appendix A.

Figure 3 illustrates the subject site including soil borings, monitoring wells, and sample locations.

4.2 SOIL SAMPLING

A total of six (6) borings were advanced as part of this investigation. The six (6) soil samples collected (one from each boring) were submitted for analysis. Boring/sample locations are illustrated on Figure 3. Boring logs are included in Appendix B.

Soil borings were advanced to 12 or 16 feet below land surface (BLS) and terminated in wet to saturated fine sand except boring 1816DPT-03, which was terminated in silty fine sand. Soils were collected continuously to boring termination. After retrieving the drive, soil was visually/manually classified for USCS and screened for organic vapor head space. Soil samples collected from each boring for analysis were packed in the appropriate glassware, labeled, and placed in a cooler on ice. The six (6) soil samples were submitted to RED Lab for QED™ analyses. The COC documentation is included in Appendix C.

4.3 GROUNDWATER SAMPLING

One (1) groundwater sample (1816DPT-04) was collected and submitted for analysis per Standard Method 6200B and EPA Method 625 under proper COC protocol (see Appendix C).

4.4 SURVEYING

Boring/sample locations were recorded utilizing a Trimble® global positioning survey instrument and data collector. Boring coordinates are on the boring logs provided in Appendix B and Table 2. Boring locations are indicated on plan sheets provided by NCDOT and illustrated on Figure 3.

5.0 RESULTS

Historical review

Review of the NCDEQ Division of Waste Management Site Locator Tool indicated three (3) gasoline USTs were installed in 1971 and removed in 1998. One (1) was a 10,000-gallon gasoline UST and two (2) were 6,000-gallon gasoline USTs. Further review indicated two (2) additional USTs were installed in 1980. The two (2) tanks, one (1) 6,000-gallon diesel UST and one (1) 4,000-gallon kerosene UST, were both removed in 1998. All removed USTs are under Facility ID # 00-0-0000008008 and identified as Pantry #925 (Formerly Kwik Mart #23).

On March 28, 1990 a release of gasoline and diesel was reported to NCDEQ and assigned Incident #6100. A Phase II Limited Site Assessment (LSA) was performed at the site in January of 1998 and three (3) monitoring wells were installed. Following the Phase II LSA, a Comprehensive Site Assessment (CSA) was performed. Natural attenuation, active sampling of monitoring wells, and New

Technology Cleanup Plans (NTCP) were also implemented in an attempt to reduce the groundwater plume. After the continued monitoring and active cleanup efforts, the site was given a Conditional No Further Action (NFA) on January 17, 2018 and following the filing of a soil and groundwater Notice of Residual Petroleum, closed out on June 18, 2018.

No ASTs or other incidents were registered at the site.

Geophysical Investigation

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of five (5) EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface and reinforced concrete. The presence of reinforcement within the concrete was confirmed using GPR. No evidence of metallic USTs was observed during the geophysical investigation. The complete geophysical survey report by Pyramid is included in Appendix A.

Soil

Soil borings 1816DPT-01, -02, -04, -05, and -06 were terminated in fine sand at 12 or 16 feet BLS. Boring 1816DPT-03 was terminated at 12 feet BLS in silty fine sand. Complete boring logs are provided in Appendix B. A soil sample was collected at each boring from within seven (7) and ten (10) feet BLS (+/- 1 foot) and submitted for laboratory analysis. The complete analytical reports and COC documents are provided in Appendix C.

The soil headspace OVA results ranged from 0.0 ppm [1816DPT-02 (0-2')] to 3.2 ppm [1816DPT-01 (8-10')]. The soil headspace screening is summarized in Table 1.

The soil samples collected from borings 1816DPT-01 through 1816DPT-06 did not reveal TPH DRO and/or TPH GRO above the State Action Levels (100 ppm DRO, 50 ppm GRO). Summarized TPH results are provided on Table 2 and illustrated on Figure 3. No impacted soils are suspected to be encountered during construction.

Groundwater

Based on the saturated soils found in the 1816DPT-04 temporary monitoring well boring, depth to groundwater is assumed at approximately 10 feet BLS. No Standard Method 6200B and EPA Method 625 compounds were detected above the North Carolina Administrative Code (NCAC) T15A:02L Groundwater Quality Standards (2L GWQS). The EPA Method 625 sample was received and extracted outside of hold time. The groundwater sample results are summarized on Table 3. The groundwater sample location and summarized results are illustrated on Figure 4. The complete laboratory analytical report is provided in Appendix C. A monitoring well construction and abandonment record were submitted to NCDEQ. Copies of the records are provided in Appendix B.

6.0 SUMMARY AND CONCLUSIONS

The Circle K Stores, Inc. property at 1816-1818 N. Berkeley Blvd. operates as a retail fuel station, convenience store, and Subway restaurant. There are three (3) active USTs registered and in service under Facility ID # 00-0-0000008008, all are 12,000-gallon gasoline tanks.

Review of the NCDEQ Division of Waste Management Site Locator Tool indicated three (3) gasoline USTs were installed in 1971 and removed in 1998. One (1) was a 10,000-gallon gasoline UST and two (2) were 6,000-gallon gasoline USTs. Further review indicated two (2) additional USTs were installed in 1980. The two (2) tanks, one (1) 6,000-gallon diesel UST and one (1) 4,000-gallon kerosene UST, were both removed in 1998. All removed USTs are under Facility ID # 00-0-0000008008 and identified as Pantry #925 (Formerly Kwik Mart #23).

On March 28, 1990 a release of gasoline and diesel was reported to NCDEQ and assigned Incident #6100. A Phase II Limited Site Assessment (LSA) was performed at the site in January of 1998 and three (3) monitoring wells were installed. In response to the Phase II LSA, a Comprehensive Site Assessment (CSA) was performed. Natural attenuation, active sampling of monitoring wells, and New Technology Cleanup Plans (NTCP) were also implemented in an attempt to reduce the groundwater plume as well as the CAP. The site was given a Conditional No Further Action (NFA) on January 17, 2018 and subsequently closed out on June 18, 2018 after filing a soil and groundwater Notice of Residual Petroleum.

Further review of the NCDEQ database showed no USTs, ASTs, or other incidents registered at the site.

The building and dispenser islands are outside of the proposed ROW and/or easement. No signs of USTs were observed during site reconnaissance or through geophysical surveying in the ROW and/or easement.

Soil and groundwater samples (6 soil, 1 groundwater) did not reveal TPH DRO/GRO or semi-volatile/volatile organic concentrations, respectively. The proposed construction at the site is not suspected to encounter contaminated soil or groundwater.

7.0 LIMITATIONS

This report is based on the agreed work scope and a review of available data from limited sampling. It is possible that this investigation may have failed to reveal the presence of contamination in the project area where such contamination may exist. Although CATLIN has used accepted methods appropriate for soil and groundwater sampling, CATLIN cannot guarantee that additional soil and/or groundwater contamination does not exist.

8.0 SIGNATURES

(Document Not Considered Final Unless All Signatures Are Completed)

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Benjamin J. Ashba
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2/6/2020

Benjamin J. Ashba, P.G.
Project Manager

DocuSigned by:
Corey D. Futral
10FF8E52EF63477...

Corey D. Futral
Project Geologist

TABLES

**TABLE 1
SUMMARY OF SOIL HEADSPACE SCREENING**

Circle K Stores, Inc.
1816-1818 N. Berkeley Blvd., Goldsboro, North Carolina

BORING I.D.	Sample Depth (ft.)	OVA READING (ppm)	Sample Selected for Laboratory Analysis
1816DPT-01	0 - 4	1.9	
1816DPT-01	4 - 6	1.8	
1816DPT-01	6 - 8	2.2	
1816DPT-01	8 - 10	3.2	1816 DPT-01 (9')
1816DPT-01	10 - 12	0.2	
1816DPT-01	12 - 14	0.7	
1816DPT-01	14 - 16	0.2	
1816DPT-02	0 - 2	0.0	
1816DPT-02	2 - 4	0.0	
1816DPT-02	4 - 6	0.0	
1816DPT-02	6 - 8	0.0	
1816DPT-02	8 - 10	1.0	1816 DPT-02 (10')
1816DPT-02	10 - 12	1.6	
1816DPT-03	0 - 2	0.0	
1816DPT-03	2 - 4	0.0	
1816DPT-03	4 - 6	0.0	
1816DPT-03	6 - 8	0.0	
1816DPT-03	8 - 10	0.0	1816 DPT-03 (8')
1816DPT-03	10 - 12	0.0	
1816DPT-04	0 - 2	0.8	
1816DPT-04	2 - 4	1.5	
1816DPT-04	4 - 6	1.7	
1816DPT-04	6 - 8	1.8	Soil 1816 DPT-04 (7')
1816DPT-04	8 - 10	1.2	
1816DPT-04	10 - 12	1.7	
1816DPT-04	12 - 14	0.9	
1816DPT-04	14 - 16	1.7	Water 1816 DPT-04
1816DPT-05	0 - 2	0.6	
1816DPT-05	2 - 4	1.1	
1816DPT-05	4 - 6	1.3	
1816DPT-05	6 - 8	1.6	
1816DPT-05	8 - 10	2.2	1816 DPT-05 (9')
1816DPT-05	10 - 12	0.3	
1816DPT-06	0 - 2	0.3	
1816DPT-06	2 - 4	0.6	
1816DPT-06	4 - 6	1.1	
1816DPT-06	6 - 8	1.2	

TABLE 1
SUMMARY OF SOIL HEADSPACE SCREENING

Circle K Stores, Inc.
1816-1818 N. Berkeley Blvd., Goldsboro, North Carolina

BORING I.D.	Sample Depth (ft.)	OVA READING (ppm)	Sample Selected for Laboratory Analysis
1816DPT-06	8 - 10	1.1	1816 DPT-06 (8')
1816DPT-06	10 - 12	0.9	

TABLE 2
SUMMARY OF SOIL LABORATORY RESULTS
ULTRA VIOLET FLUORESCENCE BY REDLAB QED™ ANALYZER

Circle K Stores, Inc.
1816-1818 N. Berkeley Blvd., Goldsboro, North Carolina

Sample ID	Northing	Easting	Contaminant of Concern	TPH GRO	TPH DRO
			Date Collected		
1816DPT-01 (9')	598,096	2,322,013	12/9/2019	<0.52	<0.52
1816DPT-02 (10')	598,108	2,321,969	12/9/2019	<0.2	<0.2
1816DPT-03 (8')	598,111	2,321,939	12/9/2019	<0.23	<0.23
1816DPT-04 (7')	598,114	2,321,893	12/9/2019	<0.28	<0.28
1816DPT-05 (9')	598,104	2,321,859	12/9/2019	<0.11	<0.11
1816DPT-06 (8')	598,086	2,321,819	12/9/2019	<0.2	<0.2
STATE ACTION LEVELS				50	100

Sample depth provided in parantheses as part of the Sample ID.

All results in milligrams per kilogram (mg/Kg).

< = Less than method detection limit

TABLE 3
SUMMARY OF GROUNDWATER LABORATORY RESULTS
EPA Method 625 and Standard Method 6200B

Circle K Stores, Inc.
1816-1818 N. Berkeley Blvd., Goldsboro, North Carolina

Method →		EPA Method 625	Standard Method 6200B
Contaminant of Concern →		All Parameters	All Parameters
Sample ID	Date Collected		
1816DPT-04	12/9/2019	BMDL	BMDL
GCL (µg/L)		Varies	Varies
2L GWQS (µg/L)		Varies	Varies

BMDL = Below Method Detection Limit. Refer to analytical report for a complete list of parameters and reporting limits.

GCL = Gross Contaminant Level

2L GWQS = NCAC T15A:02L Groundwater Quality Standards

FIGURES

DESCRIPTION:
CIRCLE K STORES, INC.
1816-1818 N. BERKELEY BLVD.
GOLDSBORO, NC



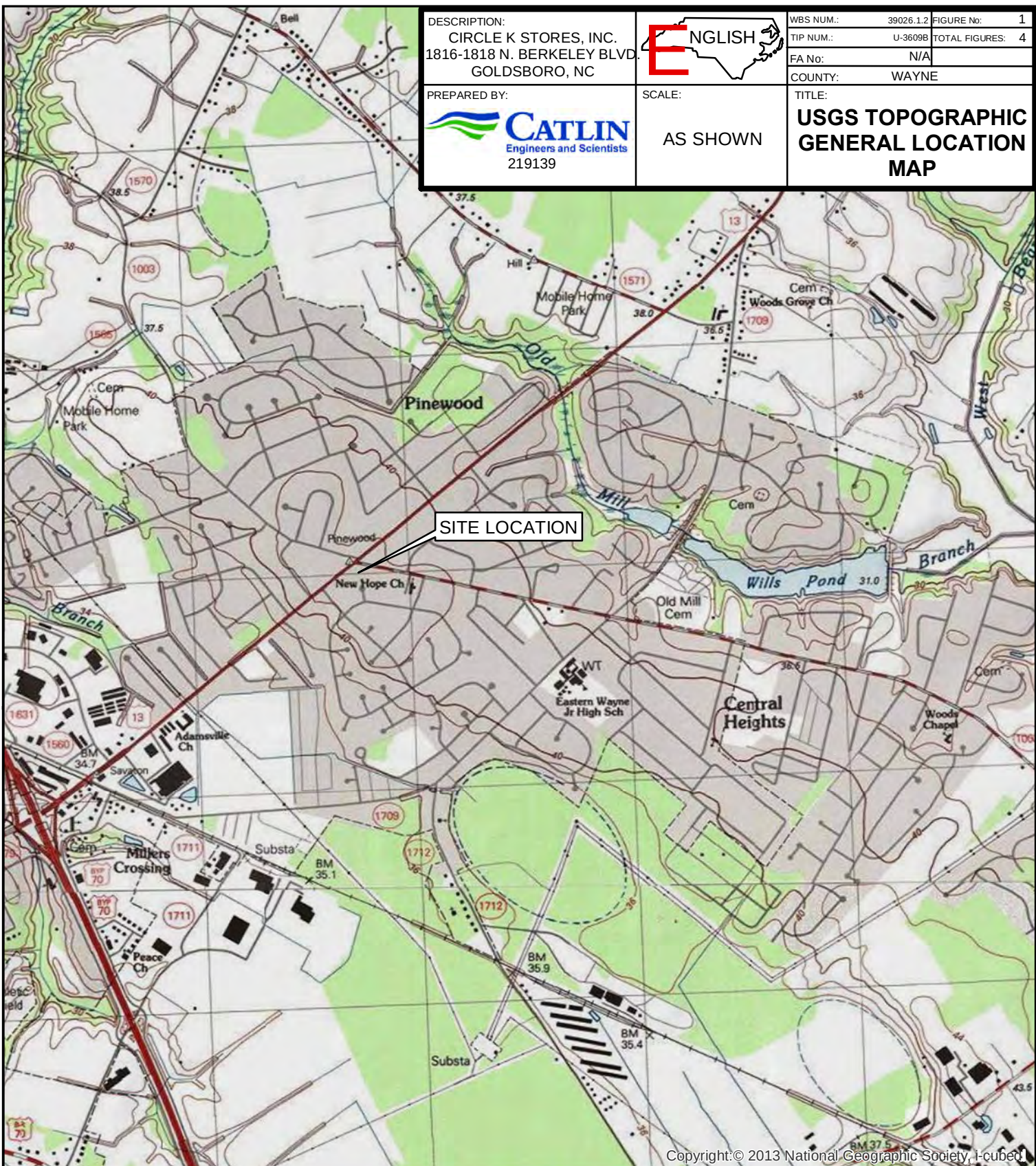
WBS NUM.:	39026.1.2	FIGURE No.:	1
TIP NUM.:	U-3609B	TOTAL FIGURES:	4
FA No.:	N/A		
COUNTY:	WAYNE		

PREPARED BY:
 **CATLIN**
Engineers and Scientists
219139

SCALE:

AS SHOWN

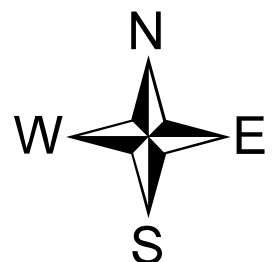
TITLE:
**USGS TOPOGRAPHIC
GENERAL LOCATION
MAP**



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2,000 1,000 0 2,000 4,000
Feet

SCALE



STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	
Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Exist Permanent Easment Pin and Cap	
New Permanent Easement Pin and Cap	
Vertical Benchmark	
Existing Right of Way Marker	
Existing Right of Way Line	
New Right of Way Line	
New Right of Way Line with Pin and Cap	
New Right of Way Line with Concrete or Granite RW Marker	
New Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
New Control of Access	
Existing Easement Line	
New Temporary Construction Easement	
New Temporary Drainage Easement	
New Permanent Drainage Easement	
New Permanent Drainage /Utility Easement	
New Permanent Utility Easement	
New Temporary Utility Easement	
New Aerial Utility Easement	

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	
Single Shrub	

*S.U.E. = Subsurface Utility Engineering

Hedge	
Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

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

UTILITIES:

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

TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Cable LOS B (S.U.E.*)	
U/G Telephone Cable LOS C (S.U.E.*)	
U/G Telephone Cable LOS D (S.U.E.*)	
U/G Telephone Conduit LOS B (S.U.E.*)	
U/G Telephone Conduit LOS C (S.U.E.*)	
U/G Telephone Conduit LOS D (S.U.E.*)	
U/G Fiber Optics Cable LOS B (S.U.E.*)	
U/G Fiber Optics Cable LOS C (S.U.E.*)	
U/G Fiber Optics Cable LOS D (S.U.E.*)	

WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line LOS B (S.U.E.*)	
U/G Water Line LOS C (S.U.E.*)	
U/G Water Line LOS D (S.U.E.*)	
Above Ground Water Line	

TV:

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Cable LOS B (S.U.E.*)	
U/G TV Cable LOS C (S.U.E.*)	
U/G TV Cable LOS D (S.U.E.*)	
U/G Fiber Optic Cable LOS B (S.U.E.*)	
U/G Fiber Optic Cable LOS C (S.U.E.*)	
U/G Fiber Optic Cable LOS D (S.U.E.*)	

GAS:

Gas Valve	
Gas Meter	
U/G Gas Line LOS B (S.U.E.*)	
U/G Gas Line LOS C (S.U.E.*)	
U/G Gas Line LOS D (S.U.E.*)	
Above Ground Gas Line	

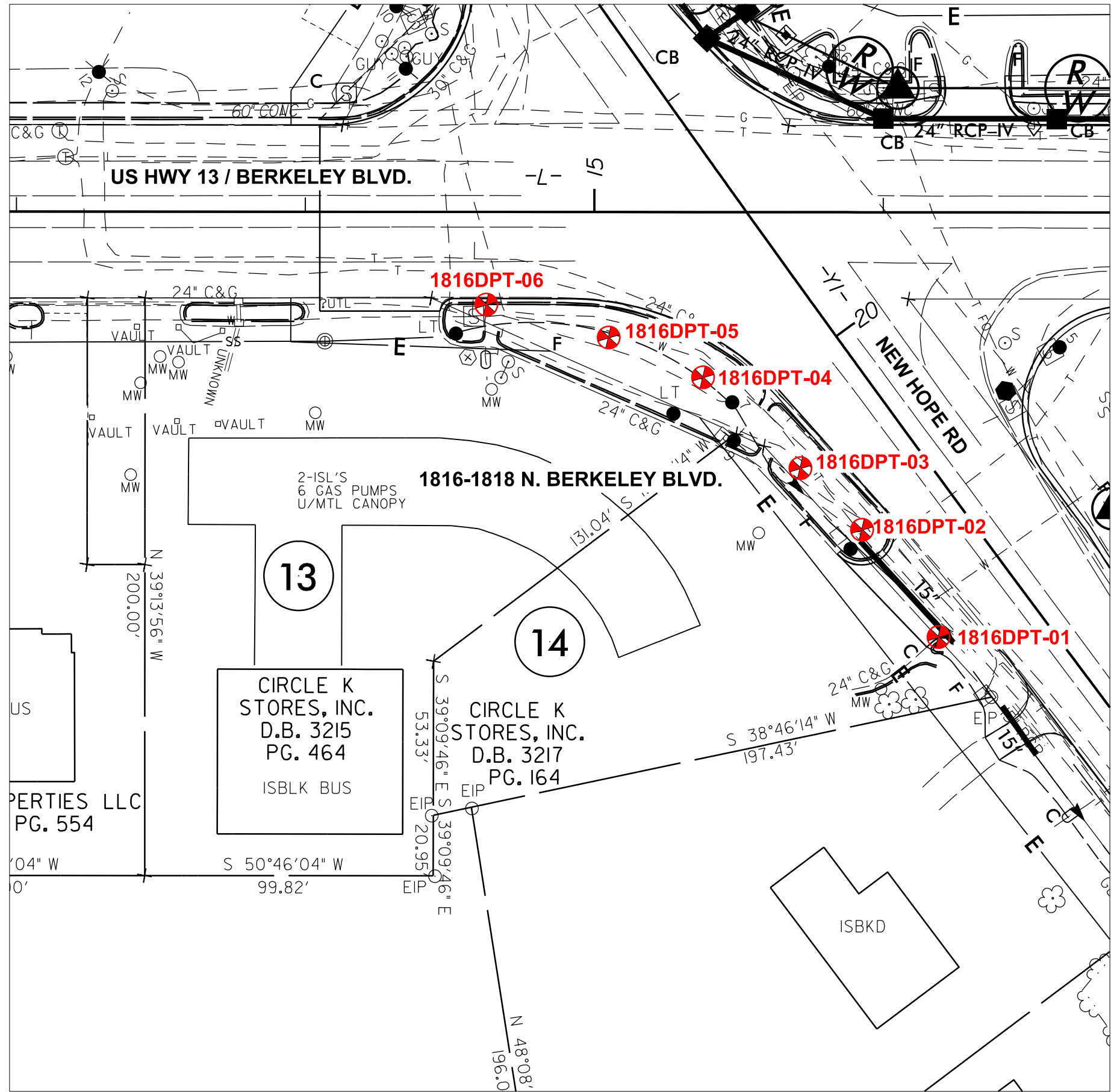
SANITARY SEWER:

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Forced Main Line LOS B (S.U.E.*)	
SS Forced Main Line LOS C (S.U.E.*)	
SS Forced Main Line LOS D (S.U.E.*)	

MISCELLANEOUS:

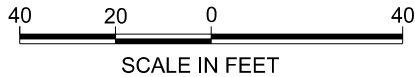
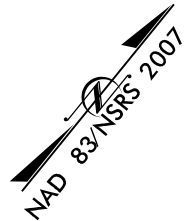
Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line LOS B (S.U.E.*)	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
U/G Test Hole LOS A (S.U.E.*)	
Abandoned According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

S:\wpmktg\PROJECT\219139\NCDOT Goldsboro PSAs\Figures\Approved 25 Percent to Hydro\Roadway\Proj\Site Plans



NOTE:
1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.

DESCRIPTION: CIRCLE K STORES, INC. 1816-1818 N. BERKELEY BLVD. GOLDSBORO, NC		WBS NO.: 39026.1.2	FIGURE NO.: 3
		TIP NO.: U-3609B	TOTAL FIGURES: 4
		F.A. NO.: N/A	
		COUNTY: WAYNE	
PREPARED BY:  PROJ #: 219139	SCALE: 1" = 40'	TITLE: BORING LOCATIONS AND SUMMARIZED SOIL SAMPLE RESULTS	

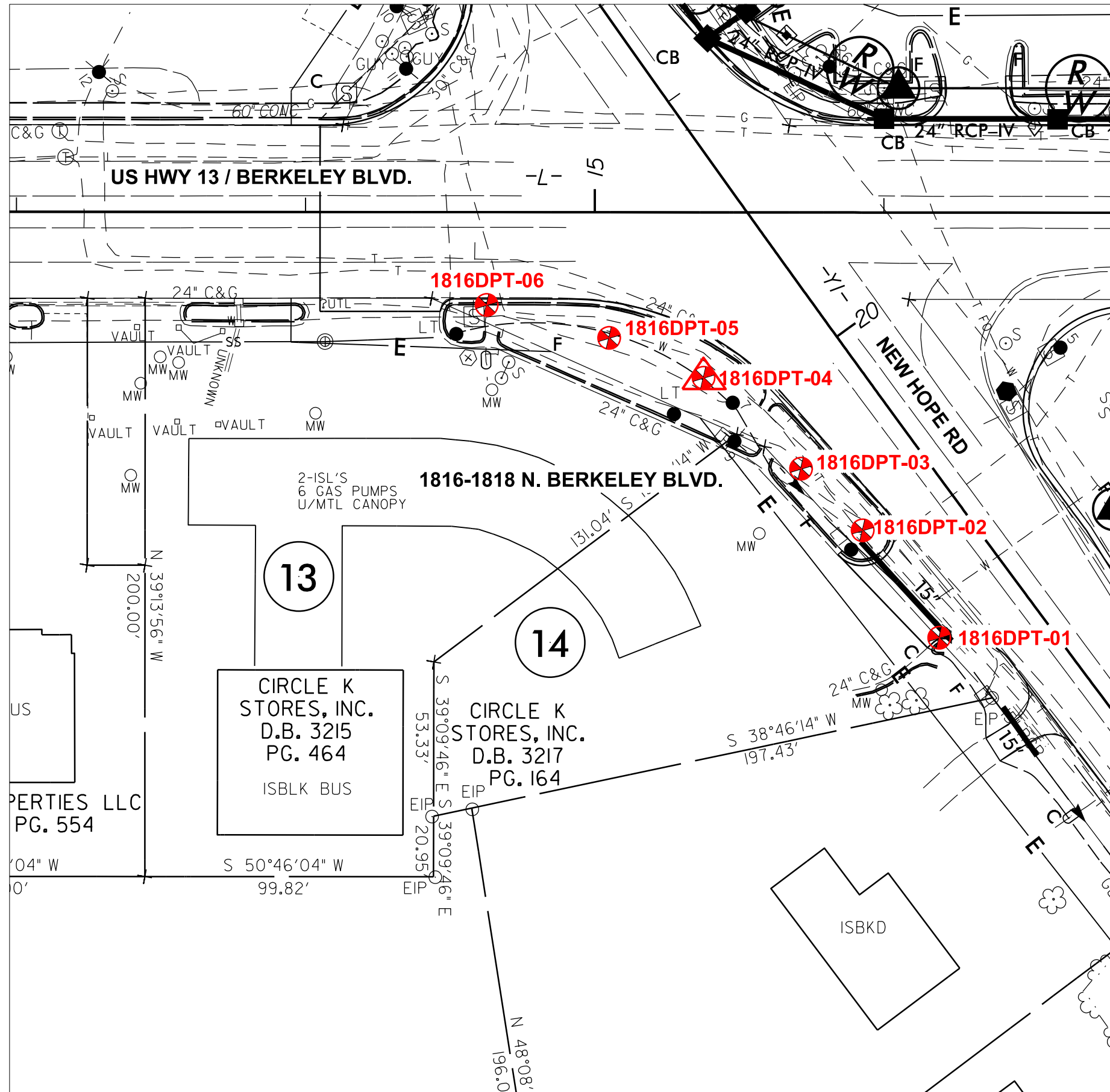


ULTRA VIOLET FLUORESCENCE BY REDLAB QED™ ANALYZER

Sample ID	Contaminant of Concern	TPH GRO	TPH DRO
	Date Collected		
1816DPT-01 (9')	12/9/2019	<0.52	<0.52
1816DPT-02 (10')	12/9/2019	<0.2	<0.2
1816DPT-03 (8')	12/9/2019	<0.23	<0.23
1816DPT-04 (7')	12/9/2019	<0.28	<0.28
1816DPT-05 (9')	12/9/2019	<0.11	<0.11
1816DPT-06 (8')	12/9/2019	<0.2	<0.2
STATE ACTION LEVELS		50	100

Sample depth provided in parantheses as part of the Sample ID.
All results in milligrams per kilogram (mg/Kg).
<= Less than method detection limit

S:\wpmktg\PROJECT\219139\NCDOT Goldsboro PSAs\Figures\Approved 25 Percent to Hydro/Roadway\Proj\Site Plans



NOTE:
1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.

DESCRIPTION:
CIRCLE K STORES, INC.
1816-1818 N. BERKELEY BLVD.
GOLDSBORO, NC

PREPARED BY:
CATLIN
Engineers and Scientists
Wilmington, North Carolina
PROJ #: 219139

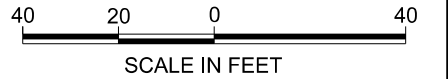


SCALE:
1" = 40'

WBS NO.: 39026.1.2
TIP NO.: U-3609B
F.A. NO.: N/A
COUNTY: WAYNE

FIGURE NO.: 4
TOTAL FIGURES: 4

TITLE:
BORING LOCATIONS AND
SUMMARIZED GROUNDWATER
SAMPLE RESULTS



LEGEND



GROUNDWATER SAMPLE

SUMMARY OF GROUNDWATER LABORATORY RESULTS

Method →		EPA Method 625	Standard Method 6200B
Contaminant of Concern →		All Parameters	All Parameters
Sample ID	Date Collected		
1816DPT-04	12/9/2019	BMDL	BMDL
GCL (µg/L)		Varies	Varies
2L GWQS (µg/L)		Varies	Varies

BMDL = Below Method Detection Limit. Refer to analytical report for a complete list of parameters and reporting limits.

GCL = Gross Contaminant Level

2L GWQS = NCAC T15A:02L Groundwater Quality Standards

APPENDICES

APPENDIX A
PYRAMID GEOPHYSICAL SURVEY



PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2019-359)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION: 1816-1818 N. BERKELEY BLVD. NCDOT PROJECT U-3609B (39026.1.2)

1816-1818 N. BERKELEY BLVD., GOLDSBORO, NC

December 20, 2019

Report prepared for: Benjamin Ashba, P.G.
Catlin Engineers & Scientists
220 Old Dairy Road
Wilmington, NC 28405

Prepared by: _____

A handwritten signature in black ink, appearing to read "E. Cross".

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

Reviewed by: _____

A handwritten signature in black ink, appearing to read "Doug Canavella".

Douglas A. Canavella, P.G.
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406

P: 336.335.3174 F: 336.691.0648

C257: GEOLOGY

C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
1816-1818 N. Berkeley Blvd.
Goldsboro, Wayne County, North Carolina

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<i>Discussion of GPR Results</i>	4
Summary & Conclusions	5
Limitations	5

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- Figure 2 – 1816-1818 N. Berkeley Blvd. – EM61 Results Contour Map
- Figure 3 – 1816-1818 N. Berkeley Blvd. – GPR Transect Locations and Select Images
- Figure 4 – Overlay of Metal Detection Results on NCDOT Engineering Plans

Appendices

- Appendix A – GPR Transect Images

LIST OF ACRONYMS

CADD	Computer Assisted Drafting and Design
DF	Dual Frequency
EM.....	Electromagnetic
GPR.....	Ground Penetrating Radar
GPS	Global Positioning System
NCDOT.....	North Carolina Department of Transportation
ROW	Right-of-Way
UST	Underground Storage Tank

EXECUTIVE SUMMARY

Project Description:

Pyramid Environmental conducted a geophysical investigation for Catlin Engineers & Scientists at 1816-1818 N. Berkeley Blvd. in Goldsboro, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-3609B). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from December 4-5, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results:

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of five EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface and reinforced concrete. The presence of reinforcement within the concrete was confirmed using GPR.

EM and GPR identified suspected buried metal to the northeast of the gas station. Given the size, depth, and location on the property, this is likely a utility structure such as a manhole or a water meter. Collectively, the geophysical data did not record any evidence of metallic USTs at the parcel. The active USTs for the gas station were located outside of the survey area.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Catlin Engineers & Scientists at 1816-1818 N. Berkeley Blvd. in Goldsboro, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-3609B). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from December 4-5, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included an active gas station surrounded by concrete and grass surfaces. The active USTs for the gas station were located outside of the survey area. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61-MK2 (EM61) metal detector integrated with a Geode External GPS/GLONASS receiver. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8-foot intervals along north-south trending or east-west trending,

generally parallel survey lines, spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 15.0 software programs.

GPR data were acquired across select EM anomalies on December 5, 2019, using a Geophysical Survey Systems, Inc. (GSSI) SIR 4000 controller coupled to a 350 MHz HS antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

Pyramid's classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks on NCDOT Projects			
High Confidence	Intermediate Confidence	Low Confidence	No Confidence
Known UST Active tank - spatial location, orientation, and approximate depth determined by geophysics.	Probable UST Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	Possible UST Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist's discretion.

DISCUSSION OF RESULTS

Discussion of EM Results

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The

following table presents the list of EM anomalies and the cause of the metallic response, if known:

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Reinforced Concrete	✓
2	Utilities/Lights	
3	Suspected Buried Metallic Debris	✓
4	Utility	
5	Reinforced Concrete	✓

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including reinforced concrete, utilities, and lights. GPR was performed across the concrete slab (EM Anomalies 1 and 5) to confirm the presence of reinforcement within the slab and to investigate for more significant structures, such as USTs, that may have been obscured due to the EM interference caused by any reinforcement in the concrete. EM Anomaly 3 was a small, high-amplitude anomaly and was further investigated to confirm that this was not the result of a more significant structure such as a UST.

Discussion of GPR Results

Figure 3 presents the locations of the formal GPR transects performed at the property as well as select transect images. All of the transect images are included in **Appendix A**. A total of fourteen formal GPR transects were performed at the site.

GPR Transects 1-12 were performed in a across EM Anomalies 1 and 5 and confirmed the presence of reinforcement within the concrete slab. No significant structures, such as USTs, were observed beneath the reinforcement.

GPR Transects 13-14 were performed across EM Anomaly 3. These transects recorded smaller, high-amplitude flat reflectors just below the surface consistent with buried metal. Given the size, depth, and location on the property, this is likely a utility structure such as a manhole or a water meter.

Collectively, the geophysical data did not record any evidence of metallic USTs at the parcel. The active USTs for the gas station were located outside of the survey area.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at 1816-1818 N. Berkeley Blvd. in Goldsboro, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface and reinforced concrete. The presence of reinforcement within the concrete was confirmed using GPR.
- EM and GPR identified suspected buried metal to the northeast of the gas station. Given the size, depth, and location on the property, this is likely a utility structure such as a manhole or a water meter.
- Collectively, the geophysical data did not record any evidence of metallic USTs at the parcel. The active USTs for the gas station were located outside of the survey area.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for Catlin Engineers & Scientists in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR surveys are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined the definitive presence or absence of metallic USTs, but the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA



View of Survey Area
(Facing Approximately South)



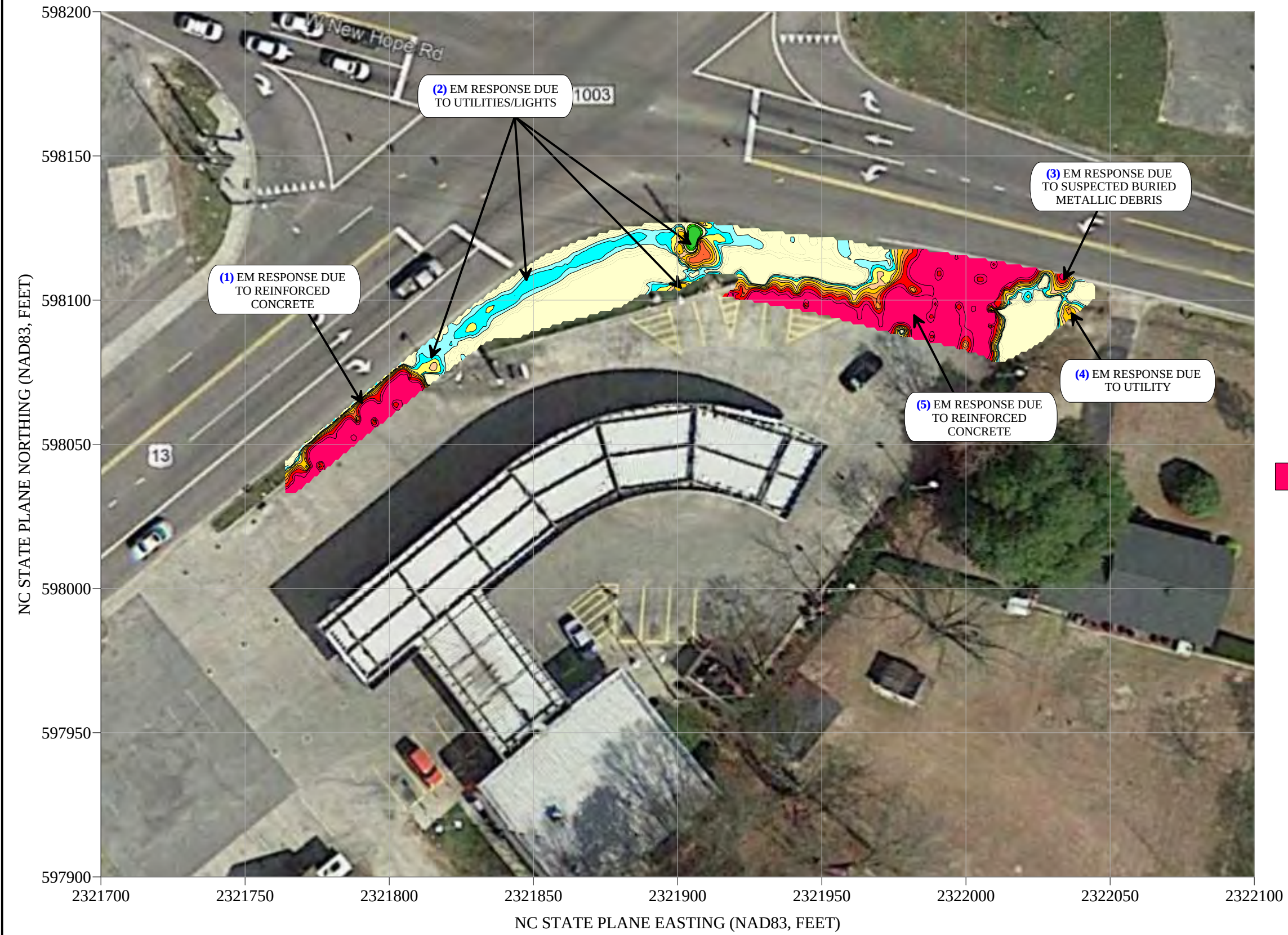
View of Survey Area
(Facing Approximately East)



 503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	PROJECT 1816-1818 N. BERKELEY BLVD. GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-3609B	TITLE 1816-1818 N. BERKELEY BLVD. - GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS	DATE 12/4/2019	CLIENT Catlin Engineers & Scientists
			PYRAMID PROJECT #: 2019-359	

FIGURE 1

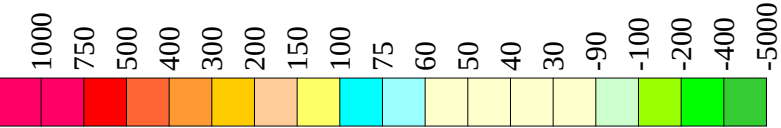
EM61 METAL DETECTION RESULTS



NO EVIDENCE OF UNKNOWN METALLIC USTs WAS OBSERVED.

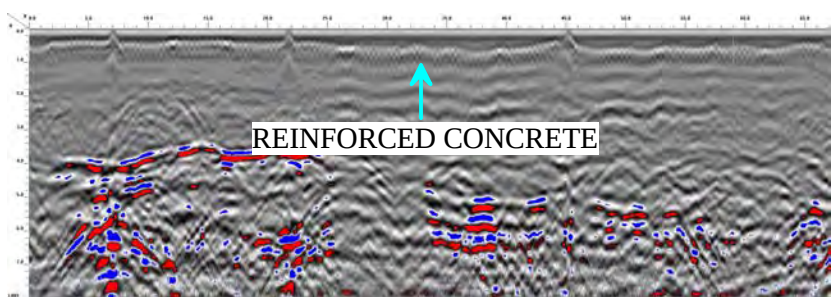
The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM data were collected on December 4, 2019, using a Geonics EM61-MK2 instrument. Verification GPR data were collected using a GSSI SIR 4000 instrument with a 350 MHz HS antenna on December 5, 2019.

EM61 Metal Detection Response (millivolts)

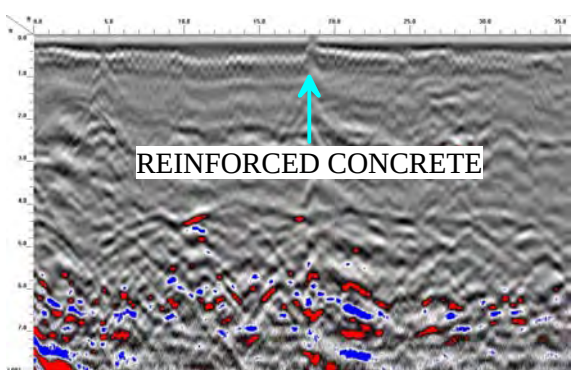


 503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	PROJECT 1816-1818 N. BERKELEY BLVD. GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-3609B	TITLE 1816-1818 N. BERKELEY BLVD. - EM61 METAL DETECTION CONTOUR MAP	DATE 12/4/2019	CLIENT Catlin Engineers & Scientists
			PYRAMID PROJECT #: 2019-359	FIGURE 2

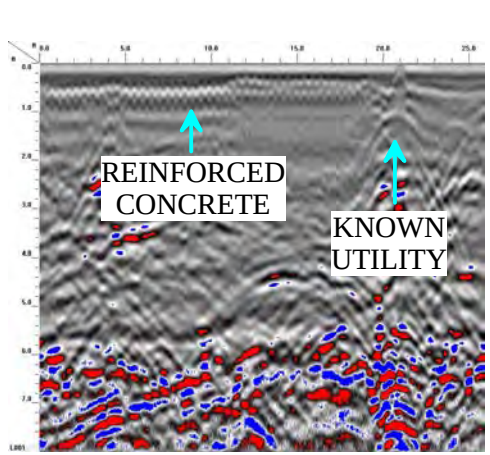
GPR TRANSECT LOCATIONS



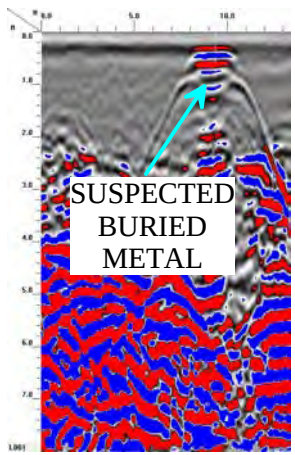
GPR TRANSECT 1 (T1)



GPR TRANSECT 6 (T6)



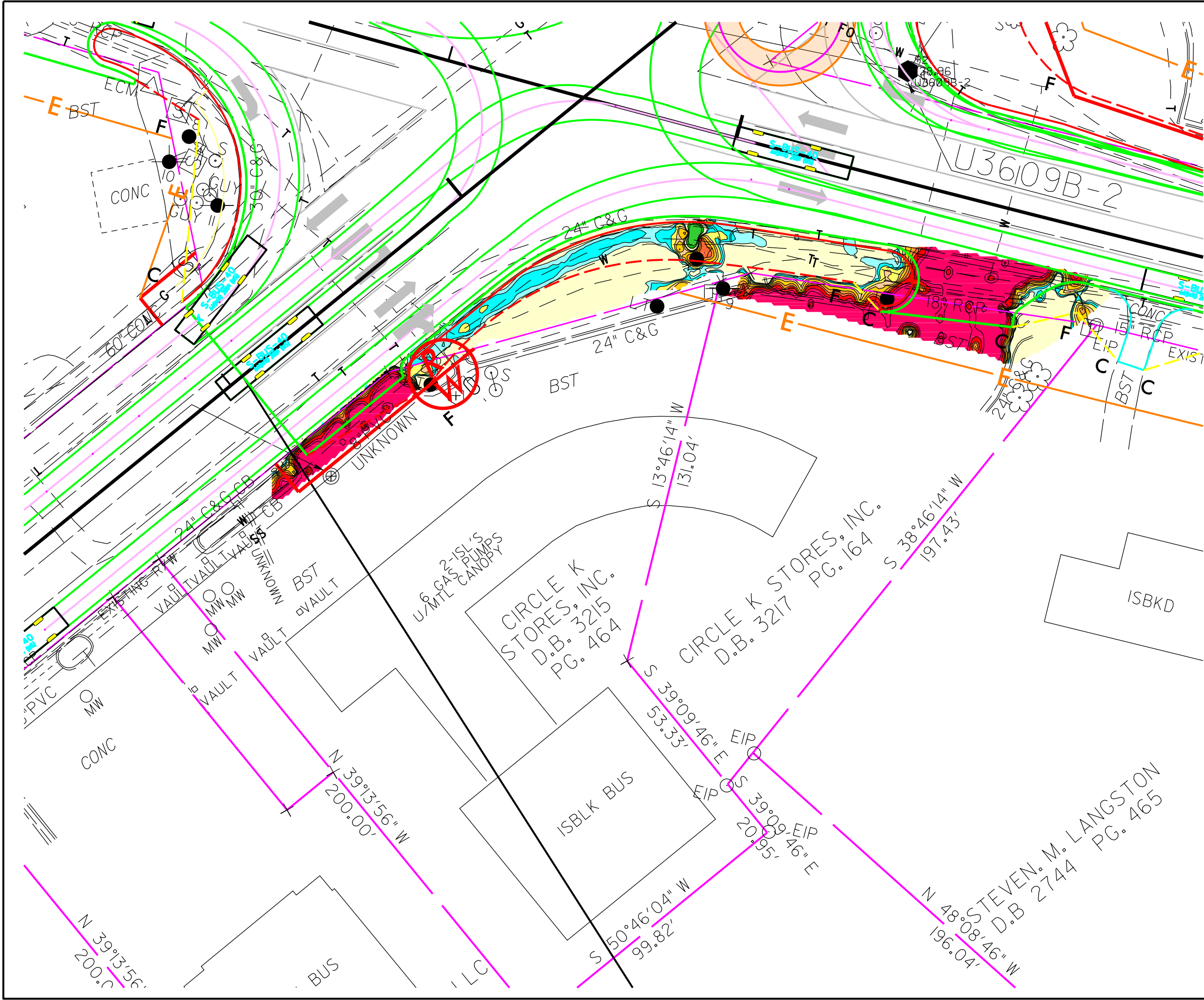
GPR TRANSECT 12 (T12)



GPR TRANSECT 13 (T13)

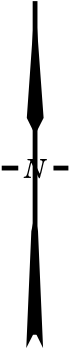
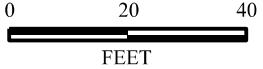


 503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	PROJECT1816-1818 N. BERKELEY BLVD. GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-3609B	TITLE1816-1818 N. BERKELEY BLVD. - GPR TRANSECT LOCATIONS AND SELECT IMAGES	DATE12/5/2019	CLIENTCatlin Engineers & Scientists
			PYRAMID PROJECT #:2019-359	FIGURE 3



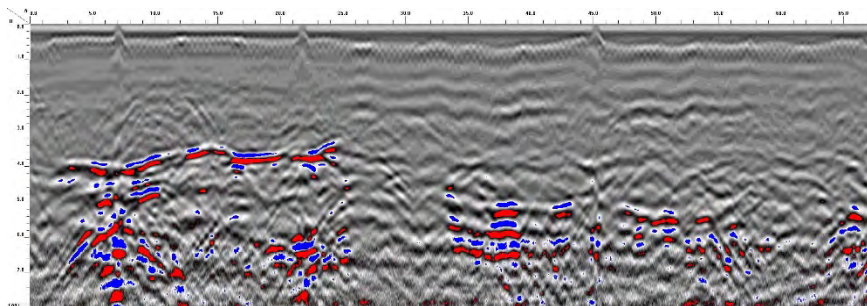
LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- PROPOSED CONSTRUCTION EASEMENT
- PDE
- PROPOSED DRAINAGE EASEMENT
- PROPOSED SS FILL LINE
- PROPOSED SS CUT LINE

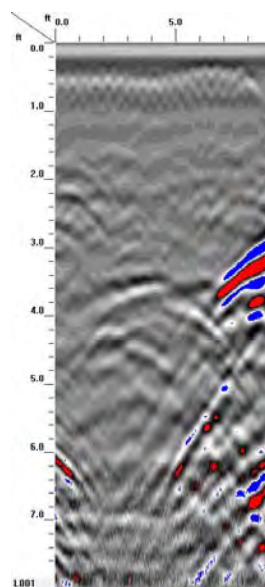


TITLE OVERLAY OF METAL DETECTION RESULTS ON NCDOT ENGINEERING PLANS	
PROJECT 1816-1818 N. BERKELEY BLVD. GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-3609B	
 503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 336.335.3174 (p) 336.691.0648 (f) License # C1251 Eng. / #C257 Geology	
DATE: 12-16-19	REVISION NO. 0
PYRAMID PROJECT NO. 2019-359	FIGURE NO. 4

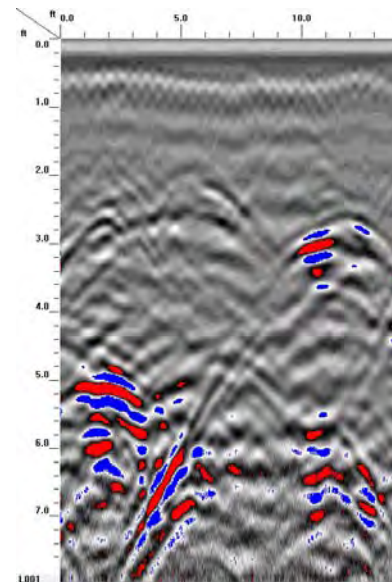
Appendix A – GPR Transect Images



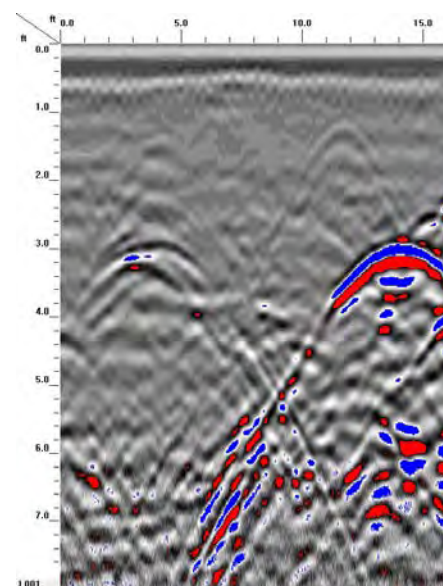
GPR TRANSECT 1



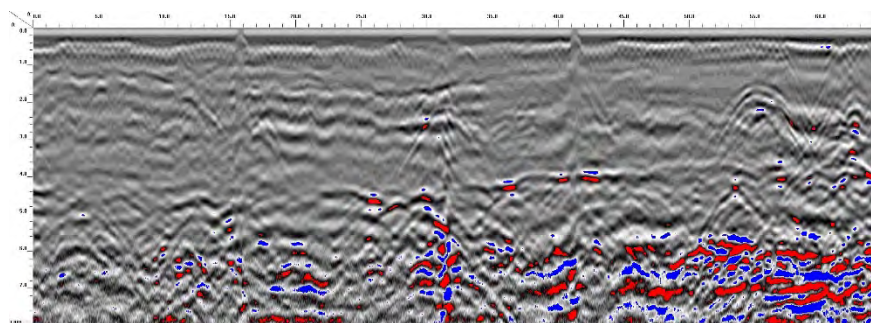
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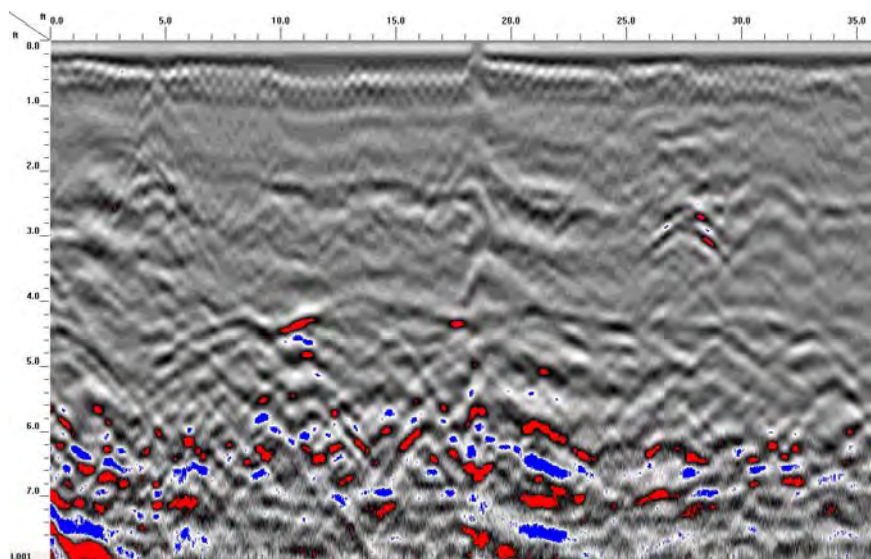
GPR TRANSECT 3



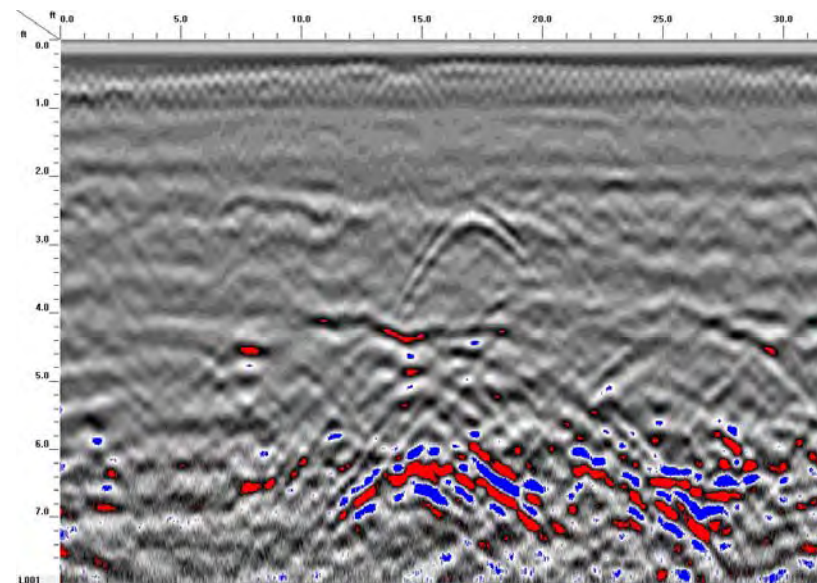
GPR TRANSECT 4



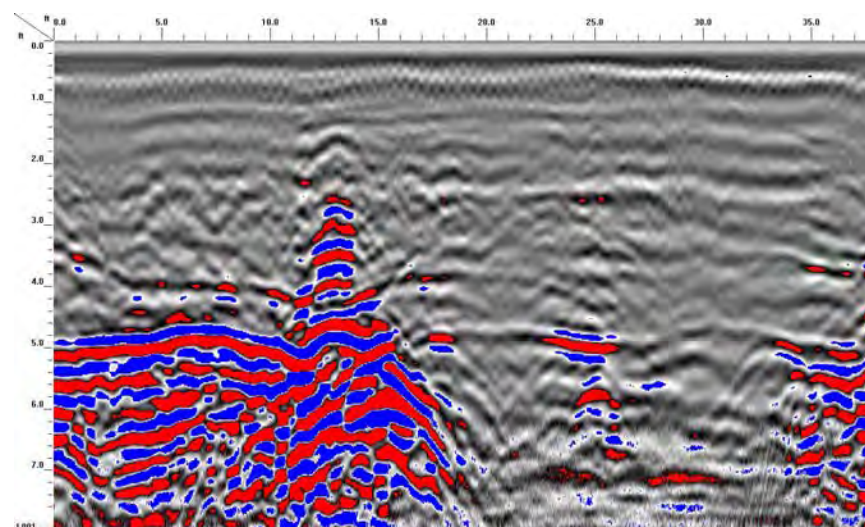
GPR TRANSECT 5



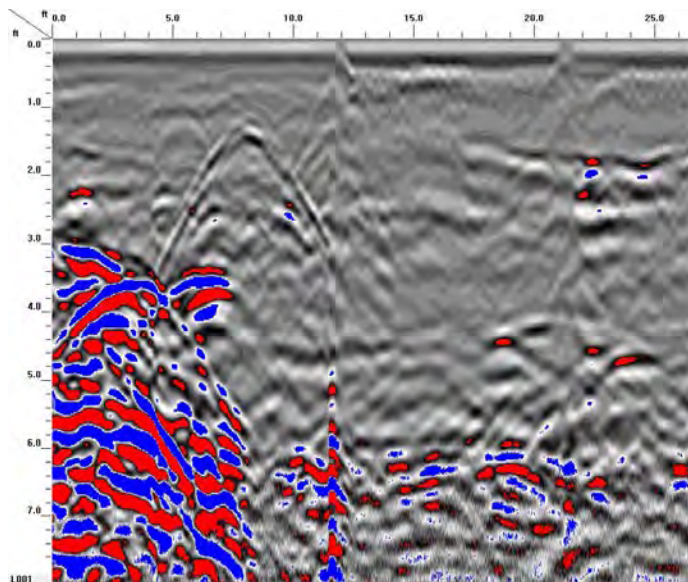
GPR TRANSECT 6



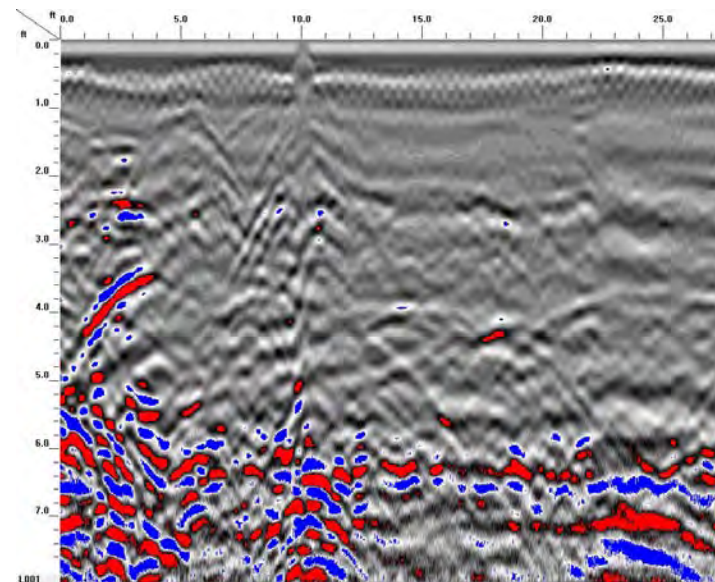
GPR TRANSECT 7



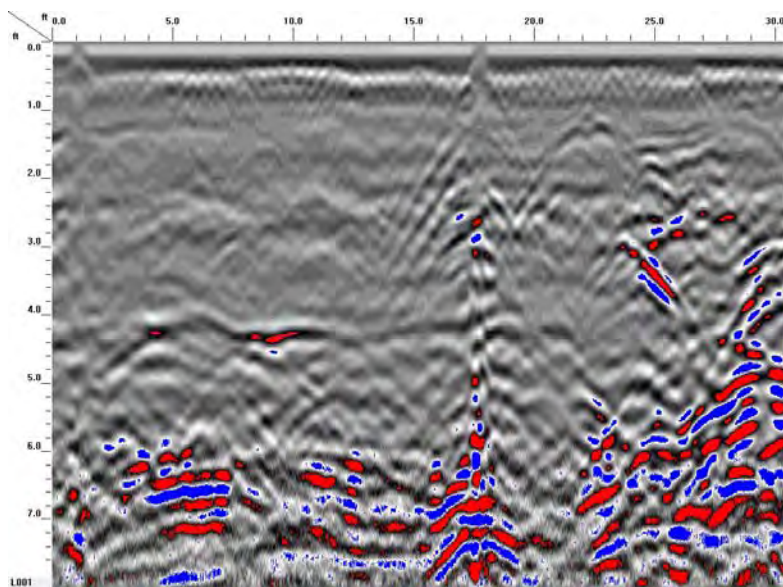
GPR TRANSECT 8



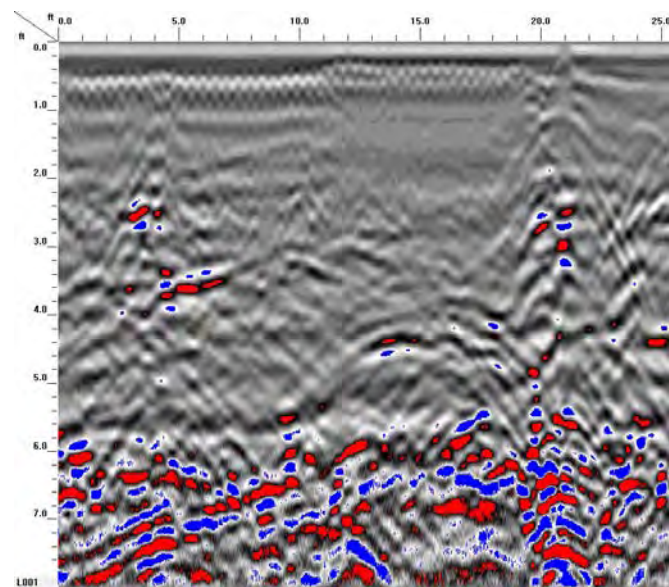
GPR TRANSECT 9



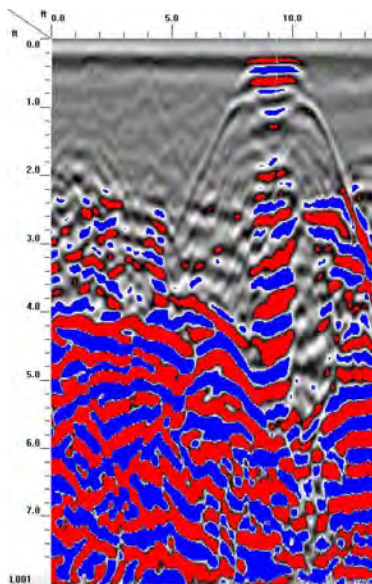
GPR TRANSECT 11



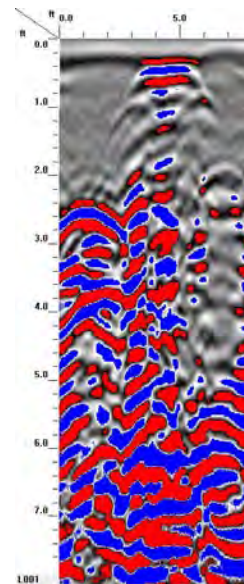
GPR TRANSECT 10



GPR TRANSECT 12



GPR TRANSECT 13



GPR TRANSECT 14

APPENDIX B

BORING LOGS, WELL CONSTRUCTION AND ABANDONMENT RECORDS

BORING LOG


WBS #: 39026.1.2
TIP #: U-3609B

219139

PROJECT NO.:	219139	STATE:	N.C.	COUNTY:	WAYNE	LOCATION:	GOLDSBORO
PROJECT NAME:	GOLDSBORO-US13 (BERKELEY BLVD) FROM SR 1003 (NEW HOPE RD) TO SR 1572 (SAULSTON RD)				LOGGED BY:	Corey Futral	BORING ID:
					DRILLER:	E. Swain	1816DPT-01
NORTHING:	598,096	EASTING:	2,322,013	CREW:	CATLIN		
SYSTEM:	NCSP NAD 83 (ft)	BORING LOCATION:	1816 N. Berkeley Blvd			LAND ELEV.:	NM
DRILL MACHINE:	GeoProbe	METHOD:	DPT	0 HOUR DTW:	N/A	BORING DEPTH:	16.0
START DATE:	12/9/19	FINISH DATE:	12/9/19	24 HOUR DTW:	N/A	WATER DEPTH:	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	SCREENING RESULTS (ppm)	LAB. ID.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	ELEVATION
0.0			0 250 500 750 1,000				0.0	LAND SURFACE
4.0	Direct Push	D	▲1.9		SP		Brown to gray with orange from 4.0-5.0' BLS, F. SAND	
6.0	Direct Push	D	▲1.8				5.0	
8.0	Direct Push	M	▲2.2		SM		Orange grading to tan with orange mottling, Silty F. SAND with tr. clay	
10.0	Direct Push	M	▲3.2	1816 DPT-01 (9')				
12.0	Direct Push	M	▲0.2				11.0	
14.0	Direct Push	Sat.	▲0.7		SP		Lt. tan, F. SAND	
16.0	Direct Push	Sat.	▲0.2				16.0	
							BORING TERMINATED AT DEPTH 16.0 ft in F. SAND	

= 0hr. DTW

= 24hr. DTW

CATLIN ENVIRO.LOG_219139_NCDOT_GOLDSBORO_PSAS.GPJ_CATLIN.GDT_12/18/19

BORING LOG


WBS #: 39026.1.2
TIP #: U-3609B

219139

PROJECT NO.:	219139	STATE:	N.C.	COUNTY:	WAYNE	LOCATION:	GOLDSBORO
PROJECT NAME:	GOLDSBORO-US13 (BERKELEY BLVD) FROM SR 1003 (NEW HOPE RD) TO SR 1572 (SAULSTON RD)				LOGGED BY:	Corey Futral	BORING ID:
					DRILLER:	E. Swain	1816DPT-02
NORTHING:	598,108	EASTING:	2,321,969	CREW:	CATLIN		
SYSTEM:	NCSP NAD 83 (ft)	BORING LOCATION:	1816 N. Berkeley Blvd			LAND ELEV.:	NM
DRILL MACHINE:	GeoProbe	METHOD:	DPT	0 HOUR DTW:	N/A	BORING DEPTH:	12.0
START DATE:	12/9/19	FINISH DATE:	12/9/19	24 HOUR DTW:	N/A	WATER DEPTH:	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	SCREENING RESULTS (ppm)	LAB. ID.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	ELEVATION
0.0			0 250 500 750 1,000				0.0	LAND SURFACE
2.0	Direct Push	D	▲0.0		SM		Dark gray to brown, Silty F. SAND	
4.0	Direct Push	D	▲0.0		SP		Tan, F. SAND	3.0
6.0	Direct Push	M	▲0.0		SM		Tan with orange mottling, Silty F. SAND with tr. clay	4.0
8.0	Direct Push	M	▲0.0		SP		Tan, F. SAND	5.0
10.0	Direct Push	M	▲1.0	1816 DPT-02 (10')	CL		Tan with orange and red mottling, Sandy and Silty mod. plastic CLAY	5.5
12.0	Direct Push	W	▲1.6		SP		Lt. tan, F. SAND	11.0
							BORING TERMINATED AT DEPTH 12.0 ft in F. SAND	12.0

= 0hr. DTW

= 24hr. DTW

CATLIN\ENVIRO\LOG_219139_NCDOT_GOLDSBORO_PSAS.GPJ CATLIN.GDT 12/18/19

BORING LOG


WBS #: 39026.1.2
TIP #: U-3609B

219139

PROJECT NO.:	219139	STATE:	N.C.	COUNTY:	WAYNE	LOCATION:	GOLDSBORO
PROJECT NAME:	GOLDSBORO-US13 (BERKELEY BLVD) FROM SR 1003 (NEW HOPE RD) TO SR 1572 (SAULSTON RD)				LOGGED BY:	Corey Futral	BORING ID:
					DRILLER:	E. Swain	1816DPT-03
NORTHING:	598,111	EASTING:	2,321,939	CREW:	CATLIN		
SYSTEM:	NCSP NAD 83 (ft)	BORING LOCATION:	1816 N. Berkeley Blvd			LAND ELEV.:	NM
DRILL MACHINE:	GeoProbe	METHOD:	DPT	0 HOUR DTW:	N/A	BORING DEPTH:	12.0
START DATE:	12/9/19	FINISH DATE:	12/9/19	24 HOUR DTW:	N/A	WATER DEPTH:	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	SCREENING RESULTS (ppm)	LAB. ID.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	ELEVATION
0.0			0 250 500 750 1,000				0.0	LAND SURFACE
2.0	Direct Push	D	▲0.0		ML		Dark gray to dark brown, Sandy SILT	2.0
4.0	Direct Push	D	▲0.0		SP		Tan with orange mottling, F. SAND	5.0
6.0	Direct Push	M	▲0.0		CL		Gray and tan with orange and red mottling, Sandy and Silty mod. plastic CLAY	10.0
8.0	Direct Push	M	▲0.0	1816 DPT-03 (8')				
10.0	Direct Push	M	▲0.0					
12.0	Direct Push	W	▲0.0		ML		Gray with tan, Silty F. SAND	12.0
							BORING TERMINATED AT DEPTH 12.0 ft in Silty F. SAND	

= 0hr. DTW

= 24hr. DTW

CATLIN\ENVIRO\LOG_219139_NCDOT_GOLDSBORO_PSAS.GPJ CATLIN.GDT 12/18/19

WBS #: 39026.1.2

TIP # U-3609B

219139

[illegible]

1" PVC Well set to 15.0'BLS Sampled and Abandoned

 = 24hr. DTW

CATLIN ENVIRO.LOG 219139 NCDOT GOLDSBORO PSAS.GPJ CATLIN.GDT 12/18/19

BORING LOG


 WBS #: 39026.1.2
 TIP #: U-3609B

219139

PROJECT NO.:	219139	STATE:	N.C.	COUNTY:	WAYNE	LOCATION:	GOLDSBORO
PROJECT NAME:	GOLDSBORO-US13 (BERKELEY BLVD) FROM SR 1003 (NEW HOPE RD) TO SR 1572 (SAULSTON RD)				LOGGED BY:	Corey Futral	BORING ID:
					DRILLER:	E. Swain	1816DPT-05
NORTHING:	598,104	EASTING:	2,321,859	CREW:	CATLIN		
SYSTEM:	NCSP NAD 83 (ft)	BORING LOCATION:	1816 N. Berkeley Blvd			LAND ELEV.:	NM
DRILL MACHINE:	GeoProbe	METHOD:	DPT	0 HOUR DTW:	N/A	BORING DEPTH:	12.0
START DATE:	12/9/19	FINISH DATE:	12/9/19	24 HOUR DTW:	N/A	WATER DEPTH:	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	SCREENING RESULTS (ppm)	LAB. ID.	USCS	LOG	SOIL AND ROCK DESCRIPTION	ELEVATION
0.0			0 250 500 750 1,000				0.0 LAND SURFACE	
2.0	Direct Push	D	▲0.6		ML		Dark brown to dark gray, Silty F. SAND	
4.0	Direct Push	D	▲1.1		SP		Brown grading to lt. gray, F. SAND	3.0
6.0	Direct Push	M	▲1.3		CL		Gray with orange and red mottling, Sandy and Silty mod. plastic CLAY	4.5
8.0	Direct Push	M	▲1.6					
10.0	Direct Push	M	▲2.2	1816 DPT-05 (9')				
12.0	Direct Push	W	▲0.3		SP		Lt. gray with tr. orange mottling, F. SAND	10.5
							BORING TERMINATED AT DEPTH 12.0 ft in F. SAND	12.0

= 0hr. DTW

= 24hr. DTW

CATLIN\ENVIRO\LOG_219139_NCDOT_GOLDSBORO_PSAS.GPJ CATLIN.GDT 12/18/19

BORING LOG


 WBS #: 39026.1.2
 TIP #: U-3609B

219139

PROJECT NO.:	219139	STATE:	N.C.	COUNTY:	WAYNE	LOCATION:	GOLDSBORO
PROJECT NAME:	GOLDSBORO-US13 (BERKELEY BLVD) FROM SR 1003 (NEW HOPE RD) TO SR 1572 (SAULSTON RD)				LOGGED BY:	Corey Futral	BORING ID:
					DRILLER:	E. Swain	1816DPT-06
NORTHING:	598,086	EASTING:	2,321,819	CREW:	CATLIN		
SYSTEM:	NCSP NAD 83 (ft)	BORING LOCATION:	1816 N. Berkeley Blvd				LAND ELEV.: NM
DRILL MACHINE:	GeoProbe	METHOD:	DPT	0 HOUR DTW:	N/A	BORING DEPTH:	12.0
START DATE:	12/9/19	FINISH DATE:	12/9/19	24 HOUR DTW:	N/A	WATER DEPTH:	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	SCREENING RESULTS (ppm)	LAB. ID.	USCS	LOG	SOIL AND ROCK DESCRIPTION	ELEVATION
0.0			0 250 500 750 1,000				LAND SURFACE	0.0
2.0	Direct Push	D	▲0.3		SP		Dark brown and gray grading to tan, F. SAND	
4.0	Direct Push	D	▲0.6					
6.0	Direct Push	D	▲1.1					
8.0	Direct Push	D	▲1.2		CL		Gray with orange mottling, Sandy and Silty mod. plastic CLAY	
10.0	Direct Push	M	▲1.1	1816 DPT-06 (8')				
12.0	Direct Push	W	▲0.9		SP		Lt. gray, F. SAND	
							BORING TERMINATED AT DEPTH 12.0 ft in F. SAND	

= 0hr. DTW

= 24hr. DTW

CATLIN\ENVIRO\LOG_219139_NCDOT_GOLDSBORO_PSAS.GPJ CATLIN.GDT 12/18/19

WELL CONSTRUCTION RECORD (GW-1)**1. Well Contractor Information:****Corey Futral**

Well Contractor Name

4330-B

NC Well Contractor Certification Number

CATLIN Engineers and Scientists

Company Name

2. Well Construction Permit #: _____

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

3. Well Use (check well use):**Water Supply Well:**

- ☐ Agricultural
 ☐ Municipal/Public
☐ Geothermal (Heating/Cooling Supply)
 ☐ Residential Water Supply (single)
☐ Industrial/Commercial
 ☐ Residential Water Supply (shared)
☐ Irrigation

Non-Water Supply Well:

- ☒ Monitoring
 ☐ Recovery

Injection Well:

- ☐ Aquifer Recharge
 ☐ Groundwater Remediation
☐ Aquifer Storage and Recovery
 ☐ Salinity Barrier
☐ Aquifer Test
 ☐ Stormwater Drainage
☐ Experimental Technology
 ☐ Subsidence Control
☐ Geothermal (Closed Loop)
 ☐ Tracer
☐ Geothermal (Heating/Cooling Return)
 ☐ Other (explain under #21 Remarks)

4. Date Well(s) Completed: 12/9/19 **Well ID#** 1816DPT-04
5a. Well Location:**NCDOT**

Facility/Owner Name

Facility ID# (if applicable)

1816 N. Berkeley Blvd., Goldsboro, NC 27534

Physical Address, City, and Zip

Wayne

County

Parcel Identification No. (PIN)

5b. Latitude and longitude in degrees/minutes/seconds or decimal degrees:
 (if well field, one lat/long is sufficient)

35.388368 N **-77.920151** W

6. Is(are) the well(s): ☐ Permanent or ☒ Temporary

7. Is this a repair to an existing well: ☐ Yes or ☒ No

If this is a repair, fill out known well construction information and explain the nature of the repair under #21 remarks section or on the back of this form.

8. For Geoprobe/DPT or Closed-Loop Geothermal Wells having the same construction, only 1 GW-1 is needed. Indicate TOTAL NUMBER of wells drilled: 1
9. Total well depth below land surface: 15.0 (ft.)
 For multiple wells list all depths if different (example- 3@200' and 2@100')

10. Static water level below top of casing: ~10.0 (ft.)
 If water level is above casing, use "+"

11. Borehole diameter: 2 (in.)

12. Well construction method: Direct Push
 (i.e. auger, rotary, cable, direct push, etc.)
 FOR WATER SUPPLY WELLS ONLY:
13a. Yield (gpm) _____ **Method of test:** _____

13b. Disinfection type: _____ **Amount:** _____

For Internal Use Only:

14. WATER ZONES

FROM	TO	DESCRIPTION
ft.	ft.	
ft.	ft.	

15. OUTER CASING (for multi-cased wells) OR LINER (if applicable)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		

16. INNER CASING OR TUBING (geothermal closed-loop)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		
ft.	ft.	in.		

17. SCREEN

FROM	TO	DIAMETER	SLOT SIZE	THICKNESS	MATERIAL
0 ft.	15 ft.	1 in.	.010	Sch 40	PVC
ft.	ft.	in.			

18. GROUT

FROM	TO	MATERIAL	EMPLACEMENT METHOD & AMOUNT
ft.	ft.		
ft.	ft.		
ft.	ft.		

19. SAND/GRAVEL PACK (if applicable)

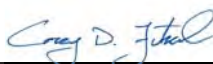
FROM	TO	MATERIAL	EMPLACEMENT METHOD
0 ft.	15 ft.	Natural Backfill	
ft.	ft.		

20. DRILLING LOG (attach additional sheets if necessary)

FROM	TO	DESCRIPTION (color, hardness, soil/rock type, grain size, etc.)
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	

21. REMARKS

22. Certification:


 Signature of Certified Well Contractor

1/24/20
 Date

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

23. Site diagram or additional well details:

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

SUBMITTAL INSTRUCTIONS

24a. For All Wells: Submit this form within 30 days of completion of well construction to the following:

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

24b. For Injection Wells: In addition to sending the form to the address in 24a above, also submit one copy of this form within 30 days of completion of well construction to the following:

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

24c. 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 construction to the county health department of the county where constructed.

WELL ABANDONMENT RECORD

1. Well Contractor Information:

Corey Futral

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

4330-B

NC Well Contractor Certification Number

CATLIN Engineers and Scientists

Company Name

2. Well Construction Permit #:

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

3. Well use (check well use):

Water Supply Well:

- | | |
|--|--|
| ☐ Agricultural | ☐ Municipal/Public |
| ☐ Geothermal (Heating/Cooling Supply) | ☐ Residential Water Supply (single) |
| ☐ Industrial/Commercial | ☐ Residential Water Supply (shared) |
| ☐ Irrigation | |

Non-Water Supply Well:

- | | |
|--|-----------------------------------|
| ☒ Monitoring | ☐ Recovery |
|--|-----------------------------------|

Injection Well:

- | | |
|--|---|
| ☐ Aquifer Recharge | ☐ Groundwater Remediation |
| ☐ Aquifer Storage and Recovery | ☐ Salinity Barrier |
| ☐ Aquifer Test | ☐ Stormwater Drainage |
| ☐ Experimental Technology | ☐ Subsidence Control |
| ☐ Geothermal (Closed Loop) | ☐ Tracer |
| ☐ Geothermal (Heating/Cooling Return) | ☐ Other (explain under 7g) |

4. Date well(s) abandoned: 12/9/19

5a. Well location:

NCDOT

Facility/Owner Name

Facility ID# (if applicable)

1816 N. Berkeley Blvd., Goldsboro, NC 27534

Physical Address, City, and Zip

Wayne

County

Parcel Identification No. (PIN)

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

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

35.388368 N -77.920151 W

CONSTRUCTION DETAILS OF WELL(S) 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#: 1816DPT-04

6b. Total well depth: 15.0 (ft.)

6c. Borehole diameter: 2 (in.)

6d. Water level below ground surface: ~10.0 (ft.)

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

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

6g. Screen length (if known): 15.0 (ft.)

For Internal Use ONLY:

WELL ABANDONMENT DETAILS

7a. For Geoprobe/DPT or Closed-Loop Geothermal Wells having the same well construction/depth, only 1 GW-30 is needed. Indicate TOTAL NUMBER of wells abandoned: 1

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):

- | | |
|--|--|
| ☐ Neat Cement Grout | ☒ Bentonite Chips or Pellets |
| ☐ Sand Cement Grout | ☐ Dry Clay |
| ☐ Concrete Grout | ☐ Drill Cuttings |
| ☐ Specialty Grout | ☐ Gravel |
| ☐ Bentonite Slurry | ☐ Other (explain under 7g) |

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

Bentonite Pellets ~24 lbs.

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

All well material pulled, surface poured bentonite pellets and hydrated.

8. Certification:

Signature of Certified Well Contractor or Well Owner

1/24/20

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 Resources, 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 Resources, 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.

APPENDIX C

LABORATORY REPORTS AND CHAIN OF CUSTODY RECORDS



Hydrocarbon Analysis Results

Client: CATLIN
Address: WILMINGTON NC

Samples taken Monday, December 09, 2019
Samples extracted Monday, December 09, 2019
Samples analysed Tuesday, December 17, 2019

Contact: BEN ASHBA

Operator CAROLINE STEVENS

Project: 219139 (1816)

													F03640
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	1816DPT-01(9')	20.6	<0.52	<0.52	<0.52	<0.52	<0.1	<0.17	<0.021	0	0	0	PHC not detected
s	1816DPT-02(10')	7.9	<0.2	<0.2	<0.2	<0.2	<0.04	<0.06	<0.008	0	0	0	, (FCM)
s	1816DPT-03(8')	9.1	<0.23	<0.23	<0.23	<0.23	<0.05	<0.07	<0.009	0	0	0	, (FCM), (BO)
s	1816DPT-04(7')	11.4	<0.28	<0.28	<0.28	<0.28	<0.06	<0.09	<0.011	0	0	0	, (FCM), (BO)
s	1816DPT-05(9')	4.5	<0.11	<0.11	<0.11	<0.11	<0.02	<0.04	<0.005	0	0	0	, (FCM)
s	1816DPT-06(8')	7.9	<0.2	<0.2	<0.2	<0.2	<0.04	<0.06	<0.008	0	0	0	, (FCM), (BO)
Initial Calibrator QC check			OK		Final FCM QC Check					OK		101.1 %	

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

Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

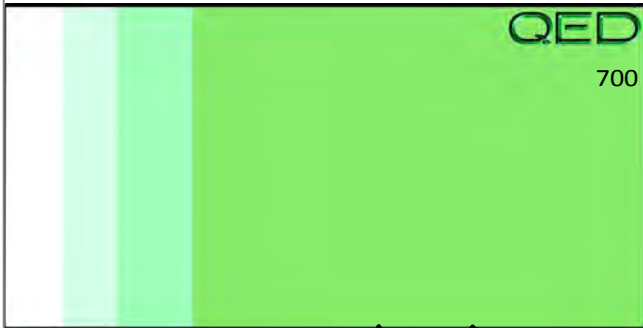
1816DPT-01(9') : PHC not detected



1816DPT-02(10') : ,(FCM)



1816DPT-03(8') : ,(FCM),(BO)



1816DPT-04(7') : ,(FCM),(BO)



1816DPT-05(9') : ,(FCM)



1816DPT-06(8') : ,(FCM),(BO)



RED Lab, LLC
5598 Marvin K Moss Lane
MARBIONC Bldg, Suite 2003
Wilmington, NC 28409

COREY FURTEL

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

analyses in the space provided below.

Sample Collection Date/Time	TAT Requested		Analysis Type		Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
	24 Hour	48 Hour	UVF	GC					
12/9/19 @ 1430		✓	✓		GF	1816 DPT-01 (9')	56.7	44.1	12.6
12/9/19 @ 1500		✓	✓		GF	1816 DPT-02 (10')	57.3	44.6	12.7
12/9/19 @ 1530		✓	✓		GF	1816 DPT-03 (8')	55.3	44.3	11.0
12/9/19 @ 1600		✓	✓		GF	1816 DPT-04 (7')	56.1	43.8	12.3
12/9/19 @ 1645		✓	✓		GF	1816 DPT-05 (9')	57.2	44.0	13.2
12/9/19 @ 1715		✓	✓		GF	1816 DPT-06 (8')	56.8	44.2	12.6
12/9/19 @		✓	✓		GF	1816 DPT-07		44.2	

TARGET GC/UVF ANALYTES:

RED Lab USE ONLY

6

Ref. No B 148



ENCO Laboratories

Accurate. Timely. Responsive. Innovative.

102-A Woodwinds Industrial Court

Cary NC, 27511

Phone: 919.467.3090 FAX: 919.467.3515

Monday, January 6, 2020

Catlin Engineers & Scientists (CA038)

Attn: Ben Ashba

220 Old Dairy Road

Wilmington, NC 28405

RE: Laboratory Results for

Project Number: [none], Project Name/Desc: NCDOT Goldsboro

ENCO Workorder(s): CC20427

Dear Ben Ashba,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Tuesday, December 17, 2019.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

The analytical results contained in this report are in compliance with NELAC standards, except as noted in the project narrative if applicable. This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Unless otherwise noted, all analyses were performed at ENCO Cary. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Chuck Smith

Project Manager

Enclosure(s)

PROJECT NARRATIVE

Client: Catlin Engineers & Scientists (CA038)
Project: NCDOT Goldsboro
Lab ID: CC20427

Overview

Environmental Conservation Laboratories, Inc. (ENCO) analyzed all submitted samples in accordance with the methods referenced in the laboratory report. Any particular difficulties encountered during sample handling by ENCO are discussed in the QC Remarks section below.

Quality Control Samples

No Comments

Quality Control Remarks

The method 625.1 analysis was received and extracted outside of the holding time.

Other Comments

The analytical data presented in this report are consistent with the methods as referenced in the analytical report. Any exceptions or deviations are noted in the QC remarks section of this narrative or in the Flags/Notes and Definitions section of the report.

Released By:
Environmental Conservation Laboratories, Inc.

Chuck Smith
Project Manager



www.encolabs.com

SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID: 1816DPT-04 Lab ID: CC20427-01 Sampled: 12/09/19 16:15 Received: 12/17/19 11:00

<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>		<u>Prep Date/Time(s)</u>		<u>Analysis Date/Time(s)</u>
EPA 625.1	EPA 3510C_MS	12/16/19	01/28/20	12/19/19	14:06	12/26/19 20:47
SM 6200B-2011	Same	12/23/19		12/18/19	10:21	12/18/19 17:59

SAMPLE DETECTION SUMMARY

No positive results detected.

ANALYTICAL RESULTS

Description: 1816DPT-04

Lab Sample ID: CC20427-01

Received: 12/17/19 11:00

Matrix: Ground Water

Sampled: 12/09/19 16:15

Work Order: CC20427

Project: NCDOT Goldsboro

Sampled By: Corey Futral

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6]^	0.091	U	ug/L	1	0.091	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,1,1-Trichloroethane [71-55-6]^	0.15	U	ug/L	1	0.15	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,1,2,2-Tetrachloroethane [79-34-5]^	0.085	U	ug/L	1	0.085	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,1,2-Trichloroethane [79-00-5]^	0.068	U	ug/L	1	0.068	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,1-Dichloroethane [75-34-3]^	0.050	U	ug/L	1	0.050	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,1-Dichloroethene [75-35-4]^	0.15	U	ug/L	1	0.15	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,1-Dichloropropene [563-58-6]^	0.063	U	ug/L	1	0.063	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,2,3-Trichlorobenzene [87-61-6]^	0.25	U	ug/L	1	0.25	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,2,3-Trichloropropane [96-18-4]^	0.15	U	ug/L	1	0.15	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,2,4-Trichlorobenzene [120-82-1]^	0.097	U	ug/L	1	0.097	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,2,4-Trimethylbenzene [95-63-6]^	0.067	U	ug/L	1	0.067	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,2-Dibromo-3-chloropropane [96-12-8]^	0.48	U	ug/L	1	0.48	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,2-Dibromoethane [106-93-4]^	0.42	U	ug/L	1	0.42	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,2-Dichlorobenzene [95-50-1]^	0.052	U	ug/L	1	0.052	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,2-Dichloroethane [107-06-2]^	0.082	U	ug/L	1	0.082	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,2-Dichloropropane [78-87-5]^	0.098	U	ug/L	1	0.098	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,3,5-Trimethylbenzene [108-67-8]^	0.10	U	ug/L	1	0.10	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,3-Dichlorobenzene [541-73-1]^	0.092	U	ug/L	1	0.092	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,3-Dichloropropane [142-28-9]^	0.15	U	ug/L	1	0.15	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
1,4-Dichlorobenzene [106-46-7]^	0.10	U	ug/L	1	0.10	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
2,2-Dichloropropane [594-20-7]^	0.12	U	ug/L	1	0.12	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
2-Chlorotoluene [95-49-8]^	0.10	U	ug/L	1	0.10	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
4-Chlorotoluene [106-43-4]^	0.10	U	ug/L	1	0.10	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
4-Isopropyltoluene [99-87-6]^	0.066	U	ug/L	1	0.066	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Benzene [71-43-2]^	0.050	U	ug/L	1	0.050	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Bromobenzene [108-86-1]^	0.13	U	ug/L	1	0.13	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Bromochloromethane [74-97-5]^	0.11	U	ug/L	1	0.11	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Bromodichloromethane [75-27-4]^	0.10	U	ug/L	1	0.10	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Bromoform [75-25-2]^	0.20	U	ug/L	1	0.20	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Bromomethane [74-83-9]^	0.28	U	ug/L	1	0.28	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Carbon Tetrachloride [56-23-5]^	0.082	U	ug/L	1	0.082	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Chlorobenzene [108-90-7]^	0.069	U	ug/L	1	0.069	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Chloroethane [75-00-3]^	0.18	U	ug/L	1	0.18	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Chloroform [67-66-3]^	0.083	U	ug/L	1	0.083	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Chloromethane [74-87-3]^	0.050	U	ug/L	1	0.050	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
cis-1,2-Dichloroethene [156-59-2]^	0.075	U	ug/L	1	0.075	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
cis-1,3-Dichloropropene [10061-01-5]^	0.073	U	ug/L	1	0.073	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Dibromochloromethane [124-48-1]^	0.067	U	ug/L	1	0.067	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Dibromomethane [74-95-3]^	0.13	U	ug/L	1	0.13	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Dichlorodifluoromethane [75-71-8]^	0.091	U	ug/L	1	0.091	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Ethylbenzene [100-41-4]^	0.10	U	ug/L	1	0.10	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Freon 113 [76-13-1]^	0.35	U	ug/L	1	0.35	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Hexachlorobutadiene [87-68-3]^	0.15	U	ug/L	1	0.15	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Isopropyl Ether [108-20-3]^	0.21	U	ug/L	1	0.21	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Isopropylbenzene [98-82-8]^	0.13	U	ug/L	1	0.13	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
m,p-Xylenes [108-38-3/106-42-3]^	0.18	U	ug/L	1	0.18	2.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Methylene Chloride [75-09-2]^	0.070	U	ug/L	1	0.070	2.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	

ANALYTICAL RESULTS

Description: 1816DPT-04

Lab Sample ID: CC20427-01

Received: 12/17/19 11:00

Matrix: Ground Water

Sampled: 12/09/19 16:15

Work Order: CC20427

Project: NCDOT Goldsboro

Sampled By: Corey Futral

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Methyl-tert-Butyl Ether [1634-04-4]^	0.12	U	ug/L	1	0.12	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Naphthalene [91-20-3]^	0.086	U	ug/L	1	0.086	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
n-Butyl Benzene [104-51-8]^	0.074	U	ug/L	1	0.074	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
n-Propyl Benzene [103-65-1]^	0.073	U	ug/L	1	0.073	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
o-Xylene [95-47-6]^	0.088	U	ug/L	1	0.088	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
sec-Butylbenzene [135-98-8]^	0.053	U	ug/L	1	0.053	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Styrene [100-42-5]^	0.082	U	ug/L	1	0.082	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
tert-Butylbenzene [98-06-6]^	0.094	U	ug/L	1	0.094	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Tetrachloroethene [127-18-4]^	0.099	U	ug/L	1	0.099	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Toluene [108-88-3]^	0.053	U	ug/L	1	0.053	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
trans-1,2-Dichloroethene [156-60-5]^	0.11	U	ug/L	1	0.11	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
trans-1,3-Dichloropropene [10061-02-6]^	0.080	U	ug/L	1	0.080	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Trichloroethene [79-01-6]^	0.13	U	ug/L	1	0.13	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Trichlorofluoromethane [75-69-4]^	0.15	U	ug/L	1	0.15	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Vinyl chloride [75-01-4]^	0.083	U	ug/L	1	0.083	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Xylenes (Total) [1330-20-7]^	0.22	U	ug/L	1	0.22	1.0	9L18018	SM 6200B-2011	12/18/19 17:59	REF	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	47	1	50.0	95 %	70-130	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Dibromofluoromethane	38	1	50.0	76 %	70-130	9L18018	SM 6200B-2011	12/18/19 17:59	REF	
Toluene-d8	42	1	50.0	83 %	70-130	9L18018	SM 6200B-2011	12/18/19 17:59	REF	

Semivolatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
1,2,4-Trichlorobenzene [120-82-1]^	3.3	U	ug/L	1	3.3	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
1,2-Dichlorobenzene [95-50-1]	3.2	U	ug/L	1	3.2	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
1,3-Dichlorobenzene [541-73-1]	3.4	U	ug/L	1	3.4	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
1,4-Dichlorobenzene [106-46-7]	3.2	U	ug/L	1	3.2	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2,4,6-Trichlorophenol [88-06-2]^	6.4	U	ug/L	1	6.4	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2,4-Dichlorophenol [120-83-2]^	6.5	U	ug/L	1	6.5	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2,4-Dimethylphenol [105-67-9]^	6.4	U	ug/L	1	6.4	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2,4-Dinitrophenol [51-28-5]^	7.7	U	ug/L	1	7.7	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2,4-Dinitrotoluene [121-14-2]^	3.2	U	ug/L	1	3.2	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2,6-Dinitrotoluene [606-20-2]^	2.9	U	ug/L	1	2.9	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2-Chloronaphthalene [91-58-7]^	3.2	U	ug/L	1	3.2	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2-Chlorophenol [95-57-8]^	7.4	U	ug/L	1	7.4	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2-Methyl-4,6-dinitrophenol [534-52-1]^	6.0	U	ug/L	1	6.0	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2-Nitrophenol [88-75-5]^	5.2	U	ug/L	1	5.2	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
3,3'-Dichlorobenzidine [91-94-1]^	3.3	U	ug/L	1	3.3	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
4-Bromophenyl-phenylether [101-55-3]^	3.3	U	ug/L	1	3.3	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
4-Chloro-3-methylphenol [59-50-7]^	7.3	U	ug/L	1	7.3	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
4-Chlorophenyl-phenylether [7005-72-3]^	3.2	U	ug/L	1	3.2	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
4-Nitrophenol [100-02-7]^	7.9	U	ug/L	1	7.9	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Acenaphthene [83-32-9]^	3.0	U	ug/L	1	3.0	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Acenaphthylene [208-96-8]^	9.6	U	ug/L	1	9.6	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Anthracene [120-12-7]^	3.0	U	ug/L	1	3.0	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05

ANALYTICAL RESULTS

Description: 1816DPT-04

Lab Sample ID: CC20427-01

Received: 12/17/19 11:00

Matrix: Ground Water

Sampled: 12/09/19 16:15

Work Order: CC20427

Project: NCDOT Goldsboro

Sampled By: Corey Futral

Semivolatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Benzidine [92-87-5]^	7.1	U	ug/L	1	7.1	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	QV-01, O-05
Benzo(a)anthracene [56-55-3]^	3.2	U	ug/L	1	3.2	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Benzo(a)pyrene [50-32-8]^	3.2	U	ug/L	1	3.2	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Benzo(b)fluoranthene [205-99-2]^	3.4	U	ug/L	1	3.4	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Benzo(g,h,i)perylene [191-24-2]^	3.7	U	ug/L	1	3.7	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Benzo(k)fluoranthene [207-08-9]^	3.8	U	ug/L	1	3.8	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Bis(2-chloroethoxy)methane [111-91-1]^	3.3	U	ug/L	1	3.3	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Bis(2-chloroethyl)ether [111-44-4]^	3.8	U	ug/L	1	3.8	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Bis(2-chloroisopropyl)ether [108-60-1]^	3.5	U	ug/L	1	3.5	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Bis(2-ethylhexyl)phthalate [117-81-7]^	3.5	U	ug/L	1	3.5	5.0	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Butylbenzylphthalate [85-68-7]^	5.1	U	ug/L	1	5.1	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	QV-01, O-05
Chrysene [218-01-9]^	3.0	U	ug/L	1	3.0	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Dibenzo(a,h)anthracene [53-70-3]^	3.8	U	ug/L	1	3.8	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Diethylphthalate [84-66-2]^	3.0	U	ug/L	1	3.0	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Dimethylphthalate [131-11-3]^	3.0	U	ug/L	1	3.0	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Di-n-butylphthalate [84-74-2]^	3.2	U	ug/L	1	3.2	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Di-n-octylphthalate [117-84-0]^	4.7	U	ug/L	1	4.7	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Fluoranthene [206-44-0]^	4.0	U	ug/L	1	4.0	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Fluorene [86-73-7]^	2.9	U	ug/L	1	2.9	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Hexachlorobenzene [118-74-1]^	3.0	U	ug/L	1	3.0	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Hexachlorobutadiene [87-68-3]^	4.1	U	ug/L	1	4.1	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Hexachlorocyclopentadiene [77-47-4]^	3.8	U	ug/L	1	3.8	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Hexachloroethane [67-72-1]^	3.0	U	ug/L	1	3.0	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Indeno(1,2,3-cd)pyrene [193-39-5]^	4.1	U	ug/L	1	4.1	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Isophorone [78-59-1]^	4.5	U	ug/L	1	4.5	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Naphthalene [91-20-3]^	3.6	U	ug/L	1	3.6	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Nitrobenzene [98-95-3]^	3.2	U	ug/L	1	3.2	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
N-Nitrosodimethylamine [62-75-9]^	3.8	U	ug/L	1	3.8	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
N-Nitroso-di-n-propylamine [621-64-7]^	4.5	U	ug/L	1	4.5	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
N-nitrosodiphenylamine/Diphenylamine [86-30-6/122-39-4]^	5.4	U	ug/L	1	5.4	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Pentachlorophenol [87-86-5]^	8.2	U	ug/L	1	8.2	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Phenanthrene [85-01-8]^	2.8	U	ug/L	1	2.8	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Phenol [108-95-2]^	5.6	U	ug/L	1	5.6	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Pyrene [129-00-0]^	4.1	U	ug/L	1	4.1	10	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
2,4,6-Tribromophenol	68	1	100	68 %	47-128	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2-Fluorobiphenyl	48	1	50.0	95 %	44-102	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
2-Fluorophenol	57	1	100	57 %	25-79	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Nitrobenzene-d5	40	1	50.0	81 %	43-112	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Phenol-d5	45	1	100	45 %	14-54	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05
Terphenyl-d14	46	1	50.0	91 %	65-122	9L19010	EPA 625.1	12/26/19 20:47	DFM	O-05

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L18018 - EPA 5030B_MS

Blank (9L18018-BLK1)

Prepared: 12/18/2019 10:24 Analyzed: 12/18/2019 13:40

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	0.091	U	1.0	ug/L							
1,1,1-Trichloroethane	0.15	U	1.0	ug/L							
1,1,2,2-Tetrachloroethane	0.085	U	1.0	ug/L							
1,1,2-Trichloroethane	0.068	U	1.0	ug/L							
1,1-Dichloroethane	0.050	U	1.0	ug/L							
1,1-Dichloroethene	0.15	U	1.0	ug/L							
1,1-Dichloropropene	0.063	U	1.0	ug/L							
1,2,3-Trichlorobenzene	0.25	U	1.0	ug/L							
1,2,3-Trichloropropane	0.15	U	1.0	ug/L							
1,2,4-Trichlorobenzene	0.097	U	1.0	ug/L							
1,2,4-Trimethylbenzene	0.067	U	1.0	ug/L							
1,2-Dibromo-3-chloropropane	0.48	U	1.0	ug/L							
1,2-Dibromoethane	0.42	U	1.0	ug/L							
1,2-Dichlorobenzene	0.052	U	1.0	ug/L							
1,2-Dichloroethane	0.082	U	1.0	ug/L							
1,2-Dichloropropane	0.098	U	1.0	ug/L							
1,3,5-Trimethylbenzene	0.10	U	1.0	ug/L							
1,3-Dichlorobenzene	0.092	U	1.0	ug/L							
1,3-Dichloropropane	0.15	U	1.0	ug/L							
1,4-Dichlorobenzene	0.10	U	1.0	ug/L							
2,2-Dichloropropane	0.12	U	1.0	ug/L							
2-Chlorotoluene	0.10	U	1.0	ug/L							
4-Chlorotoluene	0.10	U	1.0	ug/L							
4-Isopropyltoluene	0.066	U	1.0	ug/L							
Benzene	0.050	U	1.0	ug/L							
Bromobenzene	0.13	U	1.0	ug/L							
Bromochloromethane	0.11	U	1.0	ug/L							
Bromodichloromethane	0.10	U	1.0	ug/L							
Bromoform	0.20	U	1.0	ug/L							
Bromomethane	0.28	U	1.0	ug/L							
Carbon Tetrachloride	0.082	U	1.0	ug/L							
Chlorobenzene	0.069	U	1.0	ug/L							
Chloroethane	0.18	U	1.0	ug/L							
Chloroform	0.083	U	1.0	ug/L							
Chloromethane	0.050	U	1.0	ug/L							
cis-1,2-Dichloroethene	0.075	U	1.0	ug/L							
cis-1,3-Dichloropropene	0.073	U	1.0	ug/L							
Dibromochloromethane	0.067	U	1.0	ug/L							
Dibromomethane	0.13	U	1.0	ug/L							
Dichlorodifluoromethane	0.091	U	1.0	ug/L							
Ethylbenzene	0.10	U	1.0	ug/L							
Freon 113	0.35	U	1.0	ug/L							
Hexachlorobutadiene	0.15	U	1.0	ug/L							
Isopropyl Ether	0.21	U	1.0	ug/L							
Isopropylbenzene	0.13	U	1.0	ug/L							
m,p-Xylenes	0.18	U	2.0	ug/L							
Methylene Chloride	0.070	U	2.0	ug/L							
Methyl-tert-Butyl Ether	0.12	U	1.0	ug/L							
Naphthalene	0.086	U	1.0	ug/L							

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L18018 - EPA 5030B_MS - Continued

Blank (9L18018-BLK1) Continued

Prepared: 12/18/2019 10:24 Analyzed: 12/18/2019 13:40

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
n-Butyl Benzene	0.074	U	1.0	ug/L							
n-Propyl Benzene	0.073	U	1.0	ug/L							
o-Xylene	0.088	U	1.0	ug/L							
sec-Butylbenzene	0.053	U	1.0	ug/L							
Styrene	0.082	U	1.0	ug/L							
tert-Butylbenzene	0.094	U	1.0	ug/L							
Tetrachloroethene	0.099	U	1.0	ug/L							
Toluene	0.053	U	1.0	ug/L							
trans-1,2-Dichloroethene	0.11	U	1.0	ug/L							
trans-1,3-Dichloropropene	0.080	U	1.0	ug/L							
Trichloroethene	0.13	U	1.0	ug/L							
Trichlorofluoromethane	0.15	U	1.0	ug/L							
Vinyl chloride	0.083	U	1.0	ug/L							
Xylenes (Total)	0.22	U	1.0	ug/L							
4-Bromofluorobenzene	46			ug/L	50.0		92	70-130			
Dibromofluoromethane	38			ug/L	50.0		76	70-130			
Toluene-d8	42			ug/L	50.0		84	70-130			

LCS (9L18018-BS1)

Prepared: 12/18/2019 10:24 Analyzed: 12/18/2019 11:23

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	17		1.0	ug/L	20.0		87	70-130			
1,1,1-Trichloroethane	18		1.0	ug/L	20.0		92	70-130			
1,1,2,2-Tetrachloroethane	17		1.0	ug/L	20.0		87	70-130			
1,1,2-Trichloroethane	18		1.0	ug/L	20.0		88	70-130			
1,1-Dichloroethane	17		1.0	ug/L	20.0		86	70-130			
1,1-Dichloroethene	17		1.0	ug/L	20.0		87	70-130			
1,1-Dichloropropene	18		1.0	ug/L	20.0		88	70-130			
1,2,3-Trichlorobenzene	19		1.0	ug/L	20.0		94	70-130			
1,2,3-Trichloropropane	15		1.0	ug/L	20.0		75	70-130			
1,2,4-Trichlorobenzene	18		1.0	ug/L	20.0		92	70-130			
1,2,4-Trimethylbenzene	16		1.0	ug/L	20.0		78	70-130			
1,2-Dibromo-3-chloropropane	14		1.0	ug/L	20.0		68	70-130			
1,2-Dibromoethane	16		1.0	ug/L	20.0		82	70-130			
1,2-Dichlorobenzene	17		1.0	ug/L	20.0		85	70-130			
1,2-Dichloroethane	18		1.0	ug/L	20.0		92	70-130			
1,2-Dichloropropane	18		1.0	ug/L	20.0		91	70-130			
1,3,5-Trimethylbenzene	15		1.0	ug/L	20.0		76	70-130			
1,3-Dichlorobenzene	17		1.0	ug/L	20.0		83	70-130			
1,3-Dichloropropane	16		1.0	ug/L	20.0		81	70-130			
1,4-Dichlorobenzene	16		1.0	ug/L	20.0		81	70-130			
2,2-Dichloropropane	22		1.0	ug/L	20.0		109	70-130			
2-Chlorotoluene	15		1.0	ug/L	20.0		76	70-130			
4-Chlorotoluene	15		1.0	ug/L	20.0		77	70-130			
4-Isopropyltoluene	16		1.0	ug/L	20.0		80	70-130			
Benzene	19		1.0	ug/L	20.0		96	70-130			
Bromobenzene	19		1.0	ug/L	20.0		95	70-130			
Bromochloromethane	19		1.0	ug/L	20.0		97	70-130			
Bromodichloromethane	17		1.0	ug/L	20.0		84	70-130			

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L18018 - EPA 5030B_MS - Continued

LCS (9L18018-BS1) Continued

Prepared: 12/18/2019 10:24 Analyzed: 12/18/2019 11:23

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Bromoform	16		1.0	ug/L	20.0		78	70-130			
Bromomethane	21		1.0	ug/L	20.0		105	60-140			
Carbon Tetrachloride	17		1.0	ug/L	20.0		86	70-130			
Chlorobenzene	17		1.0	ug/L	20.0		85	70-130			
Chloroethane	20		1.0	ug/L	20.0		101	60-140			
Chloroform	17		1.0	ug/L	20.0		86	70-130			
Chloromethane	18		1.0	ug/L	20.0		89	60-140			
cis-1,2-Dichloroethene	18		1.0	ug/L	20.0		91	70-130			
cis-1,3-Dichloropropene	18		1.0	ug/L	20.0		92	70-130			
Dibromochloromethane	16		1.0	ug/L	20.0		82	70-130			
Dibromomethane	17		1.0	ug/L	20.0		86	70-130			
Dichlorodifluoromethane	18		1.0	ug/L	20.0		88	60-140			
Ethylbenzene	17		1.0	ug/L	20.0		84	70-130			
Freon 113	44		1.0	ug/L	40.0		110	70-130			
Hexachlorobutadiene	20		1.0	ug/L	20.0		99	70-130			
Isopropyl Ether	16		1.0	ug/L	20.0		80	70-130			
Isopropylbenzene	17		1.0	ug/L	20.0		87	70-130			
m,p-Xylenes	31		2.0	ug/L	40.0		77	70-130			
Methylene Chloride	17		2.0	ug/L	20.0		87	70-130			
Methyl-tert-Butyl Ether	16		1.0	ug/L	20.0		82	70-130			
Naphthalene	17		1.0	ug/L	20.0		84	70-130			
n-Butyl Benzene	16		1.0	ug/L	20.0		80	70-130			
n-Propyl Benzene	17		1.0	ug/L	20.0		86	70-130			
o-Xylene	16		1.0	ug/L	20.0		82	70-130			
sec-Butylbenzene	16		1.0	ug/L	20.0		79	70-130			
Styrene	17		1.0	ug/L	20.0		84	70-130			
tert-Butylbenzene	16		1.0	ug/L	20.0		79	70-130			
Tetrachloroethene	19		1.0	ug/L	20.0		94	70-130			
Toluene	19		1.0	ug/L	20.0		93	70-130			
trans-1,2-Dichloroethene	17		1.0	ug/L	20.0		85	70-130			
trans-1,3-Dichloropropene	17		1.0	ug/L	20.0		85	70-130			
Trichloroethene	20		1.0	ug/L	20.0		100	70-130			
Trichlorofluoromethane	18		1.0	ug/L	20.0		92	60-140			
Vinyl chloride	19		1.0	ug/L	20.0		93	60-140			
Xylenes (Total)	47		1.0	ug/L	60.0		79	70-130			
4-Bromofluorobenzene	47			ug/L	50.0		93	70-130			
Dibromofluoromethane	39			ug/L	50.0		77	70-130			
Toluene-d8	41			ug/L	50.0		83	70-130			

Matrix Spike (9L18018-MS1)

Prepared: 12/18/2019 10:24 Analyzed: 12/18/2019 12:02

Source: CC21287-05

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	16		1.0	ug/L	20.0	0.091 U	81	71-117			
1,1,1-Trichloroethane	18		1.0	ug/L	20.0	0.15 U	89	72-143			
1,1,2,2-Tetrachloroethane	17		1.0	ug/L	20.0	0.085 U	84	59-133			
1,1,2-Trichloroethane	17		1.0	ug/L	20.0	0.068 U	85	67-118			
1,1-Dichloroethane	17		1.0	ug/L	20.0	0.050 U	85	79-141			
1,1-Dichloroethene	17		1.0	ug/L	20.0	0.15 U	85	75-133			
1,1-Dichloropropene	17		1.0	ug/L	20.0	0.063 U	85	70-129			

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L18018 - EPA 5030B_MS - Continued

Matrix Spike (9L18018-MS1) Continued

Prepared: 12/18/2019 10:24 Analyzed: 12/18/2019 12:02

Source: CC21287-05

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,2,3-Trichlorobenzene	18		1.0	ug/L	20.0	0.45	85	62-117			
1,2,3-Trichloropropane	13		1.0	ug/L	20.0	0.15 U	67	58-140			
1,2,4-Trichlorobenzene	17		1.0	ug/L	20.0	0.097 U	85	59-122			
1,2,4-Trimethylbenzene	15		1.0	ug/L	20.0	0.067 U	75	74-123			
1,2-Dibromo-3-chloropropane	11		1.0	ug/L	20.0	0.48 U	53	37-157			
1,2-Dibromoethane	17		1.0	ug/L	20.0	0.42 U	85	66-123			
1,2-Dichlorobenzene	17		1.0	ug/L	20.0	0.052 U	84	76-116			
1,2-Dichloroethane	16		1.0	ug/L	20.0	0.082 U	82	72-151			
1,2-Dichloropropane	17		1.0	ug/L	20.0	0.098 U	86	78-125			
1,3,5-Trimethylbenzene	15		1.0	ug/L	20.0	0.10 U	75	77-129			QM-07
1,3-Dichlorobenzene	16		1.0	ug/L	20.0	0.092 U	78	76-119			
1,3-Dichloropropane	16		1.0	ug/L	20.0	0.15 U	82	60-129			
1,4-Dichlorobenzene	16		1.0	ug/L	20.0	0.10 U	81	76-122			
2,2-Dichloropropane	20		1.0	ug/L	20.0	0.12 U	101	21-167			
2-Chlorotoluene	14		1.0	ug/L	20.0	0.10 U	71	73-135			QM-07
4-Chlorotoluene	15		1.0	ug/L	20.0	0.10 U	73	76-134			QM-07
4-Isopropyltoluene	16		1.0	ug/L	20.0	0.066 U	80	75-127			
Benzene	19		1.0	ug/L	20.0	0.050 U	95	81-134			
Bromobenzene	18		1.0	ug/L	20.0	0.13 U	88	72-115			
Bromochloromethane	19		1.0	ug/L	20.0	0.11 U	95	74-128			
Bromodichloromethane	16		1.0	ug/L	20.0	0.10 U	81	72-129			
Bromoform	17		1.0	ug/L	20.0	0.20 U	83	73-119			
Bromomethane	21		1.0	ug/L	20.0	0.28 U	107	38-189			
Carbon Tetrachloride	15		1.0	ug/L	20.0	0.082 U	77	68-142			
Chlorobenzene	17		1.0	ug/L	20.0	0.069 U	83	83-117			
Chloroethane	21		1.0	ug/L	20.0	0.18 U	104	45-213			
Chloroform	17		1.0	ug/L	20.0	0.083 U	84	78-138			
Chloromethane	18		1.0	ug/L	20.0	0.050 U	88	56-171			
cis-1,2-Dichloroethene	18		1.0	ug/L	20.0	0.075 U	92	69-120			
cis-1,3-Dichloropropene	18		1.0	ug/L	20.0	0.073 U	92	63-125			
Dibromochloromethane	16		1.0	ug/L	20.0	0.067 U	80	73-117			
Dibromomethane	16		1.0	ug/L	20.0	0.13 U	81	76-124			
Dichlorodifluoromethane	17		1.0	ug/L	20.0	0.091 U	86	25-161			
Ethylbenzene	16		1.0	ug/L	20.0	0.10 U	80	68-124			
Freon 113	44		1.0	ug/L	40.0	0.35 U	109	0-200			
Hexachlorobutadiene	17		1.0	ug/L	20.0	0.15 U	87	63-114			
Isopropyl Ether	16		1.0	ug/L	20.0	0.21 U	78	70-130			
Isopropylbenzene	17		1.0	ug/L	20.0	0.13 U	85	81-136			
m,p-Xylenes	31		2.0	ug/L	40.0	0.18 U	78	79-121			QM-07
Methylene Chloride	18		2.0	ug/L	20.0	0.070 U	89	68-128			
Methyl-tert-Butyl Ether	17		1.0	ug/L	20.0	0.12 U	84	10-127			
Naphthalene	16		1.0	ug/L	20.0	0.086 U	78	50-127			
n-Butyl Benzene	15		1.0	ug/L	20.0	0.074 U	77	68-126			
n-Propyl Benzene	17		1.0	ug/L	20.0	0.073 U	84	76-125			
o-Xylene	16		1.0	ug/L	20.0	0.088 U	81	71-125			
sec-Butylbenzene	15		1.0	ug/L	20.0	0.053 U	76	75-122			
Styrene	17		1.0	ug/L	20.0	0.082 U	84	73-120			
tert-Butylbenzene	15		1.0	ug/L	20.0	0.094 U	73	70-137			
Tetrachloroethene	18		1.0	ug/L	20.0	0.099 U	91	40-181			

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L18018 - EPA 5030B_MS - Continued

Matrix Spike (9L18018-MS1) Continued

Prepared: 12/18/2019 10:24 Analyzed: 12/18/2019 12:02

Source: CC21287-05

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Toluene	18		1.0	ug/L	20.0	0.053 U	89	71-118			
trans-1,2-Dichloroethene	17		1.0	ug/L	20.0	0.11 U	86	75-139			
trans-1,3-Dichloropropene	17		1.0	ug/L	20.0	0.080 U	83	62-152			
Trichloroethene	18		1.0	ug/L	20.0	0.13 U	90	75-115			
Trichlorofluoromethane	17		1.0	ug/L	20.0	0.15 U	85	68-183			
Vinyl chloride	17		1.0	ug/L	20.0	0.083 U	83	49-150			
Xylenes (Total)	47		1.0	ug/L	60.0	0.22 U	79	77-121			
4-Bromofluorobenzene	47			ug/L	50.0		95	70-130			
Dibromofluoromethane	38			ug/L	50.0		77	70-130			
Toluene-d8	41			ug/L	50.0		82	70-130			

Matrix Spike Dup (9L18018-MSD1)

Prepared: 12/18/2019 10:24 Analyzed: 12/18/2019 12:35

Source: CC21287-05

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	15		1.0	ug/L	20.0	0.091 U	77	71-117	5	16	
1,1,1-Trichloroethane	16		1.0	ug/L	20.0	0.15 U	78	72-143	13	18	
1,1,2,2-Tetrachloroethane	17		1.0	ug/L	20.0	0.085 U	83	59-133	2	16	
1,1,2-Trichloroethane	18		1.0	ug/L	20.0	0.068 U	89	67-118	4	18	
1,1-Dichloroethane	16		1.0	ug/L	20.0	0.050 U	78	79-141	9	19	QM-07
1,1-Dichloroethene	15		1.0	ug/L	20.0	0.15 U	76	75-133	11	20	
1,1-Dichloropropene	15		1.0	ug/L	20.0	0.063 U	76	70-129	12	17	
1,2,3-Trichlorobenzene	17		1.0	ug/L	20.0	0.45	80	62-117	6	17	
1,2,3-Trichloropropane	15		1.0	ug/L	20.0	0.15 U	74	58-140	10	17	
1,2,4-Trichlorobenzene	17		1.0	ug/L	20.0	0.097 U	84	59-122	1	17	
1,2,4-Trimethylbenzene	14		1.0	ug/L	20.0	0.067 U	69	74-123	9	18	QM-07
1,2-Dibromo-3-chloropropane	14		1.0	ug/L	20.0	0.48 U	68	37-157	26	18	QM-11
1,2-Dibromoethane	16		1.0	ug/L	20.0	0.42 U	80	66-123	6	15	
1,2-Dichlorobenzene	16		1.0	ug/L	20.0	0.052 U	78	76-116	8	16	
1,2-Dichloroethane	16		1.0	ug/L	20.0	0.082 U	81	72-151	2	16	
1,2-Dichloropropane	18		1.0	ug/L	20.0	0.098 U	88	78-125	2	19	
1,3,5-Trimethylbenzene	14		1.0	ug/L	20.0	0.10 U	70	77-129	7	16	QM-07
1,3-Dichlorobenzene	15		1.0	ug/L	20.0	0.092 U	76	76-119	3	17	
1,3-Dichloropropane	16		1.0	ug/L	20.0	0.15 U	79	60-129	3	16	
1,4-Dichlorobenzene	14		1.0	ug/L	20.0	0.10 U	72	76-122	12	16	QM-07
2,2-Dichloropropane	19		1.0	ug/L	20.0	0.12 U	93	21-167	8	20	
2-Chlorotoluene	14		1.0	ug/L	20.0	0.10 U	70	73-135	2	16	QM-07
4-Chlorotoluene	14		1.0	ug/L	20.0	0.10 U	68	76-134	7	16	QM-07
4-Isopropyltoluene	14		1.0	ug/L	20.0	0.066 U	71	75-127	12	17	QM-07
Benzene	18		1.0	ug/L	20.0	0.050 U	89	81-134	6	17	
Bromobenzene	17		1.0	ug/L	20.0	0.13 U	85	72-115	4	17	
Bromochloromethane	17		1.0	ug/L	20.0	0.11 U	86	74-128	10	18	
Bromodichloromethane	17		1.0	ug/L	20.0	0.10 U	83	72-129	2	16	
Bromoform	16		1.0	ug/L	20.0	0.20 U	82	73-119	2	44	
Bromomethane	18		1.0	ug/L	20.0	0.28 U	91	38-189	16	27	
Carbon Tetrachloride	14		1.0	ug/L	20.0	0.082 U	70	68-142	10	17	
Chlorobenzene	16		1.0	ug/L	20.0	0.069 U	79	83-117	5	16	QM-07
Chloroethane	19		1.0	ug/L	20.0	0.18 U	93	45-213	11	26	
Chloroform	15		1.0	ug/L	20.0	0.083 U	76	78-138	9	17	QM-07
Chloromethane	15		1.0	ug/L	20.0	0.050 U	77	56-171	13	28	

FINAL

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QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L18018 - EPA 5030B_MS - Continued

Matrix Spike Dup (9L18018-MSD1) Continued

Prepared: 12/18/2019 10:24 Analyzed: 12/18/2019 12:35

Source: CC21287-05

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
cis-1,2-Dichloroethene	17		1.0	ug/L	20.0	0.075 U	84	69-120	10	18	
cis-1,3-Dichloropropene	17		1.0	ug/L	20.0	0.073 U	86	63-125	6	17	
Dibromochloromethane	15		1.0	ug/L	20.0	0.067 U	73	73-117	9	16	
Dibromomethane	17		1.0	ug/L	20.0	0.13 U	83	76-124	3	15	
Dichlorodifluoromethane	14		1.0	ug/L	20.0	0.091 U	71	25-161	19	48	
Ethylbenzene	15		1.0	ug/L	20.0	0.10 U	75	68-124	7	16	
Freon 113	37		1.0	ug/L	40.0	0.35 U	94	0-200	15	25	
Hexachlorobutadiene	14		1.0	ug/L	20.0	0.15 U	72	63-114	19	19	
Isopropyl Ether	14		1.0	ug/L	20.0	0.21 U	71	70-130	9	30	
Isopropylbenzene	16		1.0	ug/L	20.0	0.13 U	78	81-136	8	16	QM-07
m,p-Xylenes	28		2.0	ug/L	40.0	0.18 U	71	79-121	9	16	QM-07
Methylene Chloride	16		2.0	ug/L	20.0	0.070 U	80	68-128	11	17	
Methyl-tert-Butyl Ether	16		1.0	ug/L	20.0	0.12 U	79	10-127	6	21	
Naphthalene	15		1.0	ug/L	20.0	0.086 U	76	50-127	2	19	
n-Butyl Benzene	14		1.0	ug/L	20.0	0.074 U	70	68-126	9	15	
n-Propyl Benzene	16		1.0	ug/L	20.0	0.073 U	78	76-125	7	16	
o-Xylene	15		1.0	ug/L	20.0	0.088 U	75	71-125	8	15	
sec-Butylbenzene	14		1.0	ug/L	20.0	0.053 U	70	75-122	8	17	QM-07
Styrene	16		1.0	ug/L	20.0	0.082 U	82	73-120	3	23	
tert-Butylbenzene	13		1.0	ug/L	20.0	0.094 U	67	70-137	9	22	QM-07
Tetrachloroethene	16		1.0	ug/L	20.0	0.099 U	81	40-181	11	26	
Toluene	17		1.0	ug/L	20.0	0.053 U	83	71-118	7	17	
trans-1,2-Dichloroethene	16		1.0	ug/L	20.0	0.11 U	79	75-139	8	19	
trans-1,3-Dichloropropene	16		1.0	ug/L	20.0	0.080 U	82	62-152	0.4	16	
Trichloroethene	17		1.0	ug/L	20.0	0.13 U	86	75-115	5	18	
Trichlorofluoromethane	15		1.0	ug/L	20.0	0.15 U	74	68-183	14	22	
Vinyl chloride	15		1.0	ug/L	20.0	0.083 U	76	49-150	9	27	
Xylenes (Total)	43		1.0	ug/L	60.0	0.22 U	72	77-121	8	16	QM-07
4-Bromofluorobenzene	47			ug/L	50.0		94	70-130			
Dibromofluoromethane	37			ug/L	50.0		74	70-130			
Toluene-d8	42			ug/L	50.0		84	70-130			

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L19010 - EPA 3510C_MS

Blank (9L19010-BLK1)

Prepared: 12/19/2019 14:06 Analyzed: 12/26/2019 16:27

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,2,4-Trichlorobenzene	3.3	U	10	ug/L							
1,2-Dichlorobenzene	3.2	U	10	ug/L							
1,3-Dichlorobenzene	3.4	U	10	ug/L							
1,4-Dichlorobenzene	3.2	U	10	ug/L							
2,4,6-Trichlorophenol	6.4	U	10	ug/L							
2,4-Dichlorophenol	6.5	U	10	ug/L							
2,4-Dimethylphenol	6.4	U	10	ug/L							
2,4-Dinitrophenol	7.7	U	10	ug/L							
2,4-Dinitrotoluene	3.2	U	10	ug/L							
2,6-Dinitrotoluene	2.9	U	10	ug/L							

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L19010 - EPA 3510C_MS - Continued

Blank (9L19010-BLK1) Continued

Prepared: 12/19/2019 14:06 Analyzed: 12/26/2019 16:27

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
2-Chloronaphthalene	3.2	U	10	ug/L							
2-Chlorophenol	7.4	U	10	ug/L							
2-Methyl-4,6-dinitrophenol	6.0	U	10	ug/L							
2-Nitrophenol	5.2	U	10	ug/L							
3,3'-Dichlorobenzidine	3.3	U	10	ug/L							
4-Bromophenyl-phenylether	3.3	U	10	ug/L							
4-Chloro-3-methylphenol	7.3	U	10	ug/L							
4-Chlorophenyl-phenylether	3.2	U	10	ug/L							
4-Nitrophenol	7.9	U	10	ug/L							
Acenaphthene	3.0	U	10	ug/L							
Acenaphthylene	9.6	U	10	ug/L							
Anthracene	3.0	U	10	ug/L							
Benidine	7.1	U	10	ug/L							QV-01
Benzo(a)anthracene	3.2	U	10	ug/L							
Benzo(a)pyrene	3.2	U	10	ug/L							
Benzo(b)fluoranthene	3.4	U	10	ug/L							
Benzo(g,h,i)perylene	3.7	U	10	ug/L							
Benzo(k)fluoranthene	3.8	U	10	ug/L							
Bis(2-chloroethoxy)methane	3.3	U	10	ug/L							
Bis(2-chloroethyl)ether	3.8	U	10	ug/L							
Bis(2-chloroisopropyl)ether	3.5	U	10	ug/L							
Bis(2-ethylhexyl)phthalate	3.5	U	5.0	ug/L							
Butylbenzylphthalate	5.1	U	10	ug/L							QV-01
Chrysene	3.0	U	10	ug/L							
Dibenzo(a,h)anthracene	3.8	U	10	ug/L							
Diethylphthalate	3.0	U	10	ug/L							
Dimethylphthalate	3.0	U	10	ug/L							
Di-n-butylphthalate	3.2	U	10	ug/L							
Di-n-octylphthalate	4.7	U	10	ug/L							
Fluoranthene	4.0	U	10	ug/L							
Fluorene	2.9	U	10	ug/L							
Hexachlorobenzene	3.0	U	10	ug/L							
Hexachlorobutadiene	4.1	U	10	ug/L							
Hexachlorocyclopentadiene	3.8	U	10	ug/L							
Hexachloroethane	3.0	U	10	ug/L							
Indeno(1,2,3-cd)pyrene	4.1	U	10	ug/L							
Isophorone	4.5	U	10	ug/L							
Naphthalene	3.6	U	10	ug/L							
Nitrobenzene	3.2	U	10	ug/L							
N-Nitrosodimethylamine	3.8	U	10	ug/L							
N-Nitroso-di-n-propylamine	4.5	U	10	ug/L							
N-nitrosodiphenylamine/Diphenylamine	5.4	U	10	ug/L							
Pentachlorophenol	8.2	U	10	ug/L							
Phenanthrene	2.8	U	10	ug/L							
Phenol	5.6	U	10	ug/L							
Pyrene	4.1	U	10	ug/L							
2,4,6-Tribromophenol	77			ug/L	100		77	47-128			
2-Fluorobiphenyl	47			ug/L	50.0		94	44-102			
2-Fluorophenol	70			ug/L	100		70	25-79			

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L19010 - EPA 3510C_MS - Continued

Blank (9L19010-BLK1) Continued

Prepared: 12/19/2019 14:06 Analyzed: 12/26/2019 16:27

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Nitrobenzene-d5	44			ug/L	50.0		89	43-112			
Phenol-d5	58			ug/L	100		58	14-54			Q5-03
Terphenyl-d14	55			ug/L	50.0		110	65-122			

LCS (9L19010-BS1)

Prepared: 12/19/2019 14:06 Analyzed: 12/26/2019 16:56

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,2,4-Trichlorobenzene	40		10	ug/L	50.0		81	57-130			
1,2-Dichlorobenzene	38		10	ug/L	50.0		76	32-129			
1,3-Dichlorobenzene	38		10	ug/L	50.0		75	10-172			
1,4-Dichlorobenzene	38		10	ug/L	50.0		77	20-124			
2,4,6-Trichlorophenol	48		10	ug/L	50.0		97	52-129			
2,4-Dichlorophenol	44		10	ug/L	50.0		88	53-122			
2,4-Dimethylphenol	43		10	ug/L	50.0		85	42-120			
2,4-Dinitrophenol	45		10	ug/L	50.0		90	5-173			
2,4-Dinitrotoluene	48		10	ug/L	50.0		96	48-127			
2,6-Dinitrotoluene	51		10	ug/L	50.0		101	68-137			
2-Chloronaphthalene	46		10	ug/L	50.0		93	65-120			
2-Chlorophenol	42		10	ug/L	50.0		84	36-120			
2-Methyl-4,6-dinitrophenol	46		10	ug/L	50.0		93	53-130			
2-Nitrophenol	41		10	ug/L	50.0		82	45-167			
3,3'-Dichlorobenzidine	82		10	ug/L	50.0		164	8-213			
4-Bromophenyl-phenylether	47		10	ug/L	50.0		93	65-120			
4-Chloro-3-methylphenol	44		10	ug/L	50.0		88	41-128			
4-Chlorophenyl-phenylether	49		10	ug/L	50.0		99	38-145			
4-Nitrophenol	31		10	ug/L	50.0		63	13-129			
Acenaphthene	47		10	ug/L	50.0		94	60-132			
Acenaphthylene	47		10	ug/L	50.0		94	54-126			
Anthracene	51		10	ug/L	50.0		103	43-120			
Benzidine	39		10	ug/L	50.0		78	10-136			J-04
Benzo(a)anthracene	49		10	ug/L	50.0		98	42-133			
Benzo(a)pyrene	53		10	ug/L	50.0		106	32-148			
Benzo(b)fluoranthene	60		10	ug/L	50.0		121	42-140			
Benzo(g,h,i)perylene	56		10	ug/L	50.0		111	5-195			
Benzo(k)fluoranthene	52		10	ug/L	50.0		104	25-146			
Bis(2-chloroethoxy)methane	44		10	ug/L	50.0		89	49-165			
Bis(2-chloroethyl)ether	46		10	ug/L	50.0		93	43-126			
Bis(2-chloroisopropyl)ether	39		10	ug/L	50.0		78	63-139			
Bis(2-ethylhexyl)phthalate	48		5.0	ug/L	50.0		96	29-137			
Butylbenzylphthalate	64		10	ug/L	50.0		128	5-140			J-04
Chrysene	47		10	ug/L	50.0		94	44-140			
Dibenzo(a,h)anthracene	56		10	ug/L	50.0		111	5-200			
Diethylphthalate	50		10	ug/L	50.0		101	5-120			
Dimethylphthalate	52		10	ug/L	50.0		103	10-120			
Di-n-butylphthalate	55		10	ug/L	50.0		110	8-120			
Di-n-octylphthalate	50		10	ug/L	50.0		101	19-132			
Fluoranthene	53		10	ug/L	50.0		107	43-121			
Fluorene	46		10	ug/L	50.0		93	70-120			
Hexachlorobenzene	49		10	ug/L	50.0		98	8-142			

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L19010 - EPA 3510C_MS - Continued

LCS (9L19010-BS1) Continued

Prepared: 12/19/2019 14:06 Analyzed: 12/26/2019 16:56

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Hexachlorobutadiene	40		10	ug/L	50.0		80	24-120			
Hexachlorocyclopentadiene	37		10	ug/L	50.0		74	38-120			
Hexachloroethane	35		10	ug/L	50.0		69	55-120			
Indeno(1,2,3-cd)pyrene	57		10	ug/L	50.0		114	5-151			
Isophorone	41		10	ug/L	50.0		81	47-180			
Naphthalene	42		10	ug/L	50.0		84	36-120			
Nitrobenzene	44		10	ug/L	50.0		87	54-158			
N-Nitrosodimethylamine	38		10	ug/L	50.0		76	24-94			
N-Nitroso-di-n-propylamine	41		10	ug/L	50.0		82	14-198			
Pentachlorophenol	43		10	ug/L	50.0		86	38-152			
Phenanthrene	52		10	ug/L	50.0		103	65-120			
Phenol	30		10	ug/L	50.0		61	17-120			
Pyrene	54		10	ug/L	50.0		108	70-120			
2,4,6-Tribromophenol	85			ug/L	100		85	47-128			
2-Fluorobiphenyl	46			ug/L	50.0		93	44-102			
2-Fluorophenol	69			ug/L	100		69	25-79			
Nitrobenzene-d5	42			ug/L	50.0		84	43-112			
Phenol-d5	56			ug/L	100		56	14-54			QS-03
Terphenyl-d14	54			ug/L	50.0		107	65-122			

Matrix Spike (9L19010-MS1)

Prepared: 12/19/2019 14:06 Analyzed: 12/26/2019 17:25

Source: CC19548-01

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,2,4-Trichlorobenzene	40		10	ug/L	50.0	3.3 U	79	44-142			
1,2-Dichlorobenzene	38		10	ug/L	50.0	3.2 U	76	32-129			
1,3-Dichlorobenzene	37		10	ug/L	50.0	3.4 U	74	10-172			
1,4-Dichlorobenzene	38		10	ug/L	50.0	3.2 U	76	20-124			
2,4,6-Trichlorophenol	47		10	ug/L	50.0	6.4 U	95	37-144			
2,4-Dichlorophenol	43		10	ug/L	50.0	6.5 U	85	39-135			
2,4-Dimethylphenol	40		10	ug/L	50.0	6.4 U	80	32-120			
2,4-Dinitrophenol	43		10	ug/L	50.0	7.7 U	85	5-191			
2,4-Dinitrotoluene	45		10	ug/L	50.0	3.2 U	90	53-130			
2,6-Dinitrotoluene	49		10	ug/L	50.0	2.9 U	98	50-158			
2-Chloronaphthalene	44		10	ug/L	50.0	3.2 U	89	60-120			
2-Chlorophenol	41		10	ug/L	50.0	7.4 U	82	23-134			
2-Methyl-4,6-dinitrophenol	43		10	ug/L	50.0	6.0 U	85	5-181			
2-Nitrophenol	40		10	ug/L	50.0	5.2 U	80	29-182			
3,3'-Dichlorobenzidine	74		10	ug/L	50.0	3.3 U	149	5-262			
4-Bromophenyl-phenylether	44		10	ug/L	50.0	3.3 U	88	53-127			
4-Chloro-3-methylphenol	43		10	ug/L	50.0	7.3 U	86	22-147			
4-Chlorophenyl-phenylether	47		10	ug/L	50.0	3.2 U	94	25-158			
4-Nitrophenol	27		10	ug/L	50.0	7.9 U	53	5-132			
Acenaphthene	45		10	ug/L	50.0	3.0 U	90	47-145			
Acenaphthylene	45		10	ug/L	50.0	9.6 U	90	33-145			
Anthracene	48		10	ug/L	50.0	3.0 U	97	27-133			
Benzidine	23		10	ug/L	50.0	7.1 U	47	10-136			J-04
Benzo(a)anthracene	45		10	ug/L	50.0	3.2 U	90	33-143			
Benzo(a)pyrene	48		10	ug/L	50.0	3.2 U	97	17-163			
Benzo(b)fluoranthene	53		10	ug/L	50.0	3.4 U	106	24-159			

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L19010 - EPA 3510C_MS - Continued

Matrix Spike (9L19010-MS1) Continued

Prepared: 12/19/2019 14:06 Analyzed: 12/26/2019 17:25

Source: CC19548-01

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Benzo(g,h,i)perylene	50		10	ug/L	50.0	3.7 U	100	5-219			
Benzo(k)fluoranthene	49		10	ug/L	50.0	3.8 U	97	11-162			
Bis(2-chloroethoxy)methane	43		10	ug/L	50.0	3.3 U	85	33-184			
Bis(2-chloroethyl)ether	45		10	ug/L	50.0	3.8 U	90	12-158			
Bis(2-chloroisopropyl)ether	38		10	ug/L	50.0	3.5 U	77	36-166			
Bis(2-ethylhexyl)phthalate	45		5.0	ug/L	50.0	3.5 U	89	8-158			
Butylbenzylphthalate	57		10	ug/L	50.0	5.1 U	115	5-152			J-04
Chrysene	44		10	ug/L	50.0	3.0 U	87	17-168			
Dibenzo(a,h)anthracene	50		10	ug/L	50.0	3.8 U	100	5-227			
Diethylphthalate	47		10	ug/L	50.0	3.0 U	94	5-120			
Dimethylphthalate	48		10	ug/L	50.0	3.0 U	96	5-120			
Di-n-butylphthalate	50		10	ug/L	50.0	3.2 U	100	1-120			
Di-n-octylphthalate	47		10	ug/L	50.0	4.7 U	94	4-146			
Fluoranthene	48		10	ug/L	50.0	4.0 U	97	26-137			
Fluorene	44		10	ug/L	50.0	2.9 U	88	59-121			
Hexachlorobenzene	47		10	ug/L	50.0	3.0 U	93	5-152			
Hexachlorobutadiene	40		10	ug/L	50.0	4.1 U	79	24-120			
Hexachlorocyclopentadiene	39		10	ug/L	50.0	3.8 U	79	10-99			
Hexachloroethane	36		10	ug/L	50.0	3.0 U	71	40-120			
Indeno(1,2,3-cd)pyrene	51		10	ug/L	50.0	4.1 U	102	5-171			
Isophorone	40		10	ug/L	50.0	4.5 U	79	21-196			
Naphthalene	41		10	ug/L	50.0	3.6 U	82	21-133			
Nitrobenzene	42		10	ug/L	50.0	3.2 U	84	35-180			
N-Nitrosodimethylamine	34		10	ug/L	50.0	3.8 U	68	24-94			
N-Nitroso-di-n-propylamine	41		10	ug/L	50.0	4.5 U	82	5-230			
Pentachlorophenol	41		10	ug/L	50.0	8.2 U	82	14-176			
Phenanthrene	48		10	ug/L	50.0	2.8 U	96	54-120			
Phenol	27		10	ug/L	50.0	5.6 U	53	5-120			
Pyrene	49		10	ug/L	50.0	4.1 U	98	52-120			
2,4,6-Tribromophenol	80			ug/L	100		80	47-128			
2-Fluorobiphenyl	45			ug/L	50.0		90	44-102			
2-Fluorophenol	62			ug/L	100		62	25-79			
Nitrobenzene-d5	40			ug/L	50.0		81	43-112			
Phenol-d5	49			ug/L	100		49	14-54			
Terphenyl-d14	49			ug/L	50.0		97	65-122			

Matrix Spike Dup (9L19010-MSD1)

Prepared: 12/19/2019 14:06 Analyzed: 12/26/2019 17:54

Source: CC19548-01

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,2,4-Trichlorobenzene	42		10	ug/L	50.0	3.3 U	84	44-142	5	50	
1,2-Dichlorobenzene	41		10	ug/L	50.0	3.2 U	81	32-129	6	25	
1,3-Dichlorobenzene	39		10	ug/L	50.0	3.4 U	78	10-172	5	25	
1,4-Dichlorobenzene	40		10	ug/L	50.0	3.2 U	81	20-124	6	25	
2,4,6-Trichlorophenol	52		10	ug/L	50.0	6.4 U	104	37-144	10	58	
2,4-Dichlorophenol	48		10	ug/L	50.0	6.5 U	96	39-135	12	50	
2,4-Dimethylphenol	46		10	ug/L	50.0	6.4 U	91	32-120	12	58	
2,4-Dinitrophenol	63		10	ug/L	50.0	7.7 U	127	5-191	39	132	
2,4-Dinitrotoluene	55		10	ug/L	50.0	3.2 U	109	53-130	19	42	
2,6-Dinitrotoluene	55		10	ug/L	50.0	2.9 U	109	50-158	11	48	

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L19010 - EPA 3510C_MS - Continued

Matrix Spike Dup (9L19010-MSD1) Continued

Prepared: 12/19/2019 14:06 Analyzed: 12/26/2019 17:54

Source: CC19548-01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
2-Chloronaphthalene	48		10	ug/L	50.0	3.2 U	96	60-120	7	24	
2-Chlorophenol	44		10	ug/L	50.0	7.4 U	89	23-134	8	61	
2-Methyl-4,6-dinitrophenol	60		10	ug/L	50.0	6.0 U	121	5-181	34	203	
2-Nitrophenol	43		10	ug/L	50.0	5.2 U	87	29-182	8	55	
3,3'-Dichlorobenzidine	82		10	ug/L	50.0	3.3 U	163	5-262	9	108	
4-Bromophenyl-phenylether	47		10	ug/L	50.0	3.3 U	93	53-127	6	43	
4-Chloro-3-methylphenol	51		10	ug/L	50.0	7.3 U	102	22-147	17	73	
4-Chlorophenyl-phenylether	51		10	ug/L	50.0	3.2 U	103	25-158	9	61	
4-Nitrophenol	37		10	ug/L	50.0	7.9 U	75	5-132	33	131	
Acenaphthene	49		10	ug/L	50.0	3.0 U	99	47-145	9	48	
Acenaphthylene	50		10	ug/L	50.0	9.6 U	99	33-145	10	74	
Anthracene	52		10	ug/L	50.0	3.0 U	103	27-133	6	66	
Benidine	41		10	ug/L	50.0	7.1 U	82	10-136	56	25	J-04, QM-11
Benzo(a)anthracene	49		10	ug/L	50.0	3.2 U	98	33-143	9	53	
Benzo(a)pyrene	55		10	ug/L	50.0	3.2 U	110	17-163	13	72	
Benzo(b)fluoranthene	64		10	ug/L	50.0	3.4 U	129	24-159	20	71	
Benzo(g,h,i)perylene	52		10	ug/L	50.0	3.7 U	104	5-219	4	97	
Benzo(k)fluoranthene	52		10	ug/L	50.0	3.8 U	104	11-162	7	63	
Bis(2-chloroethoxy)methane	47		10	ug/L	50.0	3.3 U	94	33-184	10	54	
Bis(2-chloroethyl)ether	49		10	ug/L	50.0	3.8 U	97	12-158	8	108	
Bis(2-chloroisopropyl)ether	42		10	ug/L	50.0	3.5 U	84	36-166	9	76	
Bis(2-ethylhexyl)phthalate	51		5.0	ug/L	50.0	3.5 U	102	8-158	13	82	
Butylbenzylphthalate	66		10	ug/L	50.0	5.1 U	132	5-152	14	60	J-04
Chrysene	50		10	ug/L	50.0	3.0 U	99	17-168	13	87	
Dibenzo(a,h)anthracene	52		10	ug/L	50.0	3.8 U	104	5-227	4	126	
Diethylphthalate	54		10	ug/L	50.0	3.0 U	107	5-120	13	100	
Dimethylphthalate	53		10	ug/L	50.0	3.0 U	107	5-120	11	183	
Di-n-butylphthalate	53		10	ug/L	50.0	3.2 U	107	1-120	6	47	
Di-n-octylphthalate	49		10	ug/L	50.0	4.7 U	97	4-146	3	69	
Fluoranthene	57		10	ug/L	50.0	4.0 U	114	26-137	16	66	
Fluorene	49		10	ug/L	50.0	2.9 U	98	59-121	11	38	
Hexachlorobenzene	51		10	ug/L	50.0	3.0 U	101	5-152	8	55	
Hexachlorobutadiene	41		10	ug/L	50.0	4.1 U	82	24-120	4	62	
Hexachlorocyclopentadiene	44		10	ug/L	50.0	3.8 U	88	10-99	11	25	
Hexachloroethane	38		10	ug/L	50.0	3.0 U	75	40-120	6	52	
Indeno(1,2,3-cd)pyrene	53		10	ug/L	50.0	4.1 U	106	5-171	4	99	
Isophorone	44		10	ug/L	50.0	4.5 U	88	21-196	11	93	
Naphthalene	44		10	ug/L	50.0	3.6 U	87	21-133	6	65	
Nitrobenzene	44		10	ug/L	50.0	3.2 U	89	35-180	5	62	
N-Nitrosodimethylamine	35		10	ug/L	50.0	3.8 U	69	24-94	2	25	
N-Nitroso-di-n-propylamine	47		10	ug/L	50.0	4.5 U	94	5-230	14	87	
Pentachlorophenol	53		10	ug/L	50.0	8.2 U	106	14-176	25	86	
Phenanthrene	52		10	ug/L	50.0	2.8 U	104	54-120	8	39	
Phenol	28		10	ug/L	50.0	5.6 U	56	5-120	5	64	
Pyrene	56		10	ug/L	50.0	4.1 U	113	52-120	14	49	
2,4,6-Tribromophenol	98			ug/L	100		98	47-128			
2-Fluorobiphenyl	49			ug/L	50.0		97	44-102			
2-Fluorophenol	65			ug/L	100		65	25-79			
Nitrobenzene-d5	43			ug/L	50.0		87	43-112			

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L19010 - EPA 3510C_MS - Continued

Matrix Spike Dup (9L19010-MSD1) Continued

Prepared: 12/19/2019 14:06 Analyzed: 12/26/2019 17:54

Source: CC19548-01

<u>Analyte</u>	<u>Result</u>	<u>Flag</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Phenol-d5	53			ug/L	100		53	14-54			
Terphenyl-d14	58			ug/L	50.0		116	65-122			

FLAGS/NOTES AND DEFINITIONS

- B** The analyte was detected in the associated method blank.
- D** The sample was analyzed at dilution.
- J** The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
- U** The analyte was analyzed for but not detected to the level shown, adjusted for actual sample preparation data and moisture content, where applicable.
- E** The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
- MRL** Method Reporting Limit. The MRL is roughly equivalent to the practical quantitation limit (PQL) and is based on the low point of the calibration curve, when applicable, sample preparation factor, dilution factor, and, in the case of soil samples, moisture content.
- PQL** PQL: Practical Quantitation Limit. The PQL presented is the laboratory MRL.
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence (85% or greater confidence) to make a "tentative identification".
- P** Greater than 25% concentration difference was observed between the primary and secondary GC column. The lower concentration is reported.
- [CALC]** Calculated analyte - MDL/MRL reported to the highest reporting limit of the component analyses.
- J-04** Result may be biased high. Associated calibration verification standard exceeded the upper control limit.
- O-05** This sample was extracted outside of the EPA recommended holding time.
- QM-07** The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- QM-11** Precision between duplicate matrix spikes of the same sample was outside acceptance limits.
- QS-03** Surrogate recovery outside acceptance limits
- QV-01** The associated continuing calibration verification standard exhibited high bias; since the result is ND, there is no impact.
- QV-02** The associated continuing calibration verification standard exhibited low bias; the reported result should be considered to be a minimum estimate.



Client Name Catlin Engineers & Scientists (CA038)		Project Number [none]		Requested Analyses		Requested Turnaround Times Note: Rush requests subject to acceptance by the facility ☒ Standard ☐ Expedited Due ____/____/____ Lab Workorder CC20427
Address 220 Old Dairy Road Wilmington, NC 28405		Project Name/Desc NCDOT Goldsboro				
City/ST/Zip Wilmington, NC 28405		PO # / Billing Info 190722-3 191216-04				
Tel (910) 452-5861		Fax				
Sampler(s) Name, Affiliation (Print) COREY FURTEL		Reporting Contact Ben Ashba				
Sampler(s) Signature <i>Corey D. Furtel</i>		Billing Contact AP				
		Site Location / Time Zone 6200B 625.1				

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	Preservation (See Codes) (Combine as necessary)										Sample Comments
	1816DPT-04	12/19/19	1615	G	GW	4	X	X									* PLEASE REPEAT
	1813DPT-03	12/10/19	1230	G	GW	4	X	X									EXH SAMPLE
	204DPT-02	12/10/19	1200	G	GW	4	X	X									ON SEPERATE
	1703DPT-02	12/10/19	1530	G	GW	4	X	X									REPEAT, TOTAL
	2305DPT-02	12/11/19	0945	G	GW	4	X	X									OF NINE (9).
	2394DPT-06	12/12/19	1645	G	GW	4	X	X									
	2436DPT-04	12/11/19	1345	G	GW	4	X	X									
	2495DPT-05	12/12/19	1145	G	GW	4	X	X									
	2502DPT-05	12/13/19	0945	G	GW	4	X	X									

Sample Kit Prepared By <i>[Signature]</i>	Date/Time 12/31/19	Reinquired By <i>Corey D. Furtel</i>	Date/Time 12/16/19 1145	Received By <i>[Signature]</i>	Date/Time 12/17/19 1100
Comments/Special Reporting Requirements		Reinquired By	Date/Time	Received By	Date/Time
		Reinquired By	Date/Time	Received By	Date/Time
Cooler #s & Temps on Receipt C-1000 1C-3048		Condition upon Receipt Acceptable		Unacceptable	

Matrix : GW-Groundwater SO-Soil DW-Drinking Water SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments)
Preservation: I-Ice HHCl N-HNOS S-H2SO4 NO-NaOH O-Other (detail in comments)
Note : All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist

APPENDIX D
FILE REVIEW

Lat & Long Corrected **CAP ADDENDUM DUE 9/21/2000. || QMR received 2/14/01. || Reviewed 2/21/01, continue monitoring. || 5/11/01-cont. with semi-annual monitoring. CAP addendum requested 12/12/07. Horizontal extent of benzene plume still not defined. Sample 5 supply wells. MTBE 3.4 ppb in irrigation well at Maplewood. Re-evaluate CAP. September 2008 event chlorinated solvents in three wells well above 2L. Active remediation proposed. August 2010 sampling shows plume adequately defined. Concentrations in plume fringes very low. Hot spot is core area. Suggest hitting core with MMPE and let fringes attenuate while sampling downgradient irrigation wells. As of May 2011, MMPE no longer cost-effective. Wants to inject ozone etc. PINTCP submitted March 2012. Preferred/least expensive option is hydrogen peroxide injection. Consultant attempted to get Innovative Technologies to approve this method. As of the date of the NTCP addendum (August 15, 2012, no approval had been given. Therefore, proposed to proceed with oxygen injection using iSOC technology. ISOC NTCP approved 8/30/2012. Implemented 10/14/2013. Initial response is favorable.////Contaminant concentrations continue to decline around plume fringes -CCS 11/2015////5/2015 request system be shut down. Resample in 6 months. Possible site closure. - CCS ////Risk Lowered. Stable/decreasing source area concentrations. Modeling indicates contaminant concentrations will not reach down gradient receptors at concentrations exceeding 2L standards. WaRO requests NRP for both soil and groundwater. Conditional NFA issued 1/17/2018.

Facility ID #: 00-0-0000008008

Incident Name: Pantry #925 (Former Kwik Mart #23)

Incident #: 6100

UST #: WA-208

RP/Company: The Pantry Inc.

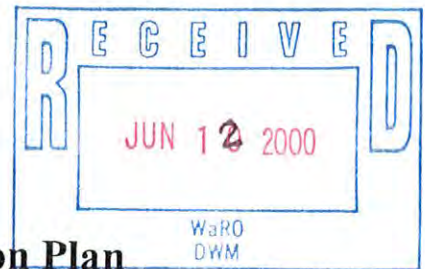
Date occurred and reported: 3/28/1990

NORP Issued: 3/6/1998

Close Out: 6/18/2018

Conditional NFA: 1/17/2018

2153



Natural Attenuation Corrective Action Plan

Site Location:

The Pantry #925 (Former Kwik Mart #23)
1816 Berkeley Boulevard
Goldsboro, North Carolina
Wayne County

Site Owner:

Wooten Oil Company
611 South George Street
Goldsboro, North Carolina 27533

Prepared For:

The Pantry, Inc.
Post Office Box 1410
Sanford, North Carolina 27330

Facility ID Number: 0-008008
Project Number: 598165
Groundwater Incident Number: 6100
Risk Ranking: High

General Site Information:

Release Date - Unknown
Estimated Quantity - Unknown
Cause of Release - Underground Storage Tank System
Latitude/Longitude - N 35° 23.292' / W 77° 55.214'

Prepared By:

A handwritten signature in black ink, appearing to read "M. D. Shaw".

Michael D. Shaw, P.G.
NC Licensed Geologist #1338
SPATCO Engineering and
Geological Services, P.C.
5100 I-85 Service Road, Suite 7A
Charlotte, North Carolina 28206



June 6, 2000

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LIMITATIONS

This report has been prepared under the guidance of a North Carolina Licensed Geologist and meets the requirements of the North Carolina Department of Environment and Natural Resources (NCDENR). The information and conclusions expressed in this report are based upon normal standards of the profession and limited to information available at this time. Chemical analyses of samples associated with this report were performed by a subcontracted, independent, and certified laboratory. All data and parameters have been reviewed for accuracy and, excepting obvious errors, have been accepted as correct. SPATCO Engineering and Geological Services, P.C. reserves the right to revise estimates of performance as required by changes in the data supplied by Environmental Conservation Laboratories.

EXECUTIVE SUMMARY

SPATCO Engineering and Geological Services, P.C. (SPATCO) has completed a Corrective Action Plan (CAP) for The Pantry #925 (former Kwik Mart #23) facility located at 1816 Berkeley Boulevard in Goldsboro, Wayne County, North Carolina.

The most recent groundwater sampling and analysis (March 22 and 23, 2000) detected petroleum constituents at concentrations exceeding the groundwater quality standards in nine of the eleven groundwater monitoring wells sampled. Phase separated hydrocarbons (free product) have not been detected historically at the site.

It is proposed that natural processes of degradation and attenuation be relied upon to address the detected concentrations of petroleum hydrocarbons on site, in accordance with 15A NCAC 2L .0106(l). The goal of the corrective action will be restoration of groundwater to the 15A NCAC 2L Class GA groundwater quality standards, or as closely thereto as is technologically feasible. A comprehensive monitoring plan is proposed to evaluate progress toward remediation over time. In the event that acceptable progress toward remediation is not maintained, contingencies are provided for implementing active remediation in the future.

According to the CSA and confirmed during a receptor survey conducted on May 1, 2000, one irrigation well (Irrigation Well #1) is located within 250 feet of the site (hydraulically upgradient). Other irrigation wells were noted within 1,500 feet of the site, however, no others were identified within 250 feet of the site. Public drinking water is supplied to the site and surrounding area by the City of Goldsboro, which obtains its water from the Neuse River and the Little River. The average groundwater flow velocity for this site, according to the CSA, was calculated to be approximately 3.23 feet/year.

The site specific factors stipulated in 15A NCAC 2L .0106(l) have been addressed and met including the removal or control of all sources of contamination and free product, verification that the contaminant has the capacity to degrade, prediction of contaminant travel, evidence that migration will not result in any violation of applicable groundwater standards at a foreseeable receptor, and contaminants will not migrate offsite. Required public notifications are being made concurrent with submittal of this CAP to the NCDWM.

1.0 INTRODUCTION

1.1 Site Description

The Pantry #925 (former Kwik Mart #23) is a convenience/gasoline retail store located at 1816 North Berkeley Boulevard in Goldsboro, Wayne County, North Carolina. Figure 1 is an excerpt from a United States Geological Survey (USGS) 7.5 minute topographic quadrangle map showing the location of the site, as well as cultural and topographic features.

The area immediately surrounding the site consists of residential and commercial properties. In September 1998, one 10,000-gallon and two 6,000-gallon gasoline, one 6,000-gallon diesel, and one 4,000-gallon kerosene underground storage tanks (UST) were permanently removed from the property. Approximately 725.52 tons of contaminated soil were removed from the gasoline UST excavation and dispenser excavation and transported off site for treatment and disposal. There are currently three 12,000-gallon gasoline USTs on site.

1.2 Purpose of Corrective Action

This document is a plan for corrective action at The Pantry #925 facility located at 1816 North Berkeley Boulevard in Goldsboro, Wayne County, North Carolina (Figure 1). This Corrective Action Plan (CAP) proposes a remediation strategy to restore groundwater to 15A NCAC 2L Class GA groundwater quality standards, or as closely thereto as is economically and technologically feasible. A site map is presented as Figure 2.

Corrective action is proposed in accordance with 15A North Carolina Administrative Code (NCAC) 2L .0106(l), by which the remediation plan will be based on natural processes of degradation and attenuation of contaminants. The CAP provides justification for the natural remediation alternative as required by 15A NCAC 2L .0106(l). It is believed that natural degradation of the contaminants is a feasible option that will reduce levels of petroleum constituents in the groundwater without posing a threat to human health or the environment. Additionally, a natural attenuation corrective action strategy treats the groundwater *in-situ* while providing a much more cost effective option than an active remediation system.

1.3 Site Characterization Summary

Previous reports of environmental investigation for The Pantry #925 (former Kwik Mart #23) facility include the following:

- Limited Site Assessment (LSA) Report, February 12, 1998, Mid-Atlantic Associates, P.A. (MAA);
- Comprehensive Site Assessment (CSA), August 26, 1998, MAA;
- Underground Storage Tank Closure and Soil Excavation Report, November 4, 1998, SEI Environmental, Inc. (SEI);
- CSA Addendum Information, March 11, 1999, MAA; and
- Additional CSA Investigation Data, October 6, 1999, MAA.

Assessment activities summarized in these reports include the removal of the USTs; the installation and sampling of fourteen type II and one type III groundwater monitoring wells; and assessment of soil and groundwater contamination. The results of the data collected are summarized below.

1. According to the CSA and confirmed during a receptor survey conducted on May 1, 2000, one irrigation well (Irrigation Well #1) is located within 250 feet of the site. Other irrigation wells were noted within 1,500 feet of the site, however, no others were identified within 250 feet of the site. Public drinking water is supplied to the site and surrounding area by the City of Goldsboro, which obtains its water from the Neuse River and the Little River. A vicinity map is presented as Figure 3.
2. The site is located in the Tertiary Yorktown Formation of the Coastal Plain Physiographic Province. According to the Geologic Map of North Carolina (Brown, et al., 1985), the bedrock is characterized by bluish gray fossiliferous clay with varying amounts of fine grained sand, shell material commonly concentrated in lenses. According to the CSA, the site's subsurface geology appears to be primarily fine to medium sand and clayey sand. Bedrock was not encountered during drilling activities at this site.

3. Approximately 725.52 tons of contaminated soil were removed from the gasoline UST excavation and dispenser excavation and transported off site for treatment and disposal in September 1998.
4. The average depth to groundwater ranged from approximately 6 feet to 7.5 feet bls. Based on data collected to date, groundwater appears to flow to the west with a horizontal gradient (i) of 0.003. Liquid phase hydrocarbons were not detected in any of the groundwater monitoring wells.
5. The average groundwater flow velocity for this site, according to the CSA, was calculated to be approximately 3.23 feet/year.
6. Groundwater analytical results from samples collected on March 22 and 23, 2000, indicate petroleum hydrocarbon constituents in excess of 15A NCAC 2L standards in nine (MW-1 through MW-3, MW-5 through MW-9, and MW-11) of the eleven monitoring wells sampled. Maximum concentrations of benzene (3,800 µg/L), ethylbenzene (1,300 µg/L), toluene (12,000 µg/L), total xylenes (7,300 µg/L), and naphthalene (250 µg/L) were detected in monitoring well MW-3. A maximum concentration of MTBE (3,600 µg/L) was detected in MW-6.

2.0 OBJECTIVES OF CORRECTIVE ACTION PLAN

2.1 Remediation Goals and Objectives

The remediation goal of this CAP is the restoration of the shallow groundwater aquifer to the 15A NCAC 2L Class GA groundwater quality standards, or as closely thereto as is economically and technologically feasible.

2.2 Remediation Endpoints

The regulation 15A NCAC 2L .0106(j) stipulates groundwater quality must be restored to Class GA groundwater quality standards using the best available technology (with some exceptions). Therefore, the Class GA groundwater quality standards established in 15A NCAC 2L .0202(g) represent preliminary corrective action goals for the site. Table 1 lists the groundwater target cleanup levels for hydrocarbon constituents identified at this site.

2.3 Startup and Completion Schedule

Corrective action in accordance with 15A NCAC 2L .0106(l), based on the natural processes of degradation and attenuation, is proposed for this site. Progress toward attainment of the closure goals will be established through the results of an ongoing groundwater monitoring program. Once the Class GA standards are achieved at all monitoring wells, a petition for closure with no further action will be submitted. If the Class GA standards are not met at all monitoring wells within 5 years, then one or more of the following alternatives will be evaluated and implemented, if appropriate at that time:

- 1) Continuation of natural remediation;
- 2) Petition for re-classification of groundwater and/or for a variance to the Class GA groundwater standards; or
- 3) Implementation of a contingency remediation strategy.

Requests for site closure will be accompanied by a closure plan to be written at that time. Any requests for termination of corrective action without reaching the Class GA standards will include the appropriate supporting information as specified in the 15A NCAC 2L regulations.

3.0 EXPOSURE ASSESSMENT

3.1 Historical Analytical Data

The most recent groundwater sampling event occurred on March 22 and 23, 2000. Groundwater elevations were measured during this sampling event and used to construct a groundwater elevation contour map presented as Figure 4. Groundwater elevation data are presented in Table 3. Referring to Figure 4, shallow groundwater appears to be flowing to the west with a horizontal gradient (i) of approximately 0.003.

Analytical results of the most recent groundwater sampling event and historical sampling events are presented in Tables 4 and 5. A copy of the laboratory report is included in Appendix B. Concentrations of petroleum constituents exceeding the 15A NCAC 2L Class GA groundwater quality standards were detected in nine (MW-1 through MW-3, MW-5 through MW-9, and MW-11) of the eleven monitoring wells sampled on March 22, 2000. Maximum concentrations of benzene (3,800 µg/L), ethylbenzene (1,300 µg/L), toluene (12,000 µg/L), total xylenes (7,300 µg/L), and naphthalene (250 µg/L) were detected in monitoring well MW-3. A maximum concentration of MTBE (3,600 µg/L) was detected in MW-6. Isoconcentration contour maps of benzene, ethylbenzene, toluene, total xylenes, and MTBE are included as Figures 5 through 9.

3.2 Physical and Chemical Properties of Hydrocarbons

The pertinent physical and chemical properties of selected gasoline and diesel hydrocarbons are summarized in Table 7. Refined petroleum products, such as gasoline and diesel, are complex mixtures comprised of many hydrocarbon compounds. Gasoline is largely composed of relatively low molecular weight (C4 to C10), saturated, straight- and branched-chain hydrocarbons, with cyclic, aromatic and polynuclear aromatic hydrocarbons (PAHs) comprising lesser fractions. Diesel fuel, in contrast, is composed mostly of higher molecular weight (C10 to C18) PAHs, with straight- and branched-chain and aromatic hydrocarbons comprising lesser fractions (Cole, 1994). Referring to Table 7, the lower molecular weight

hydrocarbons (including BTEX) are generally characterized by low relative affinity for soil adsorption (as indicated by relatively low $\log K_{oc}$ and $\log K_{ow}$ values), relatively high volatility (as indicated by high vapor pressures and Henry's Law constants), and high water solubility relative to diesel and other high molecular weight petroleum hydrocarbons. Conversely, higher molecular weight hydrocarbons generally have a relatively higher affinity for soil adsorption, lower relative volatility, and lower relative water solubility. As such, the lower molecular weight hydrocarbons tend to be relatively more mobile in the environment than the higher molecular weight hydrocarbons. This results in the propensity of lower molecular weight hydrocarbons to migrate in the vapor and dissolved phases following a release of gasoline or diesel to the environment.

The distribution of dissolved phase hydrocarbons in the groundwater depends on several physical processes, including advection, dispersion, sorption, and volatilization. These processes also contribute to decreases in contaminant concentrations observed over time. Another process which reduces hydrocarbon concentrations in groundwater is biodegradation. Biodegradation processes generally occur under natural conditions where electron acceptors and nutrient supplies are available, and where the physical groundwater parameters are within ranges that support biodegradation (Rifai et. al., 1995). The optimal pH ranges from 6-8 and temperature from 5-45°C, however biodegradation is sustainable outside of these ranges (NCDEHNR 15A NCAC 2L Implementation Guidance). Biodegradation is generally most active along the plume margins where greater natural dissolved oxygen concentrations exist relative to the plume interiors (where groundwater may be relatively oxygen deficient). Due to this, natural containment of contaminants can occur through biological/hydraulic equilibrium (i.e., contaminants are degraded faster than they can migrate).

3.3 Health Risks

Human exposure to gasoline hydrocarbons through contaminated groundwater may occur by ingestion of water and inhalation of vapors (i.e., from running tap water). Exposure to

gasoline/diesel hydrocarbons in relatively large doses over short duration generally results in acute toxicological effects on various organ systems. Longer duration exposure to large doses of these compounds can result in death. The effects of low-dose exposure over long durations (i.e., chronic exposure) are not well documented or understood for most petroleum hydrocarbons. Moreover, the cometabolic toxicological effects of exposure to complex mixtures of hydrocarbons, such as gasoline and diesel, are understood even less. The toxicological effects of human exposure to benzene are probably the best understood and documented of the gasoline hydrocarbons. Chronic exposure to low doses of benzene has been documented to cause the development of leukemia (Amdur et. al, 1993).

3.4 Potential Receptors

Following a release of petroleum to the subsurface, the greatest mass of hydrocarbons, generally, is adsorbed to soil and in liquid phases. The masses in the vapor and dissolved phases generally represent less than 10% of the total mass released, however, these are the most mobile hydrocarbon phases. Migration of hydrocarbons in the vapor and dissolved phases results in a potential for exposure of receptors to hydrocarbons in areas away from the source location.

According to the CSA, a receptor survey revealed the presence of an irrigation well within 250 feet of the site. A receptor survey conducted on May 1, 2000, confirmed the presence of an irrigation well (Irrigation Well #1) located at 102 East New Hope Road, approximately 53 feet southeast (hydraulically upgradient) of the current UST bed at the site. Other irrigation wells were noted within 1,500 feet of the site, however, no others were identified within 250 feet of the site. Irrigation Well #1 was sampled on May 1, 2000, and submitted for laboratory analysis by EPA methods 601 and 602. Analytical results indicated that no petroleum constituents were detected in the water sample. Chloroform was the only compound detected in the water sample, with a concentration of 1.2 µg/L. Public drinking water is supplied to the site and surrounding area by the City of Goldsboro, which obtains its water from the Neuse River and the Little River. A vicinity map is presented as Figure 3.

4.0 EVALUATION OF REMEDIAL ALTERNATIVES

Corrective action at the facility is proposed in accordance with 15A NCAC 2L .0106(l) through natural processes of degradation and attenuation. A monitoring plan is proposed to track the progress of natural remediation toward closure. In the event that natural remediation processes do not result in timely progress toward closure, potential contingency approaches are identified that would augment or replace natural remediation.

4.1 Soil Remediation

Approximately 725.52 tons of contaminated soil were removed from the gasoline UST excavation and dispenser excavation and transported off site for treatment and disposal in September 1998. Please refer to the UST Closure and Soil Excavation Report dated November 4, 1998, for details on the excavation activities.

4.2 Groundwater Remediation

4.2.1 Natural Remediation

Rule .0106(l) stipulates the site-specific factors that must be demonstrated in order to gain approval for corrective action through natural remediation. Each of these factors is addressed with respect to the facility as follows.

(1) all sources of contamination and free product have been removed or controlled....

The one 10,000-gallon and two 6,000-gallon gasoline, one 6,000-gallon diesel, and one 4,000-gallon kerosene USTs were removed in September 1998. Approximately 725.52 tons of contaminated soil were removed from the gasoline UST excavation and dispenser excavation and transported off site for treatment and disposal in September 1998. Free product has not been detected historically at the site.

(2) the contaminant has the capacity to degrade or under the site-specific conditions....

As discussed in Section 3.2, benzene, toluene, ethylbenzene, and xylene are readily and completely amenable to *in-situ* destruction through biodegradation. Biodegradation is proliferated when oxygen (and/or other electron acceptors, such as nitrogen) are present in the soil and groundwater.

On March 22, 2000, dissolved oxygen, redox potential, temperature, and pH measurements were recorded for all of the monitoring wells on site (Table 6). The Corning® Checkmate™ Modular Meter system was used to measure dissolved oxygen and temperature. The modules were calibrated in accordance with the manual. Redox measurements were taken with an Oxidation Reduction Potential (ORP) Tester. This instrument requires no calibration. A pH tester was used to measure pH, and was calibrated with 4 and 7 pH solutions according to the manual.

Concentrations of dissolved oxygen ranged from 1.2 to 4.7 milligrams per liter (mg/L). Lower concentrations of oxygen were observed at the center of the plume, and higher concentrations were detected at the plume periphery and outside the contaminated area. Oxygen is generally the preferred electron acceptor of aerobic BTEX biodegradation (Wiedemeier, et. al, 1995). It appears that anaerobic biodegradation is dominant at the center of the plume (based on the relatively low concentrations of dissolved oxygen) and aerobic biodegradation is dominant at the periphery of the plume (based on the relatively high concentrations of dissolved oxygen). A dissolved oxygen map is presented as Figure 10. Redox potential ranged from 59 to 224 millivolts (mV), with the lower levels being located toward the center of the plume. This provides additional evidence that biodegradation is occurring at the site, and that anaerobic conditions are greater toward the center of the plume and aerobic conditions are greater toward the edges of the plume. Temperature of groundwater at the site ranges between 12.5° and 16.1° C, well within the range of temperatures favorable to petroleum degrading bacteria. Groundwater pH ranges from 4.4 to 6.4.

(3) *the time and direction of contaminant travel can be predicted with reasonable accuracy....*

Groundwater in the area of the site appears to flow to the west. The results of slug tests performed on monitoring wells MW-6 and MW-7 are included in the CSA. Analysis of data collected during the test yielded a hydraulic conductivity (K) of 1.62 feet/day. The groundwater velocity was calculated in the CSA to be 3.23 feet/year.

However, site specific data indicate the dissolved phase hydrocarbons are not moving at the estimated rate of groundwater flow. In general, the processes of advection, dispersion, adsorption, dilution, volatilization, and biodegradation affect the rate at which a contaminant moves down-gradient. Based on the non detection of petroleum contaminants in the furthest down-gradient monitoring well (MW-11), the petroleum contamination at this site appears to be traveling down-gradient with a lower velocity than the groundwater flow velocity.

The computer program Solute was used to model the transport and degradation of benzene, toluene, ethylbenzene, and xylene in groundwater at this site. A brief description of the program, a detailed description of the model parameters, and the model printouts are presented in Appendix C. Using conservative estimates in the models, the plume is anticipated to be degraded to the target cleanup levels in approximately 10 to 15 years or less. Graphs 1 through 4 in Appendix C show the changes in concentration vs. distance for the targeted constituents at different time intervals.

According to the data collected to date, biodegradation appears to be occurring at the site and conditions appear suitable to continue the mitigation of contaminant concentrations through natural processes.

(4) the contaminant migration will not result in any violation of applicable groundwater standards at any existing or foreseeable receptor....

The nearest potential receptor of shallow groundwater flow from the facility is an irrigation well located approximately 53 feet southeast (hydraulically upgradient) of the site. Irrigation Well #1 was sampled on May 1, 2000, and submitted for laboratory analysis by EPA methods 601 and

602. Analytical results indicated that no petroleum constituents were detected in the water sample. Chloroform was the only compound detected in the water sample, with a concentration of 1.2 µg/L.

Considering that the primary source of dissolved-phase contamination appears to have been removed and both aerobic and anaerobic biodegradation appear to be occurring, it is expected that natural attenuation will effectively mitigate the dissolved-phase hydrocarbon concentrations to below the 15A NCAC 2L standard levels prior to reaching any potential receptors.

(5) contaminants have not and will not migrate onto adjacent properties, or that: (A) such properties are served by an existing public water supply system dependent on surface waters or hydraulically isolated groundwater; or (B) the owners of properties have consented in writing to the request...

It appears that the dissolved contaminant plume associated with the former USTs has migrated onto the Berkeley Boulevard right-of-way. However, no petroleum constituents were detected in MW-9, which is located directly across Berkeley Boulevard from the site. The properties in the surrounding area are served by public water.

(6) if the contaminant plume is expected to intercept surface waters, the groundwater discharge will not possess contaminant concentrations that would result in violations of standards for surface waters contained in 15A NCAC 2B .0200....

The nearest surface water body is a stream located approximately 1,600 feet southwest of the subject property. It is expected that natural attenuation will effectively mitigate the dissolved-phase hydrocarbon concentrations to below the 15A NCAC 2B .0200 standard levels prior to reaching any potential receptors.

(7) the person making the request will put in place a groundwater monitoring program sufficient to track the degradation and attenuation of contaminants and contaminant by-products within and down-gradient of the plume and to detect contaminants and contaminant by-products prior to their reaching any existing or foreseeable receptor at least one year's time of travel upgradient of the receptor

and no greater than the distance the groundwater at the contaminated site is expected to travel in five years....

A groundwater monitoring program that conforms with the requirements of item (7) is presented in Section 5.0.

(8) all necessary access agreements needed to monitor groundwater quality pursuant to Subparagraph (7) have been or can be obtained....

All but one groundwater monitoring well necessary to monitor the plume are located on site. Monitoring well MW-9 is located on the property directly to the west across Berkeley Boulevard from the site. Access agreements from the property owner will be secured to continue the monitoring of the well.

(9) public notice of the request has been provided in accordance with Rule 0114(b)....

Required public notifications, in accordance with .0114(b), are being made concurrent with submittal of this CAP to the NCDWM. Names and addresses of the notified individuals are provided in Appendix D.

(10) the proposed corrective action plan would be consistent with all other environmental laws....

It is believed that the proposed corrective action plan will be in compliance with all existing state and federal environmental laws.

4.2.2 Evaluation of Contingency Remediation Alternatives

Based on the data collected at this site which indicate that biodegradation is occurring at this site, it is expected that remediation through natural remediation will occur in a timely manner. However, in the event that the monitoring program indicates increasing concentrations of petroleum hydrocarbons in groundwater and/or further migration of any dissolved-phase

hydrocarbon plume, then other alternatives will be evaluated to include the most current and cost effective technology.

5.0 PROPOSED MONITORING PLAN

Groundwater sampling and analysis will be conducted on a quarterly schedule (i.e., once every 3 months) for the first year of CAP implementation, and a semi-annual schedule (i.e., once every 6 months) thereafter. All groundwater samples will be analyzed by the following:

- EPA methods 601 and 602 extended to include total xylenes and MTBE;
- EPA method 625 (BN); and
- Standard method 3030c for lead.

In conjunction with the groundwater sampling, depth-to-water, dissolved oxygen, pH, temperature, and redox potential measurements will be taken in all site monitoring wells on the sampling schedule. Irrigation Well #1 will be sampled on the same schedule as the monitoring wells, and will be analyzed by EPA methods 601 and 602 extended to include total xylenes and MTBE.

Based on the four graphs presented in Appendix C, down-gradient monitoring of the contaminant plume will be accomplished through monitoring well MW-11, which is located within 5-years groundwater-travel distance down-gradient of the groundwater contaminant plume and is greater than a 1-year plume-travel distance upgradient of any potential receptors. The down-gradient monitoring well will be used to confirm that the dissolved-phase hydrocarbon plume from the area of the former USTs will not intercept the nearest potential receptors. Source area dissolved-phase contaminant reductions will be monitored using monitoring wells MW-2 and MW-3.

A report detailing the results of each groundwater monitoring event will be submitted to the NCDENR within 45-days following the sampling event. Each groundwater monitoring report will present a potentiometric surface map transposed on a scaled site map, dissolved isoconcentration maps for any constituent found to be above the 15A NCAC 2L standards, concentration versus time graphs for monitoring wells with constituent concentrations above the 15A NCAC 2L standards, as well as tabulations of groundwater analytical results, and field measurements of depth-to-water, dissolved oxygen concentrations, pH, and redox potential. An

annual report will be submitted following the end of each year of groundwater monitoring. The annual report will summarize the results of the previous year and will contain an evaluation of the progress toward remediation. Any proposed modifications to the monitoring plan will be presented in the annual report. A professional engineer or a licensed geologist is required to report any indication that natural remediation is not occurring according to the model and/or predictive calculations.

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TABLE 1

Groundwater Target Cleanup Levels		
The Pantry #925 (Former Kwik Mart # 23)		
1816 Berkeley Boulevard		
Goldsboro, North Carolina		
SEI Project Number: 598165		
Parameter	Existing Level¹ (µg/l)	Target Level² (µg/l)
Benzene	3,800	<1
Toluene	12,000	<1,000
Ethylbenzene	1,300	<29
Total Xylenes	7,300	<530
MTBE	3,600	<200

¹ Based on the concentrations detected in MW-3 and MW-6 during the 03/22/00 sampling event.

² Based on NC DENR Groundwater Quality Standards, 15A NCAC 2L .0202.

TABLE 2

Monitoring Well Construction Summary				
The Pantry #925 (Former Kwik Mart # 23)				
1816 Berkeley Boulevard				
Goldsboro, North Carolina				
SEI Project Number: 598165				
Monitoring Well	Date Installed	Total Depth (feet bls)	Screen Interval (feet)	Date Abandoned
MW-1	01/13/98	14	4-14	Destroyed in 1998
MW-1*	09/03/99	15	5-15	N/A
MW-2	01/13/98	14	4-14	N/A
MW-2D [†]	06/10/98	35	30-35	N/A
MW-3	01/13/98	14	4-14	N/A
MW-4	06/09/98	14	4-14	N/A
MW-5	06/09/98	14	4-14	N/A
MW-6	06/09/98	14	4-14	N/A
MW-7	06/09/98	14	4-14	Destroyed in 1998
MW-7*	09/03/99	15	5-15	N/A
MW-8	06/09/98	14	4-14	Destroyed in 1998
MW-8*	09/03/99	15	5-15	N/A
MW-9	01/26/99	13	3-13	N/A
MW-10	01/26/99	13	3-13	N/A
MW-11	01/26/99	13	3-13	N/A

* These wells replaced wells destroyed in 1998 during site construction activities

[†] Type III monitoring well

Monitoring well construction data were recorded by Mid-Atlantic Associates, P. A.

TABLE 3

Groundwater Elevation Data The Pantry #925 (Former Kwik Mart # 23) 1816 Berkeley Boulevard Goldsboro, North Carolina SEI Project Number: 598165				
Well Location	Date Gauged	Top of Casing Elevation (feet)*	Depth to Groundwater (feet)	Groundwater Elevation (feet)
MW-1	03/22/00	100.57	7.44	93.13
MW-2	03/22/00	99.55	6.47	93.08
MW-2D	03/22/00	99.39	17.30	82.09
MW-3	03/22/00	98.54	5.99	92.55
MW-4	03/22/00	99.89	NG	--
MW-5	03/22/00	99.05	6.03	93.02
MW-6	03/22/00	100.69	7.38	93.31
MW-7	03/22/00	100.06	6.86	93.20
MW-8	03/22/00	100.07	6.72	93.35
MW-9	03/22/00	98.70	6.10	92.60
MW-10	03/22/00	98.41	5.72	92.69
MW-11	03/22/00	97.96	5.71	92.25

* Top of casing elevations provided by Taylor Wiseman & Taylor
NG = Not Gauged

TABLE 4

Groundwater Analytical Results

The Pantry #925 (Former Kwik Mart # 23)
1816 Berkeley Boulevard
Goldsboro, North Carolina
SEI Project Number: 598165

Sample Date: March 22, 2000

Well Location	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Total Xylene (µg/L)	MTBE (µg/L)	IPE (µg/L)	Lead (µg/L)	Naphthalene (µg/L)	2-Methylnaphthalene (µg/L)	1-Methylnaphthalene (µg/L)	Chloroform (µg/L)	Bromodichloromethane (µg/L)	Bromoform (µg/L)
MW-1	BDL	BDL	BDL	BDL	5.5	BDL	BDL	BDL	BDL	BDL	8.1	2.3	2.2
MW-2	2,100	1,200	6,800	6,400	BDL	BDL	54	230	63	BDL	BDL	BDL	BDL
MW-2D	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-3 *	3,800	1,300	12,000	7,300	BDL	BDL	30	250	54	25	BDL	BDL	BDL
MW-4	Not Sampled												
MW-5	BDL	BDL	1.1	BDL	BDL	BDL	20	BDL	BDL	BDL	BDL	BDL	BDL
MW-6	BDL	BDL	BDL	BDL	3,600	BDL	12	BDL	BDL	BDL	BDL	BDL	BDL
MW-7	8.1	10	25	113	96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-8	BDL	BDL	BDL	BDL	7.2	BDL	BDL	BDL	BDL	BDL	13	BDL	BDL
MW-9	BDL	BDL	BDL	BDL	BDL	BDL	27	BDL	BDL	BDL	BDL	BDL	BDL
MW-10 *	BDL	BDL	BDL	BDL	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-11 *	BDL	BDL	BDL	BDL	BDL	BDL	37	BDL	BDL	BDL	BDL	BDL	BDL
Irrigation Well #1†	BDL	BDL	BDL	BDL	BDL	BDL	NA	NA	NA	NA	1.2	BDL	BDL
Standard	1.0	29	1,000	530	200	70	15	21	28	NE	0.19	0.56	0.19
GCL	5,000	29,000	257,500	87,500	200,000	70,000	5,000	15,500	12,500	NE	NE	NE	NE

µg/L = Micrograms per liter

BDL = Below detection limit

BOLD concentrations are above the 15A NCAC 2L standard

GCL = Gross Contamination Level

NE = Not established

NA = Not analyzed

* MW-3, MW-10, and MW-11 were sampled on 03/23/00

† Irrigation Well #1 sampled on 05/01/00

TABLE 5

Historical Groundwater Analytical Results The Pantry #925 (Former Kwik Mart # 23) 1816 Berkeley Boulevard Goldsboro, North Carolina SEI Project Number: 598165								
Well Location	Sample Date	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Total Xylene (µg/L)	MTBE (µg/L)	IPE (µg/L)	Naphthalene (µg/L)
MW-1	01/14/98	47	BDL	BDL	BDL	89	NA	BDL
	06/11/98	BDL	BDL	BDL	BDL	2	NA	BDL
	07/22/98	BDL	BDL	BDL	BDL	5	NA	BDL
	03/22/00	BDL	BDL	BDL	BDL	5.5	BDL	BDL
MW-2	01/14/98	2,900	3,000	18,000	15,500	BDL	NA	250
	06/11/98	1,200	970	6,600	4,900	BDL	NA	130
	03/22/00	2,100	1,200	6,800	6,400	BDL	BDL	230
MW-2D	06/11/98	BDL	BDL	BDL	BDL	BDL	NA	BDL
	03/22/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-3	01/14/98	BDL	BDL	BDL	BDL	BDL	NA	BDL
	06/11/98	130	12	42	197	BDL	NA	21
	07/22/98	11	BDL	BDL	10	BDL	NA	BDL
	03/23/00	3,800	1,300	12,000	7,300	BDL	BDL	250
MW-4	06/11/98	39	13	3	6	BDL	NA	BDL
	03/22/00	Not Sampled						
MW-5	06/11/98	140	89	120	190	83	NA	BDL
	03/22/00	BDL	BDL	1.1	BDL	BDL	BDL	BDL
MW-6	06/11/98	BDL	BDL	BDL	BDL	BDL	NA	BDL
	03/22/00	BDL	BDL	BDL	BDL	3,600	BDL	BDL
MW-7	06/11/98	790	2,400	4,500	11,300	BDL	NA	570
	03/22/00	8.1	10	25	113	96	BDL	BDL
MW-8	06/11/98	BDL	BDL	BDL	BDL	BDL	NA	BDL
	03/22/00	BDL	BDL	BDL	BDL	7.2	BDL	BDL
MW-9	01/27/99	BDL	BDL	2	BDL	BDL	NA	BDL
	03/22/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-10	01/27/99	2	BDL	3	3	BDL	NA	BDL
	03/23/00	BDL	BDL	BDL	BDL	1.0	BDL	BDL

TABLE 5 (Continued)

Historical Groundwater Analytical Results The Pantry #925 (Former Kwik Mart # 23) 1816 Berkeley Boulevard Goldsboro, North Carolina SEI Project Number: 598165								
Well Location	Sample Date	Benzene (µg/L)	Ethyl-benzene (µg/L)	Toluene (µg/L)	Total Xylene (µg/L)	MTBE (µg/L)	IPE (µg/L)	Naphthalene (µg/L)
MW-11	01/27/99	BDL	1	4	3	BDL	NA	BDL
	03/23/00	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Irrigation Well #1	05/01/00	BDL	BDL	BDL	BDL	BDL	BDL	NA
Standard		1.0	29	1,000	530	200	70	21

µg/L = Micrograms per liter

BDL = Below detection limit

NA = Not analyzed

BOLD concentrations are above the 15A NCAC 2L standards

Analytical results prior to 03/22/00 were reported by Mid-Atlantic Associates, P. A.

TABLE 6**Intrinsic Groundwater Remediation Parameters****The Pantry #925 (Former Kwik Mart # 23)****1816 Berkeley Boulevard****Goldsboro, North Carolina****SEI Project Number: 598165**

Well	Date	Dissolved Oxygen (mg/L)	pH	Temperature (°C)	Redox (mV)
MW-1	03/22/00	3.7	4.4	13.7	169
MW-2	03/22/00	1.2	5.9	14.3	92
MW-2D	03/22/00	3.7	6.1	15.1	113
MW-3	03/22/00	1.3	5.5	14.0	103
MW-4	03/22/00	NM	NM	NM	NM
MW-5	03/22/00	1.2	5.8	16.1	74
MW-6	03/22/00	3.2	4.8	13.0	224
MW-7	03/22/00	2.3	6.4	13.5	121
MW-8	03/22/00	3.8	5.2	13.4	193
MW-9	03/22/00	3.9	5.4	15.8	178
MW-10	03/22/00	2.5	5.0	14.9	59
MW-11	03/22/00	4.7	5.0	12.5	183

mg/L = Milligrams per liter

mV = Millivolts

NM= Not measured

TABLE 7

Physical and Chemical Properties of Petroleum Hydrocarbons						
The Pantry #925 (Former Kwik Mart # 23) 1816 Berkeley Boulevard Goldsboro, North Carolina SEI Project Number: 598165						
Parameter	Normal/Iso Hydrocarbons	Benzene	Toluene	Ethylbenzene	Xylenes (o, m, p)	MTBE
Gasoline %/volume ¹	~55 C4 to C10	2 - 5	6 - 7	5	6 - 7	2 - 15
Diesel %/volume ¹	95 - 99 C10 to C16	trace	trace	trace	trace	---
Vapor Pressure (mm Hg @ Temp)		95 (25° C)	28 (25° C)	10 (25° C)	6 (25° C)	245 (25° C)
Henry's Constant (atm @ STP) ²		240	328	357	233 - 372	19
Molecular Weight (g/mol)		78.11	92.10	106.17	106.17	88.15
Specific Gravity		0.88	0.87	0.87	0.88	0.74
Biodegradation Potential ³	D	D	D	D	D	P
Log K _{ow} ⁴		2.12	2.65	3.13	2.95 - 3.20	1.05
Log K _{oc} ⁵		1.94	2.18	2.20	2.11 - 3.20	1.11
Solubility (mg/l @ STP)		1,750	535	152	175	48,000

1. %/volume - approximate percent composition by volume.

2. Data from multiple published sources.

3. P - Persistent, D - Degradable

4. Log K_{ow} - log octanol-water partition coefficient.

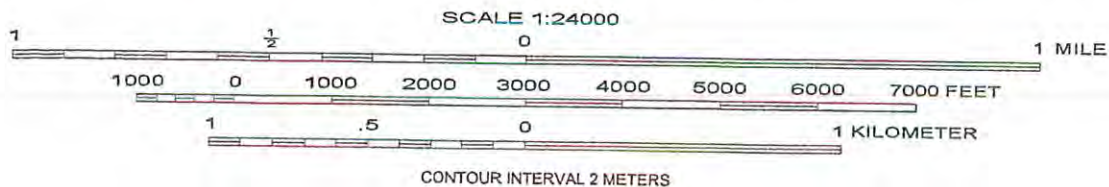
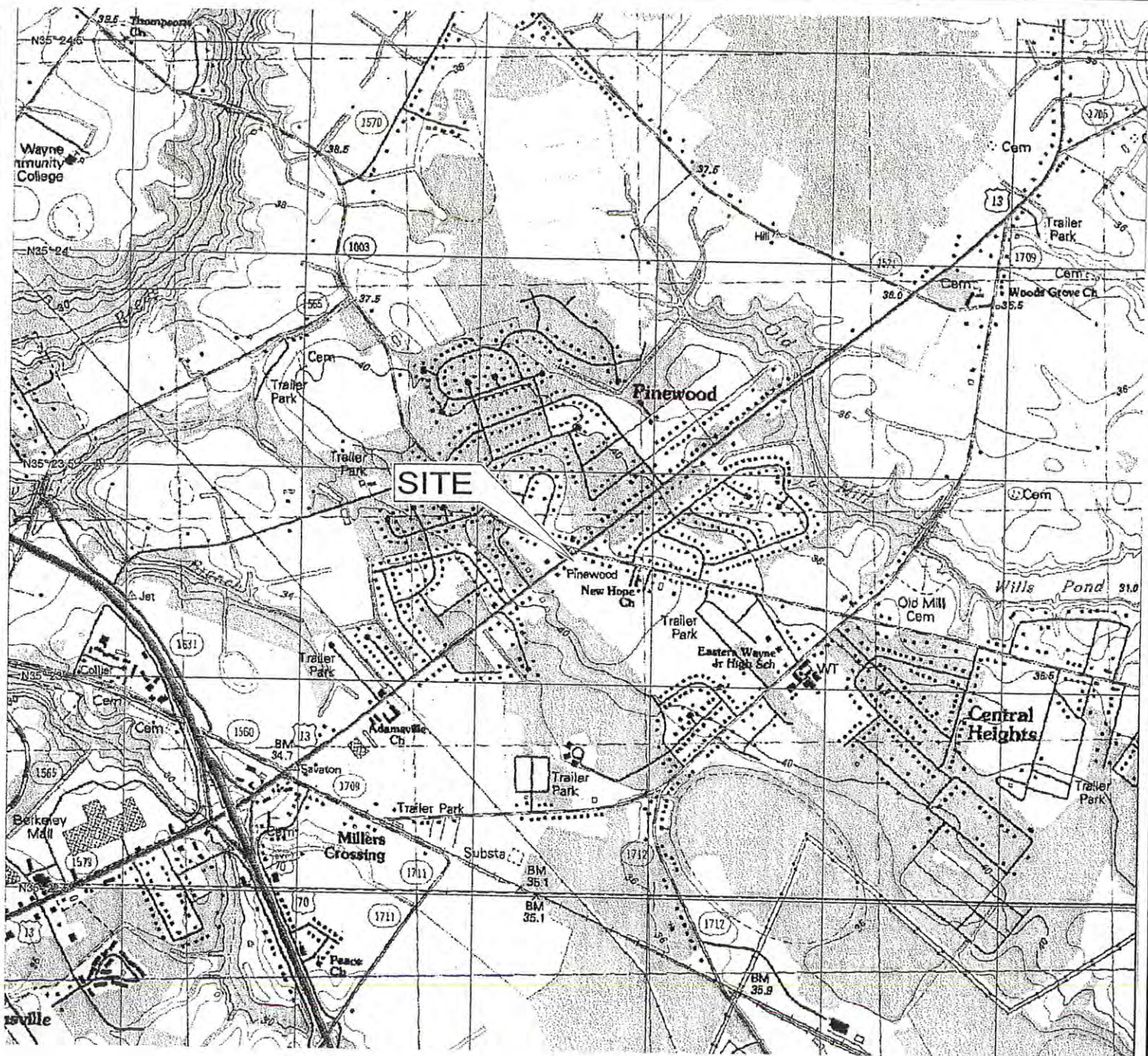
5. Log K_{oc} - log organic-carbon partition coefficient.

TABLE 8

Remediation Technologies Evaluation Matrix The Pantry #925 (Former Kwik Mart # 23) 1816 Berkeley Boulevard Goldsboro, North Carolina SEI Project Number: 598165			
Remediation Technology	Advantages	Disadvantages	Feasible
Pump & Treat	• Moderate treatment efficiency for dissolved-phase hydrocarbons. • Dewatering effects enhance efficiency of SVE.	• Low treatment efficiency for adsorbed-phase hydrocarbons. • Low permeability of soils may limit efficiency of technology. • Groundwater discharge/permitting limitations. • Lengthy time to closure when used as sole technology.	YES
<i>In-situ</i> Air Sparging	• High treatment efficiency for dissolved-phase hydrocarbons. • Treats adsorbed-phase hydrocarbons below water table in-situ without dewatering. • Treats dissolved-phase hydrocarbons in-situ without groundwater extraction. • Stimulates biodegradation.	• Low treatment efficiency for dissolved MTBE. • Must be used in conjunction with soil vapor extraction. • Cannot be used at sites with high groundwater table.	YES
Dual Phase Vacuum Extraction	• High treatment efficiency for adsorbed-phase hydrocarbons. • Moderate treatment efficiency for dissolved-phase hydrocarbons. • High vacuum increases effective area of treatment for a single well. • Stimulates biodegradation. • Combines groundwater and vapor extraction in one technology.	• Groundwater discharge/permitting limitations. • Potential vapor discharge/permitting limitations.	YES
Natural Attenuation	• No initial capital expense. • Little to no permitting required. • Allows natural processes to degrade contaminants.	• Long term monitoring required.	YES

TABLE 9

Cost Comparison of Remediation Technologies				
The Pantry #925 (Former Kwik Mart # 23) 1816 Berkeley Boulevard Goldsboro, North Carolina SEI Project Number: 598165				
Option	Capital Expense	Annual Operating and Maintenance	Estimated Project Life (years)	Estimated Total Cost
Pump & Treat	\$150, 000	\$50,000	10	\$650,000
Dual Phase Vacuum Extraction	\$150,000	\$50,000	5	\$400,000
Natural Attenuation	none	\$30,000 first year \$15,000 thereafter	10-15	\$240,000



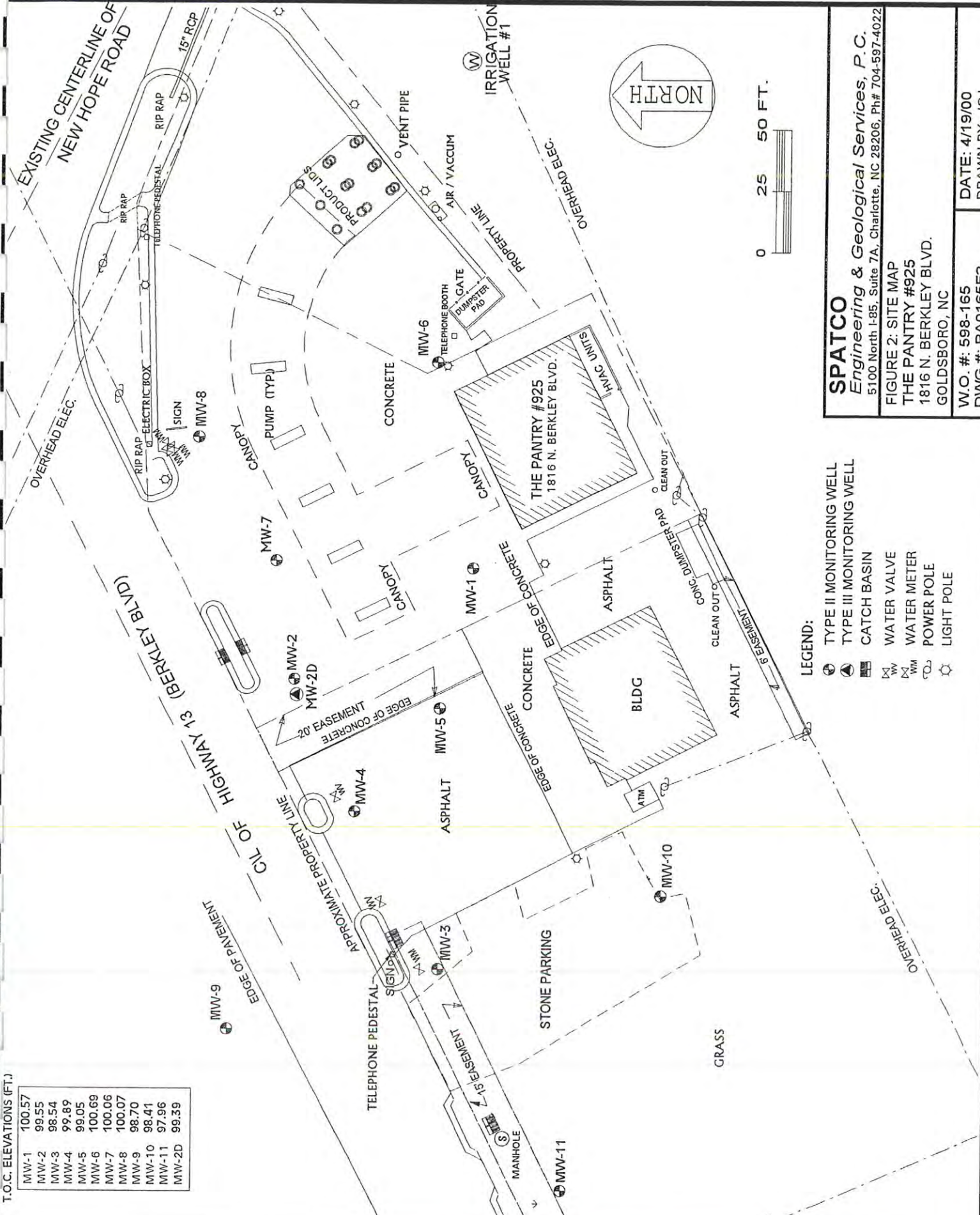
SPATCO

Engineering & Geological Services, P.C.
5100 North I-85, Suite 7A, Charlotte, NC 28206, Ph# 704-597-4022

FIGURE 1: USGS QUADRANGLE MAP
THE PANTRY #925 (FORMER KWIK MART #23)
1816 N. BERKELEY BLVD.
GOLDSBORO, NC

T.O.C. ELEVATIONS (FT.)

MW-1	100.57
MW-2	99.55
MW-3	98.54
MW-4	99.89
MW-5	99.05
MW-6	100.69
MW-7	100.06
MW-8	100.07
MW-9	98.70
MW-10	98.41
MW-11	97.96
MW-2D	99.39



- LEGEND:
- TYPE II MONITORING WELL
 - ▲ TYPE III MONITORING WELL
 - CATCH BASIN
 - ⊗ WATER VALVE
 - ⊗ WATER METER
 - ⊗ POWER POLE
 - ⊗ LIGHT POLE



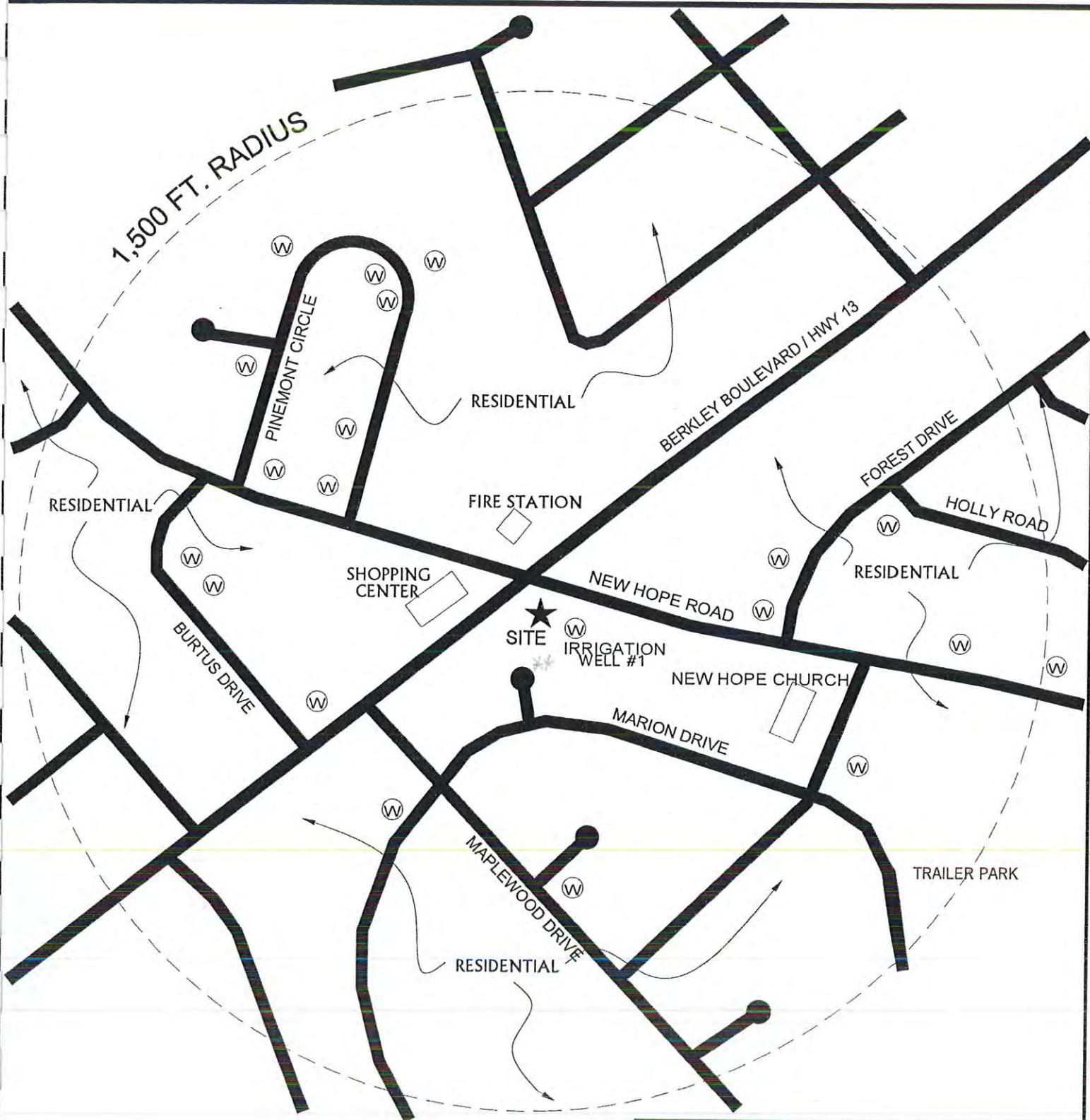
SPATCO
Engineering & Geological Services, P.C.
5100 North I-85, Suite 7A, Charlotte, NC 28206, Ph# 704-597-4022

FIGURE 2: SITE MAP
THE PANTRY #925
1816 N. BERKLEY BLVD.
GOLDSBORO, NC

W.O. #: 598-165
DWG #: PA0165F2

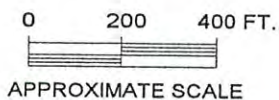
DATE: 4/19/00
DRAWN BY: JCJ

1,500 FT. RADIUS



LEGEND:

(W) IRRIGATION WELL



SPATCO

Engineering & Geological Services, P.C.

5100 North I-85, Suite 7A, Charlotte, NC 28206, Ph# 704-597-4022

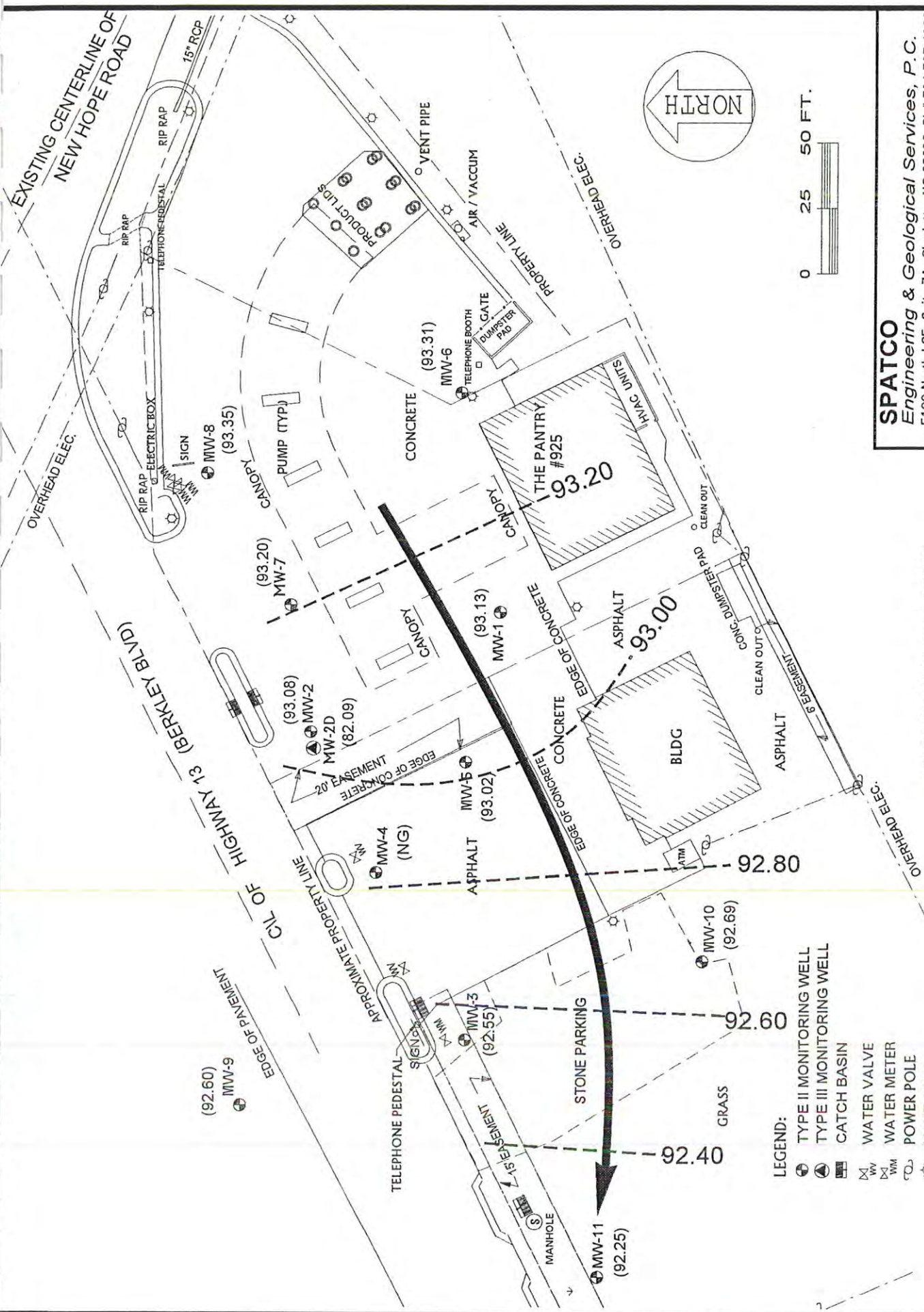
FIGURE 3: VICINITY MAP
THE PANTRY #925
1816 N. BERKLEY BLVD.
GOLDSBORO, NC

W.O. #: 598-165

DWG #: PA01653B

DATE: 5/4/00

DRAWN BY: JCJ



NOTE: WELLS GAUGED 3/22/00.

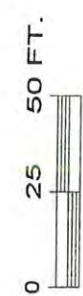
(XXX) GROUNDWATER ELEVATION (FT.) BASED ON ARBITRARY DATUM OF 100.00 FT.
 GROUNDWATER ELEVATION CONTOUR
 GROUNDWATER FLOW DIRECTION

SPATCO
 Engineering & Geological Services, P.C.
 5100 North I-85, Suite 7A, Charlotte, NC 28206, Ph# 704-597-4022

FIGURE 4: GROUNDWATER ELEVATION CONTOUR MAP
 THE PANTRY #925
 1816 N. BERKLEY BLVD.
 GOLDSBORO, NC

W.O. #: 598-165
 DWG #: PA0165F3

DATE: 4/19/00
 DRAWN BY: JCU



-  TYPE II MONITORING WELL
-  TYPE III MONITORING WELL
-  CATCH BASIN
-  WATER VALVE
-  WATER METER
-  POWER POLE
-  LIGHT POLE

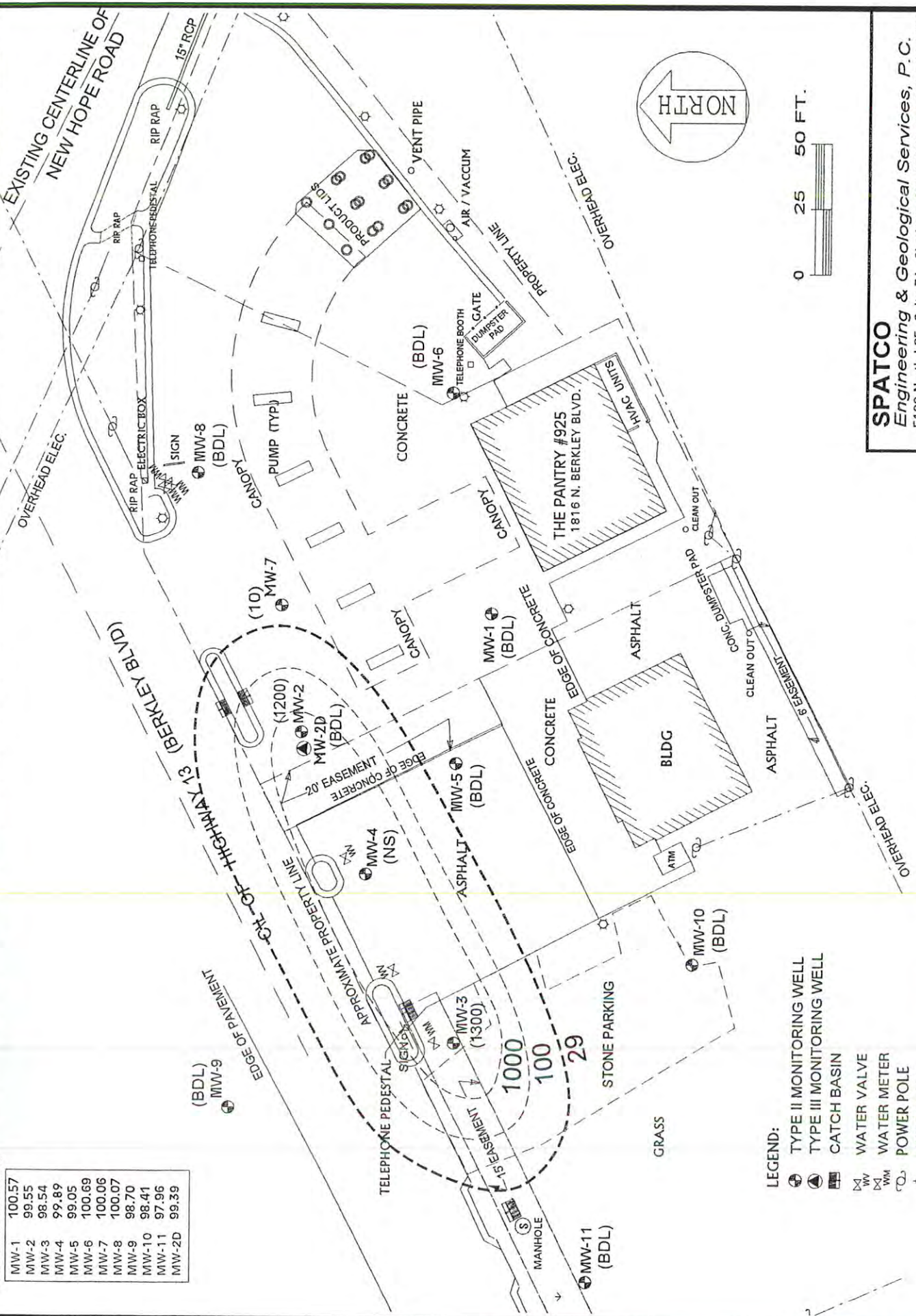
(XXX) BENZENE CONCENTRATION(ug/l)
BDL = BELOW DETECTION LIMITS
NS = NOT SAMPLED
--- CONCENTRATION CONTOUR

NOTE: WELLS SAMPLED 3/22/00 & 3/23/00.

SPATCO <i>Engineering & Geological Services, P.C.</i> 5100 North I-85, Suite 7A, Charlotte, NC 28206, Ph# 704-597-4022	
FIGURE 5: BENZENE CONCENTRATION ISOPLETH THE PANTRY #925 1816 N. BERKLEY BLVD. GOLDSBORO, NC	
W.O. #: 598-165 DWG #: PA0165F4	DATE: 4/26/00 DRAWN BY: JCJ

T.O.C. ELEVATIONS (FT.)

MW-1	100.57
MW-2	99.55
MW-3	98.54
MW-4	92.89
MW-5	99.05
MW-6	100.69
MW-7	100.06
MW-8	100.07
MW-9	98.70
MW-10	98.41
MW-11	97.96
MW-2D	99.39



- LEGEND:
- TYPE II MONITORING WELL
 - TYPE III MONITORING WELL
 - CATCH BASIN
 - ⋈ WATER VALVE
 - ⋈ WATER METER
 - ⋈ POWER POLE
 - ⋈ LIGHT POLE
 - ⊙ MANHOLE
 - ⊙ OVERHEAD ELEC.
 - ⊙ AIR / VACCUUM
 - ⊙ VENT PIPE
 - ⊙ GATE
 - ⊙ DUMPSTER PAD
 - ⊙ TELEPHONE BOOTH
 - ⊙ TELEPHONE PEDESTAL
 - ⊙ SIGN
 - ⊙ PUMP (TYP.)
 - ⊙ CANOPY
 - ⊙ CONCRETE
 - ⊙ ASPHALT
 - ⊙ BLDG
 - ⊙ ATM
 - ⊙ STONE PARKING
 - ⊙ GRASS
 - ⊙ MANHOLE
 - ⊙ MW-11 (BDL)
 - ⊙ MW-10 (BDL)
 - ⊙ MW-9 (BDL)
 - ⊙ MW-8 (BDL)
 - ⊙ MW-7 (10)
 - ⊙ MW-6 (BDL)
 - ⊙ MW-5 (BDL)
 - ⊙ MW-4 (NS)
 - ⊙ MW-3 (1300)
 - ⊙ MW-2D (BDL)
 - ⊙ MW-2 (1200)
 - ⊙ MW-1 (BDL)
 - ⊙ THE PANTRY #925 1816 N. BERKLEY BLVD.
 - ⊙ HVAC UNITS
 - ⊙ CLEAN OUT
 - ⊙ CONC. DUMPSTER PAD
 - ⊙ EASEMENT
 - ⊙ EDGE OF CONCRETE
 - ⊙ EDGE OF ASPHALT
 - ⊙ EDGE OF PAVEMENT
 - ⊙ APPROXIMATE PROPERTY LINE
 - ⊙ 15' EASEMENT
 - ⊙ 20' EASEMENT
 - ⊙ 1000
 - ⊙ 100
 - ⊙ 29

NOTE: WELLS SAMPLED 3/22/00 & 3/23/00.

ETHYLBENZENE CONCENTRATION(ug/l)

BDL = BELOW DETECTION LIMITS

NS = NOT SAMPLED

CONCENTRATION CONTOUR

SPATCO
 Engineering & Geological Services, P.C.
 5100 North I-85, Suite 7A, Charlotte, NC 28206, Ph# 704-597-4022

FIGURE 6: ETHYLBENZENE CONCENTRATION ISOPLETH
 THE PANTRY #925
 1816 N. BERKLEY BLVD.
 GOLDSBORO, NC

W.O. #: 598-165
 DWG #: PA0165F5

DATE: 4/26/00
 DRAWN BY: JCJ

T.O.C. Elevations (P.T.)

BDL = BELOW DETECTION LIMITS
NS = NOT SAMPLED

CONCENTRATION CONTOUR

NOTE: WELLS SAMPLED 3/22/00 & 3/23/00.

Engineering & Geological Services, P.C.
5100 North I-85, Suite 7A, Charlotte, NC 28206, Ph# 704-597-4022

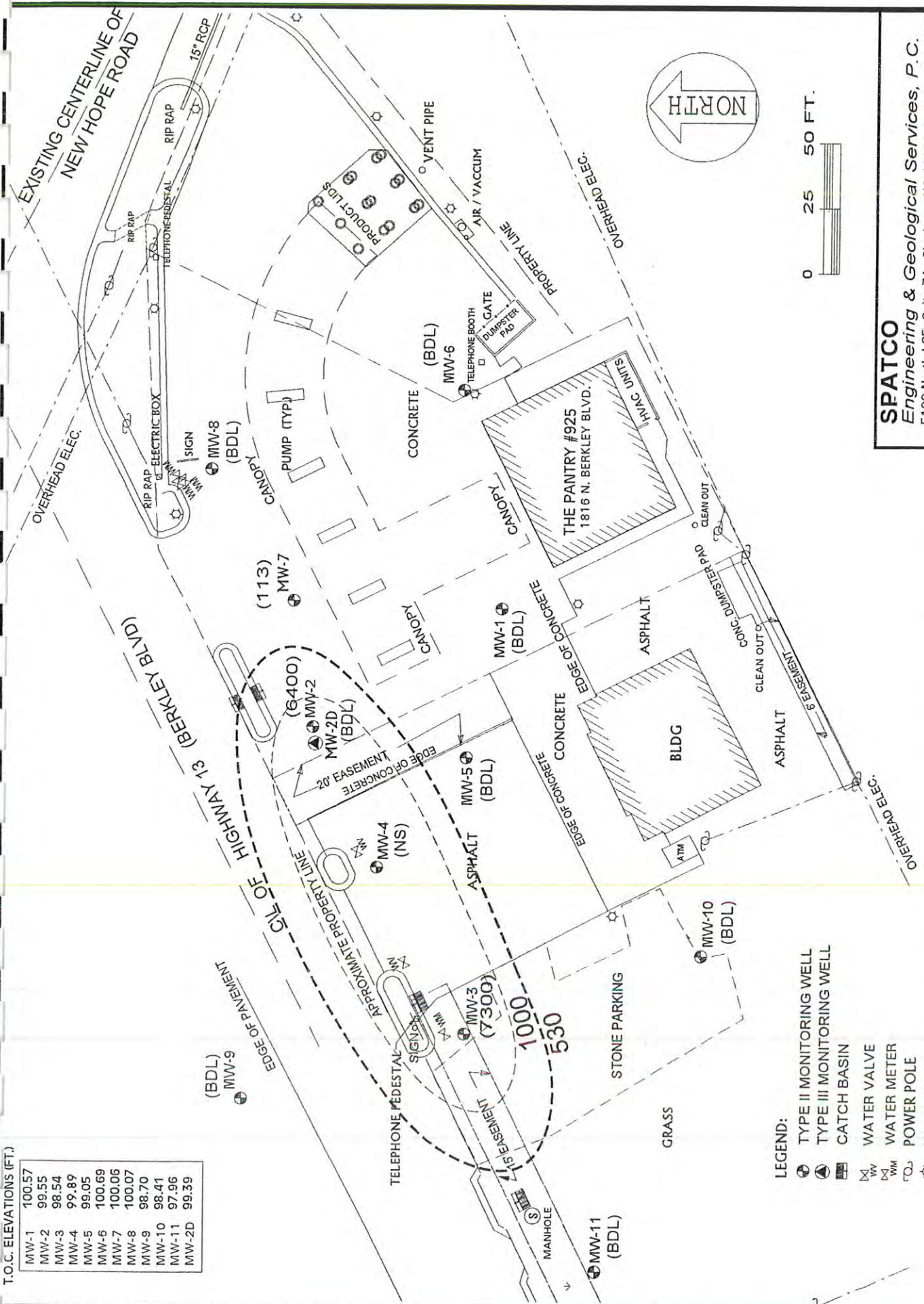
FIGURE 7: TOLUENE CONCENTRATION ISOPLETH
THE PANTRY #925
1816 N. BERKLEY BLVD.
GOLDSBORO, NC

W.O. #: 598-165

DATE: 4/26/00
DRAWN BY: JCJ

T.O.C. ELEVATIONS (FT.)

MW-1	100.57
MW-2	99.55
MW-3	98.54
MW-4	99.89
MW-5	99.05
MW-6	100.69
MW-7	100.06
MW-8	100.07
MW-9	98.70
MW-10	98.41
MW-11	97.96
MW-2D	99.39



- LEGEND:
- TYPE II MONITORING WELL
 - TYPE III MONITORING WELL
 - CATCH BASIN
 - ⊗ WATER VALVE
 - ⊗ WATER METER
 - ⊗ POWER POLE
 - ⊗ LIGHT POLE
 - (XXX) XYLENE CONCENTRATION (ug/l)
 - BDL = BELOW DETECTION LIMITS
 - NS = NOT SAMPLED
 - CONCENTRATION CONTOUR

NOTE: WELLS SAMPLED 3/22/00 & 3/23/00.

SPATCO
Engineering & Geological Services, P.C.
5100 North I-85, Suite 7A, Charlotte, NC 28206, Ph# 704-597-4022

FIGURE 8: XYLENE CONCENTRATION ISOPLETH
THE PANTRY #925
1816 N. BERKLEY BLVD.
GOLDSBORO, NC

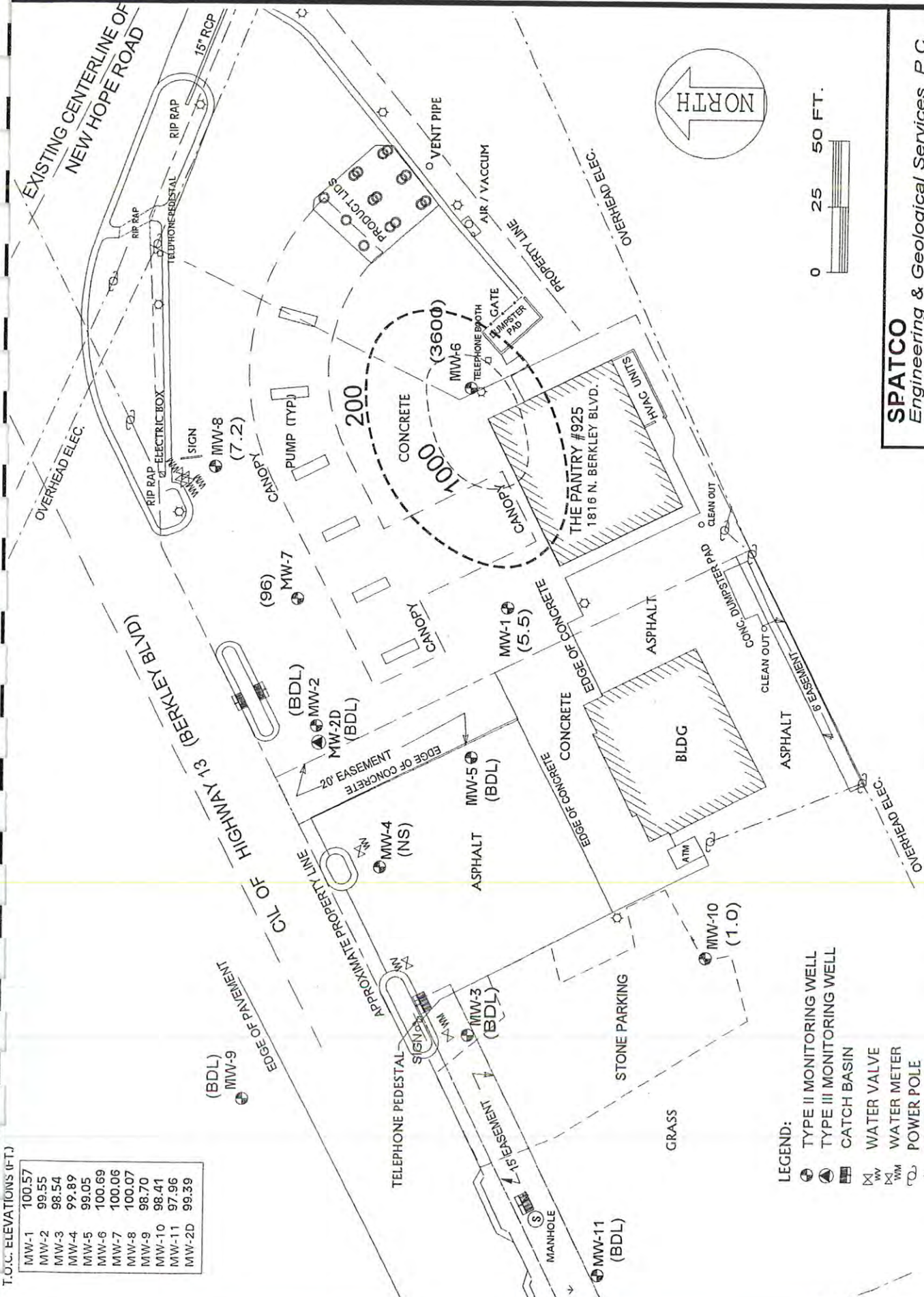
W.O. #: 598-165
DWG #: PA0165F7

DATE: 4/26/00
DRAWN BY: JCJ

530 --- CONCENTRATION CONTOUR

T.O.C. ELEVATIONS (ft.)

MW-1	100.57
MW-2	99.55
MW-3	98.54
MW-4	99.89
MW-5	99.05
MW-6	100.69
MW-7	100.06
MW-8	100.07
MW-9	98.70
MW-10	98.41
MW-11	97.96
MW-2D	99.39



- LEGEND:
- TYPE II MONITORING WELL
 - TYPE III MONITORING WELL
 - ▢ CATCH BASIN
 - ⌵ WATER VALVE
 - ⌵ WATER METER
 - ⌵ POWER POLE
 - ⌵ LIGHT POLE
 - (XXX) MTBE CONCENTRATION (ug/l)
 - BDL = BELOW DETECTION LIMITS
 - NS = NOT SAMPLED
 - CONCENTRATION CONTOUR

NOTE: WELLS SAMPLED 3/22/00 & 3/23/00.

SPATCO
Engineering & Geological Services, P.C.
5100 North I-85, Suite 7A, Charlotte, NC 28206, Ph# 704-597-4022

FIGURE 9: MTBE CONCENTRATION ISOPLETH
THE PANTRY #925
1816 N. BERKLEY BLVD.
GOLDSBORO, NC

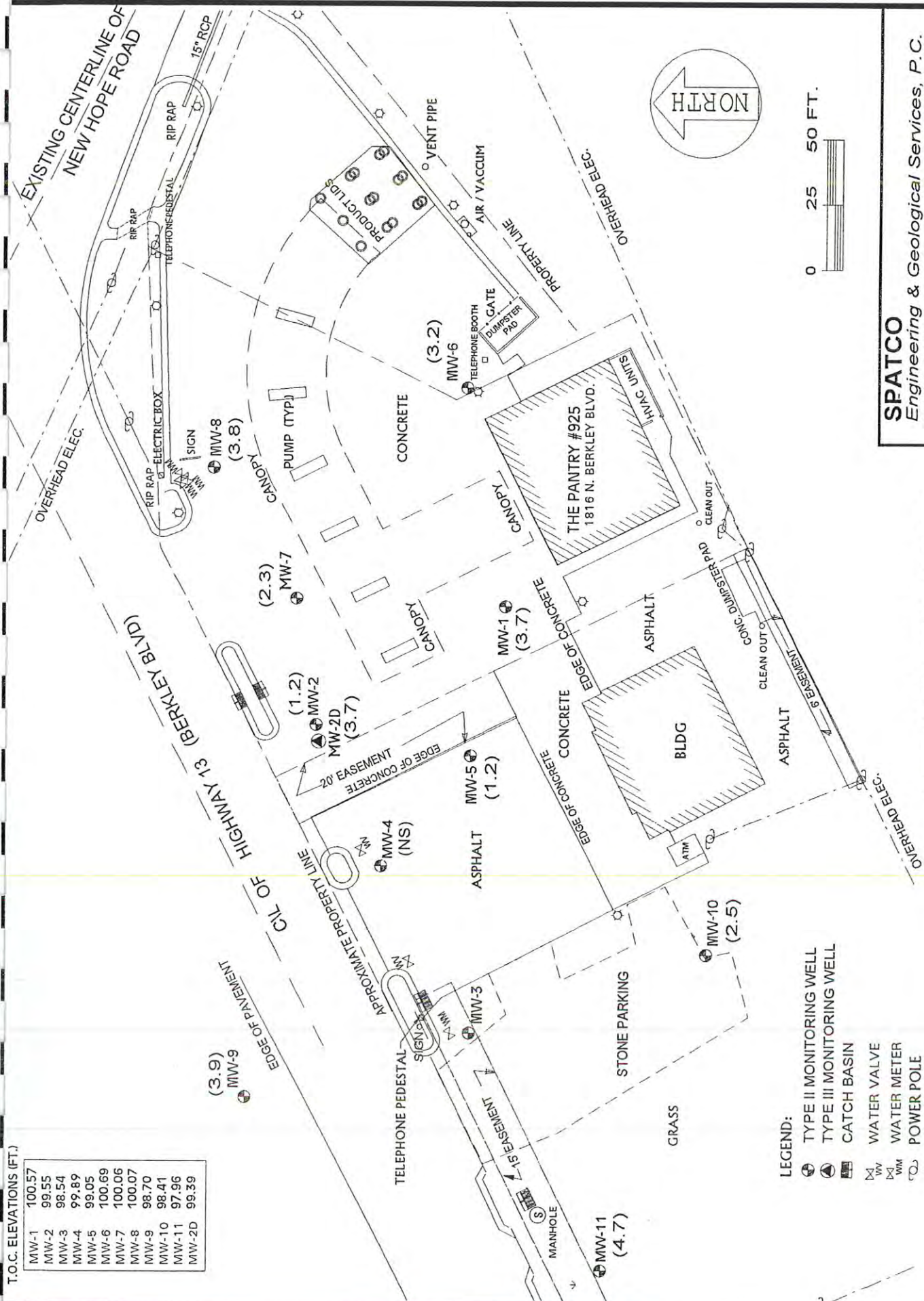
W.O. #: 598-165
DWG #: PA0165F8

DATE: 4/26/00
DRAWN BY: J.C.J

200

T.O.C. ELEVATIONS (FT.)

MW-1	100.57
MW-2	99.55
MW-3	98.54
MW-4	99.89
MW-5	99.05
MW-6	100.69
MW-7	100.06
MW-8	100.07
MW-9	98.70
MW-10	98.41
MW-11	97.96
MW-2D	99.39



LEGEND:

- TYPE II MONITORING WELL
- TYPE III MONITORING WELL
- CATCH BASIN
- ▽ WATER VALVE
- ▽ WATER METER
- POWER POLE
- LIGHT POLE

(XXX)

DISSOLVED OXYGEN CONCENTRATION (mg/l)

BDL = BELOW DETECTION LIMITS

NS = NOT SAMPLED

NOTE: WELLS SAMPLED 3/22/00.

SPATCO

Engineering & Geological Services, P.C.

5100 North I-85, Suite 7A, Charlotte, NC 28206, Ph# 704-597-4022

FIGURE 10: DISSOLVED OXYGEN CONCENTRATION MAP

THE PANTRY #925

1816 N. BERKLEY BLVD.

GOLDSBORO, NC

W.O. #: 598-165

DWG #: PA0165F9

DATE: 4/26/00

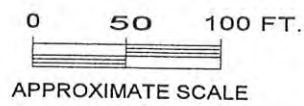
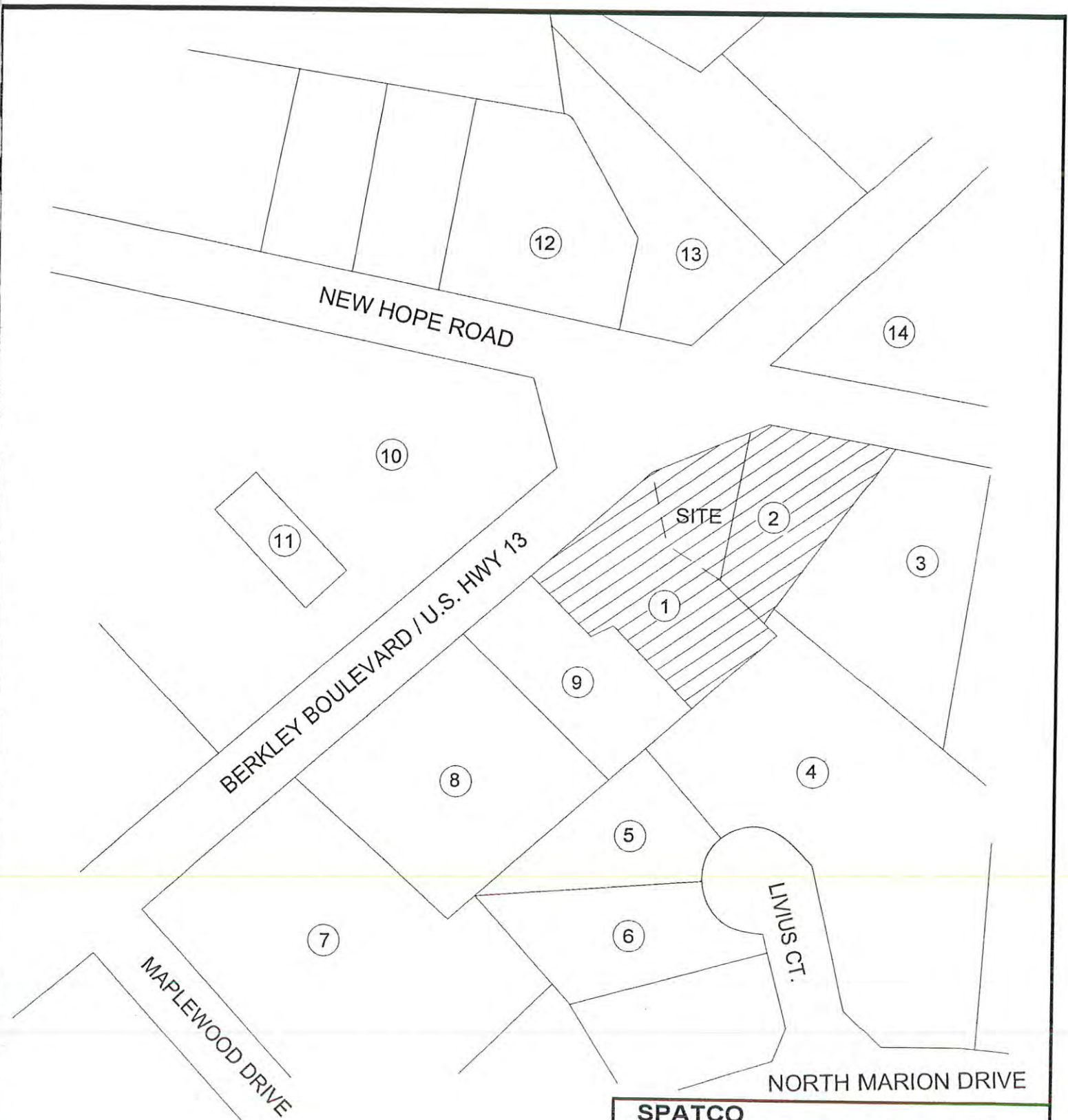
DRAWN BY: JCU

APPENDIX A

Surrounding Property Owners

The Pantry #925 (Former Kwik Mart # 23)
1816 Berkeley Boulevard
Goldsboro, North Carolina
SEI Project Number: 598165

Map #	Property Owner	Address
1	Wooten Oil & Fuel Co.	S. George St. PO Box 1277 Goldsboro, NC 27533-1277
2	Wooten Oil Co.	S. George St. PO Box 1277 Goldsboro, NC 27533-1277
3	Lois P. Langston	102 New Hope Rd. Goldsboro, NC 27534
4	Maplewood Property Owners Ass. C/o Real Estate Managers Services	PO Box 10219 Goldsboro, NC 27532
5	Michael E. Gaudreau	104 Livius Ct. Goldsboro, NC 27534-7683
6	Jo Beth & James T. Parker	102 Livius Ct. Goldsboro, NC 27534-7683
7	Alterra Healthcare Corpor.	450 W. Sunny Slope Rd., Suite 300 Brookfield, WI 53005
8	Wooten Oil Co.	S. George St. PO Box 1277 Goldsboro, NC 27533-1277
9	David Kim Mozingo	1300 South Harding Dr., Apt. 803 Goldsboro, NC 27534-8250
10	Kenneth N. & Mary S. Fallin	433 Dogwood Trail Goldsboro, NC 27534-8944
11	Jeffrey K. Fordham	227 E. Walnut St. Goldsboro, NC 27530-4834
12	Pinewood Volunteer Fire Dept.	101 W. New Hope Rd. Goldsboro, NC 27534
13	Robert Wayne Suttan, et als	PO Box 66 Winterville, NC 28590-0066
14	Neuse, Inc.	Box 1758 Goldsboro, NC 27533-1758



SPATCO <i>Engineering & Geological Services, P.C.</i> 5100 North I-85, Suite 7A, Charlotte, NC 28206, Ph# 704-597-4022	
SURROUNDING PROPERTY OWNERS MAP THE PANTRY #925 1816 N. BERKLEY BLVD. GOLDSBORO, NC	
W.O. #: 598-165 DWG #: PA01651B	DATE: 5/5/00 DRAWN BY: JCJ

APPENDIX B

Environmental Conservation Laboratories, Inc.
4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
904 / 296-3007
Fax 904 / 296-6210
www.encolabs.com



DHRS Certification No. E82277

CLIENT : SEI Environmental, Inc.
ADDRESS: 130 Penmarc Drive
Suite 108
Raleigh, NC 27603

REPORT # : JAX10428
DATE SUBMITTED: March 24, 2000
DATE REPORTED : March 30, 2000

PAGE 1 OF 39

ATTENTION: Ms. Michelle McGinnis

SAMPLE IDENTIFICATION

Samples submitted and
identified by client as:

PROJECT #: 598165

Pantry # 925

#1	-	MW-1	@	11:33	(03/22/00)
#2	-	MW-2	@	12:20	(03/22/00)
#3	-	MW-2D	@	12:46	(03/22/00)
#4	-	MW-3	@	13:00	(03/23/00)
#5	-	MW-5	@	12:45	(03/22/00)
#6	-	MW-6	@	12:10	(03/22/00)
#7	-	MW-7	@	11:45	(03/22/00)
#8	-	MW-8	@	12:00	(03/22/00)
#9	-	MW-9	@	12:35	(03/22/00)
#10	-	MW-10	@	10:30	(03/23/00)
#11	-	MW-11	@	10:39	(03/23/00)

Note: Sample bottle for MW-5 (EPA 625) analysis was received into the laboratory broken in shipment.

PROJECT MANAGER

A handwritten signature in cursive script, appearing to read "Scott D. Martin".

Scott D. Martin

ENCO LABORATORIES

REPORT # : JAX10428

DATE REPORTED: March 30, 2000

REFERENCE : 598165

PROJECT NAME : Pantry # 925

PAGE 2 OF 39

RESULTS OF ANALYSIS

EPA METHOD 601 -
VOLATILE HALOCARBONS

	MW-1	MW-2	Units
Dichlorodifluoromethane	1.0 U	50 U D1	µg/L
Chloromethane	2.0 U	100 U D1	µg/L
Vinyl Chloride	1.0 U	50 U D1	µg/L
Bromomethane	1.0 U	50 U D1	µg/L
Chloroethane	2.0 U	100 U D1	µg/L
Trichlorofluoromethane	2.0 U	100 U D1	µg/L
1,1-Dichloroethene	1.0 U	50 U D1	µg/L
Methylene Chloride	2.0 U	100 U D1	µg/L
t-1,2-Dichloroethene	1.0 U	50 U D1	µg/L
1,1-Dichloroethane	1.0 U	50 U D1	µg/L
c-1,2-Dichloroethene	1.0 U	50 U D1	µg/L
Chloroform	8.1	50 U D1	µg/L
1,1,1-Trichloroethane	1.0 U	50 U D1	µg/L
Carbon Tetrachloride	1.0 U	50 U D1	µg/L
1,2-Dichloroethane	1.0 U	50 U D1	µg/L
Trichloroethene	1.0 U	50 U D1	µg/L
1,2-Dichloropropane	1.0 U	50 U D1	µg/L
Bromodichloromethane	2.3	50 U D1	µg/L
c-1,3-Dichloropropene	1.0 U	50 U D1	µg/L
t-1,3-Dichloropropene	1.0 U	50 U D1	µg/L
1,1,2-Trichloroethane	1.0 U	50 U D1	µg/L
Tetrachloroethene	1.0 U	50 U D1	µg/L
Dibromochloromethane	1.0 U	50 U D1	µg/L
Chlorobenzene	1.0 U	50 U D1	µg/L
Bromoform	2.2	50 U D1	µg/L
1,1,2,2-Tetrachloroethane	1.0 U	50 U D1	µg/L
1,3-Dichlorobenzene	1.0 U	50 U D1	µg/L
1,4-Dichlorobenzene	1.0 U	50 U D1	µg/L
1,2-Dichlorobenzene	1.0 U	50 U D1	µg/L

Surrogate:

	% RECOV	% RECOV	LIMITS
Bromofluorobenzene	92	94	37-161
Date Analyzed	03/25/00	03/25/00	

U = Compound was analyzed for but not detected to the level shown.
D1 = Analyte value determined from a 1:50 dilution.

ENCO LABORATORIES

REPORT # : JAX10428

DATE REPORTED: March 30, 2000

REFERENCE : 598165

PROJECT NAME : Pantry # 925

PAGE 3 OF 39

RESULTS OF ANALYSIS

EPA METHOD 602 -
VOLATILE AROMATICS

	MW-1	MW-2	Units
Methyl tert-butyl ether	5.5	50 U D1	µg/L
Isopropyl Ether	1.0 U	50 U D1	µg/L
Benzene	1.0 U	2100 D1	µg/L
Toluene	1.0 U	6800 D2	µg/L
Chlorobenzene	1.0 U	50 U D1	µg/L
Ethylbenzene	1.0 U	1200 D1	µg/L
m-Xylene & p-Xylene	1.0 U	4200 D1	µg/L
o-Xylene	1.0 U	2200 D1	µg/L
1,3-Dichlorobenzene	1.0 U	50 U D1	µg/L
1,4-Dichlorobenzene	1.0 U	50 U D1	µg/L
1,2-Dichlorobenzene	1.0 U	50 U D1	µg/L
Surrogate:	% RECOV	% RECOV	LIMITS
Bromofluorobenzene	115	126	59-132
Date Analyzed	03/25/00	03/25/00	

U = Compound was analyzed for but not detected to the level shown.

D1 = Analyte value determined from a 1:50 dilution.

D2 = Analyte value determined from a 1:250 dilution.



WithersRavenel

Our People. Your Success.

115 MacKenan Drive
Cary, North Carolina 27511
t: 919.469.3340 | f: 919.467.6008

Letter of Transmittal

DATE	June 16, 2017	Job No.	02070955.0
ATTENTION	Ms. Carrie Stone		
RE:			
Circle K Store #2720925 (Former Kwik Mart #23 / Pantry # 925)			
1816 North Berkeley Blvd			
Goldsboro, Wayne County, NC			
Groundwater Incident Number: 6100			

TO: NCDEQ -DWM UST Section - WRO
943 Washington Square Mall
Washington, NC 27889

WE ARE SENDING YOU

☒ Attached

☐ Under separate cover via

the following items:

☐ Shop Drawings

☐ Prints

☐ Plans

☐ Samples

☐ Specifications

☐ Copy of Letter

☐ Change order

☐ Diskette

☐

COPIES	DATE	NO.	DESCRIPTION
1	06/16/17	1	ACTIVE REMEDIATION MONITORING REPORT
1	06/16/17	2	REPORT ON CD

THESE ARE TRANSMITTED as checked below:

☒ For approval

☐ Approved as submitted

☐ Resubmit _____ copies for approval

☐ For your use

☐ Approved as noted

☐ Submit _____ copies for distribution

☐ As requested

☐ Returned for corrections

☐ Return _____ corrected prints

☐ For review and comment

☐

☐ FOR BIDS DUE

_____ 20 _____

☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:

COPY TO: File, Circle K Stores, Inc., Mr. Wooten

SIGNED: Matt James, Project Manager

If enclosures are not as noted, kindly notify us at once.



WithersRavenel

Our People. Your Success.

ACTIVE REMEDIATION MONITORING REPORT APRIL 2017 EVENT

Circle K Store #2720925 (Former Kwik Mart No. 23 / Pantry Store No. 925)

1816 North Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
WR Project # 02070955.00
Incident No.: 6100

Responsible Party:

Circle K Stores, Inc (Formerly The Pantry Inc.)
306 Gregson Drive
Cary, North Carolina 27511

Property Occupant:

Circle K Stores, Inc
306 Gregson Drive
Cary, North Carolina 27511

Property Owner:

Wooten Oil & Fuel Company
P.O. Box 858
Goldsboro, NC 27533-0858

Prepared for:

State of North Carolina
Department of Environment Quality
Division of Waste Management- UST Section
Washington Regional Office
943 Washington Square Mall
Washington, NC 27899

Prepared by:

WithersRavenel
115 MacKenan Drive
Cary, North Carolina 27511
(919) 469-3340

Discovery Date: ~ January 1998
Release Quantity: Unknown
Latitude: N 35° 23.292'
Longitude: W 77° 55.214'

G. Matthew James
Project Manager

June 16, 2017



June 16, 2017

North Carolina Department of Environmental Quality
Division of Waste Management - UST Section
Washington Regional Office
943 Washington Square Mall
Washington, North Carolina 27899

Attn: Carrie Stone

RE: **Active Remediation Monitoring Report – April 2017 Event**
Circle K Store #2720925 (Former Kwik Mart No. 23 / Pantry Store No. 925)
1816 Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
Incident No. 6100
WR Project Number: 02070955.0

Dear Ms. Stone:

WithersRavenel has completed this report to document groundwater monitoring activities completed at the above-referenced site during the first half of 2017. This work was completed in keeping with the requirements of the North Carolina Underground Storage Tank Section with respect to the February 2, 2017 NORR. The enclosed report, which was prepared in a format required by the state, summarizes the results of groundwater assessment activities completed at the site during April and May 2017.

Please contact us at 919-469-3340 if you have any questions or comments.

WITHERSRAVENEL

G. Matthew James, P.G.
Project Manager

cc: The Circle K Stores, Inc.
Wooten Oil Company

Section A. Site Identification

1. Site Identification

Date of Report: June 16, 2017
Facility I.D.: 0-008008
Site Risk: High Site Rank: H298D UST Incident No.: 6100
Site Name: Pantry Store No. 925 / Former Kwik Mart No. 23 Land Use Category: Residential
Site Location: 1816 Berkeley Boulevard
Nearest City/Town: Goldsboro County: Wayne
Description of Geographical Data Point: Center of Site
Location Method: Topographical Map
Latitude: N 35° 23.292' Longitude: W 77° 55.214'

2. Contact Information

Responsible Party: The Circle K Stores, Inc. (Formerly The Pantry, Inc.)
Address: 305 Gregson Drive, Cary, North Carolina 27511 Phone: 919-774-6700

Property Owner: Wooten Oil & Fuel Company
Address: P.O. Box 858, Goldsboro, North Carolina 27533 Phone: 919-774-6700

Property Occupant: The Circle K Stores, Inc.
Address: 305 Gregson Drive, Cary, North Carolina 27511 Phone: 919-774-6700

Consultant/Contractor: WithersRavenel
Address: 115 MacKenan Drive, Cary, NC 27511
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Analytical Laboratory: Environmental Science Corporation (ESC) State Certification #: ENV375
Address: 12065 Lebanon Road, Mount Juliet, TN 37122 Tel: 615.758.5859

3. Release Information:

Date Discovered: ~ January 1998
Estimated Quantity of Release: Unknown
Cause of Release: UST system
Source of Release: UST /Piping
Type of material release occurred: Gasoline, Diesel
Criteria Used to Classify Risk: Water Supply Wells
Sizes & Contents of UST system(s) from which release occurred: One (1) 10,000-gallon and Two (2) 6,000-gallon gasoline, One (1) 6,000-gallon diesel, and One (1) 4,000-gallon kerosene USTs

4. Information about the Monitoring Report

Dates of Groundwater Monitoring: April 3 and 4, 2017 and May 24, 2017
Period of Time Reported: 1st Half 2017
Type of Monitoring Report: Active Remediation Monitoring

5. Certification

I, G. Matthew James a Professional Engineer/Licensed Geologist for WithersRavenel, do certify that the information contained in this report is correct and accurate to the best of my knowledge.

WithersRavenel is licensed to practice geology/engineering in North Carolina. The certification numbers are C-293 (Geology) and C-0451 (Engineering).



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1.0 INTRODUCTION

The Circle K Store # 2720925 (former Pantry Store No. 925) is located at 1816 North Berkeley Boulevard at the intersection of North Berkeley Boulevard and East New Hope Road in Goldsboro, Wayne County, North Carolina (**Figure 1**). The Circle K Stores, Inc. acquired the petroleum distribution system from The Pantry, Inc. in March 2015. This store was formerly known as Kwik Mart No. 23. The site is currently an active convenience store with fuel retail services. There are currently three 12,000-gallon underground storage tanks (USTs) on the site property. The site is located in a mixed commercial & residential setting along the eastern edge of the Goldsboro city limits. A site map is provided as **Figure 2**.

2.0 SITE HISTORY

In January 1998, a Phase II Limited Site Assessment (LSA) was conducted by Mid-Atlantic Associates, P.A. at the site on behalf of Wooten Oil Company. Three monitoring wells (MW-1 through MW-3) were installed during LSA activities. In response to the Phase II LSA, the North Carolina Department of Environment and Natural Resources Division of Waste Management (NCDENR-DWM) - Washington Regional Office issued a Notice of Regulatory Requirements (NORR) calling for the completion of a Comprehensive Site Assessment (CSA). Eight Type II wells (MW-4 through MW-11) and one Type III well (MW-2D) were installed during CSA activities.

The then-existing UST system (one 10,000-gallon gasoline, two 6,000-gallon gasoline, one 6,000-gallon diesel, and one 4,000-gallon kerosene UST) were permanently closed by excavation and removal in September 1998.

The Pantry, Inc. (Pantry) purchased the site facility from Wooten Oil Company in 1998. SPATCO Engineering & Geological Services, P.C. (SPATCO), operating under the name SEI Environmental, Inc. (SEI), conducted environmental activities at the subject site beginning in January 2000. In March 2000, SPATCO submitted a Natural Attenuation Corrective Action Plan (CAP).

Two additional monitoring wells (MW-10A and MW-12) were installed at the site in December 2000. MW-10A replaced MW-10, which had been abandoned for construction purposes.

Assessment activities were suspended at the site in November 2004 under Session Law 2004-124 and the site was issued a Risk Ranking of H294R. The site was re-activated by a December 2006 NORR that requested a groundwater monitoring report be completed. A subsequent monitoring report was completed by SEI in February 2007.

Three additional off-site monitoring wells (MW-13 through MW-15) were installed by SEI in July 2007. SEI completed a July 2007 comprehensive sampling event that included the sampling of the newly installed wells, previously existing wells, and two adjacent irrigation wells. Analyses suggested the two irrigation wells contained no impacts above method detection limits.

October 2007 – Groundwater Assessment

In response to the September 3, 2007 request from the UST Section's Washington Regional Office;

- WR installed seven additional shallow Type II monitoring wells and one deep Type III monitoring well on the site and surrounding properties in October 2007. Monitoring well MW-12D was installed on the site adjacent to the existing MW-12. Wells MW-16 through MW-18 were installed on a property approximately 300 feet southwest of the site property. Monitoring well MW-19 was installed on an adjacent property at a location approximately 80 feet southeast of MW-1. MW-20 and MW-21 were placed in the northeast part of the site property. MW-22 was installed on an adjacent property approximately 96 feet southeast of MW-12.
- Analyses of samples collected from those wells in October 2007 suggested that the groundwater contaminant plume was not defined west of MW-18 and south of MW-22. Therefore, the UST Section requested additional delineation in each direction.

April 2008 Groundwater Assessment

- WR approached off-site property owners concerning access to install the monitoring wells and obtained a signed access agreement from the Maplewood Property Owners Association for the monitoring well south of MW-22. WR attended a site meeting with DWM officials and Ms. Becky Weisiger on April 7, 2008 where she signed the access agreement for the installation of a monitoring well on her property.
- WR installed two additional shallow Type II monitoring wells on April 10, 2008. Well MW-23 was installed south of MW-22 on the Maplewood Property Owner's Association property (**Figure 2**). The well was installed due south of MW-22 at the closest practical location to the properties tennis court complex. Monitoring well MW-24 was installed on property west of North Berkley Boulevard owned by Becky Weisiger.
- Groundwater sampling and monitoring was performed on April 11, 2008. Laboratory analyses detected di-isopropylether and MTBE concentrations in the groundwater sample from monitoring well MW-23 at concentrations below their respective NCAC 2L groundwater standards. The analyses of the sample from monitoring well MW-24 suggested that the concentrations of all targeted analytes were below method detection limits in groundwater.

August 2008 – MMPE Event

- A MMPE event was conducted at the site between August 25 and August 29th, 2008. The event recovered total fluids from wells MW-2, MW-7 and MW-12. The event recovered approximately 10,135 gallons of total fluids during the event. No free phase gasoline was recovered during this event. The rate of groundwater recovery during the event averaged approximately 107 gallons per hour. Mass removal calculations by the subcontractor suggested the event removed 354.92 pounds of VOC's as gasoline in the vapor stream of the unit.

- Groundwater elevations recorded prior to the initiation of the event, by the subcontractor Advanced Environmental, indicated 0.25 ft and 0.3 ft of free product was present in wells MW-2 and MW-7. Measurements of groundwater elevations at the completion of the MMPE event did not identify any free product in these wells. Subsequent measurements on October 2, 2008 did not identify free product in wells MW-2, MW-7 or MW-12.

September 2008 – Interim Groundwater Monitoring Report

The September 2008 report documented the following assessment activities:

- WR installed one new Type III monitoring well (MW-25D) near MW-23 on the adjacent property to the southeast of the subject property on August 11, 2008. WR also installed one air sparge well (MW-26) and three soil vapor extraction wells (MW-27, MW-28, and MW-29) on the site.
- On August 14, 2008, WR personnel supervised the advancement of ten soil borings (WR-1 through WR-10) across the site. The soil samples were collected to identify and delineate petroleum contamination remaining in the soil in the vicinity of the previous tank beds and dispenser islands at the site. Based on the analytical report, petroleum constituents were only detected in boring WR-1, but at concentrations below soil-to-groundwater MSCCs. No petroleum constituents were detected in any of the other soil borings.
- Groundwater sampling and monitoring was performed on selected monitoring wells on September 8, 2008. WR personnel sampled eleven groundwater monitoring wells (MW-5, MW-12D, MW-12, MW-13, MW-15, MW-18, MW-19, and MW-22 through MW-25D) during the September 2008 monitoring event. Groundwater sample analyses revealed petroleum compounds above 2L Standards, but below Gross Contamination Levels (GCLs), in monitoring wells MW-5, MW-12, MW-13, MW-15, and MW-22. In addition, vinyl chloride was detected in MW-5 at a concentration above its GCL. The source of the chlorinated hydrocarbons is not expected to be from the subject property. No chlorinated hydrocarbons were identified in any of the soil samples collected from the site.

January 2009 – Interim Groundwater Monitoring Report

The January 2009 report documented the following assessment activities:

- WR conducted groundwater sampling and monitoring activities on-site on January 22 through 24, 2009. WR personnel sampled twenty-four (24) Type II groundwater monitoring wells (MW-1 through MW-9, MW-11 through MW-24, and MW-26), and three (3) Type III monitoring wells (MW-2D, MW-12D, MW-25D).
- Petroleum compounds were detected above 2L Standards in eight (8) of the twenty-four (24) Type II monitoring wells (MW-2, MW-5, MW-7, MW-12, MW-13, MW-15, MW-22, and MW-23). The distribution of contamination appeared similar to the distribution observed in the sampling event completed in September 2008. The plume appeared to trend on a north south axis. The plume also appeared to be migrating to the south and towards the adjacent residential properties.
- Lab analyses of the sample collected from MW-5 and MW-13 revealed no chlorinated compounds at concentrations above laboratory detection limits during the January 2009

monitoring event. The results of the September 2008 event had indicated elevated concentrations of several chlorinated compounds in wells MW-5 and MW-13. However, the historical data did not support the presence of these compounds on a repeated basis in groundwater. Therefore, it appeared that this may have been the results of an erroneous interpretation of analytical data by the laboratory.

- The irrigation wells at 102 New Hope Road (WSW-1 - Langston Residence) and the Maplewood Pool & Tennis Complex (WSW-2 - Maplewood Pool) were sampled and found to contain no targeted analytes above the method detection limits. The irrigation wells at 102 Livus Court (WSW-5) and 110 N. Marion Drive (WSW-4 - Bunch Residence) were inoperable and therefore were not sampled. Ms. Bunch indicated that the well had been shut down for the winter and would not be used in the near future.

January 2010 - Interim Groundwater Monitoring Report

The January 2010 report documented the following assessment activities:

- WR conducted groundwater sampling and monitoring activities on-site on January 5, 2010. WR personnel sampled nine (9) Type II groundwater monitoring wells (MW-15, MW-22, MW-23, and MW-30 through MW-35) and three (3) Type III monitoring wells (MW-2D, MW-12D, and MW-25D).
- Groundwater contamination in the shallow aquifer remains present on the site and on adjacent properties to the east and southeast. Petroleum compounds were detected above 2L Standards in seven of the nine Type II monitoring wells (MW-15, MW-23, MW-30, MW-31, MW-32, MW-34, and MW-35) sampled during the January 2010 monitoring event.
- Samples collected from four water supply wells (WSW-1, WSW-2, WSW-4, and WSW-6) were found to contain no targeted analytes above the method detection limits. WR attempted but was unable to collect additional samples from five other wells (WSW-3, WSW-5, and WSW-10 through WSW-12) in the same vicinity.

August 2010 - Interim Groundwater Monitoring Report

The August 2010 report documented the following assessment activities:

- WR installed six new Type II monitoring wells (MW-36 through MW-41) on adjacent and nearby properties. The well locations were selected for the purpose of delineating the petroleum contamination detected in groundwater samples collected from existing monitoring wells in these vicinities.
- WR conducted groundwater sampling and monitoring activities on August 11 through 13, 2010. WR personnel sampled thirty-six (36) Type II groundwater monitoring wells (MW-1 through MW-17, MW-19 through MW-24, MW-26, and MW-30 through MW-41) and three Type III groundwater monitoring wells (MW-2D, MW-12D, and MW-25D).
- Targeted petroleum compounds were detected above 2L Standards, but below Gross Contamination Levels (GCLs), in Type II (shallow) monitoring wells MW-2, MW-5, MW-7, MW-12, MW-13, MW-15, MW-22, MW-23, MW-30, MW-31, MW-36, and MW-38. The distribution of contamination appeared similar to the distribution observed in the sampling event completed in September 2008. The plume appeared to trend on a north

south axis. The plume also appeared to be migrating to the south and towards the adjacent residential properties.

- The results of the additional groundwater assessment and monitoring activities completed at the site suggest that the groundwater in the vicinity of wells MW-2 and MW-5 contain the highest concentrations of benzene and other petroleum constituents.
- The results of the monitoring presented two findings that appear to contradict the plume behavior derived from observation of the groundwater quality and flow data across the site. The concentration of MTBE in well MW-38, at 190 ug/l, does not appear to be consistent with a release from the UST systems in that many up gradient wells did not contain MTBE above the method reporting limits of 1.0 ug/l. In addition, the concentration of petroleum constituents in well MW-36, installed down gradient of the site near Maple Avenue, contained concentrations of benzene and naphthalene at levels which are not consistent with the concentrations in the surrounding wells, again indicating that the presence of the compounds in this well location do not appear to be consistent with a release from the UST systems.

March 2011 – Interim Groundwater Monitoring Report

The March 2011 report documented the following assessment activities:

- WR conducted groundwater sampling and monitoring activities on March 22 and 23, 2011. WR personnel sampled twelve (12) Type II groundwater monitoring wells (MW-2, MW-5, MW-7, MW-12, MW-13, MW-15, MW-22, MW-23, MW-30, MW-31, MW-36, and MW-38) and one Type III groundwater monitoring well (MW-2D). In addition, WR collected samples from water supply wells WSW-2, WSW-4, and WSW-6.
- Targeted petroleum compounds were detected above 2L Standards, but below Gross Contamination Levels (GCLs), in each of the sampled Type II (shallow) monitoring wells MW-2, MW-5, MW-7, MW-12, MW-13, MW-15, MW-22, MW-23, MW-30, MW-31, MW-36, and MW-38. The distribution of contamination appeared similar to the distribution observed in the sampling event completed in August 2010. The plume appeared to trend on a north-south axis. The plume migration continued to trend to the south and towards the adjacent residential properties.
- The results of the additional groundwater assessment and monitoring activities completed at the site again showed that the groundwater in the vicinity of wells MW-2 and MW-5, as well as MW-12, contain the highest concentrations of benzene and other petroleum constituents.

October 2011 – Interim Groundwater Monitoring Report

The October 2011 report documented the following assessment activities:

- WR conducted groundwater sampling and monitoring activities on October 25, 26, and 28, 2011. WR personnel sampled twenty-five (25) Type II groundwater monitoring wells (MW-1, MW-2, MW-4, MW-5, MW-6, MW-7, MW-10A, MW-12, MW-13, MW-15, MW-16, MW-19, MW-20, MW-21, MW-23, MW-26, MW-30, MW-32 through 38, and MW-40)

and one Type III groundwater monitoring wells (MW-25D). In addition, WR collected samples from water supply wells WSW-2, WSW-4, and WSW-6.

- Targeted petroleum compounds were detected above 2L Standards, but below Gross Contamination Levels (GCLs), in each of the sampled Type II (shallow) monitoring wells MW-1, MW-2, MW-5, MW-12, MW-13, MW-15, MW-21, MW-30, MW-32, MW-36, MW-38, and MW-40. The distribution of contamination appeared similar to the distribution observed in the sampling event completed in March 2011. The plume appeared to trend on a north-south axis. The plume migration continued to trend to the south and towards the adjacent residential properties.
- The results of the additional groundwater assessment and monitoring activities completed at the site again showed that the groundwater in the vicinity of wells MW-2 and MW-5 contain the highest concentrations of benzene and other petroleum constituents.

November 2012 – Interim Groundwater Monitoring Report

The November 2012 report documented the following assessment activities:

- WR mobilized to the site to conduct groundwater sampling and monitoring activities on November 7 and 8, 2012. WR personnel sampled twenty-seven (27) Type II groundwater monitoring wells (MW-1 through MW-8, MW-10A, MW-12 through MW-16, MW-19 through MW-23, MW-26, MW-30, MW-31, MW-32, MW-36 through 38, and MW-40). In addition, WR sampled water supply well WSW-2. WR also made unsuccessful attempts to sample WSW-1, WSW-4, and WSW-6.
- Targeted petroleum compounds were detected above 2L Standards, but below Gross Contamination Levels (GCLs), in Type II (shallow) monitoring wells MW-1, MW-2, MW-5, MW-12, MW-13, MW-15, MW-21, MW-30, MW-32, MW-36, MW-38, and MW-40. All targeted analytes were found either below laboratory method detection limits or below 2L Standards in the remaining Type II wells sampled.
- The results of the groundwater assessment and monitoring activities suggested that the groundwater in the vicinity of wells MW-2 and MW-5 contain the highest concentrations of benzene and other petroleum constituents. WR concluded that an additional groundwater monitoring well may be needed in the southwestern direction of the source area in order to delineate the groundwater contaminant plume, based on continued benzene and naphthalene concentrations observed in monitoring well MW-36 above 15A NCAC 2L groundwater standards and groundwater flow direction.

October 2013 – iSOC System Installation

- In September and October 2013, WR installed ten (10), 25-foot, 2", iSOC curtain wells to provide iSOC remediation to the more focused area of the groundwater contaminant plume. In addition, WR installed two (2), 25-foot, 2" monitoring wells (MW-42 and Mw-43) on the site. On October 14, 2013, the iSOC system began operation. See **Section 4** for more information regarding the system.

January 2014 – Interim Groundwater Monitoring Report

The January 2014 report documented the following assessment activities:

- WR mobilized to the site to conduct groundwater sampling and monitoring activities on January 13 and 14, 2014. WR personnel sampled twenty-seven (27) Type II groundwater monitoring wells (MW-1, MW-2, MW-2D, MW-4, MW-5, MW-6, MW-7, MW-10A, MW-12, MW-14, MW-15, MW-16, MW-19, MW-20, MW-21, MW-22, MW-23, MW-25D, MW-26, MW-30, MW-32, MW-33, MW-34, MW-35, MW-36, MW-38, and MW-40). In addition, WR sampled water supply wells WSW-2 and WSW-6. WR also made an unsuccessful attempt to sample WSW-4.
- Targeted petroleum compounds were detected above 2L Standards, but below Gross Contamination Levels (GCLs), in Type II (shallow) monitoring wells MW-2, MW-5, MW-7, MW-12, MW-15, MW-23, MW-26, and MW-30. Constituents detected above standards included benzene, ethylbenzene, isopropyl- benzene, naphthalene, n-propylbenzene, toluene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl- benzene, and total xylenes. All other targeted analytes were found either below laboratory method detection limits or below 2L Standards in the aforementioned and remaining Type II wells sampled.
- The results of the groundwater assessment and monitoring activities suggested that the system is functioning properly, and reductions in contaminants on the site from the previous monitoring events are evident. The results of the groundwater assessment and monitoring activities completed at the site show an overall reduction in concentrations in MW-2, MW-15, and MW-30 with a slight increase in concentrations in MW-5. These wells have historically contained the highest concentrations of benzene and other petroleum constituents.

September 2014 – Active Remediation Groundwater Monitoring Report

The September 2014 report documented the following assessment activities:

- WR mobilized to the site to conduct groundwater sampling and monitoring activities on August 12, 13, and 14, 2014. WR personnel sampled twenty-seven (27) Type II groundwater monitoring wells (MW-1, MW-2, MW-2D, MW-4, MW-5, MW-6, MW-7, MW-10A, MW-12, MW-14, MW-15, MW-16, MW-19, MW-20, MW-21, MW-22, MW-26, MW-30, MW-32, MW-34, MW-35, MW-36, MW-38, MW-40, MW-41, MW-42, and MW-43). In addition, WR sampled water supply wells WSW-2 and WSW-6. WR attempted to sample MW-23, MW-33, and MW-25D during this groundwater monitoring event; however, these wells are now located inside a fence that requires a key for entrance and exit.
- The system is functioning properly. Petroleum constituents above 15A NCAC 2L groundwater standards were detected in wells MW-2, MW-5, MW-7, MW-10A, MW-12, MW-15, MW-42, and MW-43. In general, benzene concentrations have increased in source area wells MW-2, MW-5, and MW-10A and also MW-15. However, the overall size of the benzene plume has decreased, as benzene was not detected in wells MW-7 and MW-30. These wells have historically contained benzene concentrations above 2L Standards. Naphthalene concentrations have also generally decreased across the site.

The naphthalene plume is currently concentrated around two monitoring wells, MW-10A and MW-15. Newly sampled monitoring wells MW-42 and MW-43 contained various petroleum constituents above 15A NCAC 2L groundwater standards.

January 2015 – Active Remediation Groundwater Monitoring Report

The January 2015 report documented the following assessment activities:

- WR mobilized to the site to conduct groundwater sampling and monitoring activities on January 22, 23, and 26, 2015. WR personnel sampled twenty-seven (27) Type II groundwater monitoring wells (MW-1, MW-2, MW-2D, MW-4, MW-5, MW-6, MW-7, MW-10A, MW-12, MW-14, MW-15, MW-16, MW-19, MW-20, MW-21, MW-22, MW-26, MW-30, MW-32, MW-34, MW-35, MW-36, MW-38, MW-40, MW-41, MW-42, and MW-43). In addition, WR sampled water supply wells WSW-2, WSW-4, and WSW-6. WR attempted to sample MW-23, MW-33, and MW-25D during this groundwater monitoring event; however, these wells are now located inside a fence that requires a key for entrance and exit which WR has been unable to obtain from the property management association.
- The iSOC remediation system appears to be functioning properly. Petroleum constituents above 15A NCAC 2L groundwater standards were detected in wells MW-2, MW-4, MW-5, MW-7, MW-10A, MW-12, MW-14, MW-16, MW-32, MW-42, and MW-43. Based on historical groundwater data, dissolved phase impacts in monitoring wells MW-2, MW-5, MW-10A, and MW-15 continue to reduce when compared to groundwater data collected prior to the installation of the iSOC diffusion system. However, benzene and naphthalene were detected above 15A NCAC 2L groundwater standards for the first time in MW-14 and benzene was detected above 15A NCAC 2L groundwater standards in MW-16. Due to the results reported for MW-14 and MW-16, WR recommended adding MW-11, MW-17, MW-18, and MW-24 to the next groundwater sampling event.

July 2015 – Active Remediation Groundwater Monitoring Report

The July 2015 report documented the following assessment activities:

- WR mobilized to the site to conduct groundwater sampling and monitoring activities on July 20, 21, and 22, 2015. WR personnel sampled thirty (30) Type II groundwater monitoring wells (MW-1, MW-2, MW-4, MW-5, MW-6, MW-7, MW-10A, MW-11, MW-12, MW-14, MW-15, MW-16, MW-17, MW-18, MW-19, MW-20, MW-21, MW-22, MW-24, MW-26, MW-30, MW-32, MW-34, MW-35, MW-36, MW-38, MW-40, MW-41, MW-42, and MW-43) and one (1) Type III groundwater monitoring well (MW-2D). In addition, WR attempted to sample water supply wells WSW-2, WSW-4, and WSW-6.
- The iSOC remediation system appears to be functioning properly. Petroleum constituents above 15A NCAC 2L groundwater standards were detected in wells MW-2, MW-4, MW-5, MW-12, MW-14, MW-18, MW-42, and MW-43. Based on historical groundwater data, concentrations of petroleum constituents in monitoring wells MW-5, MW-10A, and MW-15 continue to reduce when compared to groundwater data collected prior to the installation of the iSOC diffusion system. Analytical results for MW-43 over the last three sampling events also show a decreasing trend in dissolved constituent concentrations. Furthermore, this is the second consecutive sampling event that analytical results for MW-15 reported all targeted constituents below laboratory detection limits. Historical

analytical results for source area wells MW-2 and MW-42 show appear to be fairly stable. No dissolve phase constituents were detected in the deep aquifer well. MW-2D.

- No constituents were detected in monitoring wells located on or adjacent to residential properties located south and east of the subject property. Water supply wells WSW-2 and WSW-6 did not contain any analytes at concentrations that exceeded the laboratories method detection limit.
- Alkalinity data shows increased microbial activity in monitoring wells containing 2L violations, with the exception of MW-43.
- WR recommended continued operations of the iSOC diffusion system and continued semi-annual groundwater sampling.

April 2016 – Active Remediation Groundwater Monitoring Report

The April 2016 report documented the following assessment activities:

- WR mobilized to the site to conduct groundwater sampling and monitoring activities on March 23 & 24, 2016. WR personnel sampled fifteen (15) Type II groundwater monitoring wells (MW-1, MW-2, MW-4, MW-5, MW-7, MW-12, MW-13, MW-14, MW-15, MW-16, MW-17, MW-18, MW-19, MW-26). In addition, WR sampled water supply wells WSW-2 and WSW-6, and attempted to sample WSW-4. WSW-4 was found to be in-operational and not active.
- The iSOC remediation system appears to be functioning properly. Petroleum constituents above 15A NCAC 2L groundwater standards were detected in wells MW-2, MW-4, MW-5, MW-12, MW-18, and MW-26. Based on historical groundwater data, dissolved phase impacts in monitoring wells MW-2 and MW-5 are at historical low concentrations for petroleum related contaminants.
- Water supply wells WSW-2 and WSW-6 did not contain any analytes at concentrations that exceeded the laboratories method detection limit.
- WR recommended continued operations of the iSOC diffusion system and continued semi-annual groundwater sampling.
- Following review of this report by NCDEQ, an updated NORR was issued asking for the shutdown of the iSOC diffusion system and a groundwater sampling event in September or October 2016.

October 2016 – Active Remediation Groundwater Monitoring Report

The October 2016 report documented the following assessment activities:

- WR mobilized to the site to conduct groundwater sampling and monitoring activities on October 4 & 5, 2016. WR personnel sampled sixteen (16) Type II groundwater monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5, MW-7, MW-12, MW-13, MW-14, MW-15, MW-16, MW-17, MW-18, MW-19, MW-26, and MW-43). In addition, WR sampled water supply wells WSW-2, WSW-4, and WSW-6.

- Petroleum constituents above 15A NCAC 2L groundwater standards were detected in the following wells sampled in October 2016:
 - o MW-2, MW-4, MW-5, MW-7, MW-12, MW-14, MW-17, MW-19, and MW-43.
- No compounds were detected at concentrations greater than their published GCL standards.
- Groundwater concentrations have rebounded slightly to levels resembling analytical results published in July 2015.
- Irrigation wells WSW-2, WSW-4, and WSW-6 do not contain petroleum related compounds at concentrations above the laboratories reporting limits.
- The iSOC Oxygen Diffusion system was shut down in July 2016 according to the NORR dated March 25, 2016.
- Following review of this report by NCDEQ, an updated NORR was issued asking for a groundwater sampling event and fate & transport modeling in March or April 2017.

3.0 GROUNDWATER ASSESSMENT – APRIL & MAY 2017

3.1 Groundwater Sampling – Monitoring Wells

WR mobilized to the site to conduct groundwater sampling activities on April 3 & 4, 2017. WR personnel collected groundwater samples from the following seventeen (17) Type II groundwater monitoring wells:

- MW-1, MW-2, MW-3, MW-4, MW-5, MW-7, MW-12, MW-13, MW-14, MW-15, MW-16, MW-17, MW-18, MW-19, MW-21, MW-26, and MW-43.

Prior to sampling, WR measured the depth to groundwater within each monitoring well sampled using an electric water-level meter. The depth to groundwater in each well installed in the shallow aquifer was measured at depths ranging from approximately 7.73 feet below top of casing in MW-17 to 9.96 feet below top of casing in MW-1. The monitoring well construction data and relative groundwater elevations are summarized in **Table 1** and the historical groundwater elevations are summarized in **Table 2**. The depth-to-water data was converted to relative groundwater elevations based on the top of casing elevations. A groundwater potentiometric surface map (**Figure 3**) was created using the groundwater elevation data from the groundwater monitoring wells measured during the April 2017 event. Based on the information compiled from **Figure 3**, the contours suggest the groundwater flow direction to be mainly towards the southwest. Historical groundwater flow direction has varied in previous events with groundwater flow direction mostly to the west, southwest, or south-southwest. No free phase product was observed during this event.

After measuring depth-to-water, the monitoring wells were purged of at least 3-well volumes. A groundwater sample was then collected from each of the required monitoring wells via peristaltic pump connected to small diameter polyethylene tubing. Disposable nitrile gloves were worn by the field technicians during sampling to minimize the risk of personal exposure to potentially harmful chemical substances and to minimize the risk of sample cross-contamination. The groundwater samples were transferred to laboratory prepared containers, immediately placed in a cooler containing ice, and transported under chain of custody to a North Carolina Certified laboratory for analysis. The samples were submitted for laboratory analysis for volatile organics by EPA Method 6200B, with the exception of MW-21. MW-2 and MW-21 were analyzed by EPA Methods 2320B-2011, 6010C, and 9056A for alkalinity, iron, magnesium, manganese, nitrate, and sulfate.

Based on the laboratory analytical report, targeted petroleum compounds were detected above NC 2L Standards in the following monitoring wells:

- MW-2, MW-4, MW-5, MW-7, MW-12, MW-14, MW-15, MW-17, MW-18, MW-19, and MW-43.

No targeted compounds were detected at concentrations that exceeded their respected GCL Standard.

A summary of the April 2017 analytical results is presented in **Table 3** and historical analytical data is included as **Table 4**. A groundwater concentration isocontour map of benzene for the April

2017 sampling event is displayed on **Figure 4**. The laboratory analytical report and chain of custody is included in **Appendix A**.

3.2 Groundwater Sampling – Irrigation Wells

WR collected a groundwater sample from irrigation wells WSW-2, WSW-4 and WSW-6 during the April 2017 groundwater monitoring event. Prior to sample collection, the wells were allowed to operate/purge for approximately 15 minutes to ensure that a representative sample was collected. The samples from WSW-2, WSW-4, and WSW-6 were analyzed by EPA Method 6200B. The following NC 2L Standard exceedance was reported in WSW-2:

- WSW-2: Naphthalene at 6.07 µg/L.
- WSW-4: Bromodichloromethane at 8.88 µg/L and Chlorodibromomethane at 1.51 µg/L.
- WSW-6: Bromodichloromethane at 7.97 µg/L and Chlorodibromomethane at 1.36 µg/L.

WR attributes Bromodichloromethane and Chlorodibromomethane as biproduct of well chlorination.

A summary of the April analytical data is presented in **Table 3** and historical groundwater analytical data for the irrigation wells is included in **Table 4**. The supply well / irrigation locations are shown on **Figure 5** and summarized in **Table 5**. Both laboratory analytical reports and chain of custodies are included in **Appendix A**.

WSW-2 Discussion:

WR collected the April 4, 2017 sample for WSW-2 at the spigot connected to the building on the property. WR determined that this spigot is connected to municipal water and not the onsite water supply well. WR called the laboratory to determine if the Naphthalene hit was a result of laboratory cross-contamination, the laboratory stated that low level cross-contamination hits of Naphthalene are common in 6200B analysis but they could not confirm that this particular sample was affected by laboratory cross-contamination. QA/QC results of the method blank reported a Naphthalene concentration of 1.36 µg/L which indicates Naphthalene cross-contamination was present in the method blank, though at a concentration less than was observed in the April 4th sample.

WR traversed back to the site on May 24, 2017 to collect a sample from the WSW-2 well head. Prior to collection, the well was purged for approximately 15 minutes to ensure that a representative sample was collected. The WSW-2 well head sample was analyzed for VOCs by EPA Method 6200B. Laboratory results from the May 24th event did not detect any compounds above the method detection limit.

While onsite, WR measured the depth of WSW-2 to be 121 feet below ground surface with a groundwater depth of approximately 23 feet. This depth is more in line with type III well groundwater depths observed on the incident property. The depth to groundwater indicates that the screen interval for WSW-2 does not bracket the surficial water table.

Analytical data from the May 2017 sampling event is included in the tables, figure and appendix mentioned above.

4.0 CONTAMINANT FATE & TRANSPORT MODELING

WR used EPA's Bioscreen Natural Attenuation Decision Support System Model (Bioscreen) to simulate steady state migration and natural attenuation of the dissolved phase hydrocarbons in the surficial aquifer using the Domenico analytical solute transport model. This model considers advection, dispersion, absorption, aerobic decay, and anaerobic reactions that result in the natural biodegradation of petroleum compounds over specified times. WR elected not to summarize the "no degradation" model because this part of the model is used to predict movement of non-degrading solutes such as chloride.

Note: All concentrations in the model are reported in units of mg/L or ppm.

Contaminants of Concern

Total benzene, toluene, ethylbenzene, and xylene (BTEX) concentrations from the October 2016 and April 2017 groundwater monitoring events for source area monitoring well MW-2 were averaged to get the source area concentrations used in the model.

- Total BTEX source area concentration used in the model: 14.68 mg/L (ppm).

Note: Bioscreen assumes that source area concentrations are "infinite" and do not degraded over time.

Model Receptor Locations

Historical receptor surveys have identified one active downgradient "sole source" water supply well (WSW-46), located approximately 1,185 feet from MW-2 (source area); therefore, WR modeled fate and transport of dissolved phase impacts to a distance of 1,200 feet.

Site-Specific Groundwater Parameters

Groundwater parameters used in the model are based on field measurements and values obtained from literature based on observed soil lithology at the subject site.

- Hydraulic gradient is based on field observations collected between MW-2 and MW-3 observed during the April 2017 groundwater sampling event
 - o 0.0014 ft./ft.
- Hydraulic conductivity was determined by averaging the K values observed during slug tests on source area wells, MW-5, during the August 2012 slug test event
 - o 17.0 ft./day or 0.006 cm/sec.
- A porosity value of 30%, commonly associated with clayey sand soils, was used.
- Plume dimensions used in calculating dispersivity values are based on the current and historical analytical results.

- A Retardation Factor of 1 was used based on information provided in the Bioscreen User's Manual.
- Instantaneous Reaction models use field electron acceptor values to predict contaminant degradation and dispersion with respect to time and distance.
 - o This model cannot be calibrated to depict current site conditions.
- Instantaneous reaction parameters including oxygen, nitrate, iron, and sulfate concentrations were obtained from applying the delta of analytical results of groundwater from wells MW-2 and MW-21 collected in April 2017.
- WR calibrated the solute half-life for the 1st Order Decay model by assuming that the release occurred 20 years ago, and by adjusting the half-life value until model concentrations matched current total BTEX concentrations at MW-17 approximately ± 432 feet from the source area. This half-life value was calibrated to be:
 - o 2.05 years.
- 1st order decay models use a calibrated half-life value to predict contaminant degradation and dispersion with respect to time and distance.
 - o The 1st order decay model does not consider available electron acceptors with respect to contaminant degradation.
- Bioscreen uses simplified groundwater flow conditions and assumes the aquifer and flow field are homogenous and isotropic and that vertical flow gradients do not affect contaminant transport.

Models Ran

- WR ran 2 models with different timeframes to simulate fate & transport of total BTEX.
 - o The first model simulation was ran for 20 years to calibrate the 1st order decay portion of the model.
 - This simulation assumes that the release occurred 20 years ago (1997) and was used to match model data to current field data.
 - o The second simulation was ran for 34.7 years.
 - This simulation assumes that the release occurred 20 years ago (1997) and was used to determine when total BTEX concentrations will be detectable in the downgradient water supply using the instantaneous reaction model.
 - This model also depicts the furthest downgradient total BTEX concentrations are forecast to migrate using the 1st order decay portion of the model.

Model Results

The Bioscreen software was used to simulate (1) dispersion with 1st-order decay and (2) transport with instantaneous biodegradation reaction over the aforementioned timeframes and half-life values.

- 20 Year Model Results (from approximate date of release to present day):

- o 1st Order Decay: dissolved phase mass of 0.002 mg/L of total BTEX has reached 720 feet from the source area.
- o Instantaneous Reaction: the dissolved phase mass degrades to 0.200 mg/L total BTEX between 720 feet from the source area.
- 34.7 Year Model Results (from approximate date of release to 14.7 years in the future):
 - o 1st Order Decay: dissolved phase mass of 0.001 mg/L of total BTEX has reached a maximum of 840 feet from the source area.
 - o Instantaneous Reaction: the dissolved phase mass degrades to 0.006 mg/L total BTEX between 1,200 feet from the source area.

According to the 1st Order Decay Models:

- This model was calibrated to depict current site conditions and then modeled to 14.7 years in the future.
 - o Within the modeled time frame, the dispersion of the dissolved phase plume has reached a maximum length of 840 feet from the source area.
 - o The plume has reached a steady state and does not continue to advance toward the downgradient receptor with time.

According to the Instantaneous Reaction Models:

- This model shows significantly higher downgradient total BTEX concentrations with respect to current site conditions when compared to the calibrated 1st order decay models.
 - o Within the modeled time frame of 14.7 years in the future, the dissolved phase plume has reached 1,200 feet downgradient of the source area.
 - o WR feels this model is overly conservative with respect to plume migration and was not able to accurately predict current site conditions.
 - o Based on this model, current total BTEX values should be around 3,654 ppb in monitoring well MW-17.
 - According to groundwater data from the April 2017 event, total BTEX values in MW-17 are 41 ppb.
 - This value is significantly lower than the instantaneous model predicts.

Results for each model are provided in **Appendix B**.

5.0 CONCLUSIONS

Site activities completed during the April and May of 2017 revealed the following:

- Petroleum constituents above 15A NCAC 2L groundwater standards were detected in the following wells sampled in April 2017:
 - o MW-2, MW-4, MW-5, MW-7, MW-12, MW-14, MW-15, MW-17, MW-18, MW-19, and MW-43.
- No compounds were detected at concentrations greater than their published GCL standards.
- Groundwater concentrations remained similar to the October 2016 levels.
- Irrigation wells WSW-2, WSW-4, and WSW-6 do not contain petroleum related compounds at concentrations above the laboratories reporting limits.
 - o WR determined the WSW-2 is 121 feet deep and based on depth to groundwater the screen interval does not bracket the surficial aquifer.
- Based on 1st order decay modeling, the total BTEX plume reaches a maximum extent of 840 feet from the source area in 14.7 years where it reaches a steady state with no further migration.
- The instantaneous reaction model shows total BTEX reaching the downgradient receptor in 14.7 years; however, the model shows significantly higher downgradient total BTEX concentrations when compared to current site data.
 - o This model appears to over predict migration of the BTEX plume with respect to time.

6.0 RECOMENDATIONS

According to receptor information completed by a previous consultant and an update completed by WR in 2008; no active water supply wells are present within 1,000-feet of the source area. The closest downgradient water supply well is located at 2705 Northwood Drive which is reported to be 1,185 feet from the source area.

No active irrigation wells are reported to be within 250-feet of the source area. The closest known active irrigation well is WSW-2 located on Livius Court and is reported to be 350-feet from the source area. Based on site benzene data collected in April 2017; this irrigation well is approximately 270 feet from the estimated benzene isocontour. Additionally, no petroleum compounds have been identified in the sampled irrigation wells (WSW-1, WSW-2, WSW-4, and WSW-6) since 2008 when MTBE was detected at 3.4 µg/L in WSW-4.

With respect to the deeper impacts on the subject property;

- MW-2D – Type III well screened from 30 to 35 feet below ground surface:
 - o No impacts above the laboratory detection limits have been documented since before 2009.

- MW-12D – Type III well screened from 30 to 35 feet below ground surface:
 - o No impacts above the laboratory detection limits have been documented since before 2007.
- MW-25D – Type III well screened from 30 to 35 feet below ground surface:
 - o No petroleum impacts greater than the NC 2L Standard have been documented since September 8, 2008.

Based on historical receptor information, evidence that the petroleum plume is not impacting groundwater at depths below the surficial aquifer, and 1st order decay modeling results; this incident is eligible for reduction of risk to “Low” and the subsequent closure of the incident with a deed restriction on soil and groundwater.

Please contact us at (919) 469-3340 with any questions or comments about this report.

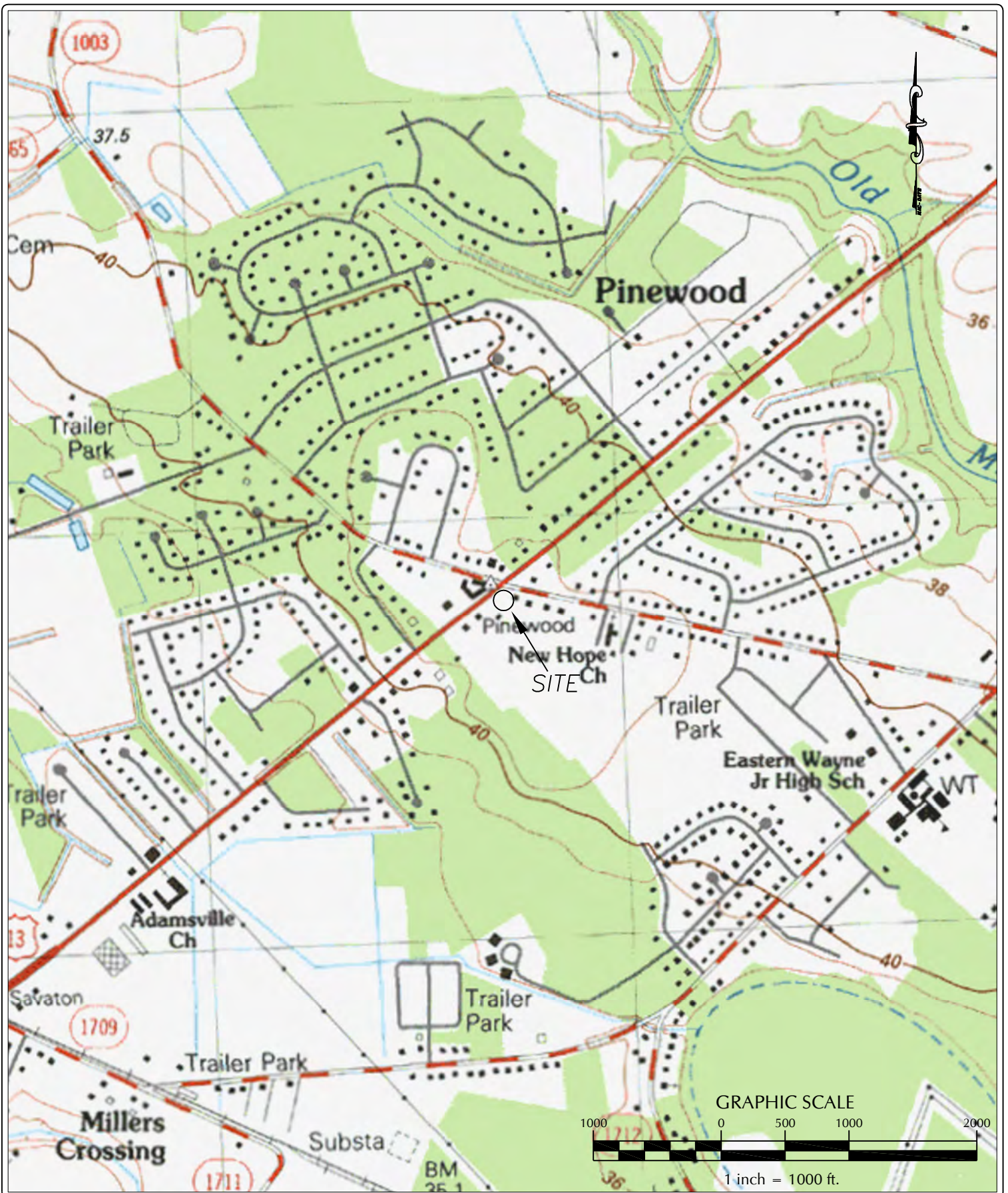
Sincerely,

WITHERSRAVENEL



G. Matthew James, P.G.
Project Manager

FIGURES



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 tel: 919-460-6006 fax: 919-535-4545

GENERAL LOCATION MAP

CIRCLE K STORE # 2720925
 (FORMER PANTRY STORE NO. 925)
 1816 NORTH BERKELEY BOULEVARD
 GOLDSBORO, WAYNE CO., NORTH CAROLINA

USGS NORTHEAST/SOUTHEAST GOLDSBORO, NC
 7.5 min. Quadrangle

DRAWN BY:

MJ

APPROVED BY:

CB

SCALE:

1"=1000'

DATE:

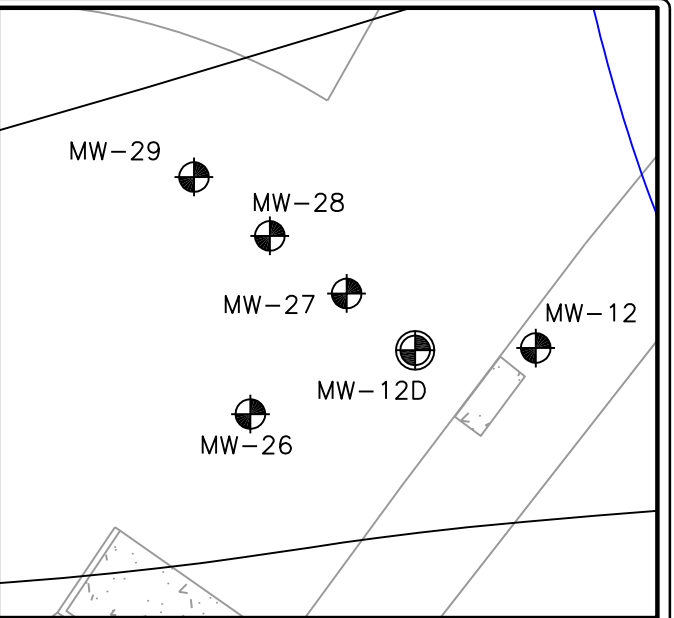
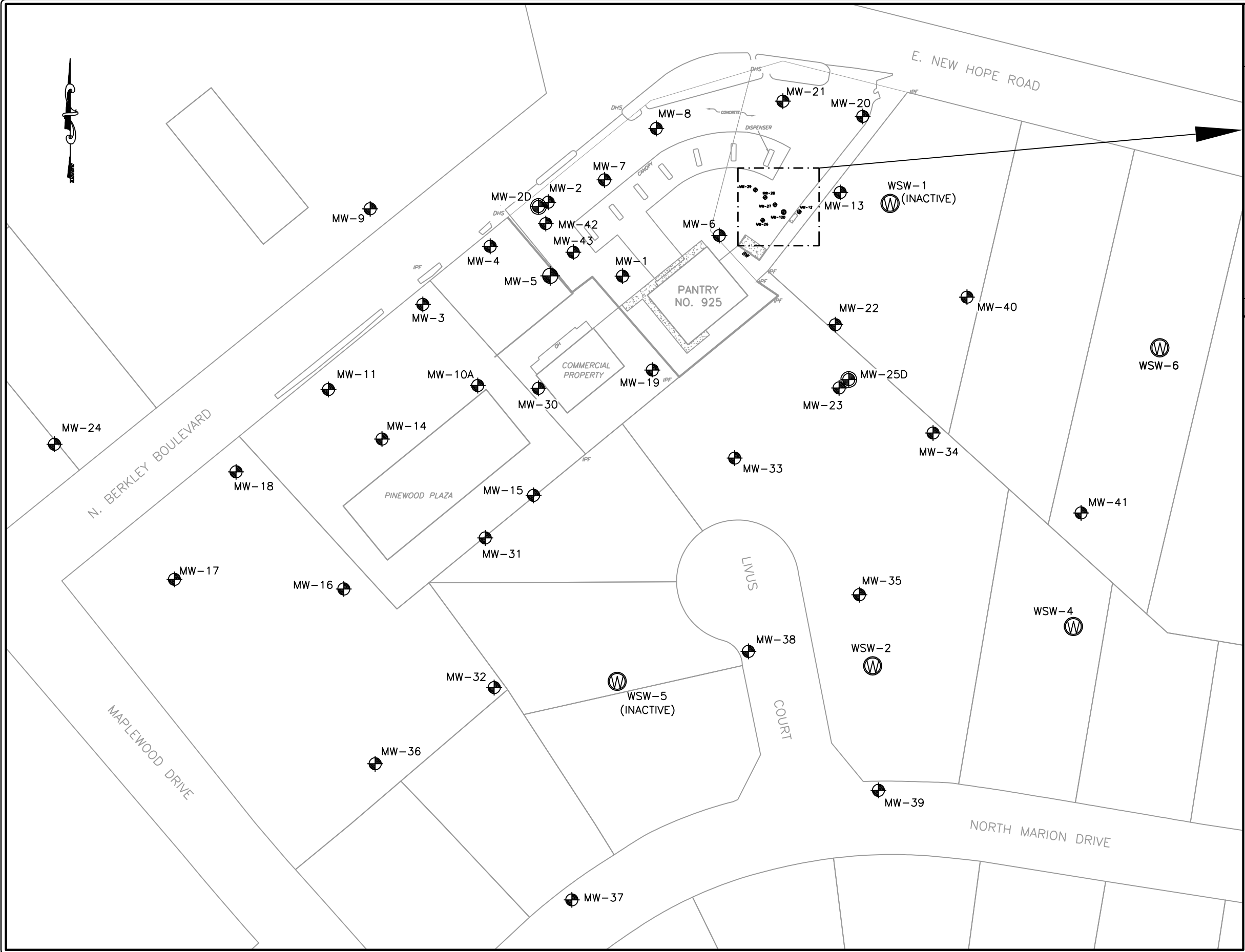
2/16/15

FIGURE NO.

1

JOB NO:

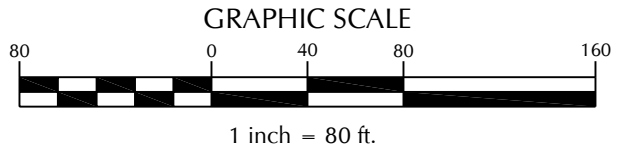
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SCALE: 1" = 20'

LEGEND

-  TYPE II MONITORING WELL
-  TYPE III MONITORING WELL
-  WATER SUPPLY WELL



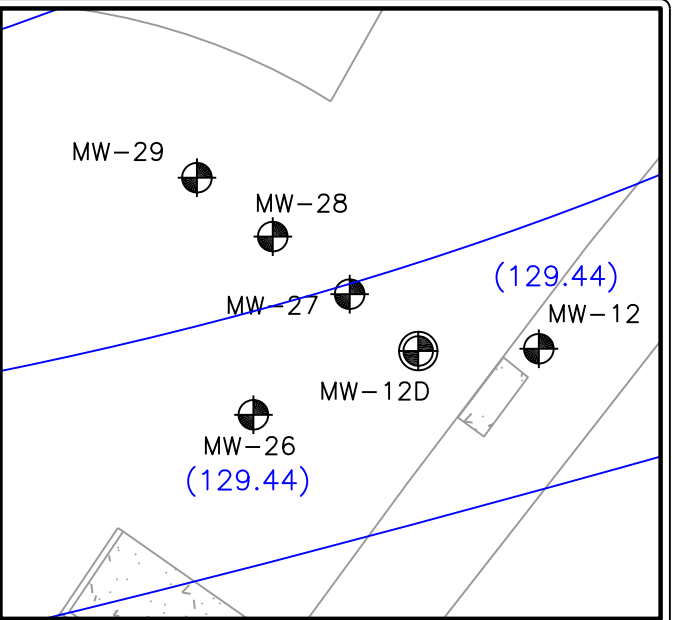
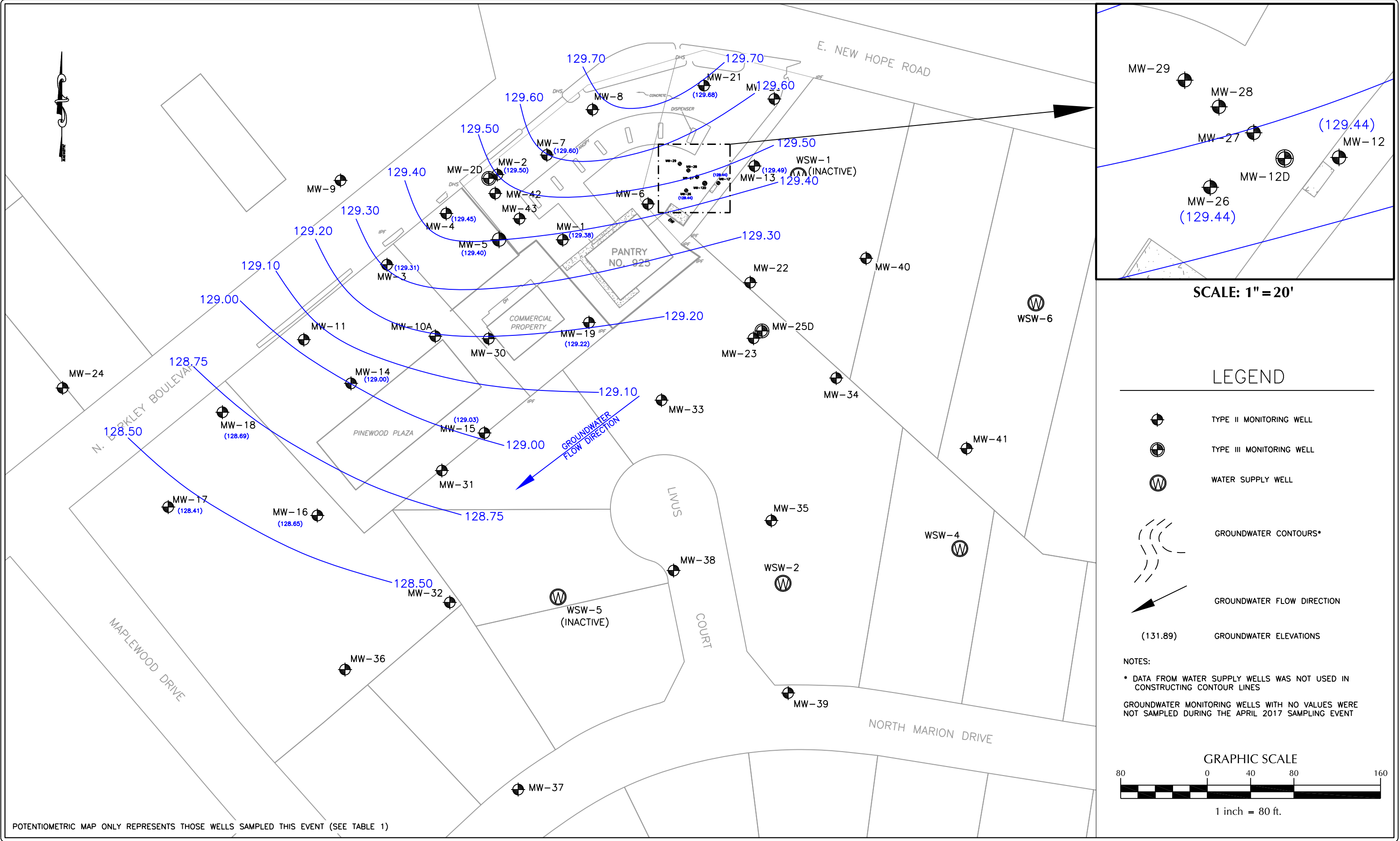
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Revisions			
No.	Description	Date	By

CIRCLE K STORE #2720925 (FORMER PANTRY STORE NO. 925)
1816 BERKELEY BOULEVARD
GOLDSBORO, WAYNE CO., NORTH CAROLINA

SITE MAP

Drawn By MJ	Scale 1"=80'	Job No. 02070955.0
Checked By CB	Date 02/16/15	Sheet No. 2

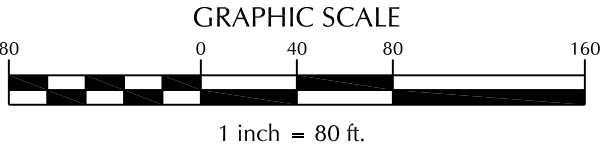


SCALE: 1" = 20'

LEGEND

- TYPE II MONITORING WELL
- TYPE III MONITORING WELL
- WATER SUPPLY WELL
- GROUNDWATER CONTOURS*
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER ELEVATIONS

NOTES:
* DATA FROM WATER SUPPLY WELLS WAS NOT USED IN CONSTRUCTING CONTOUR LINES
GROUNDWATER MONITORING WELLS WITH NO VALUES WERE NOT SAMPLED DURING THE APRIL 2017 SAMPLING EVENT



POTENTIOMETRIC MAP ONLY REPRESENTS THOSE WELLS SAMPLED THIS EVENT (SEE TABLE 1)

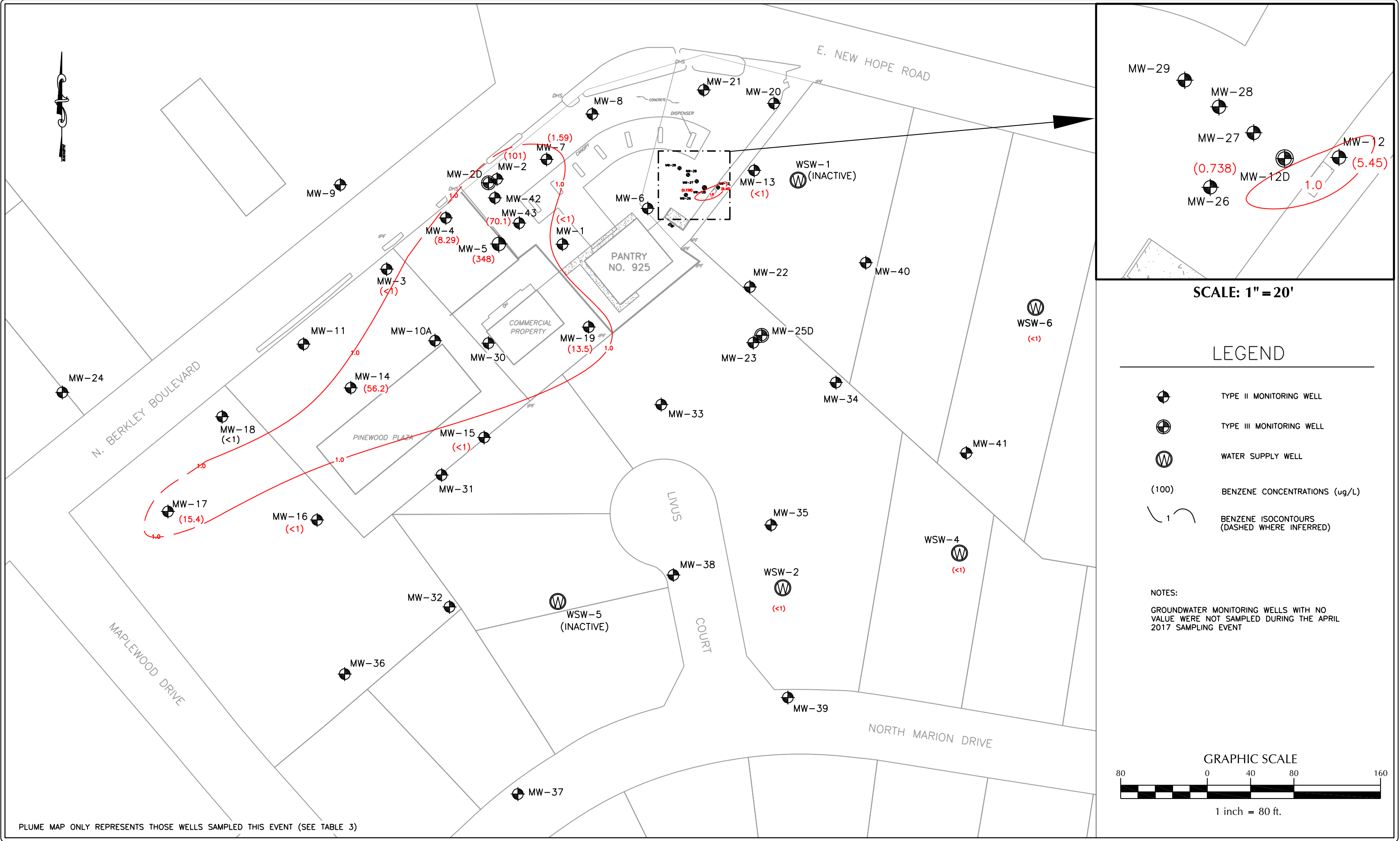
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Revisions			
No.	Description	Date	By

CIRCLE K STORE #2720925 (FORMER PANTRY STORE NO. 925)
1816 BERKELEY BOULEVARD
GOLDSBORO, WAYNE CO., NORTH CAROLINA

POTENTIOMETRIC MAP
APRIL 2017

Drawn By AP	Scale 1"=80'	Job No. 02070955.00
Checked By MJ	Date 05/09/2017	Sheet No. 3



PLUME MAP ONLY REPRESENTS THOSE WELLS SAMPLED THIS EVENT (SEE TABLE 3)

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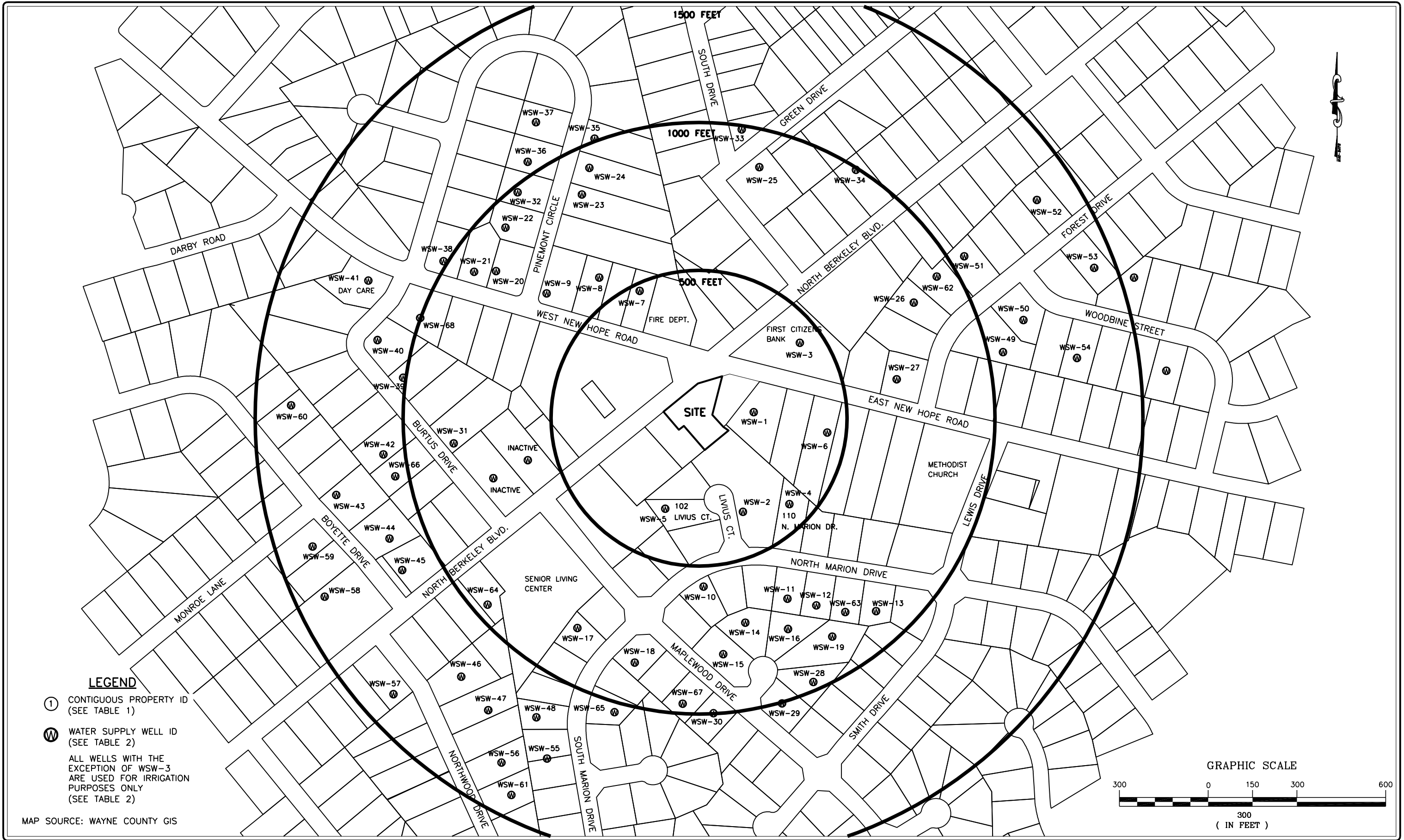
Revisions			
No.	Description	Date	By

CIRCLE K STORE #2720925 (FORMER PANTRY STORE NO. 925)
1816 BERKELEY BOULEVARD
GOLDSBORO, WAYNE CO., NORTH CAROLINA

BENZENE ISOCONTOUR MAP
APRIL 2017

Drawn By AP	Scale 1"=80'
Checked By MJ	Date 05/09/2017

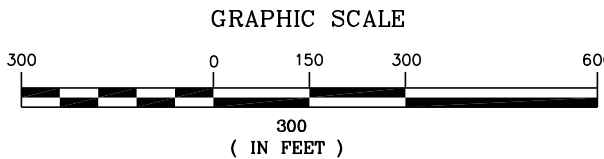
Job No. 02070955.0
Sheet No. 4



LEGEND

- ① CONTIGUOUS PROPERTY ID
(SEE TABLE 1)
- W WATER SUPPLY WELL ID
(SEE TABLE 2)
- ALL WELLS WITH THE
EXCEPTION OF WSW-3
ARE USED FOR IRRIGATION
PURPOSES ONLY
(SEE TABLE 2)

MAP SOURCE: WAYNE COUNTY GIS



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Revisions			
No.	Description	Date	By

CIRCLE K STORE #2720925 (FORMER PANTRY #925)
1816 N. BERKELEY BLVD.
GOLDSBORO, NORTH CAROLINA

WATER SUPPLY WELL MAP

Drawn By DT	Scale 1"=300'
Checked By CCB	Date 01/20/14

Job No. 02070955.0
Figure No. 5

TABLES

TABLE 1
SUMMARY OF GROUNDWATER MONITORING WELL & ELEVATION DATA
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
UST Incident No. 6100
WR Project No. 02070955.00

Well ID	Installation Date	TOC Elevation	Total Depth	Screened Interval	Depth to Water (April 2017)	Groundwater Elevation (April 2017)
Type II Monitoring Wells						
MW-1	9/3/1999	139.34	15.00	5.0 - 15.0	9.96	129.38
MW-2	1/13/1998	138.30	14.00	4.0 - 14.0	8.80	129.50
MW-3	1/13/1998	137.29	14.00	4.0 - 14.0	7.98	129.31
MW-4	6/9/1998	137.60	14.00	4.0 - 14.0	8.15	129.45
MW-5	6/9/1998	137.78	14.00	4.0 - 14.0	8.38	129.40
MW-6	6/9/1998	139.46	14.00	4.0 - 14.0	NM	NM
MW-7	9/3/1999	138.82	15.00	5.0 - 15.0	9.22	129.60
MW-8	9/3/1999	138.83	15.00	5.0 - 15.0	NM	NM
MW-9	1/26/1999	137.42	13.00	3.0 - 13.0	NM	NM
MW-10A	12/13/2000	138.11	15.00	5.0 - 15.0	NM	NM
MW-11	1/26/1999	136.81	13.00	3.0 - 13.0	NM	NM
MW-12	12/13/2000	138.64	15.00	5.0 - 15.0	9.2	129.44
MW-13	7/16/2007	137.93	15.00	5.0 - 15.0	8.44	129.49
MW-14	7/16/2007	138.16	15.00	5.0 - 15.0	9.16	129.00
MW-15	7/16/2007	137.95	15.00	5.0 - 15.0	8.92	129.03
MW-16	10/15/2007	137.67	18.00	3.0 - 18.0	9.02	128.65
MW-17	10/15/2007	136.14	17.00	7.0 - 17.0	7.73	128.41
MW-18	10/15/2007	137.26	18.00	3.0 - 18.0	8.57	128.69
MW-19	10/16/2007	138.50	20.00	5.0 - 20.0	9.28	129.22
MW-20	10/16/2007	138.31	20.00	5.0 - 20.0	NM	NM
MW-21	10/16/2007	138.61	20.00	5.0 - 20.0	8.93	129.68
MW-22	10/16/2007	138.30	20.00	5.0 - 20.0	NM	NM
MW-23	4/10/2008	138.91	20.00	5.0 - 20.0	NM	NM
MW-24	4/10/2008	136.02	20.00	5.0 - 20.0	NM	NM
MW-26	8/11/2008	138.97	20.00	18.0 - 20.0	9.53	129.44
MW-30	1/4/2010	138.16	20.00	5.0 - 20.0	NM	NM
MW-31	1/4/2010	138.08	20.00	5.0 - 20.0	NM	NM
MW-32	1/4/2010	136.94	20.00	5.0 - 20.0	NM	NM
MW-33	1/4/2010	138.13	20.00	5.0 - 20.0	NM	NM
MW-34	1/4/2010	139.55	20.00	5.0 - 20.0	NM	NM
MW-35	1/4/2010	138.09	20.00	5.0 - 20.0	NM	NM
MW-36	7/19/2010	136.39	18.00	3.0 - 18.0	NM	NM
MW-37	7/19/2010	136.64	18.00	3.0 - 18.0	NM	NM
MW-38	7/19/2010	137.42	18.00	3.0 - 18.0	NM	NM
MW-39	7/19/2010	136.48	18.00	3.0 - 18.0	NM	NM
MW-40	7/19/2010	138.13	18.00	3.0 - 18.0	NM	NM
MW-41	7/19/2010	137.76	18.00	3.0 - 18.0	NM	NM
MW-42	10/1/2013	NM	20.00	5.0 - 20.0	NM	NM
MW-43	10/1/2013	NM	18.00	5.0 - 20.0	8.97	NM
Type III Monitoring Wells						
MW-2D	6/10/1998	138.13	35.00	30.0 - 35.0	NM	NM
MW-12D	10/17/2007	138.73	35.00	30.0 - 35.0	NM	NM
MW-25D	8/11/2008	138.87	35.00	30.0 - 35.0	NM	NM

Notes: TOC = Top of PVC Well Casing
All Measurements in Feet
All Elevations in Feet Above Mean Sea Level (AMSL)
NM = Not Measured
NS = Not Surveyed

TABLE 2
HISTORICAL MONITORING WELL GROUNDWATER ELEVATION DATA
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
UST Incident No. 6100
WR Project No. 02070955.00

Well ID	Installation Date	TOC Elevation	Groundwater Elevation													
			October 2007		April 2008		September 2008		January 2009		January 2010		August 2010		March 2011	
			Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation
			Type II Monitoring Wells													
MW-1	9/3/1999	139.34	13.16	126.18	7.04	132.30	12.44	126.90	9.85	129.49	9.17	130.17	11.52	127.82	NM	NM
MW-2	1/13/1998	138.30	12.00	126.30	7.35	130.95	11.50	126.80	8.78	129.52	8.02	130.28	10.27	128.03	10.36	127.94
MW-3	1/13/1998	137.29	11.15	126.14	6.66	130.63	9.93	127.36	7.42	129.87	6.74	130.55	9.52	127.77	NM	NM
MW-4	6/9/1998	137.60	11.36	126.24	6.75	130.85	10.65	126.95	8.68	128.92	7.98	129.62	9.65	127.95	NM	NM
MW-5	6/9/1998	137.78	11.60	126.18	6.94	130.84	10.40	127.38	8.43	129.35	7.89	129.89	9.91	127.87	9.97	127.81
MW-6	6/9/1998	139.46	13.30	126.16	8.34	131.12	12.53	126.93	10.06	129.40	9.31	130.15	11.53	127.93	NM	NM
MW-7	9/3/1999	138.82	12.50	126.32	7.74	131.08	11.70	127.12	9.22	129.60	8.51	130.31	10.76	128.06	10.86	127.96
MW-8	9/3/1999	138.83	12.46	126.37	7.63	131.20	11.70	127.13	9.20	129.63	8.48	130.35	10.67	128.16	NM	NM
MW-9	1/26/1999	137.42	12.26	125.16	7.64	129.78	9.70	127.72	7.81	129.61	7.10	130.32	9.42	128.00	NM	NM
MW-10A	12/13/2000	138.11	NM	NM	7.53	130.58	NM	NM	NM	NM	9.17	128.94	10.49	127.62	NM	NM
MW-11	1/26/1999	136.81	10.91	125.90	6.59	130.22	9.65	127.16	7.84	128.97	7.12	129.69	9.32	127.49	NM	NM
MW-12	12/13/2000	138.64	12.48	126.16	7.54	131.10	12.75	125.89	9.21	129.43	8.50	130.14	10.73	127.91	10.88	127.76
MW-13	7/16/2007	137.93	11.81	126.12	6.78	131.15	11.04	126.89	8.51	129.42	7.75	130.18	10.03	127.90	10.17	127.76
MW-14	7/16/2007	138.16	12.30	125.86	7.88	130.28	11.05	127.11	9.24	128.92	8.49	129.67	10.76	127.40	NM	NM
MW-15	7/16/2007	137.95	12.12	125.83	7.41	130.54	10.98	126.97	8.94	129.01	8.06	129.89	10.58	127.37	10.45	127.50
MW-16	10/15/2007	137.67	11.61	126.06	7.72	129.95	11.05	126.62	9.13	128.54	7.97	129.70	10.64	127.03	NM	NM
MW-17	10/15/2007	136.14	10.80	125.34	6.69	129.45	9.57	126.57	7.68	128.46	6.67	129.47	9.30	126.84	NM	NM
MW-18	10/15/2007	137.26	12.12	125.14	7.16	130.10	10.37	126.89	8.51	128.75	NM	NM	NM	NM	NM	NM
MW-19	10/16/2007	138.50	12.46	126.04	7.67	130.83	11.32	127.18	9.34	129.16	8.63	129.87	10.90	127.60	NM	NM
MW-20	10/16/2007	138.31	12.10	126.21	7.05	131.26	11.30	127.01	8.75	129.56	8.00	130.31	10.25	128.06	NM	NM
MW-21	10/16/2007	138.61	12.30	126.31	7.33	131.28	11.52	127.09	8.98	129.63	8.27	130.34	10.47	128.14	NM	NM
MW-22	10/16/2007	138.30	12.35	125.95	7.34	130.96	11.13	127.17	9.17	129.13	8.45	129.85	10.70	127.60	10.78	127.52
MW-23	4/10/2008	138.91	DNE	DNE	7.42	131.49	11.19	127.72	9.30	129.61	8.44	130.47	10.80	128.11	10.92	127.99
MW-24	4/10/2008	136.02	DNE	DNE	10.65	125.37	9.04	126.98	7.49	128.53	6.76	129.26	9.15	126.87	NM	NM
MW-26	8/11/2008	138.97	DNE	DNE	DNE	DNE	NM	NM	9.53	129.44	NM	NM	11.10	127.87	NM	NM
MW-30	1/4/2010	138.16	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	8.75	129.41	10.61	127.55	10.52	127.64
MW-31	1/4/2010	138.08	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	8.22	129.86	10.84	127.24	10.65	127.43
MW-32	1/4/2010	136.94	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	7.22	129.72	9.91	127.03	NM	NM
MW-33	1/4/2010	138.13	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	7.65	130.48	10.10	128.03	NM	NM
MW-34	1/4/2010	139.55	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	9.34	130.21	11.57	127.98	NM	NM
MW-35	1/4/2010	138.09	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	8.06	130.03	10.28	127.81	NM	NM
MW-36	7/19/2010	136.39	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	9.71	126.68	9.51	126.88
MW-37	7/19/2010	136.64	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	9.56	127.08	NM	NM
MW-38	7/19/2010	137.42	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	8.69	128.73	9.88	127.54
MW-39	7/19/2010	136.48	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	9.12	127.36	NM	NM
MW-40	7/19/2010	138.13	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	10.57	127.56	NM	NM
MW-41	7/19/2010	137.76	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	10.59	127.17	NM	NM
MW-42	10/1/2014	NM	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE
MW-43	10/1/2014	NM	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE	DNE
			Type III Monitoring Wells													
MW-2D	6/10/1998	138.13	22.14	115.99	17.94	120.19	NM	NM	18.30	119.83	17.61	120.52	17.61	117.53	19.46	118.67
MW-12D	10/17/2007	138.73	20.33	118.40	18.47	120.26	20.45	118.28	18.86	119.87	18.03	120.70	18.03	117.74	NM	NM
MW-25D	8/11/2008	138.87	DNE	DNE	DNE	DNE	14.25	124.62	17.95	120.92	17.23	121.64	17.23	118.51	NM	NM

Notes: TOC = top of PVC well casing
All measurements in feet
All elevations in feet above mean sea level (AMSL)
NM - Not measured
DNE - Did Not Exist (had not yet been installed)

TABLE 2
HISTORICAL MONITORING WELL GROUNDWATER ELEVATION DATA
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
UST Incident No. 6100
WR Project No. 02070955.00

Well ID	Installation Date	TOC Elevation	Groundwater Elevation													
			January 2014		August 2014		January 2015		July 2015		March 2016		October 2016		April 2017	
			Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation	Groundwater Depth	Groundwater Elevation
			Type II Monitoring Wells													
MW-1	9/3/1999	139.34	9.19	130.15	7.6	131.74	7.45	131.89	10.04	129.30	6.65	132.69	7.94	131.40	9.96	129.38
MW-2	1/13/1998	138.30	8.04	130.26	6.6	131.7	6.45	131.85	8.95	129.35	5.77	132.53	6.92	131.38	8.80	129.50
MW-3	1/13/1998	137.29	7.22	130.07	6	131.29	NM	NM	NM	NM	5.27	132.02	6.09	131.20	7.98	129.31
MW-4	6/9/1998	137.60	7.46	130.14	6.04	131.56	NM	NM	8.35	129.25	5.25	132.35	6.30	131.30	8.15	129.45
MW-5	6/9/1998	137.78	7.66	130.12	6.2	131.58	6.05	131.73	8.59	129.19	5.34	132.44	6.47	131.31	8.38	129.40
MW-6	6/9/1998	139.46	9.21	130.25	7.52	131.94	7.36	132.10	10.09	129.37	NM	NM	NM	NM	NM	NM
MW-7	9/3/1999	138.82	8.49	130.33	6.96	131.86	6.83	131.99	9.4	129.42	6.05	132.77	7.34	131.48	9.22	129.60
MW-8	9/3/1999	138.83	8.41	130.42	6.85	131.98	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-9	1/26/1999	137.42	NM	NM	6.1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-10A	12/13/2000	138.11	8.03	130.08	6.85	131.26	6.66	131.45	9.13	128.98	6.00	132.11	NM	NM	NM	NM
MW-11	1/26/1999	136.81	6.88	129.93	5.96	130.85	NM	NM	8.02	128.79	NM	NM	NM	NM	NM	NM
MW-12	12/13/2000	138.64	8.36	130.28	6.62	132.02	6.45	132.19	9.26	129.38	5.65	132.99	7.01	131.63	9.20	129.44
MW-13	7/16/2007	137.93	7.58	130.35	5.86	132.07	NM	NM	NM	NM	4.89	133.04	6.23	131.70	8.44	129.49
MW-14	7/16/2007	138.16	8.32	129.84	7.22	130.94	7.01	131.15	9.41	128.75	6.56	131.60	7.24	130.92	9.16	129.00
MW-15	7/16/2007	137.95	8.5	129.45	6.65	131.3	6.40	131.55	9.13	128.82	6.25	131.70	6.85	131.10	8.92	129.03
MW-16	10/15/2007	137.67	8.01	129.66	7.05	130.62	6.72	130.95	9.34	128.33	6.48	131.19	7.07	130.60	9.02	128.65
MW-17	10/15/2007	136.14	6.6	129.54	6.04	130.1	NM	NM	8.06	128.08	5.90	130.24	5.84	130.30	7.73	128.41
MW-18	10/15/2007	137.26	7.58	129.68	6.9	130.36	NM	NM	8.83	128.43	6.60	130.66	6.69	130.57	8.57	128.69
MW-19	10/16/2007	138.50	8.31	130.19	6.84	131.66	6.66	131.84	9.44	129.06	5.91	132.59	7.17	131.33	9.28	129.22
MW-20	10/16/2007	138.31	7.79	130.52	6.15	132.16	5.97	132.34	8.74	129.57	6.03	132.28	NM	NM	NM	NM
MW-21	10/16/2007	138.61	8.12	130.49	6.46	132.15	6.32	132.29	8.96	129.65	NM	NM	NM	NM	8.93	129.68
MW-22	10/16/2007	138.30	8.21	130.09	6.36	131.94	5.92	132.38	9.17	129.13	NM	NM	NM	NM	NM	NM
MW-23	4/10/2008	138.91	8.37	130.54	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-24	4/10/2008	136.02	6.45	129.57	6.09	129.93	NM	NM	7.85	128.17	NM	NM	NM	NM	NM	NM
MW-26	8/11/2008	138.97	8.49	130.48	7	131.97	6.85	132.12	9.60	129.37	NM	NM	7.36	131.61	9.53	129.44
MW-30	1/4/2010	138.16	8.2	129.96	6.72	131.44	6.55	131.61	9.15	129.01	NM	NM	NM	NM	NM	NM
MW-31	1/4/2010	138.08	8.4	129.68	7	131.08	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-32	1/4/2010	136.94	7.02	129.92	6.01	130.93	5.64	131.30	8.56	128.38	NM	NM	NM	NM	NM	NM
MW-33	1/4/2010	138.13	7.85	130.28	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-34	1/4/2010	139.55	9.32	130.23	7.1	132.45	6.85	132.70	10.08	129.47	NM	NM	NM	NM	NM	NM
MW-35	1/4/2010	138.09	7.95	130.14	5.85	132.24	5.60	132.49	8.78	129.31	NM	NM	NM	NM	NM	NM
MW-36	7/19/2010	136.39	6.96	129.43	6.05	130.34	5.64	130.75	8.43	127.96	NM	NM	NM	NM	NM	NM
MW-37	7/19/2010	136.64	6.89	129.75	5.61	131.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-38	7/19/2010	137.42	7.31	130.11	5.4	132.02	5.12	132.30	8.23	129.19	NM	NM	NM	NM	NM	NM
MW-39	7/19/2010	136.48	6.91	129.57	4.9	131.58	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-40	7/19/2010	138.13	8.09	130.04	6.05	132.08	5.61	132.52	9.02	129.11	NM	NM	NM	NM	NM	NM
MW-41	7/19/2010	137.76	NM	NM	6.02	NM	5.49	132.27	9.19	128.57	NM	NM	NM	NM	NM	NM
MW-42	10/1/2014	NM	7.97	NM	6.46	NM	6.35	NM	8.88	NM	NM	NM	NM	NM	NM	NM
MW-43	10/1/2014	NM	NM	NM	NM	NM	6.60	NM	9.15	NM	NM	NM	7.06	NM	8.97	NM
			Type III Monitoring Wells													
MW-2D	6/10/1998	138.13	17.59	120.54	17.35	120.78	16.84	121.29	20.00	118.13	NM	NM	NM	NM	NM	NM
MW-12D	10/17/2007	138.73	18.14	120.32	17.76	120.97	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-25D	8/11/2008	138.87	17.65	121.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM

Notes: TOC = top of PVC well casing
All measurements in feet
All elevations in feet above mean
NM - Not measured
DNE - Did Not Exist (had not yet l

TABLE 3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - HITS ONLY
 Circle K Store #2720925 (Former Pantry Store No. 925)
 1816 Berkeley Boulevard
 Goldsboro, Wayne County, North Carolina
 UST Incident No. 6100
 WR Project No. 02070955.00

Client Sample ID						MW-1	MW-2	MW-3	MW-4	MW-5	MW-7	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19	MW-21	MW-26	MW-43	WSW-2	WSW-4	WSW-6	
Collect Date						4/3/2017	4/3/2017	4/3/2017	4/3/2017	4/3/2017	4/3/2017	4/3/2017	4/3/2017	4/3/2017	4/4/2017	4/4/2017	4/4/2017	4/4/2017	4/4/2017	4/4/2017	4/3/2017	4/3/2017	4/3/2017	5/24/2017	4/4/2017	4/4/2017
Method	Parameter	CAS #	Units	NC 2L Standard (µg/L)	GCLs (µg/L)	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	
Natural Attenuation Parameter																										
2320 B-2011	Alkalinity	-	µg/l	NL	NL	NA	45000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5360	NA	NA	NA	NA	NA	
6010C	Iron	7439-89-6	µg/l	300	NL	NA	15200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	52.9	NA	NA	NA	NA	NA	
6010C	Magnesium	7439-95-4	µg/l	NL	NL	NA	2750	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1050	NA	NA	NA	NA	NA	
6010C	Manganese	7439-96-5	µg/l	50	NL	NA	38.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.4	NA	NA	NA	NA	NA	
9056A	Nitrate	14797-55-8	µg/l	NL	NL	NA	288	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2380	NA	NA	NA	NA	NA	
9056A	Sulfate	14808-79-8	µg/l	250000	NL	NA	6730	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6990	NA	NA	NA	NA	NA	
Volatile Organic Compounds (VOCs)																										
6200B-1997	Acetone	67-64-1	µg/l	6,000	6,000,000	<50	<1250	<50	125	126	11.2	30.7	<50	45.2	<50	<50	<50	<50	<50	NA	<50	38	<50	<50	<50	
6200B-1997	Benzene	71-43-2	µg/l	1	5,000	<1	101	<1	8.29	348	1.59	5.45	<1	56.2	<1	<1	15.4	<1	13.5	NA	0.738	70.1	<1	<1	<1	
6200B-1997	Bromodichloromethane	75-27-4	µg/l	0.6	NL	<1	<25	<1	<10	<10	<1	<1	<1	<1	<1	<1	<1	2.81	<1	NA	<1	<1	<1	8.88	7.97	
6200B-1997	n-Butylbenzene	104-51-8	µg/l	70	6,900	<1	10.7	<1	13.6	10.7	0.815	1.21	<1	4.52	<1	<1	0.787	<1	<1	NA	<1	4.71	<1	<1	<1	
6200B-1997	sec-Butylbenzene	135-98-8	µg/l	70	8,500	<1	13.8	<1	11.2	10.9	0.596	1.33	<1	3.2	<1	<1	0.77	<1	<1	NA	<1	3.38	<1	<1	<1	
6200B-1997	tert-Butylbenzene	98-06-6	µg/l	70	15,000	<1	<25	<1	<10	188	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	<1	<1	<1	<1		
6200B-1997	Chlorodibromomethane	124-48-1	µg/l	0.4	400	<1	<25	<1	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	<1	<1	<1	1.51	1.36	
6200B-1997	Chloroform	67-66-3	µg/l	70	70,000	<5	<125	<5	<50	<50	<5	<5	<5	<5	<5	<5	23.9	<5	NA	<5	<5	<5	25.2	22.3		
6200B-1997	Chloromethane	74-87-3	µg/l	3	3,000	<2.5	<62.5	<2.5	<25	<25	<2.5	1.88	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	NA	<2.5	<2.5	<2.5	<2.5	<2.5	
6200B-1997	Ethylbenzene	100-41-4	µg/l	600	84,500	<1	1720	<1	1860	1640	<1	11.6	<1	274	<1	<1	5.45	<1	<1	NA	<1	272	<1	<1	<1	
6200B-1997	Isopropylbenzene	98-82-8	µg/l	70	25,000	<1	82.8	<1	89.1	70	<1	4.1	<1	26	<1	<1	3.77	<1	<1	NA	<1	20.6	<1	<1	<1	
6200B-1997	p-Isopropyltoluene	99-87-6	µg/l	25	11,700	<1	29.4	<1	21.8	12.3	5.35	<1	<1	2.03	<1	<1	0.39	<1	<1	NA	<1	6.9	<1	<1	<1	
6200B-1997	Naphthalene	91-20-3	µg/l	6	6,000	<5	316	1.35	357	488	4.86	4.92	<5	133	8.27	<5	27.4	1.42	<5	NA	<5	116	<5	<5	<5	
6200B-1997	n-Propylbenzene	103-65-1	µg/l	70	30,000	<1	178	<1	234	195	<1	10.9	<1	50.1	<1	<1	3.98	<1	<1	NA	<1	51.7	<1	<1	<1	
6200B-1997	Toluene	108-88-3	µg/l	600	260,000	<1	4990	<1	73.3	5490	<1	0.897	<1	212	<1	<1	1.48	<1	<1	NA	<1	973	<1	<1	<1	
6200B-1997	1,2,4-Trimethylbenzene	95-63-6	µg/l	400	28,500	<1	1490	<1	1520	1440	5.4	25.4	<1	92.2	<1	<1	12.4	<1	<1	NA	<1	253	<1	<1	<1	
6200B-1997	1,3,5-Trimethylbenzene	108-67-8	µg/l	400	25,000	<1	435	<1	394	321	2.28	1.36	<1	35	<1	<1	<1	<1	<1	NA	<1	82.7	<1	<1	<1	
6200B-1997	o-Xylene	95-47-6	µg/l	500	85,500	<1	2920	<1	1940	1200	<1	<1	<1	60.7	<1	<1	2.16	<1	<1	NA	<1	383	<1	<1	<1	
6200B-1997	m&p-Xylenes	1330-20-7	µg/l	500	85,500	<2	6320	<2	3120	4340	<2	3.54	<2	170	<2	<2	16.6	<2	<2	NA	<2	655	<2	<2	<2	
6200B-1997	Total Xylenes	1330-20-7	µg/l	500	85,500	<2	9240	<2	5060	5540	<2	3.54	<2	230.7	<2	<2	18.76	<2	<2	NA	<2	1038	<2	<2	<2	

Notes

- 1.) All results provided in ug/L (micrograms per liter) or parts per billion
- 2.) Compounds analyzed for by laboratory but not listed were not detected above laboratory detection limits. See the laboratory report included in the Appendix for a full list of constituents.
- 3.) NC 2L Standard - North Carolina Groundwater Quality Standard as per NC Administrative Code 15A NCAC 02L
- 4.) GCLs for Groundwater = NCDENR UST Section Gross Contamination Levels for Groundwater
- 5.) WSW-2 had to be sampled on May 24, 2017 due to mistakenly sampling municipal water on April 4, 2017. Data for the accidental municipal water sampling can be found in the original lab report in the Appendix.

NL	= Not Listed
NA	= Compound Not Analyzed for by Laboratory.
NS	= Not Sampled
Result	= Result Exceeds Laboratory Detection Limits
Result	= Result Exceeds 2L Standard
Result	= Result Exceeds GCL Value

TABLE 4
HISTORICAL SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
UST Incident No. 6100
WR Project No. 02070955.00

[illegible]

Notes: All results in µg/L - (micrograms per liter); BDL = Below Detection Limit

Result	= Result Exceeds Laboratory Detection Limit
Result	= Result Exceeds 2L Standard
Result	= Result Exceeds GCL Value

* = Detection Limit is above NCAC 2L Standard

TABLE 4 (continued)
HISTORICAL SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
UST Incident No. 6100
WR Project No. 02070955.00

Compound	MW-6						MW-7										MW-8		MW-9		MW-10A				MW-11			MW-12										NCAC 2L	GCL																																																																																																																																																																																																																																																																																																																						
	1/23/09	8/11/10	1/23/14	8/13/14	1/23/15	7/21/15	1/23/09	8/11/10	3/22/11	1/23/14	8/13/14	1/23/15	7/22/15	3/24/16	10/4/16	4/3/17	1/23/09	8/11/10	1/23/09	8/13/10	8/12/10	1/23/14	8/13/14	1/22/15	7/21/15	1/24/09	8/11/10	7/21/15	9/8/08	1/23/09	8/11/10	3/22/11	1/23/14	8/14/14	1/23/15	7/21/15	3/24/16	10/5/16	4/3/17	STD (µg/l)	(µg/l)																																																																																																																																																																																																																																																																																																																				
Alkalinity by EPA Method 2320 B-2011	NA	NA	NA	NA	NA	<20000	<20000	NA	NA	NA	NA	NA	46,000	130,000	222,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	<20000	<20000	NA	NA	<20000	NA	NA	NA	NA	NA	NA	130,000	130,000	82,600	NA	NA	NL	NL																																																																																																																																																																																																																																																																																																																			
Iron, Magnesium, and Manganese by EPA Method 6019C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	300	NL																																																																																																																																																																																																																																																																																																																			
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	NL																																																																																																																																																																																																																																																																																																																			
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	NL																																																																																																																																																																																																																																																																																																																		
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50	NL																																																																																																																																																																																																																																																																																																																		
Nitrate and Sulfate by EPA Method 9056A	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	NL																																																																																																																																																																																																																																																																																																																		
Sulfate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	250000	NL																																																																																																																																																																																																																																																																																																																		
Volatile Petroleum Hydrocarbons/Extractable Petroleum Hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	205	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	400	NL																																																																																																																																																																																																																																																																																																																	
C5-C8 Aliphatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	205	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	NL																																																																																																																																																																																																																																																																																																																	
C9-C18 Aliphatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	282	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	700	NL																																																																																																																																																																																																																																																																																																																	
C19-C36 Aliphatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1000	NL																																																																																																																																																																																																																																																																																																																	
C9-C22 Aromatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	372	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	200	NL																																																																																																																																																																																																																																																																																																																		
Volatile Organic Compounds (VOCs) by EPA Method 6200B	<50	<50	<50	<50	<50	<50	<2,500*	<50	<500*	72	<1000	<1000	<50	<50	<50	11.2	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	30.7	6,000	6,000,000																																																																																																																																																																																																																																																																																																																		
Acetone	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50*	<1.0	<10*	1.8	<20*	<20*	<1.0	<1.0	<1.0	2.01	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.51	5.45	1	5,000																																																																																																																																																																																																																																																																																																																
Bromodichloromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50*	<1.0	<10*	<1.0	<20*	<20*	<1.0	<1.0	<1.0	<1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.6	NL																																																																																																																																																																																																																																																																																																																
n-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<55	39	29	7.7	<20*	<20*	<1.0	<1.0	<1	0.815	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.21	70	6,900																																																																																																																																																																																																																																																																																																															
sec-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	18	16	5	<20*	<20*	12	<1.0	<1	0.596	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.33	70	8,500																																																																																																																																																																																																																																																																																																														
tert-Butylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<50	<1.0	<1.0	<1.0	<20*	<20*	7.8	<1.0	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	&

Notes: All results in µg/L - (micrograms per liter); BDL = Below Detection Limit

Result	= Result Exceeds Laboratory Detection Limits
Result	= Result Exceeds 2L Standard
Result	= Result Exceeds GCL Value

GCL = Gross Contaminant Level; NL = Not Listed

2L STD - Groundwater Quality Standard (15A NCAC Subchapter 2L)

* = Detection Limit is above NCAC 2L Standard

TABLE 4 (continued)
HISTORICAL SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
UST Incident No. 6100
WR Project No. 02070955.00

[illegible]

Notes: All results in µg/L - (micrograms per liter); BDL = Below Detection Limit

TABLE 4 (continued)
HISTORICAL SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
UST Incident No. 6100
WR Project No. 02070955.00

[illegible]

Notes: All results µg/L - (micrograms per liter); BDL = Below Detection Limit

Result	= Result Exceeds Laboratory Detection Limits
Result	= Result Exceeds 2L Standard
Result	= Result Exceeds GCL Value

GCL = Gross Contaminant Level; NL = Not Listed

2L STD - Groundwater Quality Standard (15A NCAC Subchapter 2L)

* = Detection Limit is above NCAC 2L Standard

TABLE 4 (continued)
HISTORICAL SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
UST Incident No. 6100
WR Project No. 02070955.00

Compound	MW-23							MW-24					MW-25D				MW-26								MW-30							MW-31			NCAC 2L STD (µg/l)	GCL (µg/l)				
	4/11/08	9/8/08	1/22/09	1/5/10	8/13/10	3/22/11	1/23/14	4/11/08	9/8/08	1/23/09	8/13/10	7/21/15	9/8/08	1/22/09	8/13/10	1/23/14	1/23/09	8/11/10	1/23/14	8/14/14	1/23/15	7/21/15	3/24/16	10/4/16	4/3/17	1/5/10	8/13/10	3/22/11	1/23/14	8/13/14	1/22/15	7/21/15	1/5/10	8/13/10			3/22/11			
Alkalinity by EPA Method 2320 B-2011																																								
Alkalinity	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<20000	NA	NA	NA	NA	NA	NA	NA	NA	<20000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	NL
Iron, Magnesium, and Manganese by EPA Method 6010C																																								
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	300	NL	
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	NL	
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50	NL		
Nitrate and Sulfate by EPA Method 9056A																																								
Nitrate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	NL	
Sulfate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	250000	NL	
Volatile Petroleum Hydrocarbons/Extractable Petroleum Hydrocarbons																																								
C5-C8 Aliphatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	400	NL	
C9-C18 Aliphatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	700	NL	
C19-C36 Aliphatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10000	NL	
C9-C22 Aromatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	200	NL	
Volatile Organic Compounds (VOCs) by EPA Method 6200B																																								
Acetone	BDL	< 50 *	< 50	<50	<50	<50	<50	BDL	< 50 *	< 50	< 50	< 50	55	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	<500	< 50	<50	< 50	< 50	< 50	< 50	<250	< 50	<50	6,000	6,000,000			
Benzene	BDL	< 1.0	260	6.2	2.0	1.0	14.0	BDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<440	< 75	91	13	< 1.0	< 1.0	< 1.0	< 1.0	290	6.6	51	1	5,000		
Bromodichloromethane	BDL	< 1.0	< 1.0	<1.0*	<1.0*	<1.0*	<1.0	BDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<10*	< 1.0	<1.0	< 1.0	<1.0*	<1.0*	<1.0*	<5.0*	< 1.0	<1.0*	0.6	NL			
n-Butylbenzene	BDL	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	BDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<10	< 1.0	1.0	< 1.0	< 1.0	< 1.0	<5.0	< 1.0	< 1.0	70	6,900	
sec-Butylbenzene	BDL	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	BDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<5.0	< 1.0	< 1.0	70	8,500	
tert-Butylbenzene	BDL	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	BDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<5.0	< 1.0	< 1.0	70	15,000	
Chlorodibromomethane	BDL	< 1.0 *	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0	BDL	< 1.0 *	< 1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	<1	<1	<1	<10*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<5.0*	< 1.0*	< 1.0*	0.41	400	
Chloroform	BDL	< 5.0	< 5.0	<5.0	<5.0	<5.0	<5.0	BDL	< 5.0	< 5.0	<5.0	<5.0	8.3	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<5	<5	<5	<50	< 5.0	<5.0	< 5.0	< 5.0	< 5.0	<25	< 5.0	< 5.0	70	70,000	
1,2-Dibromoethane (EDB)	BDL	< 1.0 *	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0	BDL	< 1.0 *	< 1.0*	<1.0*	< 1.0*	< 1.0 *	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	<1	<1	<1	<10*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<5.0*	< 1.0*	< 1.0*	0.0004	50	
1,2-Dichloroethane	BDL	< 1.0 *	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0	BDL	< 1.0 *	< 1.0*	<1.0*	< 1.0*	< 1.0 *	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	<1	<1	<1	<10*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<5.0*	< 1.0*	< 1.0*	0.4	400	
cis-1,2-Dichloroethene	BDL	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	BDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<5.0	< 1.0	< 1.0	70	70,000	
Di-isopropyl ether (IPE)	1.2	< 1.0	1	<1.0	<1.0	<1.0	<1.0	BDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<5.0	< 1.0	< 1.0	70	70,000	
Ethylbenzene	BDL	< 1.0	160	<1.0	1.7	<1.0	1.7	BDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	500	120	130	93	< 1.0	< 1.0	< 1.0	310	11	78	600	84,500
Isopropylbenzene	BDL	< 1.0	6.2	<1.0	3.9	<1.0	<1.0	BDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	18	< 1.0	5.5	5	< 1.0	< 1.0	< 1.0	14	< 1.0	4.4	70	25,000
Methyl tertiary-butyl ether (MTBE)	25	7.7	6	<1.0*	< 1.0	< 1.0	<1.0	BDL	< 1.0	< 1.0	< 1.0	< 1.0	14	6.7	6.0	7.6	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<10*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<5.0*	< 1.0	< 1.0	20	20,000	
Naphthalene	BDL	< 5.0	32	1.6	< 5.0	< 5.0	< 5.0	BDL	< 5.0	< 5.0	< 5.0	< 5.0	12	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<5	<5	<5	<10*	< 5.0	36	24	< 5.0	< 5.0	< 5.0	<5.0	8.4	41	6	6,000
n-Propylbenzene	BDL	< 1.0	14	<5.0	< 1.0	< 1.0	<1.0	BDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	110	16	15	9.8	< 1.0	< 1.0	< 1.0	99	1.2	9.1	70	30,000
p-Isopropyltoluene	BDL	< 1.0	< 1.0*	<1.0	< 1.0*	< 1.0*	<1.0	BDL	< 1.0	< 1.0*	<1.0*	< 1.0*	< 1.0	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	<1	<1	<1	49	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	34	< 1.0*	< 1.0*	25	11,700
Styrene	BDL	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	<1.0	BDL	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1	<1	<1	<10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	70	70,000
Tetrachloroethene (PCE)	BDL	< 1.0 *	< 1.0*	<1.0*	< 1.0*	< 1.0*	<1.0	BDL	< 1.0 *	< 1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	< 1.0*	<1	<1	<1	<10*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	<5.0*	< 1.0*	< 1.0*		

TABLE 4 (continued)
HISTORICAL SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
UST Incident No. 6100
WR Project No. 02070955.00

Compound	MW-32						MW-33			MW-34						MW-35						MW-36						MW-37	NCAC 2L	GCL	
	1/5/10	8/12/10	1/23/14	8/12/14	1/22/15	7/20/15	1/5/10	8/13/10	1/23/14	1/5/10	8/13/10	1/23/14	8/13/14	1/22/15	7/20/15	1/5/10	8/13/10	1/23/14	8/13/14	1/22/15	7/20/15	8/12/10	3/23/11	1/23/14	8/12/14	1/22/15	7/20/15	8/12/10	STD (µg/l)	(µg/l)	
Alkalinity by EPA Method 2320 B-2011																															
Alkalinity	NA	NA	NA	NA	<20000	<20000	NA	NA	NA	NA	NA	NA	NA	<20000	<20000	NA	NA	NA	NA	<20000	<20000	NA	NA	NA	NA	<20000	<20000	NA	NL	NL	
Iron, Magnesium, and Manganese by EPA Method 6010C																															
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	300	NL	
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	NL	
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50	NL	
Nitrate and Sulfate by EPA Method 9056A																															
Nitrate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NL	NL	
Sulfate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	250000	NL	
Volatile Petroleum Hydrocarbons/Extractable Petroleum Hydrocarbons																															
C5-C8 Aliphatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	400	NL	
C9-C18 Aliphatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	700	NL	
C19-C36 Aliphatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10000	NL	
C9-C22 Aromatics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	200	NL	
Volatile Organic Compounds (VOCs) by EPA Method 6200B																															
Acetone	<50	< 50	< 50	< 50	< 50	< 50	<50	< 50	< 50	<50	< 50	< 50	< 50	< 50	< 50	<50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	6,000	6,000,000	
Benzene	38	< 1.0	< 1.0	< 1.0	1.5	<1.0	<1.0*	< 1.0	< 1.0	42	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	43	140	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1	5,000	
Bromodichloromethane	<1.0*	<1.0*	<1.0*	<1.0*	<1.0*	<1.0*	<1.0*	< 1.0	<1.0*	<1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0*	<1.0*	<1.0*	<1.0*	<1.0*	<1.0*	<1.0*	< 1.0	<1.0	< 1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	0.6	NL	
n-Butylbenzene	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	1.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	70	6,900	
sec-Butylbenzene	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	1.1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	70	8,500	
tert-Butylbenzene	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	70	15,000	
Chlorodibromomethane	<1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	0.41	400	
Chloroform	<5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	70	70,000	
1,2-Dibromoethane (EDB)	<1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	0.0004	50	
1,2-Dichloroethane	<1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	0.4	400	
cis-1,2-Dichloroethene	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	70	70,000	
Di-isopropyl ether (IPE)	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	70	70,000	
Ethylbenzene	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	13	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	9.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	600	84,500	
Isopropylbenzene	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	5.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	70	25,000	
Methyl tertiary-butyl ether (MTBE)	<1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0*	< 1.0	< 1.0	<1.0*	< 1.0	< 1.0	2.5	1.2	1.2	<1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	20	20,000	
Naphthalene	1.4	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	2.4	< 5.0	< 5.0	18	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	30	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	12	57	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	6	6,000	
n-Propylbenzene	14	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<5.0	< 1.0	< 1.0	22	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	70	30,000	
p-Isopropyltoluene	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	4.8	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	1.4	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	25	11,700	
Styrene	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	70	70,000	
Tetrachloroethene (PCE)	<1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	0.7	700	
Trichloroethene (TCE)	<5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<5.0	< 1.0	< 1.0	<5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.0	3,000	
Toluene	<1.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<1.0	< 5.0	< 5.0	<1.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	<1.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	600	260,000	
1,2,4-Trimethylbenzene	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	1.8	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	10	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	400	28,500	
1,3,5-Trimethylbenzene	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	11	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	400	25,000	
Vinyl Chloride	<1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	< 1.0*	< 1.0*	<1.0*	<1.0*	< 1.0*	<1.0*	< 1.0*	<1.0*	<1.0*	<1.0*	< 1.0*	0.030	30	
Xylenes, Total	<3.0	< 3.0	< 3.0	< 3.0	< 3.0																										

HISTORICAL SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Boulevard
Goldsboro, Wayne County, North Carolina
UST Incident No. 6100
WR Project No. 02070955.00

[illegible]

Notes: All results in µg/L - (micrograms per liter); BDL = Below Detection Limit

Result	= Result Exceeds Laboratory Detection Limit
Result	= Result Exceeds 2L Standard
Result	= Result Exceeds GCL Value

GCL = Gross Contaminant Level; NL = Not Listed
2L STD - Groundwater Quality Standard (15A NCAC Subchapter 2L)
* = Detection Limit is above NCAC 2L Standard

TABLE 5
WATER SUPPLY WELL INFORMATION
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Blvd.
Goldsboro, Wayne County, NC
UST Incident No. 6100
WR Project No. 02070955.00

WSW # Parcel ID	Distance from Source (feet)	Property Owner	Property Address	Owner Address	Use of Well	Municipal Water	Direction From Source
1 3529270938	185	Lois P. Langston	102 E. New Hope Rd. Goldsboro, NC 27534	102 E. New Hope Rd. Goldsboro, NC 27534	Irrigation	Yes	East
2 3529179840	350	Maplewood Property Owners Association, Inc.	Livius Court Goldsboro, NC	108 N. Marion Drive Goldsboro, NC 27534	Irrigation & Filling Swimming Pool	Yes	South
3 3529281260	425	First Citizens Bank	1900 N. Berkeley Blvd. Goldsboro, NC	P.O. Box 27131 Raleigh, NC 27611	Not in service	Yes	Northeast
4 3529271642	420	Lance & Emily Bunch	110 N. Marion Dr. Goldsboro, NC 27534	110 N. Marion Dr. Goldsboro, NC 27534	Irrigation	Yes	Southeast
5 3529177685	325	Warren C. & Patricia Childers	102 Livius Ct. Goldsboro, NC 27534	102 Livius Ct. Goldsboro, NC 27534	Irrigation	Yes	South
6 3529272838	435	Malcolm W. Yates Jr.	106 E. New Hope Rd. Goldsboro, NC	106 E. New Hope Rd. Goldsboro, NC	Irrigation	Yes	East
7 3529186337	475	Willie F. Smith	103 West New Hope Rd. Goldsboro, NC 27534	103 West New Hope Rd. Goldsboro, NC 27534	Irrigation	Yes	North
8 3529184471	585	Thomas A. Potter	107 West New Hope Rd. Goldsboro, NC	107 West New Hope Rd. Goldsboro, NC	Irrigation	Yes	Northwest
9 3529183474	665	Robert W. Sutton	1931 Pinemont Circle Goldsboro, NC	150 LaGrange Rd. LaGrange, NC 28551	Unknown	Unknown	Northwest
10 3529178355	570	Wesley H. & Carolyn Powell	103 N. Marion Dr. Goldsboro, NC 27534	103 N. Marion Dr. Goldsboro, NC 27534	Irrigation	Yes	South
11 3529271338	680	Patricia Kennedy	109 N. Marion Dr. Goldsboro, NC 27534	109 N. Marion Dr. Goldsboro, NC 27534	Irrigation	Yes	Southeast
12 3529272336	745	Timothy & Angela Sollars	111 N. Marion Dr. Goldsboro, NC 27534	111 N. Marion Dr. Goldsboro, NC 27534	Irrigation	Yes	Southeast
13 3529274333	885	Conrad & Maya Preedom	115 N. Marion Dr. Goldsboro, NC 27534	115 N. Marion Dr. Goldsboro, NC 27534	Irrigation	Yes	Southeast
14 3529270204	710	Boris Hrebenuyuk	202 Leigh Place Goldsboro, NC 27534	202 Leigh Place Goldsboro, NC 27534	Unknown	Unknown	South
15 3529179126	802	George & Jane Silver	206 Maplewood Dr. Goldsboro, NC 27534	206 Maplewood Dr. Goldsboro, NC 27534	Irrigation	Yes	South
16 3529271223	775	Evelyn & Joseph Kelly	204 Leigh Place Goldsboro, NC 27534	204 Leigh Place Goldsboro, NC 27534	Irrigation	Yes	Southeast
17 3529174232	820	David & Charlene Corbett	102 S. Marion Dr. Goldsboro, NC 27534	102 S. Marion Dr. Goldsboro, NC 27534	Irrigation	Yes	Southwest
18 3529176136	855	Roy & Elaine Nelson	201 Maplewood Dr. Goldsboro, NC 27534	201 Maplewood Dr. Goldsboro, NC 27534	Irrigation	Yes	South
19 3529272139	865	Robert & Sandra Bruns	205 Leigh Place Goldsboro, NC 27534	205 Leigh Place Goldsboro, NC 27534	Irrigation	Yes	Southeast
20 3529181497	845	Mary Anne & Anne P. Boughter	1922 Pinemont Circle Goldsboro, NC	1922 Pinemont Circle Goldsboro, NC	Irrigation	Yes	Northwest
21 3529180581	905	Brian D. Snyder	203 W. New Hope Rd. Goldsboro, NC	203 W. New Hope Rd. Goldsboro, NC	Irrigation	Yes	Northwest
22 3529182622	920	Jesse G. Presnell, Jr.	1920 Pinemont Circle Goldsboro, NC	1920 Pinemont Circle Goldsboro, NC	Irrigation	Yes	Northwest
23 3529185666	855	Vernell T. Grantham	1927 Pinemont Circle Goldsboro, NC	1927 Pinemont Circle Goldsboro, NC	Unknown	Unknown	Northwest
24 3529185777	925	William Jr. & Anna White	1925 Pinemont Circle Goldsboro, NC	1925 Pinemont Circle Goldsboro, NC	Irrigation	Yes	Northwest
25 3529280754	875	Joseph Turner	105 South Drive Goldsboro, NC	105 South Drive Goldsboro, NC	Irrigation	Yes	North

TABLE 5
WATER SUPPLY WELL INFORMATION
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Blvd.
Goldsboro, Wayne County, NC
UST Incident No. 6100
WR Project No. 02070955.00

WSW # Parcel ID	Distance from Source (feet)	Property Owner	Property Address	Owner Address	Use of Well	Municipal Water	Direction From Source
26 3529285374	825	Dora Hare	103 Forest Drive Goldsboro, NC 27534	103 Forest Drive Goldsboro, NC 27534	Disconnected	Yes	Northeast
27 3529285121	680	Leslie & Evelyn Ham	109 East New Hope Rd. Goldsboro, NC	109 East New Hope Rd. Goldsboro, NC	Disconnected	Yes	East
28 3529272008	970	Doris & Leroy Holmes	203 Leigh Place Goldsboro, NC	203 Leigh Place Goldsboro, NC	Inactive	Yes	Southeast
29 3529261929	1,005	Deborah E. Barsan	210 Maplewood Drive Goldsboro, NC 27534	210 Maplewood Drive Goldsboro, NC 27534	Irrigation	Yes	Southeast
30 3529168975	1,000	Lori & John Costa	207 Maplewood Drive Goldsboro, NC 27534	207 Maplewood Drive Goldsboro, NC 27534	Inactive	Yes	South
31 3529170979	835	James H. Jr. & Cheryl Ellis	2609 Burtus Dr. Goldsboro, NC 27534	2609 Burtus Dr. Goldsboro, NC 27534	Irrigation	Yes	West
32 3529182743	980	Aaron & Nancy Fail	1918 Pinemont Circle Goldsboro, NC	1918 Pinemont Circle Goldsboro, NC	Irrigation	Yes	Northwest
33 3529280905	985	Donna & John Edwards	301 Green Dr. Goldsboro, NC	301 Green Dr. Goldsboro, NC	Irrigation	Yes	North
34 3529283796	995	Joanne J. Roberts	1913 N. Berkeley Blvd. Goldsboro, NC	1913 N. Berkeley Blvd. Goldsboro, NC	Inactive	Yes	Northeast
35 3529185868	1,010	James Bitting	1923 Pinemont Circle Goldsboro, NC	1923 Pinemont Circle Goldsboro, NC	Irrigation	Yes	Northwest
36 3529182875	1,040	Bessie McKoy	1916 Pinemont Circle Goldsboro, NC	1916 Pinemont Circle Goldsboro, NC	Irrigation	Yes	Northwest
37 3529183906	1,140	John T. Gray & Joanna Etta	1914 Pinemont Circle Goldsboro, NC	1914 Pinemont Circle Goldsboro, NC	Unknown	Unknown	Northwest
38 3529089583	1,015	Milton L. & Opal Johnson	1900 Pinemont Circle Goldsboro, NC 27534	1900 Pinemont Circle Goldsboro, NC 27534	Irrigation	Yes	Northwest
39 3529088194	1,010	Howard C. Gerken	2605 Burtus Dr. Goldsboro, NC 27534	2605 Burtus Dr. Goldsboro, NC 27534	Irrigation	Yes	West
40 3529088202	1,120	Eric S. & Debbie Griffith	2603 Burtus Dr. Goldsboro, NC 27534	2603 Burtus Dr. Goldsboro, NC 27534	Irrigation	Yes	West
41 3529086482	1,210	Bobby R. West	300 W. New Hope Rd. Goldsboro, NC 27534	2600 Burtus Dr. Goldsboro, NC 27534	Irrigation	Yes	Northwest
42 3529077868	1,075	Dorothy Burris	2612 Burtus Dr. Goldsboro, NC 27534	2612 Burtus Dr. Goldsboro, NC 27534	Irrigation	Yes	West
43 3529076770	1,255	John B. Meeks Jr.	1619 Boyette Dr. Goldsboro, NC 27534	1619 Boyette Dr. Goldsboro, NC 27534	Inactive	Yes	Southwest
44 3529077569	1,120	Olga Markowitsch	1621 Boyette Dr. Goldsboro, NC 27534	1621 Boyette Dr. Goldsboro, NC 27534	Irrigation	Yes	Southwest
45 3529078467	1,125	Sharon H. Smith Etal.	1701 N. Berkeley Blvd. Goldsboro, NC	1701 N. Berkeley Blvd. Goldsboro, NC	Unknown	Unknown	Southwest
46 3529170120	1,185	David Crumpler	2705 Northwood Dr. Goldsboro, NC 27534	2705 Northwood Dr. Goldsboro, NC 27534	Sole Source*	No	Southwest
47 3529160999	1,215	J.R. Nickens	2707 Northwood Dr. Goldsboro, NC 27534	2707 Northwood Dr. Goldsboro, NC 27534	Irrigation	Yes	Southwest
48 3529163916	1,150	William & Marlene Bos	108 S. Marion Dr. Goldsboro, NC 27534	108 S. Marion Dr. Goldsboro, NC 27534	Irrigation	Yes	Southwest
49 3529288214	1,050	Roy S. Robinson	102 Forest Drive Goldsboro, NC 27534	102 Forest Drive Goldsboro, NC 27534	Irrigation	Yes	East
50 3529289322	1,145	Richard J. Harris Sr.	104 Forest Drive Goldsboro, NC 27534	104 Forest Drive Goldsboro, NC 27534	Irrigation	Yes	Northeast

TABLE 5
WATER SUPPLY WELL INFORMATION
Circle K Store #2720925 (Former Pantry Store No. 925)
1816 Berkeley Blvd.
Goldsboro, Wayne County, NC
UST Incident No. 6100
WR Project No. 02070955.00

WSW # Parcel ID	Distance from Source (feet)	Property Owner	Property Address	Owner Address	Use of Well	Municipal Water	Direction From Source
51 3529285374	1,050	Donnie M. Jr. & Rhonda W. Butts	107 Forest Dr. Goldsboro, NC 27534	107 Forest Dr. Goldsboro, NC 27534	Inactive	Yes	Northeast
52 3529289699	1,360	Robert K. Warren	203 Forest Dr. Goldsboro, NC 27534	203 Forest Dr. Goldsboro, NC 27534	Irrigation	Yes	Northeast
53 3529381550	1,430	Kristal D. Mitchell	202 Forest Dr. Goldsboro, NC 27534	202 Forest Dr. Goldsboro, NC 27534	Irrigation	Yes	Northeast
54 3529381220	1,295	Lee R. Grantham	204 Woodbine St. Goldsboro, NC 27534	204 Woodbine St. Goldsboro, NC 27534	Drinking & Irrigation	Yes	East
55 3529163826 3529163737	1,260	Franklin Douglas Rowley	110 & 112 S. Marion Dr. Goldsboro, NC 27534	110 & 112 S. Marion Dr. Goldsboro, NC 27534	Irrigation	Yes	Southwest
56 3529161850	1,340	Reba W. Barnes	2711 Northwood Dr. Goldsboro, NC 27534	2711 Northwood Dr. Goldsboro, NC 27534	Irrigation	Yes	Southwest
57 3529077078	1,390	William J. II & Rebecca Barber	1608 Berkeley Blvd. Goldsboro, NC 27534	1608 Berkeley Blvd. Goldsboro, NC 27534	Unknown	Unknown	Southwest
58 3529076333	1,400	Janet W. Potter	1613 N. Berkeley Blvd. Goldsboro, NC 27534	1613 N. Berkeley Blvd. Goldsboro, NC 27534	Irrigation	Yes	Southwest
59 3529074582	1,375	James P. Ussary	1614 Boyette Dr. Goldsboro, NC 27534	1614 Boyette Dr. Goldsboro, NC 27534	Irrigation	Yes	Southwest
60 3529074946	1,380	Francis & Vonda Nottingham	1613 Boyette Dr. Goldsboro, NC 27534	1613 Boyette Dr. Goldsboro, NC 27534	Irrigation	Yes	West
61 3529161689	1,425	Reba W. Barnes	2713 Northwood Dr. Goldsboro, NC 27534	2711 Northwood Dr. Goldsboro, NC 27534	Irrigation	Yes	Southwest
62 3529286452	935	Alice Edwards	105 Forest Dr. Goldsboro, NC 27534	105 Forest Dr. Goldsboro, NC 27534	Irrigation	Yes	Northeast
63 3529273335	820	William B. & Deborah Swartz	113 N. Marion Dr. Goldsboro, NC 27534	113 N. Marion Dr. Goldsboro, NC 27534	Irrigation	Yes	Southeast
64 3529171318	955	Russell & Beth Dawley	1708 N. Berkeley Blvd. Goldsboro, NC 27534	1708 N. Berkeley Blvd. Goldsboro, NC 27534	Inactive	Yes	Southwest
65 3529165928	1,035	Randy & Martha Guthrie	107 S. Marion Dr. Goldsboro, NC 27534	107 S. Marion Dr. Goldsboro, NC 27534	Irrigation	Yes	South
66 3529078830	1,045	Richard & Vicky Hill	2614 Burtus Dr. Goldsboro, NC 27534	2614 Burtus Dr. Goldsboro, NC 27534	Disconnected	Yes	West
67 3529177092	966	Eric & Jeanne Artzer	205 Maplewood Dr. Goldsboro, NC 27534	205 Maplewood Dr. Goldsboro, NC 27534	Irrigation	Yes	South
68 3529089303	1,000	James & Kimberly Weisiger	206 W. New Hope Rd. Goldsboro, NC 27534	206 W. New Hope Rd. Goldsboro, NC 27534	Swimming Pool & Irrigation	Yes	Northwest

Note: See Vicinity Map For Well Locations

* Only source of groundwater - used for drinking, bathing, etc.

Appendix A

Laboratory Analytical Results and COCs

Withers & Ravenel Eng. - Standard

Sample Delivery Group: L900436
Samples Received: 04/05/2017
Project Number: 02070955.00
Description: Pantry 925

Report To: Matt James
115 MacKenan Drive
Cary, NC 27511

Entire Report Reviewed By:



Jason Romer
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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MW-1 L900436-01 GW

			Collected by Austin Pote	Collected date/time 04/03/17 13:30	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 11:27	04/12/17 11:27	ACG

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

MW-2 L900436-02 GW

			Collected by Austin Pote	Collected date/time 04/03/17 13:20	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG967839	1	04/06/17 12:56	04/06/17 12:56	AMC
Wet Chemistry by Method 9056A	WG967514	1	04/06/17 08:30	04/06/17 08:30	KCF
Metals (ICP) by Method 6010C	WG967756	1	04/06/17 10:03	04/06/17 20:35	ST
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	200	04/13/17 10:37	04/13/17 10:37	JHH
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	25	04/12/17 11:44	04/12/17 11:44	ACG

MW-3 L900436-03 GW

			Collected by Austin Pote	Collected date/time 04/03/17 15:00	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 12:02	04/12/17 12:02	ACG

MW-4 L900436-04 GW

			Collected by Austin Pote	Collected date/time 04/03/17 15:05	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	10	04/12/17 13:11	04/12/17 13:11	ACG

MW-5 L900436-05 GW

			Collected by Austin Pote	Collected date/time 04/03/17 15:10	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	10	04/12/17 13:28	04/12/17 13:28	ACG
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	200	04/13/17 10:50	04/13/17 10:50	JHH

MW-7 L900436-06 GW

			Collected by Austin Pote	Collected date/time 04/03/17 13:50	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 13:45	04/12/17 13:45	ACG

MW-12 L900436-07 GW

			Collected by Austin Pote	Collected date/time 04/03/17 11:55	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 14:03	04/12/17 14:03	ACG

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



MW-13 L900436-08 GW

			Collected by Austin Pote	Collected date/time 04/03/17 11:50	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 14:20	04/12/17 14:20	ACG

¹ Cp

² Tc

³ Ss

MW-14 L900436-09 GW

			Collected by Austin Pote	Collected date/time 04/04/17 12:40	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 14:37	04/12/17 14:37	ACG
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	20	04/13/17 11:03	04/13/17 11:03	JHH

⁴ Cn

⁵ Sr

⁶ Qc

MW-15 L900436-10 GW

			Collected by Austin Pote	Collected date/time 04/04/17 11:10	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 14:55	04/12/17 14:55	ACG

⁷ Gl

⁸ Al

MW-16 L900436-11 GW

			Collected by Austin Pote	Collected date/time 04/04/17 12:20	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 15:12	04/12/17 15:12	ACG

⁹ Sc

MW-17 L900436-12 GW

			Collected by Austin Pote	Collected date/time 04/04/17 12:30	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 15:29	04/12/17 15:29	ACG

MW-18 L900436-13 GW

			Collected by Austin Pote	Collected date/time 04/04/17 12:50	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 15:47	04/12/17 15:47	ACG

MW-19 L900436-14 GW

			Collected by Austin Pote	Collected date/time 04/04/17 11:00	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 16:04	04/12/17 16:04	ACG

MW-21 L900436-15 GW

			Collected by Austin Pote	Collected date/time 04/03/17 11:40	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 2320 B-2011	WG967839	1	04/06/17 13:22	04/06/17 13:22	AMC
Wet Chemistry by Method 9056A	WG967514	1	04/06/17 08:45	04/06/17 08:45	KCF
Metals (ICP) by Method 6010C	WG967756	1	04/06/17 10:03	04/06/17 20:08	ST

ACCOUNT:

Withers & Ravenel Eng. - Standard

PROJECT:

02070955.00

SDG:

L900436

DATE/TIME:

04/14/17 09:32

PAGE:

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MW-26 L900436-16 GW

			Collected by Austin Pote	Collected date/time 04/03/17 11:45	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 16:21	04/12/17 16:21	ACG

¹ Cp² Tc³ Ss

MW-43 L900436-17 GW

			Collected by Austin Pote	Collected date/time 04/03/17 13:40	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 16:56	04/12/17 16:56	ACG
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	25	04/13/17 11:16	04/13/17 11:16	JHH

⁴ Cn⁵ Sr⁶ Qc

WSW-2 L900436-18 GW

			Collected by Austin Pote	Collected date/time 04/04/17 13:10	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 17:13	04/12/17 17:13	ACG
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/13/17 10:25	04/13/17 10:25	JHH

⁷ Gl⁸ Al⁹ Sc

WSW-4 L900436-19 GW

			Collected by Austin Pote	Collected date/time 04/04/17 13:15	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 17:31	04/12/17 17:31	ACG

WSW-6 L900436-20 GW

			Collected by Austin Pote	Collected date/time 04/04/17 13:30	Received date/time 04/05/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG968119	1	04/12/17 17:48	04/12/17 17:48	ACG



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jason Romer
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

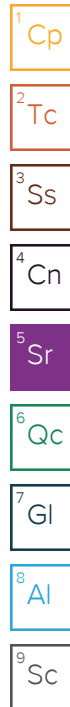
⁸ Al

⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 11:27	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 11:27	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 11:27	WG968119
Benzene	U		0.331	1.00	1	04/12/2017 11:27	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 11:27	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 11:27	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 11:27	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 11:27	WG968119
n-Butylbenzene	U		0.361	1.00	1	04/12/2017 11:27	WG968119
sec-Butylbenzene	U		0.365	1.00	1	04/12/2017 11:27	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 11:27	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 11:27	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 11:27	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 11:27	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 11:27	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 11:27	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 11:27	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 11:27	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 11:27	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 11:27	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 11:27	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 11:27	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 11:27	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 11:27	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 11:27	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 11:27	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 11:27	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 11:27	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 11:27	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 11:27	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 11:27	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 11:27	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 11:27	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 11:27	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 11:27	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 11:27	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 11:27	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 11:27	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 11:27	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 11:27	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 11:27	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 11:27	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 11:27	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 11:27	WG968119
Naphthalene	U		1.00	5.00	1	04/12/2017 11:27	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 11:27	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 11:27	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 11:27	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 11:27	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 11:27	WG968119
Toluene	U		0.412	1.00	1	04/12/2017 11:27	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 11:27	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 11:27	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 11:27	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 11:27	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 11:27	WG968119





Collected date/time: 04/03/17 13:30

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 11:27	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 11:27	WG968119
1,2,4-Trimethylbenzene	U		0.373	1.00	1	04/12/2017 11:27	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 11:27	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 11:27	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 11:27	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 11:27	WG968119
(S) Toluene-d8	105			80.0-120		04/12/2017 11:27	WG968119
(S) Dibromofluoromethane	101			76.0-123		04/12/2017 11:27	WG968119
(S) α,α,α-Trifluorotoluene	98.5			80.0-120		04/12/2017 11:27	WG968119
(S) 4-Bromofluorobenzene	94.9			80.0-120		04/12/2017 11:27	WG968119

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity	45000		2710	20000	1	04/06/2017 12:56	WG967839

Wet Chemistry by Method 9056A

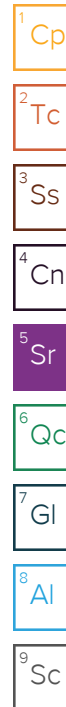
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Nitrate	288	T8	22.7	100	1	04/06/2017 08:30	WG967514
Sulfate	6730		77.4	5000	1	04/06/2017 08:30	WG967514

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Iron	15200		14.1	100	1	04/06/2017 20:35	WG967756
Magnesium	2750		11.1	1000	1	04/06/2017 20:35	WG967756
Manganese	38.5		1.20	10.0	1	04/06/2017 20:35	WG967756

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		250	1250	25	04/12/2017 11:44	WG968119
Acrolein	U	J4	222	1250	25	04/12/2017 11:44	WG968119
Acrylonitrile	U		46.8	250	25	04/12/2017 11:44	WG968119
Benzene	101		8.28	25.0	25	04/12/2017 11:44	WG968119
Bromobenzene	U		8.80	25.0	25	04/12/2017 11:44	WG968119
Bromodichloromethane	U		9.50	25.0	25	04/12/2017 11:44	WG968119
Bromoform	U		11.7	25.0	25	04/12/2017 11:44	WG968119
Bromomethane	U		21.6	125	25	04/12/2017 11:44	WG968119
n-Butylbenzene	10.7	J	9.02	25.0	25	04/12/2017 11:44	WG968119
sec-Butylbenzene	13.8	J	9.12	25.0	25	04/12/2017 11:44	WG968119
tert-Butylbenzene	U		9.98	25.0	25	04/12/2017 11:44	WG968119
Carbon tetrachloride	U		9.48	25.0	25	04/12/2017 11:44	WG968119
Chlorobenzene	U		8.70	25.0	25	04/12/2017 11:44	WG968119
Chlorodibromomethane	U		8.18	25.0	25	04/12/2017 11:44	WG968119
Chloroethane	U		11.3	125	25	04/12/2017 11:44	WG968119
Chloroform	U		8.10	125	25	04/12/2017 11:44	WG968119
Chloromethane	U		6.90	62.5	25	04/12/2017 11:44	WG968119
2-Chlorotoluene	U		9.38	25.0	25	04/12/2017 11:44	WG968119
4-Chlorotoluene	U		8.78	25.0	25	04/12/2017 11:44	WG968119
1,2-Dibromo-3-Chloropropane	U		33.2	125	25	04/12/2017 11:44	WG968119
1,2-Dibromoethane	U		9.52	25.0	25	04/12/2017 11:44	WG968119
Dibromomethane	U		8.65	25.0	25	04/12/2017 11:44	WG968119
1,2-Dichlorobenzene	U		8.72	25.0	25	04/12/2017 11:44	WG968119
1,3-Dichlorobenzene	U		5.50	25.0	25	04/12/2017 11:44	WG968119
1,4-Dichlorobenzene	U		6.85	25.0	25	04/12/2017 11:44	WG968119
Dichlorodifluoromethane	U		13.8	125	25	04/12/2017 11:44	WG968119
1,1-Dichloroethane	U		6.48	25.0	25	04/12/2017 11:44	WG968119
1,2-Dichloroethane	U		9.02	25.0	25	04/12/2017 11:44	WG968119
1,1-Dichloroethene	U		9.95	25.0	25	04/12/2017 11:44	WG968119
cis-1,2-Dichloroethene	U		6.50	25.0	25	04/12/2017 11:44	WG968119
trans-1,2-Dichloroethene	U		9.90	25.0	25	04/12/2017 11:44	WG968119
1,2-Dichloropropane	U		7.65	25.0	25	04/12/2017 11:44	WG968119
1,1-Dichloropropene	U		8.80	25.0	25	04/12/2017 11:44	WG968119
1,3-Dichloropropane	U		9.15	25.0	25	04/12/2017 11:44	WG968119
2,2-Dichloropropane	U		8.02	25.0	25	04/12/2017 11:44	WG968119
Di-isopropyl ether	U		8.00	25.0	25	04/12/2017 11:44	WG968119





Collected date/time: 04/03/17 13:20

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Ethylbenzene	1720		9.60	25.0	25	04/12/2017 11:44	WG968119
Hexachloro-1,3-butadiene	U		6.40	25.0	25	04/12/2017 11:44	WG968119
Isopropylbenzene	82.8		8.15	25.0	25	04/12/2017 11:44	WG968119
p-Isopropyltoluene	29.4		8.75	25.0	25	04/12/2017 11:44	WG968119
2-Butanone (MEK)	U		98.2	250	25	04/12/2017 11:44	WG968119
Methylene Chloride	U		25.0	125	25	04/12/2017 11:44	WG968119
4-Methyl-2-pentanone (MIBK)	U		53.5	250	25	04/12/2017 11:44	WG968119
Methyl tert-butyl ether	U		9.18	25.0	25	04/12/2017 11:44	WG968119
Naphthalene	316	B	25.0	125	25	04/12/2017 11:44	WG968119
n-Propylbenzene	178		8.72	25.0	25	04/12/2017 11:44	WG968119
Styrene	U		7.68	25.0	25	04/12/2017 11:44	WG968119
1,1,1,2-Tetrachloroethane	U		9.62	25.0	25	04/12/2017 11:44	WG968119
1,1,2,2-Tetrachloroethane	U		3.25	25.0	25	04/12/2017 11:44	WG968119
Tetrachloroethene	U		9.30	25.0	25	04/12/2017 11:44	WG968119
Toluene	4990		82.4	200	200	04/13/2017 10:37	WG968119
1,2,3-Trichlorobenzene	U		5.75	25.0	25	04/12/2017 11:44	WG968119
1,2,4-Trichlorobenzene	U		8.88	25.0	25	04/12/2017 11:44	WG968119
1,1,1-Trichloroethane	U		7.98	25.0	25	04/12/2017 11:44	WG968119
1,1,2-Trichloroethane	U		9.58	25.0	25	04/12/2017 11:44	WG968119
Trichloroethene	U		9.95	25.0	25	04/12/2017 11:44	WG968119
Trichlorofluoromethane	U		30.0	125	25	04/12/2017 11:44	WG968119
1,2,3-Trichloropropane	U		20.2	62.5	25	04/12/2017 11:44	WG968119
1,2,4-Trimethylbenzene	1490		9.32	25.0	25	04/12/2017 11:44	WG968119
1,3,5-Trimethylbenzene	435		9.68	25.0	25	04/12/2017 11:44	WG968119
Vinyl chloride	U		6.48	25.0	25	04/12/2017 11:44	WG968119
o-Xylene	2920		8.52	25.0	25	04/12/2017 11:44	WG968119
m&p-Xylenes	6320		18.0	50.0	25	04/12/2017 11:44	WG968119
(S) Toluene-d8	103			80.0-120		04/13/2017 10:37	WG968119
(S) Toluene-d8	106			80.0-120		04/12/2017 11:44	WG968119
(S) Dibromofluoromethane	102			76.0-123		04/12/2017 11:44	WG968119
(S) Dibromofluoromethane	103			76.0-123		04/13/2017 10:37	WG968119
(S) a,a,a-Trifluorotoluene	98.9			80.0-120		04/12/2017 11:44	WG968119
(S) a,a,a-Trifluorotoluene	101			80.0-120		04/13/2017 10:37	WG968119
(S) 4-Bromofluorobenzene	99.9			80.0-120		04/13/2017 10:37	WG968119
(S) 4-Bromofluorobenzene	108			80.0-120		04/12/2017 11:44	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 12:02	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 12:02	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 12:02	WG968119
Benzene	U		0.331	1.00	1	04/12/2017 12:02	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 12:02	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 12:02	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 12:02	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 12:02	WG968119
n-Butylbenzene	U		0.361	1.00	1	04/12/2017 12:02	WG968119
sec-Butylbenzene	U		0.365	1.00	1	04/12/2017 12:02	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 12:02	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 12:02	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 12:02	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 12:02	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 12:02	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 12:02	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 12:02	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 12:02	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 12:02	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 12:02	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 12:02	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 12:02	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 12:02	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 12:02	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 12:02	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 12:02	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 12:02	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 12:02	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 12:02	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 12:02	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 12:02	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 12:02	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 12:02	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 12:02	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 12:02	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 12:02	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 12:02	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 12:02	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 12:02	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 12:02	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 12:02	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 12:02	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 12:02	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 12:02	WG968119
Naphthalene	1.35	B J V3	1.00	5.00	1	04/12/2017 12:02	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 12:02	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 12:02	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 12:02	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 12:02	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 12:02	WG968119
Toluene	U		0.412	1.00	1	04/12/2017 12:02	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 12:02	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 12:02	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 12:02	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 12:02	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 12:02	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 12:02	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 12:02	WG968119
1,2,4-Trimethylbenzene	U		0.373	1.00	1	04/12/2017 12:02	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 12:02	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 12:02	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 12:02	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 12:02	WG968119
(S) Toluene-d8	106			80.0-120		04/12/2017 12:02	WG968119
(S) Dibromofluoromethane	102			76.0-123		04/12/2017 12:02	WG968119
(S) α,α,α-Trifluorotoluene	98.6			80.0-120		04/12/2017 12:02	WG968119
(S) 4-Bromofluorobenzene	95.2			80.0-120		04/12/2017 12:02	WG968119

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	125	J	100	500	10	04/12/2017 13:11	WG968119
Acrolein	U	J4	88.7	500	10	04/12/2017 13:11	WG968119
Acrylonitrile	U		18.7	100	10	04/12/2017 13:11	WG968119
Benzene	8.29	J	3.31	10.0	10	04/12/2017 13:11	WG968119
Bromobenzene	U		3.52	10.0	10	04/12/2017 13:11	WG968119
Bromodichloromethane	U		3.80	10.0	10	04/12/2017 13:11	WG968119
Bromoform	U		4.69	10.0	10	04/12/2017 13:11	WG968119
Bromomethane	U		8.66	50.0	10	04/12/2017 13:11	WG968119
n-Butylbenzene	13.6		3.61	10.0	10	04/12/2017 13:11	WG968119
sec-Butylbenzene	11.2		3.65	10.0	10	04/12/2017 13:11	WG968119
tert-Butylbenzene	U		3.99	10.0	10	04/12/2017 13:11	WG968119
Carbon tetrachloride	U		3.79	10.0	10	04/12/2017 13:11	WG968119
Chlorobenzene	U		3.48	10.0	10	04/12/2017 13:11	WG968119
Chlorodibromomethane	U		3.27	10.0	10	04/12/2017 13:11	WG968119
Chloroethane	U		4.53	50.0	10	04/12/2017 13:11	WG968119
Chloroform	U		3.24	50.0	10	04/12/2017 13:11	WG968119
Chloromethane	U		2.76	25.0	10	04/12/2017 13:11	WG968119
2-Chlorotoluene	U		3.75	10.0	10	04/12/2017 13:11	WG968119
4-Chlorotoluene	U		3.51	10.0	10	04/12/2017 13:11	WG968119
1,2-Dibromo-3-Chloropropane	U		13.3	50.0	10	04/12/2017 13:11	WG968119
1,2-Dibromoethane	U		3.81	10.0	10	04/12/2017 13:11	WG968119
Dibromomethane	U		3.46	10.0	10	04/12/2017 13:11	WG968119
1,2-Dichlorobenzene	U		3.49	10.0	10	04/12/2017 13:11	WG968119
1,3-Dichlorobenzene	U		2.20	10.0	10	04/12/2017 13:11	WG968119
1,4-Dichlorobenzene	U		2.74	10.0	10	04/12/2017 13:11	WG968119
Dichlorodifluoromethane	U		5.51	50.0	10	04/12/2017 13:11	WG968119
1,1-Dichloroethane	U		2.59	10.0	10	04/12/2017 13:11	WG968119
1,2-Dichloroethane	U		3.61	10.0	10	04/12/2017 13:11	WG968119
1,1-Dichloroethene	U		3.98	10.0	10	04/12/2017 13:11	WG968119
cis-1,2-Dichloroethene	U		2.60	10.0	10	04/12/2017 13:11	WG968119
trans-1,2-Dichloroethene	U		3.96	10.0	10	04/12/2017 13:11	WG968119
1,2-Dichloropropane	U		3.06	10.0	10	04/12/2017 13:11	WG968119
1,1-Dichloropropene	U		3.52	10.0	10	04/12/2017 13:11	WG968119
1,3-Dichloropropane	U		3.66	10.0	10	04/12/2017 13:11	WG968119
2,2-Dichloropropane	U		3.21	10.0	10	04/12/2017 13:11	WG968119
Di-isopropyl ether	U		3.20	10.0	10	04/12/2017 13:11	WG968119
Ethylbenzene	1860		3.84	10.0	10	04/12/2017 13:11	WG968119
Hexachloro-1,3-butadiene	U		2.56	10.0	10	04/12/2017 13:11	WG968119
Isopropylbenzene	89.1		3.26	10.0	10	04/12/2017 13:11	WG968119
p-Isopropyltoluene	21.8		3.50	10.0	10	04/12/2017 13:11	WG968119
2-Butanone (MEK)	U		39.3	100	10	04/12/2017 13:11	WG968119
Methylene Chloride	U		10.0	50.0	10	04/12/2017 13:11	WG968119
4-Methyl-2-pentanone (MIBK)	U		21.4	100	10	04/12/2017 13:11	WG968119
Methyl tert-butyl ether	U		3.67	10.0	10	04/12/2017 13:11	WG968119
Naphthalene	357		10.0	50.0	10	04/12/2017 13:11	WG968119
n-Propylbenzene	234		3.49	10.0	10	04/12/2017 13:11	WG968119
Styrene	U		3.07	10.0	10	04/12/2017 13:11	WG968119
1,1,1,2-Tetrachloroethane	U		3.85	10.0	10	04/12/2017 13:11	WG968119
1,1,2,2-Tetrachloroethane	U		1.30	10.0	10	04/12/2017 13:11	WG968119
Tetrachloroethene	U		3.72	10.0	10	04/12/2017 13:11	WG968119
Toluene	73.3		4.12	10.0	10	04/12/2017 13:11	WG968119
1,2,3-Trichlorobenzene	U		2.30	10.0	10	04/12/2017 13:11	WG968119
1,2,4-Trichlorobenzene	U		3.55	10.0	10	04/12/2017 13:11	WG968119
1,1,1-Trichloroethane	U		3.19	10.0	10	04/12/2017 13:11	WG968119
1,1,2-Trichloroethane	U		3.83	10.0	10	04/12/2017 13:11	WG968119
Trichloroethene	U		3.98	10.0	10	04/12/2017 13:11	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		12.0	50.0	10	04/12/2017 13:11	WG968119
1,2,3-Trichloropropane	U		8.07	25.0	10	04/12/2017 13:11	WG968119
1,2,4-Trimethylbenzene	1520		3.73	10.0	10	04/12/2017 13:11	WG968119
1,3,5-Trimethylbenzene	394		3.87	10.0	10	04/12/2017 13:11	WG968119
Vinyl chloride	U		2.59	10.0	10	04/12/2017 13:11	WG968119
o-Xylene	1940		3.41	10.0	10	04/12/2017 13:11	WG968119
m&p-Xylenes	3120		7.19	20.0	10	04/12/2017 13:11	WG968119
(S) Toluene-d8	107			80.0-120		04/12/2017 13:11	WG968119
(S) Dibromofluoromethane	100			76.0-123		04/12/2017 13:11	WG968119
(S) a,a,a-Trifluorotoluene	97.6			80.0-120		04/12/2017 13:11	WG968119
(S) 4-Bromofluorobenzene	109			80.0-120		04/12/2017 13:11	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	126	J	100	500	10	04/12/2017 13:28	WG968119
Acrolein	U	J4	88.7	500	10	04/12/2017 13:28	WG968119
Acrylonitrile	U		18.7	100	10	04/12/2017 13:28	WG968119
Benzene	348		3.31	10.0	10	04/12/2017 13:28	WG968119
Bromobenzene	U		3.52	10.0	10	04/12/2017 13:28	WG968119
Bromodichloromethane	U		3.80	10.0	10	04/12/2017 13:28	WG968119
Bromoform	U		4.69	10.0	10	04/12/2017 13:28	WG968119
Bromomethane	U		8.66	50.0	10	04/12/2017 13:28	WG968119
n-Butylbenzene	10.7		3.61	10.0	10	04/12/2017 13:28	WG968119
sec-Butylbenzene	10.9		3.65	10.0	10	04/12/2017 13:28	WG968119
tert-Butylbenzene	188		3.99	10.0	10	04/12/2017 13:28	WG968119
Carbon tetrachloride	U		3.79	10.0	10	04/12/2017 13:28	WG968119
Chlorobenzene	U		3.48	10.0	10	04/12/2017 13:28	WG968119
Chlorodibromomethane	U		3.27	10.0	10	04/12/2017 13:28	WG968119
Chloroethane	U		4.53	50.0	10	04/12/2017 13:28	WG968119
Chloroform	U		3.24	50.0	10	04/12/2017 13:28	WG968119
Chloromethane	U		2.76	25.0	10	04/12/2017 13:28	WG968119
2-Chlorotoluene	U		3.75	10.0	10	04/12/2017 13:28	WG968119
4-Chlorotoluene	U		3.51	10.0	10	04/12/2017 13:28	WG968119
1,2-Dibromo-3-Chloropropane	U		13.3	50.0	10	04/12/2017 13:28	WG968119
1,2-Dibromoethane	U		3.81	10.0	10	04/12/2017 13:28	WG968119
Dibromomethane	U		3.46	10.0	10	04/12/2017 13:28	WG968119
1,2-Dichlorobenzene	U		3.49	10.0	10	04/12/2017 13:28	WG968119
1,3-Dichlorobenzene	U		2.20	10.0	10	04/12/2017 13:28	WG968119
1,4-Dichlorobenzene	U		2.74	10.0	10	04/12/2017 13:28	WG968119
Dichlorodifluoromethane	U		5.51	50.0	10	04/12/2017 13:28	WG968119
1,1-Dichloroethane	U		2.59	10.0	10	04/12/2017 13:28	WG968119
1,2-Dichloroethane	U		3.61	10.0	10	04/12/2017 13:28	WG968119
1,1-Dichloroethene	U		3.98	10.0	10	04/12/2017 13:28	WG968119
cis-1,2-Dichloroethene	U		2.60	10.0	10	04/12/2017 13:28	WG968119
trans-1,2-Dichloroethene	U		3.96	10.0	10	04/12/2017 13:28	WG968119
1,2-Dichloropropane	U		3.06	10.0	10	04/12/2017 13:28	WG968119
1,1-Dichloropropene	U		3.52	10.0	10	04/12/2017 13:28	WG968119
1,3-Dichloropropane	U		3.66	10.0	10	04/12/2017 13:28	WG968119
2,2-Dichloropropane	U		3.21	10.0	10	04/12/2017 13:28	WG968119
Di-isopropyl ether	U		3.20	10.0	10	04/12/2017 13:28	WG968119
Ethylbenzene	1640		76.8	200	200	04/13/2017 10:50	WG968119
Hexachloro-1,3-butadiene	U		2.56	10.0	10	04/12/2017 13:28	WG968119
Isopropylbenzene	70.0		3.26	10.0	10	04/12/2017 13:28	WG968119
p-Isopropyltoluene	12.3		3.50	10.0	10	04/12/2017 13:28	WG968119
2-Butanone (MEK)	U		39.3	100	10	04/12/2017 13:28	WG968119
Methylene Chloride	U		10.0	50.0	10	04/12/2017 13:28	WG968119
4-Methyl-2-pentanone (MIBK)	U		21.4	100	10	04/12/2017 13:28	WG968119
Methyl tert-butyl ether	U		3.67	10.0	10	04/12/2017 13:28	WG968119
Naphthalene	488		10.0	50.0	10	04/12/2017 13:28	WG968119
n-Propylbenzene	195		3.49	10.0	10	04/12/2017 13:28	WG968119
Styrene	U		3.07	10.0	10	04/12/2017 13:28	WG968119
1,1,1,2-Tetrachloroethane	U		3.85	10.0	10	04/12/2017 13:28	WG968119
1,1,2,2-Tetrachloroethane	U		1.30	10.0	10	04/12/2017 13:28	WG968119
Tetrachloroethene	U		3.72	10.0	10	04/12/2017 13:28	WG968119
Toluene	5490		82.4	200	200	04/13/2017 10:50	WG968119
1,2,3-Trichlorobenzene	U		2.30	10.0	10	04/12/2017 13:28	WG968119
1,2,4-Trichlorobenzene	U		3.55	10.0	10	04/12/2017 13:28	WG968119
1,1,1-Trichloroethane	U		3.19	10.0	10	04/12/2017 13:28	WG968119
1,1,2-Trichloroethane	U		3.83	10.0	10	04/12/2017 13:28	WG968119
Trichloroethene	U		3.98	10.0	10	04/12/2017 13:28	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 04/03/17 15:10

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		12.0	50.0	10	04/12/2017 13:28	WG968119
1,2,3-Trichloropropane	U		8.07	25.0	10	04/12/2017 13:28	WG968119
1,2,4-Trimethylbenzene	1440		3.73	10.0	10	04/12/2017 13:28	WG968119
1,3,5-Trimethylbenzene	321		3.87	10.0	10	04/12/2017 13:28	WG968119
Vinyl chloride	U		2.59	10.0	10	04/12/2017 13:28	WG968119
o-Xylene	1200		3.41	10.0	10	04/12/2017 13:28	WG968119
m&p-Xylenes	4340		144	400	200	04/13/2017 10:50	WG968119
(S) Toluene-d8	103			80.0-120		04/13/2017 10:50	WG968119
(S) Toluene-d8	110			80.0-120		04/12/2017 13:28	WG968119
(S) Dibromofluoromethane	99.0			76.0-123		04/12/2017 13:28	WG968119
(S) Dibromofluoromethane	104			76.0-123		04/13/2017 10:50	WG968119
(S) a,a,a-Trifluorotoluene	100			80.0-120		04/12/2017 13:28	WG968119
(S) a,a,a-Trifluorotoluene	101			80.0-120		04/13/2017 10:50	WG968119
(S) 4-Bromofluorobenzene	98.2			80.0-120		04/13/2017 10:50	WG968119
(S) 4-Bromofluorobenzene	104			80.0-120		04/12/2017 13:28	WG968119

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	11.2	J	10.0	50.0	1	04/12/2017 13:45	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 13:45	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 13:45	WG968119
Benzene	1.59		0.331	1.00	1	04/12/2017 13:45	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 13:45	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 13:45	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 13:45	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 13:45	WG968119
n-Butylbenzene	0.815	J	0.361	1.00	1	04/12/2017 13:45	WG968119
sec-Butylbenzene	0.596	J	0.365	1.00	1	04/12/2017 13:45	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 13:45	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 13:45	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 13:45	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 13:45	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 13:45	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 13:45	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 13:45	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 13:45	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 13:45	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 13:45	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 13:45	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 13:45	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 13:45	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 13:45	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 13:45	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 13:45	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 13:45	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 13:45	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 13:45	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 13:45	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 13:45	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 13:45	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 13:45	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 13:45	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 13:45	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 13:45	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 13:45	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 13:45	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 13:45	WG968119
p-Isopropyltoluene	5.35		0.350	1.00	1	04/12/2017 13:45	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 13:45	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 13:45	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 13:45	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 13:45	WG968119
Naphthalene	4.86	B J	1.00	5.00	1	04/12/2017 13:45	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 13:45	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 13:45	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 13:45	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 13:45	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 13:45	WG968119
Toluene	U		0.412	1.00	1	04/12/2017 13:45	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 13:45	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 13:45	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 13:45	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 13:45	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 13:45	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 04/03/17 13:50

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 13:45	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 13:45	WG968119
1,2,4-Trimethylbenzene	5.40		0.373	1.00	1	04/12/2017 13:45	WG968119
1,3,5-Trimethylbenzene	2.28		0.387	1.00	1	04/12/2017 13:45	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 13:45	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 13:45	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 13:45	WG968119
(S) Toluene-d8	107			80.0-120		04/12/2017 13:45	WG968119
(S) Dibromofluoromethane	98.9			76.0-123		04/12/2017 13:45	WG968119
(S) α,α,α-Trifluorotoluene	99.9			80.0-120		04/12/2017 13:45	WG968119
(S) 4-Bromofluorobenzene	99.1			80.0-120		04/12/2017 13:45	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	30.7	J	10.0	50.0	1	04/12/2017 14:03	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 14:03	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 14:03	WG968119
Benzene	5.45		0.331	1.00	1	04/12/2017 14:03	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 14:03	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 14:03	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 14:03	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 14:03	WG968119
n-Butylbenzene	1.21		0.361	1.00	1	04/12/2017 14:03	WG968119
sec-Butylbenzene	1.33		0.365	1.00	1	04/12/2017 14:03	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 14:03	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 14:03	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 14:03	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 14:03	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 14:03	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 14:03	WG968119
Chloromethane	1.88	J	0.276	2.50	1	04/12/2017 14:03	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 14:03	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 14:03	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 14:03	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 14:03	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 14:03	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 14:03	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 14:03	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 14:03	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 14:03	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 14:03	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 14:03	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 14:03	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 14:03	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 14:03	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 14:03	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 14:03	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 14:03	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 14:03	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 14:03	WG968119
Ethylbenzene	11.6		0.384	1.00	1	04/12/2017 14:03	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 14:03	WG968119
Isopropylbenzene	4.10		0.326	1.00	1	04/12/2017 14:03	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 14:03	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 14:03	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 14:03	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 14:03	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 14:03	WG968119
Naphthalene	4.92	B J	1.00	5.00	1	04/12/2017 14:03	WG968119
n-Propylbenzene	10.9		0.349	1.00	1	04/12/2017 14:03	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 14:03	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 14:03	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 14:03	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 14:03	WG968119
Toluene	0.897	J	0.412	1.00	1	04/12/2017 14:03	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 14:03	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 14:03	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 14:03	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 14:03	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 14:03	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 14:03	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 14:03	WG968119
1,2,4-Trimethylbenzene	25.4		0.373	1.00	1	04/12/2017 14:03	WG968119
1,3,5-Trimethylbenzene	1.36		0.387	1.00	1	04/12/2017 14:03	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 14:03	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 14:03	WG968119
m&p-Xylenes	3.54		0.719	2.00	1	04/12/2017 14:03	WG968119
(S) Toluene-d8	106			80.0-120		04/12/2017 14:03	WG968119
(S) Dibromofluoromethane	101			76.0-123		04/12/2017 14:03	WG968119
(S) a,a,a-Trifluorotoluene	100			80.0-120		04/12/2017 14:03	WG968119
(S) 4-Bromofluorobenzene	97.7			80.0-120		04/12/2017 14:03	WG968119

1
Cp2
Tc3
Ss4
Cn5
Sr6
Qc7
Gl8
Al9
Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 14:20	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 14:20	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 14:20	WG968119
Benzene	U		0.331	1.00	1	04/12/2017 14:20	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 14:20	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 14:20	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 14:20	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 14:20	WG968119
n-Butylbenzene	U		0.361	1.00	1	04/12/2017 14:20	WG968119
sec-Butylbenzene	U		0.365	1.00	1	04/12/2017 14:20	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 14:20	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 14:20	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 14:20	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 14:20	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 14:20	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 14:20	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 14:20	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 14:20	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 14:20	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 14:20	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 14:20	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 14:20	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 14:20	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 14:20	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 14:20	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 14:20	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 14:20	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 14:20	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 14:20	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 14:20	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 14:20	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 14:20	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 14:20	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 14:20	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 14:20	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 14:20	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 14:20	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 14:20	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 14:20	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 14:20	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 14:20	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 14:20	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 14:20	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 14:20	WG968119
Naphthalene	U		1.00	5.00	1	04/12/2017 14:20	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 14:20	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 14:20	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 14:20	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 14:20	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 14:20	WG968119
Toluene	U		0.412	1.00	1	04/12/2017 14:20	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 14:20	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 14:20	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 14:20	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 14:20	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 14:20	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 14:20	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 14:20	WG968119
1,2,4-Trimethylbenzene	U		0.373	1.00	1	04/12/2017 14:20	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 14:20	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 14:20	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 14:20	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 14:20	WG968119
(S) Toluene-d8	105			80.0-120		04/12/2017 14:20	WG968119
(S) Dibromofluoromethane	100			76.0-123		04/12/2017 14:20	WG968119
(S) a,a,a-Trifluorotoluene	97.3			80.0-120		04/12/2017 14:20	WG968119
(S) 4-Bromofluorobenzene	97.8			80.0-120		04/12/2017 14:20	WG968119

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Collected date/time: 04/04/17 12:40

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	45.2	J	10.0	50.0	1	04/12/2017 14:37	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 14:37	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 14:37	WG968119
Benzene	56.2		0.331	1.00	1	04/12/2017 14:37	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 14:37	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 14:37	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 14:37	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 14:37	WG968119
n-Butylbenzene	4.52		0.361	1.00	1	04/12/2017 14:37	WG968119
sec-Butylbenzene	3.20		0.365	1.00	1	04/12/2017 14:37	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 14:37	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 14:37	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 14:37	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 14:37	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 14:37	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 14:37	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 14:37	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 14:37	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 14:37	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 14:37	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 14:37	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 14:37	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 14:37	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 14:37	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 14:37	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 14:37	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 14:37	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 14:37	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 14:37	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 14:37	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 14:37	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 14:37	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 14:37	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 14:37	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 14:37	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 14:37	WG968119
Ethylbenzene	274		7.68	20.0	20	04/13/2017 11:03	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 14:37	WG968119
Isopropylbenzene	26.0		0.326	1.00	1	04/12/2017 14:37	WG968119
p-Isopropyltoluene	2.03		0.350	1.00	1	04/12/2017 14:37	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 14:37	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 14:37	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 14:37	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 14:37	WG968119
Naphthalene	133		1.00	5.00	1	04/12/2017 14:37	WG968119
n-Propylbenzene	50.1		0.349	1.00	1	04/12/2017 14:37	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 14:37	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 14:37	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 14:37	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 14:37	WG968119
Toluene	212		8.24	20.0	20	04/13/2017 11:03	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 14:37	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 14:37	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 14:37	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 14:37	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 14:37	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

ACCOUNT:

Withers & Ravenel Eng. - Standard

PROJECT:

02070955.00

SDG:

L900436

DATE/TIME:

04/14/17 09:32

PAGE:

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Collected date/time: 04/04/17 12:40

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 14:37	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 14:37	WG968119
1,2,4-Trimethylbenzene	92.2		0.373	1.00	1	04/12/2017 14:37	WG968119
1,3,5-Trimethylbenzene	35.0		0.387	1.00	1	04/12/2017 14:37	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 14:37	WG968119
o-Xylene	60.7		0.341	1.00	1	04/12/2017 14:37	WG968119
m&p-Xylenes	170		0.719	2.00	1	04/12/2017 14:37	WG968119
(S) Toluene-d8	102			80.0-120		04/13/2017 11:03	WG968119
(S) Toluene-d8	104			80.0-120		04/12/2017 14:37	WG968119
(S) Dibromofluoromethane	99.7			76.0-123		04/12/2017 14:37	WG968119
(S) Dibromofluoromethane	104			76.0-123		04/13/2017 11:03	WG968119
(S) a,a,a-Trifluorotoluene	98.1			80.0-120		04/12/2017 14:37	WG968119
(S) a,a,a-Trifluorotoluene	101			80.0-120		04/13/2017 11:03	WG968119
(S) 4-Bromofluorobenzene	98.1			80.0-120		04/13/2017 11:03	WG968119
(S) 4-Bromofluorobenzene	110			80.0-120		04/12/2017 14:37	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 14:55	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 14:55	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 14:55	WG968119
Benzene	U		0.331	1.00	1	04/12/2017 14:55	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 14:55	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 14:55	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 14:55	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 14:55	WG968119
n-Butylbenzene	U		0.361	1.00	1	04/12/2017 14:55	WG968119
sec-Butylbenzene	U		0.365	1.00	1	04/12/2017 14:55	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 14:55	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 14:55	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 14:55	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 14:55	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 14:55	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 14:55	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 14:55	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 14:55	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 14:55	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 14:55	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 14:55	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 14:55	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 14:55	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 14:55	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 14:55	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 14:55	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 14:55	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 14:55	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 14:55	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 14:55	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 14:55	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 14:55	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 14:55	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 14:55	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 14:55	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 14:55	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 14:55	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 14:55	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 14:55	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 14:55	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 14:55	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 14:55	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 14:55	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 14:55	WG968119
Naphthalene	8.27	B	1.00	5.00	1	04/12/2017 14:55	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 14:55	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 14:55	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 14:55	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 14:55	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 14:55	WG968119
Toluene	U		0.412	1.00	1	04/12/2017 14:55	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 14:55	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 14:55	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 14:55	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 14:55	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 14:55	WG968119

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 14:55	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 14:55	WG968119
1,2,4-Trimethylbenzene	U		0.373	1.00	1	04/12/2017 14:55	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 14:55	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 14:55	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 14:55	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 14:55	WG968119
(S) Toluene-d8	104			80.0-120		04/12/2017 14:55	WG968119
(S) Dibromofluoromethane	99.7			76.0-123		04/12/2017 14:55	WG968119
(S) a,a,a-Trifluorotoluene	97.6			80.0-120		04/12/2017 14:55	WG968119
(S) 4-Bromofluorobenzene	93.4			80.0-120		04/12/2017 14:55	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

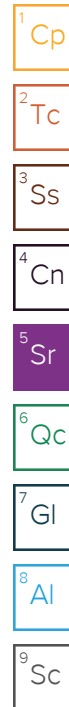


Collected date/time: 04/04/17 12:20

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 15:12	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 15:12	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 15:12	WG968119
Benzene	U		0.331	1.00	1	04/12/2017 15:12	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 15:12	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 15:12	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 15:12	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 15:12	WG968119
n-Butylbenzene	U		0.361	1.00	1	04/12/2017 15:12	WG968119
sec-Butylbenzene	U		0.365	1.00	1	04/12/2017 15:12	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 15:12	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 15:12	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 15:12	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 15:12	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 15:12	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 15:12	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 15:12	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 15:12	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 15:12	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 15:12	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 15:12	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 15:12	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 15:12	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 15:12	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 15:12	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 15:12	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 15:12	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 15:12	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 15:12	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 15:12	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 15:12	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 15:12	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 15:12	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 15:12	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 15:12	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 15:12	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 15:12	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 15:12	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 15:12	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 15:12	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 15:12	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 15:12	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 15:12	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 15:12	WG968119
Naphthalene	U		1.00	5.00	1	04/12/2017 15:12	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 15:12	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 15:12	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 15:12	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 15:12	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 15:12	WG968119
Toluene	U		0.412	1.00	1	04/12/2017 15:12	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 15:12	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 15:12	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 15:12	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 15:12	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 15:12	WG968119





Collected date/time: 04/04/17 12:20

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 15:12	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 15:12	WG968119
1,2,4-Trimethylbenzene	U		0.373	1.00	1	04/12/2017 15:12	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 15:12	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 15:12	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 15:12	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 15:12	WG968119
(S) Toluene-d8	105			80.0-120		04/12/2017 15:12	WG968119
(S) Dibromofluoromethane	98.5			76.0-123		04/12/2017 15:12	WG968119
(S) α,α,α-Trifluorotoluene	99.6			80.0-120		04/12/2017 15:12	WG968119
(S) 4-Bromofluorobenzene	96.9			80.0-120		04/12/2017 15:12	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 04/04/17 12:30

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 15:29	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 15:29	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 15:29	WG968119
Benzene	15.4		0.331	1.00	1	04/12/2017 15:29	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 15:29	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 15:29	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 15:29	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 15:29	WG968119
n-Butylbenzene	0.787	I J	0.361	1.00	1	04/12/2017 15:29	WG968119
sec-Butylbenzene	0.770	I J	0.365	1.00	1	04/12/2017 15:29	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 15:29	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 15:29	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 15:29	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 15:29	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 15:29	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 15:29	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 15:29	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 15:29	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 15:29	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 15:29	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 15:29	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 15:29	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 15:29	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 15:29	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 15:29	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 15:29	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 15:29	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 15:29	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 15:29	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 15:29	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 15:29	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 15:29	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 15:29	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 15:29	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 15:29	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 15:29	WG968119
Ethylbenzene	5.45		0.384	1.00	1	04/12/2017 15:29	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 15:29	WG968119
Isopropylbenzene	3.77		0.326	1.00	1	04/12/2017 15:29	WG968119
p-Isopropyltoluene	0.390	I J	0.350	1.00	1	04/12/2017 15:29	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 15:29	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 15:29	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 15:29	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 15:29	WG968119
Naphthalene	27.4		1.00	5.00	1	04/12/2017 15:29	WG968119
n-Propylbenzene	3.98		0.349	1.00	1	04/12/2017 15:29	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 15:29	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 15:29	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 15:29	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 15:29	WG968119
Toluene	1.48		0.412	1.00	1	04/12/2017 15:29	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 15:29	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 15:29	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 15:29	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 15:29	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 15:29	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 15:29	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 15:29	WG968119
1,2,4-Trimethylbenzene	12.4		0.373	1.00	1	04/12/2017 15:29	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 15:29	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 15:29	WG968119
o-Xylene	2.16		0.341	1.00	1	04/12/2017 15:29	WG968119
m&p-Xylenes	16.6		0.719	2.00	1	04/12/2017 15:29	WG968119
(S) Toluene-d8	106			80.0-120		04/12/2017 15:29	WG968119
(S) Dibromofluoromethane	101			76.0-123		04/12/2017 15:29	WG968119
(S) α,α,α-Trifluorotoluene	99.3			80.0-120		04/12/2017 15:29	WG968119
(S) 4-Bromofluorobenzene	96.9			80.0-120		04/12/2017 15:29	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 15:47	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 15:47	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 15:47	WG968119
Benzene	U		0.331	1.00	1	04/12/2017 15:47	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 15:47	WG968119
Bromodichloromethane	2.81		0.380	1.00	1	04/12/2017 15:47	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 15:47	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 15:47	WG968119
n-Butylbenzene	U		0.361	1.00	1	04/12/2017 15:47	WG968119
sec-Butylbenzene	U		0.365	1.00	1	04/12/2017 15:47	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 15:47	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 15:47	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 15:47	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 15:47	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 15:47	WG968119
Chloroform	23.9		0.324	5.00	1	04/12/2017 15:47	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 15:47	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 15:47	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 15:47	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 15:47	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 15:47	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 15:47	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 15:47	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 15:47	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 15:47	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 15:47	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 15:47	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 15:47	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 15:47	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 15:47	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 15:47	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 15:47	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 15:47	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 15:47	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 15:47	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 15:47	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 15:47	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 15:47	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 15:47	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 15:47	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 15:47	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 15:47	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 15:47	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 15:47	WG968119
Naphthalene	1.42	B J V3	1.00	5.00	1	04/12/2017 15:47	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 15:47	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 15:47	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 15:47	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 15:47	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 15:47	WG968119
Toluene	U		0.412	1.00	1	04/12/2017 15:47	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 15:47	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 15:47	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 15:47	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 15:47	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 15:47	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 15:47	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 15:47	WG968119
1,2,4-Trimethylbenzene	U		0.373	1.00	1	04/12/2017 15:47	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 15:47	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 15:47	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 15:47	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 15:47	WG968119
(S) Toluene-d8	103			80.0-120		04/12/2017 15:47	WG968119
(S) Dibromofluoromethane	101			76.0-123		04/12/2017 15:47	WG968119
(S) a,a,a-Trifluorotoluene	98.2			80.0-120		04/12/2017 15:47	WG968119
(S) 4-Bromofluorobenzene	95.1			80.0-120		04/12/2017 15:47	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 04/04/17 11:00

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 16:04	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 16:04	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 16:04	WG968119
Benzene	13.5		0.331	1.00	1	04/12/2017 16:04	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 16:04	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 16:04	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 16:04	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 16:04	WG968119
n-Butylbenzene	U		0.361	1.00	1	04/12/2017 16:04	WG968119
sec-Butylbenzene	U		0.365	1.00	1	04/12/2017 16:04	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 16:04	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 16:04	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 16:04	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 16:04	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 16:04	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 16:04	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 16:04	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 16:04	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 16:04	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 16:04	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 16:04	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 16:04	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 16:04	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 16:04	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 16:04	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 16:04	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 16:04	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 16:04	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 16:04	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 16:04	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 16:04	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 16:04	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 16:04	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 16:04	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 16:04	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 16:04	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 16:04	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 16:04	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 16:04	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 16:04	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 16:04	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 16:04	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 16:04	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 16:04	WG968119
Naphthalene	U		1.00	5.00	1	04/12/2017 16:04	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 16:04	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 16:04	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 16:04	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 16:04	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 16:04	WG968119
Toluene	U		0.412	1.00	1	04/12/2017 16:04	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 16:04	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 16:04	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 16:04	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 16:04	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 16:04	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 16:04	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 16:04	WG968119
1,2,4-Trimethylbenzene	U		0.373	1.00	1	04/12/2017 16:04	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 16:04	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 16:04	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 16:04	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 16:04	WG968119
(S) Toluene-d8	103			80.0-120		04/12/2017 16:04	WG968119
(S) Dibromofluoromethane	101			76.0-123		04/12/2017 16:04	WG968119
(S) a,a,a-Trifluorotoluene	97.4			80.0-120		04/12/2017 16:04	WG968119
(S) 4-Bromofluorobenzene	98.3			80.0-120		04/12/2017 16:04	WG968119

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity	5360	<u>B J</u>	2710	20000	1	04/06/2017 13:22	WG967839

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Nitrate	2380	<u>T8</u>	22.7	100	1	04/06/2017 08:45	WG967514
Sulfate	6990		77.4	5000	1	04/06/2017 08:45	WG967514

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICP) by Method 6010C

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Iron	52.9	<u>B J</u>	14.1	100	1	04/06/2017 20:08	WG967756
Magnesium	1050	<u>O1</u>	11.1	1000	1	04/06/2017 20:08	WG967756
Manganese	13.4		1.20	10.0	1	04/06/2017 20:08	WG967756



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 16:21	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 16:21	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 16:21	WG968119
Benzene	0.738	J	0.331	1.00	1	04/12/2017 16:21	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 16:21	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 16:21	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 16:21	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 16:21	WG968119
n-Butylbenzene	U		0.361	1.00	1	04/12/2017 16:21	WG968119
sec-Butylbenzene	U		0.365	1.00	1	04/12/2017 16:21	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 16:21	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 16:21	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 16:21	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 16:21	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 16:21	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 16:21	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 16:21	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 16:21	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 16:21	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 16:21	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 16:21	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 16:21	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 16:21	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 16:21	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 16:21	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 16:21	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 16:21	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 16:21	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 16:21	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 16:21	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 16:21	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 16:21	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 16:21	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 16:21	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 16:21	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 16:21	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 16:21	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 16:21	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 16:21	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 16:21	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 16:21	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 16:21	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 16:21	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 16:21	WG968119
Naphthalene	U		1.00	5.00	1	04/12/2017 16:21	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 16:21	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 16:21	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 16:21	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 16:21	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 16:21	WG968119
Toluene	U		0.412	1.00	1	04/12/2017 16:21	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 16:21	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 16:21	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 16:21	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 16:21	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 16:21	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 16:21	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 16:21	WG968119
1,2,4-Trimethylbenzene	U		0.373	1.00	1	04/12/2017 16:21	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 16:21	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 16:21	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 16:21	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 16:21	WG968119
(S) Toluene-d8	105			80.0-120		04/12/2017 16:21	WG968119
(S) Dibromofluoromethane	96.3			76.0-123		04/12/2017 16:21	WG968119
(S) a,a,a-Trifluorotoluene	97.0			80.0-120		04/12/2017 16:21	WG968119
(S) 4-Bromofluorobenzene	96.9			80.0-120		04/12/2017 16:21	WG968119

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Collected date/time: 04/03/17 13:40

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	38.0	J	10.0	50.0	1	04/12/2017 16:56	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 16:56	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 16:56	WG968119
Benzene	70.1		0.331	1.00	1	04/12/2017 16:56	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 16:56	WG968119
Bromodichloromethane	U		0.380	1.00	1	04/12/2017 16:56	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 16:56	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 16:56	WG968119
n-Butylbenzene	4.71		0.361	1.00	1	04/12/2017 16:56	WG968119
sec-Butylbenzene	3.38		0.365	1.00	1	04/12/2017 16:56	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 16:56	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 16:56	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 16:56	WG968119
Chlorodibromomethane	U		0.327	1.00	1	04/12/2017 16:56	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 16:56	WG968119
Chloroform	U		0.324	5.00	1	04/12/2017 16:56	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 16:56	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 16:56	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 16:56	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 16:56	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 16:56	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 16:56	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 16:56	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 16:56	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 16:56	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 16:56	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 16:56	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 16:56	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 16:56	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 16:56	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 16:56	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 16:56	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 16:56	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 16:56	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 16:56	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 16:56	WG968119
Ethylbenzene	272		9.60	25.0	25	04/13/2017 11:16	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 16:56	WG968119
Isopropylbenzene	20.6		0.326	1.00	1	04/12/2017 16:56	WG968119
p-Isopropyltoluene	6.90		0.350	1.00	1	04/12/2017 16:56	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 16:56	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 16:56	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 16:56	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 16:56	WG968119
Naphthalene	116		1.00	5.00	1	04/12/2017 16:56	WG968119
n-Propylbenzene	51.7		0.349	1.00	1	04/12/2017 16:56	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 16:56	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 16:56	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 16:56	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 16:56	WG968119
Toluene	973		10.3	25.0	25	04/13/2017 11:16	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 16:56	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 16:56	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 16:56	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 16:56	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 16:56	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 04/03/17 13:40

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Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 16:56	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 16:56	WG968119
1,2,4-Trimethylbenzene	253		9.32	25.0	25	04/13/2017 11:16	WG968119
1,3,5-Trimethylbenzene	82.7		0.387	1.00	1	04/12/2017 16:56	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 16:56	WG968119
o-Xylene	383		8.52	25.0	25	04/13/2017 11:16	WG968119
m&p-Xylenes	655		18.0	50.0	25	04/13/2017 11:16	WG968119
(S) Toluene-d8	103			80.0-120		04/13/2017 11:16	WG968119
(S) Toluene-d8	109			80.0-120		04/12/2017 16:56	WG968119
(S) Dibromofluoromethane	96.9			76.0-123		04/12/2017 16:56	WG968119
(S) Dibromofluoromethane	107			76.0-123		04/13/2017 11:16	WG968119
(S) a,a,a-Trifluorotoluene	100			80.0-120		04/12/2017 16:56	WG968119
(S) a,a,a-Trifluorotoluene	100			80.0-120		04/13/2017 11:16	WG968119
(S) 4-Bromofluorobenzene	99.7			80.0-120		04/13/2017 11:16	WG968119
(S) 4-Bromofluorobenzene	106			80.0-120		04/12/2017 16:56	WG968119

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 17:13	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 17:13	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 17:13	WG968119
Benzene	U		0.331	1.00	1	04/12/2017 17:13	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 17:13	WG968119
Bromodichloromethane	8.76		0.380	1.00	1	04/12/2017 17:13	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 17:13	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 17:13	WG968119
n-Butylbenzene	U		0.361	1.00	1	04/12/2017 17:13	WG968119
sec-Butylbenzene	U		0.365	1.00	1	04/12/2017 17:13	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 17:13	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 17:13	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 17:13	WG968119
Chlorodibromomethane	1.52		0.327	1.00	1	04/12/2017 17:13	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 17:13	WG968119
Chloroform	25.3		0.324	5.00	1	04/12/2017 17:13	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 17:13	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 17:13	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 17:13	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 17:13	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 17:13	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 17:13	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 17:13	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 17:13	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 17:13	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 17:13	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 17:13	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 17:13	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 17:13	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 17:13	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 17:13	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 17:13	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 17:13	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 17:13	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 17:13	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 17:13	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 17:13	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 17:13	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 17:13	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 17:13	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 17:13	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 17:13	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 17:13	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 17:13	WG968119
Naphthalene	6.07	B V3	1.00	5.00	1	04/12/2017 17:13	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 17:13	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 17:13	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 17:13	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 17:13	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 17:13	WG968119
Toluene	U		0.412	1.00	1	04/13/2017 10:25	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 17:13	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 17:13	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 17:13	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 17:13	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 17:13	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 04/04/17 13:10

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Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 17:13	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 17:13	WG968119
1,2,4-Trimethylbenzene	U		0.373	1.00	1	04/13/2017 10:25	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 17:13	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 17:13	WG968119
o-Xylene	U		0.341	1.00	1	04/13/2017 10:25	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 17:13	WG968119
(S) Toluene-d8	102			80.0-120		04/13/2017 10:25	WG968119
(S) Toluene-d8	104			80.0-120		04/12/2017 17:13	WG968119
(S) Dibromofluoromethane	101			76.0-123		04/12/2017 17:13	WG968119
(S) Dibromofluoromethane	106			76.0-123		04/13/2017 10:25	WG968119
(S) a,a,a-Trifluorotoluene	98.5			80.0-120		04/12/2017 17:13	WG968119
(S) a,a,a-Trifluorotoluene	102			80.0-120		04/13/2017 10:25	WG968119
(S) 4-Bromofluorobenzene	97.6			80.0-120		04/12/2017 17:13	WG968119
(S) 4-Bromofluorobenzene	99.1			80.0-120		04/13/2017 10:25	WG968119

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Collected date/time: 04/04/17 13:15

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 17:31	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 17:31	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 17:31	WG968119
Benzene	U		0.331	1.00	1	04/12/2017 17:31	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 17:31	WG968119
Bromodichloromethane	8.88		0.380	1.00	1	04/12/2017 17:31	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 17:31	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 17:31	WG968119
n-Butylbenzene	U		0.361	1.00	1	04/12/2017 17:31	WG968119
sec-Butylbenzene	U		0.365	1.00	1	04/12/2017 17:31	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 17:31	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 17:31	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 17:31	WG968119
Chlorodibromomethane	1.51		0.327	1.00	1	04/12/2017 17:31	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 17:31	WG968119
Chloroform	25.2		0.324	5.00	1	04/12/2017 17:31	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 17:31	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 17:31	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 17:31	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 17:31	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 17:31	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 17:31	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 17:31	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 17:31	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 17:31	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 17:31	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 17:31	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 17:31	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 17:31	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 17:31	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 17:31	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 17:31	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 17:31	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 17:31	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 17:31	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 17:31	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 17:31	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 17:31	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 17:31	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 17:31	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 17:31	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 17:31	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 17:31	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 17:31	WG968119
Naphthalene	U		1.00	5.00	1	04/12/2017 17:31	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 17:31	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 17:31	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 17:31	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 17:31	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 17:31	WG968119
Toluene	U		0.412	1.00	1	04/12/2017 17:31	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 17:31	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 17:31	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 17:31	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 17:31	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 17:31	WG968119

¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Qc
⁷ Gl
⁸ Al
⁹ Sc



Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 17:31	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 17:31	WG968119
1,2,4-Trimethylbenzene	U		0.373	1.00	1	04/12/2017 17:31	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 17:31	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 17:31	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 17:31	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 17:31	WG968119
(S) Toluene-d8	105			80.0-120		04/12/2017 17:31	WG968119
(S) Dibromofluoromethane	102			76.0-123		04/12/2017 17:31	WG968119
(S) α,α,α-Trifluorotoluene	101			80.0-120		04/12/2017 17:31	WG968119
(S) 4-Bromofluorobenzene	95.5			80.0-120		04/12/2017 17:31	WG968119

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Collected date/time: 04/04/17 13:30

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2017 17:48	WG968119
Acrolein	U	J4	8.87	50.0	1	04/12/2017 17:48	WG968119
Acrylonitrile	U		1.87	10.0	1	04/12/2017 17:48	WG968119
Benzene	U		0.331	1.00	1	04/12/2017 17:48	WG968119
Bromobenzene	U		0.352	1.00	1	04/12/2017 17:48	WG968119
Bromodichloromethane	7.97		0.380	1.00	1	04/12/2017 17:48	WG968119
Bromoform	U		0.469	1.00	1	04/12/2017 17:48	WG968119
Bromomethane	U		0.866	5.00	1	04/12/2017 17:48	WG968119
n-Butylbenzene	U		0.361	1.00	1	04/12/2017 17:48	WG968119
sec-Butylbenzene	U		0.365	1.00	1	04/12/2017 17:48	WG968119
tert-Butylbenzene	U		0.399	1.00	1	04/12/2017 17:48	WG968119
Carbon tetrachloride	U		0.379	1.00	1	04/12/2017 17:48	WG968119
Chlorobenzene	U		0.348	1.00	1	04/12/2017 17:48	WG968119
Chlorodibromomethane	1.36		0.327	1.00	1	04/12/2017 17:48	WG968119
Chloroethane	U		0.453	5.00	1	04/12/2017 17:48	WG968119
Chloroform	22.3		0.324	5.00	1	04/12/2017 17:48	WG968119
Chloromethane	U		0.276	2.50	1	04/12/2017 17:48	WG968119
2-Chlorotoluene	U		0.375	1.00	1	04/12/2017 17:48	WG968119
4-Chlorotoluene	U		0.351	1.00	1	04/12/2017 17:48	WG968119
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2017 17:48	WG968119
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2017 17:48	WG968119
Dibromomethane	U		0.346	1.00	1	04/12/2017 17:48	WG968119
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2017 17:48	WG968119
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2017 17:48	WG968119
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2017 17:48	WG968119
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2017 17:48	WG968119
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2017 17:48	WG968119
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2017 17:48	WG968119
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2017 17:48	WG968119
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2017 17:48	WG968119
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2017 17:48	WG968119
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2017 17:48	WG968119
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2017 17:48	WG968119
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2017 17:48	WG968119
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2017 17:48	WG968119
Di-isopropyl ether	U		0.320	1.00	1	04/12/2017 17:48	WG968119
Ethylbenzene	U		0.384	1.00	1	04/12/2017 17:48	WG968119
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2017 17:48	WG968119
Isopropylbenzene	U		0.326	1.00	1	04/12/2017 17:48	WG968119
p-Isopropyltoluene	U		0.350	1.00	1	04/12/2017 17:48	WG968119
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2017 17:48	WG968119
Methylene Chloride	U		1.00	5.00	1	04/12/2017 17:48	WG968119
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2017 17:48	WG968119
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2017 17:48	WG968119
Naphthalene	U		1.00	5.00	1	04/12/2017 17:48	WG968119
n-Propylbenzene	U		0.349	1.00	1	04/12/2017 17:48	WG968119
Styrene	U		0.307	1.00	1	04/12/2017 17:48	WG968119
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2017 17:48	WG968119
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2017 17:48	WG968119
Tetrachloroethene	U		0.372	1.00	1	04/12/2017 17:48	WG968119
Toluene	U		0.412	1.00	1	04/12/2017 17:48	WG968119
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2017 17:48	WG968119
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2017 17:48	WG968119
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2017 17:48	WG968119
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2017 17:48	WG968119
Trichloroethene	U		0.398	1.00	1	04/12/2017 17:48	WG968119

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 04/04/17 13:30

L900436

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2017 17:48	WG968119
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2017 17:48	WG968119
1,2,4-Trimethylbenzene	U		0.373	1.00	1	04/12/2017 17:48	WG968119
1,3,5-Trimethylbenzene	U		0.387	1.00	1	04/12/2017 17:48	WG968119
Vinyl chloride	U		0.259	1.00	1	04/12/2017 17:48	WG968119
o-Xylene	U		0.341	1.00	1	04/12/2017 17:48	WG968119
m&p-Xylenes	U		0.719	2.00	1	04/12/2017 17:48	WG968119
(S) Toluene-d8	104			80.0-120		04/12/2017 17:48	WG968119
(S) Dibromofluoromethane	100			76.0-123		04/12/2017 17:48	WG968119
(S) α,α,α-Trifluorotoluene	100			80.0-120		04/12/2017 17:48	WG968119
(S) 4-Bromofluorobenzene	96.7			80.0-120		04/12/2017 17:48	WG968119

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Method Blank (MB)

(MB) R3208843-1 04/06/17 12:26

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Alkalinity	2720	↓	2710	20000

L900436-02 Original Sample (OS) • Duplicate (DUP)

(OS) L900436-02 04/06/17 12:56 • (DUP) R3208843-2 04/06/17 13:03

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Alkalinity	45000	46100	1	2.00		20

L900695-09 Original Sample (OS) • Duplicate (DUP)

(OS) L900695-09 04/06/17 15:29 • (DUP) R3208843-5 04/06/17 15:35

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Alkalinity	168000	166000	1	1.00		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3208843-3 04/06/17 13:47 • (LCSD) R3208843-4 04/06/17 15:02

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Alkalinity	100000	93100	99500	93.0	99.0	85.0-115			7.00	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3209032-1 04/06/17 04:38

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Nitrate	U		22.7	100
Sulfate	U		77.4	5000

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

L900405-01 Original Sample (OS) • Duplicate (DUP)

(OS) L900405-01 04/06/17 06:42 • (DUP) R3209032-4 04/06/17 06:57

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Nitrate	581	586	1	1		15

L900695-01 Original Sample (OS) • Duplicate (DUP)

(OS) L900695-01 04/06/17 11:13 • (DUP) R3209032-6 04/06/17 11:28

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Nitrate	U	0.000	1	0		15
Sulfate	132	131	1	0	J	15

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3209032-2 04/06/17 04:54 • (LCSD) R3209032-3 04/06/17 05:09

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Nitrate	8000	7990	7980	100	100	80-120			0	15
Sulfate	40000	39100	39100	98	98	80-120			0	15

L900405-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L900405-02 04/06/17 07:43 • (MS) R3209032-5 04/06/17 08:14

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	ug/l	ug/l	ug/l	%		%	
Nitrate	5000	7370	12200	97	1	80-120	E



L900695-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L900695-07 04/06/17 13:00 • (MS) R3209032-7 04/06/17 13:16 • (MSD) R3209032-8 04/06/17 14:02

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Nitrate	5000	364	5330	5270	99	98	1	80-120			1	15
Sulfate	50000	52200	99700	99800	95	95	1	80-120			0	15

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3208941-1 04/06/17 20:00

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Iron	17.5	L	14.1	100
Magnesium	13.3	L	11.1	1000
Manganese	U		1.20	10.0

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3208941-2 04/06/17 20:02 • (LCSD) R3208941-3 04/06/17 20:05

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Iron	10000	10100	10200	101	102	80-120			1	20
Magnesium	10000	10400	10500	104	105	80-120			0	20
Manganese	1000	951	962	95	96	80-120			1	20

L900436-15 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L900436-15 04/06/17 20:08 • (MS) R3208941-5 04/06/17 20:13 • (MSD) R3208941-6 04/06/17 20:16

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Iron	10000	52.9	10400	10200	104	102	1	75-125			2	20
Magnesium	10000	1050	11800	11500	107	104	1	75-125			3	20
Manganese	1000	13.4	987	964	97	95	1	75-125			2	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3210315-2 04/12/17 10:33

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		10.0	50.0
Acrolein	U		8.87	50.0
Acrylonitrile	U		1.87	10.0
Benzene	U		0.331	1.00
Bromobenzene	U		0.352	1.00
Bromodichloromethane	U		0.380	1.00
Bromoform	U		0.469	1.00
Bromomethane	U		0.866	5.00
n-Butylbenzene	U		0.361	1.00
sec-Butylbenzene	U		0.365	1.00
tert-Butylbenzene	U		0.399	1.00
Carbon tetrachloride	U		0.379	1.00
Chlorobenzene	U		0.348	1.00
Chlorodibromomethane	U		0.327	1.00
Chloroethane	U		0.453	5.00
Chloroform	U		0.324	5.00
Chloromethane	U		0.276	2.50
2-Chlorotoluene	U		0.375	1.00
4-Chlorotoluene	U		0.351	1.00
1,2-Dibromo-3-Chloropropane	U		1.33	5.00
1,2-Dibromoethane	U		0.381	1.00
Dibromomethane	U		0.346	1.00
1,2-Dichlorobenzene	U		0.349	1.00
1,3-Dichlorobenzene	U		0.220	1.00
1,4-Dichlorobenzene	U		0.274	1.00
Dichlorodifluoromethane	U		0.551	5.00
1,1-Dichloroethane	U		0.259	1.00
1,2-Dichloroethane	U		0.361	1.00
1,1-Dichloroethene	U		0.398	1.00
cis-1,2-Dichloroethene	U		0.260	1.00
trans-1,2-Dichloroethene	U		0.396	1.00
1,2-Dichloropropane	U		0.306	1.00
1,1-Dichloropropene	U		0.352	1.00
1,3-Dichloropropane	U		0.366	1.00
2,2-Dichloropropane	U		0.321	1.00
Di-isopropyl ether	U		0.320	1.00
Ethylbenzene	U		0.384	1.00
Hexachloro-1,3-butadiene	1.59		0.256	1.00
Isopropylbenzene	U		0.326	1.00
p-Isopropyltoluene	U		0.350	1.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3210315-2 04/12/17 10:33

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
2-Butanone (MEK)	U		3.93	10.0
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0
Methyl tert-butyl ether	U		0.367	1.00
Naphthalene	1.36	J	1.00	5.00
n-Propylbenzene	U		0.349	1.00
Styrene	U		0.307	1.00
1,1,1,2-Tetrachloroethane	U		0.385	1.00
1,1,2,2-Tetrachloroethane	U		0.130	1.00
Tetrachloroethene	U		0.372	1.00
Toluene	U		0.412	1.00
1,2,3-Trichlorobenzene	1.66		0.230	1.00
1,2,4-Trichlorobenzene	0.597	J	0.355	1.00
1,1,1-Trichloroethane	U		0.319	1.00
1,1,2-Trichloroethane	U		0.383	1.00
Trichloroethene	U		0.398	1.00
Trichlorofluoromethane	U		1.20	5.00
1,2,3-Trichloropropane	U		0.807	2.50
1,2,4-Trimethylbenzene	U		0.373	1.00
1,3,5-Trimethylbenzene	U		0.387	1.00
Vinyl chloride	U		0.259	1.00
o-Xylene	U		0.341	1.00
m&p-Xylenes	U		0.719	2.00
(S) Toluene-d8	107			80.0-120
(S) Dibromofluoromethane	101			76.0-123
(S) a,a,a-Trifluorotoluene	99.5			80.0-120
(S) 4-Bromofluorobenzene	95.9			80.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3210315-1 04/12/17 10:15

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	125	128	102	10.0-160	
Acrolein	125	727	582	10.0-160	J4
Acrylonitrile	125	109	87.0	60.0-142	
Benzene	25.0	24.4	97.4	69.0-123	
Bromobenzene	25.0	22.9	91.5	79.0-120	
Bromodichloromethane	25.0	22.9	91.5	76.0-120	

Laboratory Control Sample (LCS)

(LCS) R3210315-1 04/12/17 10:15

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Bromoform	25.0	21.5	85.9	67.0-132	
Bromomethane	25.0	25.5	102	18.0-160	
n-Butylbenzene	25.0	25.5	102	72.0-126	
sec-Butylbenzene	25.0	24.0	96.1	74.0-121	
tert-Butylbenzene	25.0	22.3	89.3	75.0-122	
Carbon tetrachloride	25.0	24.7	98.8	63.0-122	
Chlorobenzene	25.0	23.7	94.7	79.0-121	
Chlorodibromomethane	25.0	24.5	98.0	75.0-125	
Chloroethane	25.0	24.9	99.8	47.0-152	
Chloroform	25.0	22.6	90.6	72.0-121	
Chloromethane	25.0	20.0	79.8	48.0-139	
2-Chlorotoluene	25.0	24.2	96.8	74.0-122	
4-Chlorotoluene	25.0	22.9	91.6	79.0-120	
1,2-Dibromo-3-Chloropropane	25.0	21.3	85.3	64.0-127	
1,2-Dibromoethane	25.0	24.5	98.2	77.0-123	
Dibromomethane	25.0	24.8	99.1	78.0-120	
1,2-Dichlorobenzene	25.0	27.2	109	80.0-120	
1,3-Dichlorobenzene	25.0	24.4	97.6	72.0-123	
1,4-Dichlorobenzene	25.0	24.6	98.5	77.0-120	
Dichlorodifluoromethane	25.0	23.2	92.8	49.0-155	
1,1-Dichloroethane	25.0	23.4	93.7	70.0-126	
1,2-Dichloroethane	25.0	24.3	97.4	67.0-126	
1,1-Dichloroethene	25.0	24.3	97.2	64.0-129	
cis-1,2-Dichloroethene	25.0	24.5	97.9	73.0-120	
trans-1,2-Dichloroethene	25.0	24.3	97.1	71.0-121	
1,2-Dichloropropane	25.0	23.6	94.4	75.0-125	
1,1-Dichloropropene	25.0	24.6	98.4	71.0-129	
1,3-Dichloropropane	25.0	25.6	103	80.0-121	
2,2-Dichloropropane	25.0	23.9	95.7	60.0-125	
Di-isopropyl ether	25.0	22.1	88.3	59.0-133	
Ethylbenzene	25.0	24.1	96.4	77.0-120	
Hexachloro-1,3-butadiene	25.0	23.7	94.6	64.0-131	
Isopropylbenzene	25.0	24.0	95.9	75.0-120	
p-Isopropyltoluene	25.0	23.0	92.1	74.0-126	
2-Butanone (MEK)	125	120	95.7	37.0-158	
Methylene Chloride	25.0	22.7	90.9	66.0-121	
4-Methyl-2-pentanone (MIBK)	125	111	88.8	59.0-143	
Methyl tert-butyl ether	25.0	23.6	94.5	64.0-123	
Naphthalene	25.0	22.8	91.0	62.0-128	
n-Propylbenzene	25.0	25.2	101	79.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Laboratory Control Sample (LCS)

(LCS) R3210315-1 04/12/17 10:15

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Styrene	25.0	24.2	97.0	78.0-124	
1,1,1,2-Tetrachloroethane	25.0	23.4	93.4	75.0-122	
1,1,2,2-Tetrachloroethane	25.0	23.0	92.2	71.0-122	
Tetrachloroethene	25.0	23.6	94.3	70.0-127	
Toluene	25.0	23.9	95.5	77.0-120	
1,2,3-Trichlorobenzene	25.0	22.7	90.9	61.0-133	
1,2,4-Trichlorobenzene	25.0	24.2	96.6	69.0-129	
1,1,1-Trichloroethane	25.0	23.7	95.0	68.0-122	
1,1,2-Trichloroethane	25.0	23.1	92.5	78.0-120	
Trichloroethene	25.0	24.0	96.0	78.0-120	
Trichlorofluoromethane	25.0	24.2	96.9	56.0-137	
1,2,3-Trichloropropane	25.0	24.7	98.7	72.0-124	
1,2,4-Trimethylbenzene	25.0	24.6	98.2	75.0-120	
1,3,5-Trimethylbenzene	25.0	24.9	99.5	75.0-120	
Vinyl chloride	25.0	24.0	95.9	64.0-133	
o-Xylene	25.0	24.3	97.2	78.0-120	
m&p-Xylenes	50.0	47.2	94.3	77.0-120	
(S) Toluene-d8			102	80.0-120	
(S) Dibromofluoromethane			103	76.0-123	
(S) a,a,a-Trifluorotoluene			97.6	80.0-120	
(S) 4-Bromofluorobenzene			101	80.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.
V3	The internal standard exhibited poor recovery due to sample matrix interference. The analytical results will be biased high. BDL results will be unaffected.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

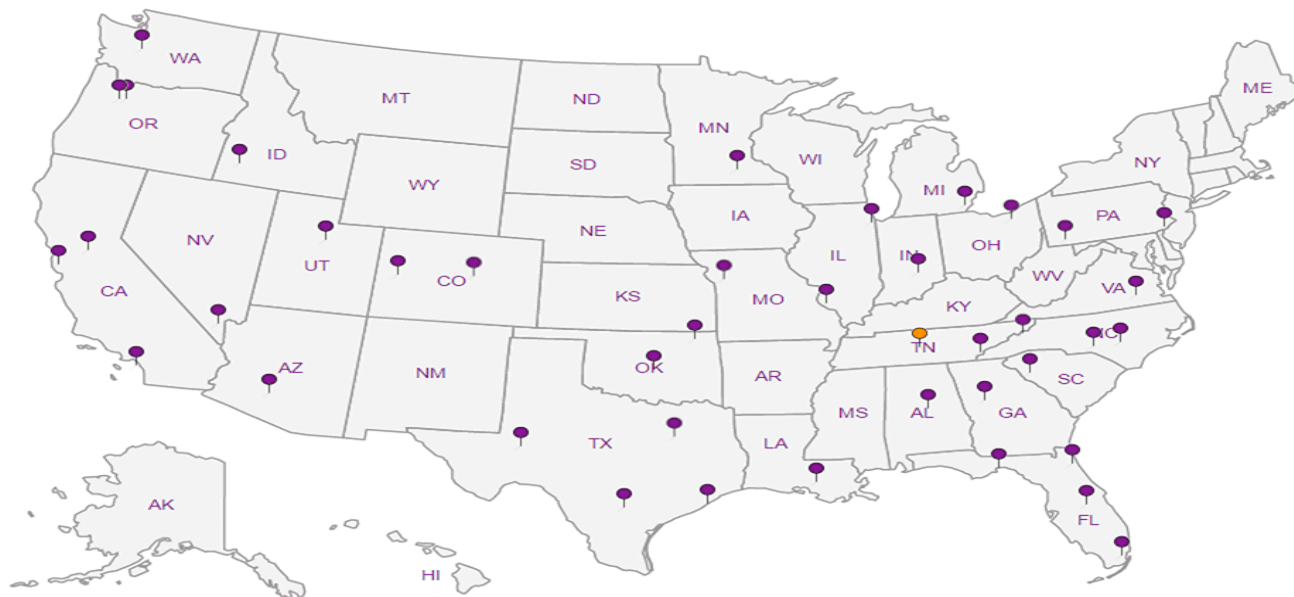
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

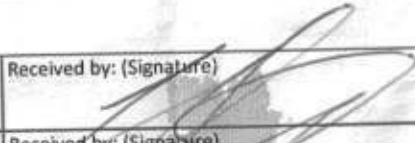
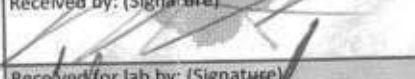
- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Third Party & Federal Accreditations

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

ES&C Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ES&C Lab Sciences performs all testing at our central laboratory.**



Company Name/Address: Withers & Ravenel Eng. 115 MacKenan Drive Cary, NC 27511				Billing Information: WITHRAVS - Regular WITHRAVS - Trust Fund WITHRAVS - 6200FULL WITHRAVS - STATE LEAD				Analysis / Container / Preservative												Chain of Custody Page 1 of 2									
Report to: Matt James				Email To: mjames@withersravenel.com				V6200 - 40ml amber HCL Nitrate/Nitrogen - 250ml HDPE H2SO4 L2 Sulfate, Total Iron, Manganese, Magnesium-250 HDPE L2 Alkalinity - 250ml HDPE no pres														 L.A.B S.C.I.E.N.C.E.S YOUR LAB OF CHOICE 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859							
Project Description: Pantry 925				City/State Collected: Goldsboro, NC																		L# L900436							
Client Project # 02070955.00				Lab Project #																		1221							
Site/Facility ID #				P.O. #																		Acctnum: WITHRAVS							
Collected by (print): Austin Pote				Date Results Needed				Template:																					
Collected by (signature): 				Rush? (Lab MUST Be Notified) Same Day200% Next Day100% Two Day50% Three Day25%				Prelogin:																					
Immediately Packed on Ice N Y ☒				Email? ☐ No ☒ Yes Fax? ☐ No ☒ Yes				TSR:																					
Sample ID				Comp/Grab				Matrix *				Depth				Date				Time				No. of Cntrs				Shipped Via:	
MW-1				G				GW								4/3/17				1330				2				Rem./Contaminant	
MW-2				G				GW								4/3/17				1320				5				Sample # (lab only)	
MW-3				G				GW								4/3/17				1500				2				-01	
MW-4				G				GW								4/3/17				1505				2				02	
MW-5				G				GW								4/3/17				1510				2				03	
MW-7				G				GW								4/3/17				1350				2				04	
MW-12				G				GW								4/3/17				1155				2				05	
MW-13				G				GW								4/3/17				1150				2				06	
MW-14				G				GW								4/4/17				1240				2				07	
MW-15				G				GW								4/4/17				1110				2				08	
* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____																													
Remarks: TRK# 7215 45222 2338																													
Relinquished by: (Signature) 				Date: 4/4/17				Time: 1531				Received by: (Signature) 				Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____				Hold #									
Relinquished by: (Signature) 				Date: 4/4/17				Time: 1627				Received by: (Signature) 				Temp: 1.2 °C Bottles Received: 44 H173				Condition: (lab use only)									
Relinquished by: (Signature) 				Date: _____				Time: _____				Received for lab by: (Signature) 				Date: 4-5-17 Time: 8:45				COC Seal Intact: Y ☐ N ☐ NA									
																pH Checked: L2				NCF: _____									

Chain of Custody Page 2 of 2



YOUR LAB OF CHOICE

1206S Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



Company Name/Address:
Withers & Ravenel Eng.
115 MacKenan Drive
Cary, NC 27511

Billing Information:
WITHRAVS - Regular
WITHRAVS - Trust Fund

WITHRAVS - 6200FULL
WITHRAVS - STATE LEAD

Report to: *Matt James*

Email To: *mjames @withersravenel.com*

Project Description: **Pantry 925**

City/State Collected: *Goldsboro, NC*

Phone: **(919) 469-3340**
Fax:

Client Project #
02070955.00

Lab Project #

Collected by (print): *Austin Pote*

Site/Facility ID #

P.O. #

Collected by (signature): *[Signature]*

Rush? (Lab MUST Be Notified)
 ___ Same Day200%
 ___ Next Day100%
 ___ Two Day50%
 ___ Three Day25%

Date Results Needed
 Email? ___ No ___ Yes
 FAX? ___ No ___ Yes

Immediately Packed on Ice N ___ Y ☒

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	V6200 - 40ml amber HCL	Nitrate/Nitrogen - 250ml HDPE H2SO4	Sulfate, Total Iron, Manganese, Magnesium-250 HDPE	Alkalinity - 250ml HDPE no pres								
MW-16	G	GW		4/4/17	1220	2	✓											11
MW-17	G	GW		4/4/17	1230	2	✓											12
MW-18	G	GW		4/4/17	1250	2	✓											13
MW-19	G	GW		4/4/17	1100	2	✓											14
MW-21	G	GW		4/3/17	1140	3		✓	✓	✓								15
MW-26	G	GW		4/3/17	1145	2	✓											16
MW-43	G	GW		4/3/17	1340	2	✓											17
WSW-2	G	DW		4/4/17	1310	2	✓											18
WSW-4	G	DW		4/4/17	1315	2	✓											19
WSW-6	G	DW		4/4/17	1330	2	✓											20

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

pH _____ Temp _____
Flow _____ Other _____

Remarks:

Relinquished by: (Signature) *[Signature]*
 Relinquished by: (Signature) *[Signature]*
 Relinquished by: (Signature) *[Signature]*

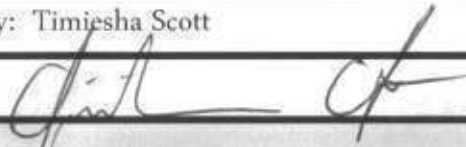
Date: *4/4/17* Time: *1531*
 Date: *4/4/17* Time: *1162*
 Date: _____ Time: _____

Received by: (Signature) *[Signature]*
 Received by: (Signature) *[Signature]*
 Received for lab by: (Signature) *[Signature]*

Samples returned via: ☐ UPS
☐ FedEx ☐ Courier ☐ _____
 Temp: *1.2* °C Bottles Received: *44+1TB*
 Date: *4-3-17* Time: *8:43*

Hold # _____
 Condition: (lab use only)
 COC Seal Intact: *1* Y ___ N ___ NA
 pH Checked: *<2* NCF: _____

ESC LAB SCIENCES Cooler Receipt Form

Client:	WITHRAVS	SDG#	2900436	
Cooler Received/Opened On:	4/5 /17	Temperature:	1.2	
Received By: Timiesha Scott				
Signature:				
Receipt Check List	NP	Yes	No	
COC Seal Present / Intact?		✓		
COC Signed / Accurate?		✓		
Bottles arrive intact?		✓		
Correct bottles used?		✓		
Sufficient volume sent?		✓		
If Applicable				
VOA Zero headspace?		✓		
Preservation Correct / Checked?		✓		

Jimmy Hunt

L900436

From: James, Matt <mjames@withersravenel.com>
Sent: Wednesday, April 05, 2017 2:51 PM
To: Jimmy Hunt
Subject: Re: Pantry 925

Ok. Thanks.

Matthew James, P.G.
WithersRavenel, Inc.
Sent from my iPhone

On Apr 5, 2017, at 3:49 PM, Jimmy Hunt <jhunt@eslabsciences.com<mailto:jhunt@eslabsciences.com>> wrote:

Nitrate only is \$13. We can try to get enough sample out of the ALK bottle to run this.

Thanks,
Jimmy Hunt
Technical Service Representative
Phone: 615-773-9668
Toll Free: 1-800-767-5859 ext:9668

Email: jhunt@eslabsciences.com<<mailto:jhunt@eslabsciences.com>>

This E-mail and any attached files are confidential, and may be copyright protected. If you are not the addressee, any dissemination of this communication is strictly prohibited. If you have received this message in error, please contact the sender immediately and delete/destroy all information received.

From: James, Matt [<mailto:mjames@withersravenel.com>]
Sent: Wednesday, April 05, 2017 2:46 PM
To: Jimmy Hunt
Subject: RE: Pantry 925

Which test costs \$13 that's all trust fund will pay for

From: Jimmy Hunt [<mailto:jhunt@eslabsciences.com>]
Sent: Wednesday, April 05, 2017 3:39 PM
To: James, Matt <mjames@withersravenel.com<<mailto:mjames@withersravenel.com>>>
Subject: Pantry 925

Matt,
2 samples on the attached COC are marked for "Nitrate/Nitrogen". Do you need Total Nitrogen, which is a calculation of NO2NO3 + TKN, or do you need just NO2NO3? Unfortunately we cannot analyze the sample for Nitrate only unless we have enough sample left in the unpreserved ALK bottle to run it. Do you want us to try and report Nitrate from the ALK bottle?

Thanks,
Jimmy Hunt
Technical Service Representative
Phone: 615-773-9668
Toll Free: 1-800-767-5859 ext:9668

Withers & Ravenel Eng. - Standard

Sample Delivery Group: L911729
Samples Received: 05/25/2017
Project Number: 02070955
Description: Circle K 2720925
Site: WSW-2
Report To: Matt James
115 MacKenan Drive
Cary, NC 27511

Entire Report Reviewed By:



Jimmy Hunt

Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	1	¹ Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	² Tc
Cn: Case Narrative	4	
Sr: Sample Results	5	³ Ss
WSW-2 L911729-01	5	
Qc: Quality Control Summary	7	⁴ Cn
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	7	⁵ Sr
Gl: Glossary of Terms	11	
Al: Accreditations & Locations	12	⁶ Qc
Sc: Chain of Custody	13	⁷ Gl
		⁸ Al
		⁹ Sc

SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



WSW-2 L911729-01 GW

Collected by
M. James

Collected date/time
05/24/17 08:00

Received date/time
05/25/17 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 6200B-1997	WG984983	1	06/01/17 16:16	06/01/17 16:16	JAH

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

ACCOUNT:

Withers & Ravenel Eng. - Standard

PROJECT:

02070955

SDG:

L911729

DATE/TIME:

06/02/17 08:16

PAGE:

3 of 14



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jimmy Hunt
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Collected date/time: 05/24/17 08:00

L911729

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	06/01/2017 16:16	WG984983
Acrolein	U		8.87	50.0	1	06/01/2017 16:16	WG984983
Acrylonitrile	U		1.87	10.0	1	06/01/2017 16:16	WG984983
Benzene	U		0.331	1.00	1	06/01/2017 16:16	WG984983
Bromobenzene	U		0.352	1.00	1	06/01/2017 16:16	WG984983
Bromodichloromethane	U		0.380	1.00	1	06/01/2017 16:16	WG984983
Bromoform	U		0.469	1.00	1	06/01/2017 16:16	WG984983
Bromomethane	U		0.866	5.00	1	06/01/2017 16:16	WG984983
n-Butylbenzene	U		0.361	1.00	1	06/01/2017 16:16	WG984983
sec-Butylbenzene	U		0.365	1.00	1	06/01/2017 16:16	WG984983
tert-Butylbenzene	U		0.399	1.00	1	06/01/2017 16:16	WG984983
Carbon tetrachloride	U		0.379	1.00	1	06/01/2017 16:16	WG984983
Chlorobenzene	U		0.348	1.00	1	06/01/2017 16:16	WG984983
Chlorodibromomethane	U		0.327	1.00	1	06/01/2017 16:16	WG984983
Chloroethane	U		0.453	5.00	1	06/01/2017 16:16	WG984983
Chloroform	U		0.324	5.00	1	06/01/2017 16:16	WG984983
Chloromethane	U		0.276	2.50	1	06/01/2017 16:16	WG984983
2-Chlorotoluene	U		0.375	1.00	1	06/01/2017 16:16	WG984983
4-Chlorotoluene	U		0.351	1.00	1	06/01/2017 16:16	WG984983
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	06/01/2017 16:16	WG984983
1,2-Dibromoethane	U		0.381	1.00	1	06/01/2017 16:16	WG984983
Dibromomethane	U		0.346	1.00	1	06/01/2017 16:16	WG984983
1,2-Dichlorobenzene	U		0.349	1.00	1	06/01/2017 16:16	WG984983
1,3-Dichlorobenzene	U		0.220	1.00	1	06/01/2017 16:16	WG984983
1,4-Dichlorobenzene	U		0.274	1.00	1	06/01/2017 16:16	WG984983
Dichlorodifluoromethane	U		0.551	5.00	1	06/01/2017 16:16	WG984983
1,1-Dichloroethane	U		0.259	1.00	1	06/01/2017 16:16	WG984983
1,2-Dichloroethane	U		0.361	1.00	1	06/01/2017 16:16	WG984983
1,1-Dichloroethene	U		0.398	1.00	1	06/01/2017 16:16	WG984983
cis-1,2-Dichloroethene	U		0.260	1.00	1	06/01/2017 16:16	WG984983
trans-1,2-Dichloroethene	U		0.396	1.00	1	06/01/2017 16:16	WG984983
1,2-Dichloropropane	U		0.306	1.00	1	06/01/2017 16:16	WG984983
1,1-Dichloropropene	U		0.352	1.00	1	06/01/2017 16:16	WG984983
1,3-Dichloropropane	U		0.366	1.00	1	06/01/2017 16:16	WG984983
2,2-Dichloropropane	U		0.321	1.00	1	06/01/2017 16:16	WG984983
Di-isopropyl ether	U		0.320	1.00	1	06/01/2017 16:16	WG984983
Ethylbenzene	U		0.384	1.00	1	06/01/2017 16:16	WG984983
Hexachloro-1,3-butadiene	U		0.256	1.00	1	06/01/2017 16:16	WG984983
Isopropylbenzene	U		0.326	1.00	1	06/01/2017 16:16	WG984983
p-Isopropyltoluene	U		0.350	1.00	1	06/01/2017 16:16	WG984983
2-Butanone (MEK)	U		3.93	10.0	1	06/01/2017 16:16	WG984983
Methylene Chloride	U		1.00	5.00	1	06/01/2017 16:16	WG984983
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	06/01/2017 16:16	WG984983
Methyl tert-butyl ether	U		0.367	1.00	1	06/01/2017 16:16	WG984983
Naphthalene	U		1.00	5.00	1	06/01/2017 16:16	WG984983
n-Propylbenzene	U		0.349	1.00	1	06/01/2017 16:16	WG984983
Styrene	U		0.307	1.00	1	06/01/2017 16:16	WG984983
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	06/01/2017 16:16	WG984983
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	06/01/2017 16:16	WG984983
Tetrachloroethene	U		0.372	1.00	1	06/01/2017 16:16	WG984983
Toluene	U		0.412	1.00	1	06/01/2017 16:16	WG984983
1,2,3-Trichlorobenzene	U		0.230	1.00	1	06/01/2017 16:16	WG984983
1,2,4-Trichlorobenzene	U		0.355	1.00	1	06/01/2017 16:16	WG984983
1,1,1-Trichloroethane	U		0.319	1.00	1	06/01/2017 16:16	WG984983
1,1,2-Trichloroethane	U		0.383	1.00	1	06/01/2017 16:16	WG984983
Trichloroethene	U		0.398	1.00	1	06/01/2017 16:16	WG984983

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Collected date/time: 05/24/17 08:00

L911729

Volatile Organic Compounds (GC/MS) by Method 6200B-1997

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Trichlorofluoromethane	U		1.20	5.00	1	06/01/2017 16:16	WG984983
1,2,3-Trichloropropane	U		0.807	2.50	1	06/01/2017 16:16	WG984983
1,2,4-Trimethylbenzene	U		0.373	1.00	1	06/01/2017 16:16	WG984983
1,3,5-Trimethylbenzene	U		0.387	1.00	1	06/01/2017 16:16	WG984983
Vinyl chloride	U		0.259	1.00	1	06/01/2017 16:16	WG984983
o-Xylene	U		0.341	1.00	1	06/01/2017 16:16	WG984983
m&p-Xylenes	U		0.719	2.00	1	06/01/2017 16:16	WG984983
(S) Toluene-d8	103			80.0-120		06/01/2017 16:16	WG984983
(S) Dibromofluoromethane	101			76.0-123		06/01/2017 16:16	WG984983
(S) a,a,a-Trifluorotoluene	103			80.0-120		06/01/2017 16:16	WG984983
(S) 4-Bromofluorobenzene	106			80.0-120		06/01/2017 16:16	WG984983

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

Method Blank (MB)

(MB) R3222534-3 06/01/17 12:26

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Acetone	U		10.0	50.0
Acrolein	U		8.87	50.0
Acrylonitrile	U		1.87	10.0
Benzene	U		0.331	1.00
Bromobenzene	U		0.352	1.00
Bromodichloromethane	U		0.380	1.00
Bromoform	U		0.469	1.00
Bromomethane	U		0.866	5.00
n-Butylbenzene	U		0.361	1.00
sec-Butylbenzene	U		0.365	1.00
tert-Butylbenzene	U		0.399	1.00
Carbon tetrachloride	U		0.379	1.00
Chlorobenzene	U		0.348	1.00
Chlorodibromomethane	U		0.327	1.00
Chloroethane	U		0.453	5.00
Chloroform	U		0.324	5.00
Chloromethane	U		0.276	2.50
2-Chlorotoluene	U		0.375	1.00
4-Chlorotoluene	U		0.351	1.00
1,2-Dibromo-3-Chloropropane	U		1.33	5.00
1,2-Dibromoethane	U		0.381	1.00
Dibromomethane	U		0.346	1.00
1,2-Dichlorobenzene	U		0.349	1.00
1,3-Dichlorobenzene	U		0.220	1.00
1,4-Dichlorobenzene	U		0.274	1.00
Dichlorodifluoromethane	U		0.551	5.00
1,1-Dichloroethane	U		0.259	1.00
1,2-Dichloroethane	U		0.361	1.00
1,1-Dichloroethene	U		0.398	1.00
cis-1,2-Dichloroethene	U		0.260	1.00
trans-1,2-Dichloroethene	U		0.396	1.00
1,2-Dichloropropane	U		0.306	1.00
1,1-Dichloropropene	U		0.352	1.00
1,3-Dichloropropane	U		0.366	1.00
2,2-Dichloropropane	U		0.321	1.00
Di-isopropyl ether	U		0.320	1.00
Ethylbenzene	U		0.384	1.00
Hexachloro-1,3-butadiene	0.394	U	0.256	1.00
Isopropylbenzene	U		0.326	1.00
p-Isopropyltoluene	U		0.350	1.00

1

Cp

2

Tc

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Ss

4

Cn

5

Sr

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Qc

7

Gl

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Al

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Sc



Method Blank (MB)

(MB) R3222534-3 06/01/17 12:26

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
2-Butanone (MEK)	U		3.93	10.0
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0
Methyl tert-butyl ether	U		0.367	1.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.349	1.00
Styrene	U		0.307	1.00
1,1,1,2-Tetrachloroethane	U		0.385	1.00
1,1,2,2-Tetrachloroethane	U		0.130	1.00
Tetrachloroethene	U		0.372	1.00
Toluene	U		0.412	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.355	1.00
1,1,1-Trichloroethane	U		0.319	1.00
1,1,2-Trichloroethane	U		0.383	1.00
Trichloroethene	U		0.398	1.00
Trichlorofluoromethane	U		1.20	5.00
1,2,3-Trichloropropane	U		0.807	2.50
1,2,4-Trimethylbenzene	U		0.373	1.00
1,3,5-Trimethylbenzene	U		0.387	1.00
Vinyl chloride	U		0.259	1.00
o-Xylene	U		0.341	1.00
m&p-Xylenes	U		0.719	2.00
(S) Toluene-d8	102			80.0-120
(S) Dibromofluoromethane	97.0			76.0-123
(S) a,a,a-Trifluorotoluene	101			80.0-120
(S) 4-Bromofluorobenzene	102			80.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3222534-1 06/01/17 11:01 • (LCSD) R3222534-2 06/01/17 11:22

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	125	96.8	86.0	77.4	68.8	10.0-160			11.8	23
Acrolein	125	133	129	106	103	10.0-160			2.99	20
Acrylonitrile	125	117	110	93.7	88.2	60.0-142			6.07	20
Benzene	25.0	22.4	22.2	89.5	88.8	69.0-123			0.760	20
Bromobenzene	25.0	23.4	23.9	93.5	95.5	79.0-120			2.06	20
Bromodichloromethane	25.0	23.2	23.8	92.8	95.4	76.0-120			2.72	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3222534-1 06/01/17 11:01 • (LCSD) R3222534-2 06/01/17 11:22

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromoform	25.0	24.4	25.8	97.7	103	67.0-132			5.43	20
Bromomethane	25.0	23.4	23.5	93.4	94.2	18.0-160			0.800	20
n-Butylbenzene	25.0	26.1	26.3	104	105	72.0-126			0.810	20
sec-Butylbenzene	25.0	24.8	25.2	99.0	101	74.0-121			1.84	20
tert-Butylbenzene	25.0	25.4	24.8	102	99.4	75.0-122			2.20	20
Carbon tetrachloride	25.0	21.2	21.4	84.8	85.6	63.0-122			0.960	20
Chlorobenzene	25.0	24.0	25.4	96.0	102	79.0-121			5.63	20
Chlorodibromomethane	25.0	24.2	25.2	96.8	101	75.0-125			4.05	20
Chloroethane	25.0	22.9	23.0	91.6	92.0	47.0-152			0.370	20
Chloroform	25.0	22.2	22.2	89.0	88.6	72.0-121			0.430	20
Chloromethane	25.0	21.7	21.3	86.8	85.3	48.0-139			1.73	20
2-Chlorotoluene	25.0	24.3	24.5	97.0	98.1	74.0-122			1.08	20
4-Chlorotoluene	25.0	24.7	25.3	98.9	101	79.0-120			2.42	20
1,2-Dibromo-3-Chloropropane	25.0	25.0	25.2	99.9	101	64.0-127			0.800	20
1,2-Dibromoethane	25.0	23.7	25.1	94.7	100	77.0-123			5.81	20
Dibromomethane	25.0	23.4	24.0	93.4	95.9	78.0-120			2.58	20
1,2-Dichlorobenzene	25.0	24.5	24.5	98.0	98.1	80.0-120			0.160	20
1,3-Dichlorobenzene	25.0	25.0	24.8	100	99.3	72.0-123			0.720	20
1,4-Dichlorobenzene	25.0	23.9	24.4	95.6	97.8	77.0-120			2.25	20
Dichlorodifluoromethane	25.0	31.8	30.5	127	122	49.0-155			3.92	20
1,1-Dichloroethane	25.0	22.8	22.0	91.3	88.1	70.0-126			3.58	20
1,2-Dichloroethane	25.0	23.7	23.4	94.9	93.5	67.0-126			1.54	20
1,1-Dichloroethene	25.0	22.4	22.2	89.5	88.8	64.0-129			0.820	20
cis-1,2-Dichloroethene	25.0	22.3	22.7	89.1	90.9	73.0-120			1.96	20
trans-1,2-Dichloroethene	25.0	21.9	20.8	87.6	83.4	71.0-121			4.89	20
1,2-Dichloropropane	25.0	23.8	24.2	95.0	97.0	75.0-125			2.01	20
1,1-Dichloropropene	25.0	22.4	22.4	89.4	89.5	71.0-129			0.0900	20
1,3-Dichloropropane	25.0	23.5	25.1	94.1	101	80.0-121			6.66	20
2,2-Dichloropropane	25.0	23.8	23.7	95.4	95.0	60.0-125			0.430	20
Di-isopropyl ether	25.0	23.2	23.3	92.7	93.1	59.0-133			0.480	20
Ethylbenzene	25.0	24.3	25.4	97.3	102	77.0-120			4.49	20
Hexachloro-1,3-butadiene	25.0	24.4	25.2	97.5	101	64.0-131			3.27	20
Isopropylbenzene	25.0	25.8	24.9	103	99.8	75.0-120			3.31	20
p-Isopropyltoluene	25.0	25.9	25.8	104	103	74.0-126			0.390	20
2-Butanone (MEK)	125	111	112	88.8	89.9	37.0-158			1.15	20
Methylene Chloride	25.0	19.8	19.7	79.3	78.9	66.0-121			0.470	20
4-Methyl-2-pentanone (MIBK)	125	123	125	98.4	99.9	59.0-143			1.48	20
Methyl tert-butyl ether	25.0	24.0	23.1	96.0	92.3	64.0-123			3.90	20
Naphthalene	25.0	24.4	27.3	97.7	109	62.0-128			11.1	20
n-Propylbenzene	25.0	24.3	24.6	97.2	98.3	79.0-120			1.05	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3222534-1 06/01/17 11:01 • (LCSD) R3222534-2 06/01/17 11:22

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Styrene	25.0	25.8	25.9	103	104	78.0-124			0.530	20
1,1,1,2-Tetrachloroethane	25.0	24.4	25.2	97.4	101	75.0-122			3.36	20
1,1,2,2-Tetrachloroethane	25.0	25.0	25.1	100	100	71.0-122			0.280	20
Tetrachloroethene	25.0	23.7	23.6	94.9	94.4	70.0-127			0.630	20
Toluene	25.0	22.2	23.2	88.8	92.6	77.0-120			4.16	20
1,2,3-Trichlorobenzene	25.0	26.0	28.1	104	113	61.0-133			7.81	20
1,2,4-Trichlorobenzene	25.0	26.5	26.6	106	106	69.0-129			0.580	20
1,1,1-Trichloroethane	25.0	23.0	22.7	92.1	90.7	68.0-122			1.57	20
1,1,2-Trichloroethane	25.0	23.9	25.0	95.6	99.8	78.0-120			4.30	20
Trichloroethene	25.0	21.0	20.7	84.0	82.9	78.0-120			1.29	20
Trichlorofluoromethane	25.0	23.1	22.3	92.3	89.2	56.0-137			3.51	20
1,2,3-Trichloropropane	25.0	25.6	26.0	102	104	72.0-124			1.74	20
1,2,4-Trimethylbenzene	25.0	25.5	25.3	102	101	75.0-120			0.760	20
1,3,5-Trimethylbenzene	25.0	25.1	25.3	100	101	75.0-120			0.890	20
Vinyl chloride	25.0	22.4	22.1	89.5	88.2	64.0-133			1.42	20
o-Xylene	25.0	25.4	25.7	102	103	78.0-120			1.34	20
m&p-Xylenes	50.0	48.6	49.6	97.3	99.3	77.0-120			2.05	20
(S) Toluene-d8				99.8	106	80.0-120				
(S) Dibromofluoromethane				98.3	97.7	76.0-123				
(S) a,a,a-Trifluorotoluene				101	104	80.0-120				
(S) 4-Bromofluorobenzene				101	102	80.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
-----------	-------------

J	The identification of the analyte is acceptable; the reported value is an estimate.
---	---

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

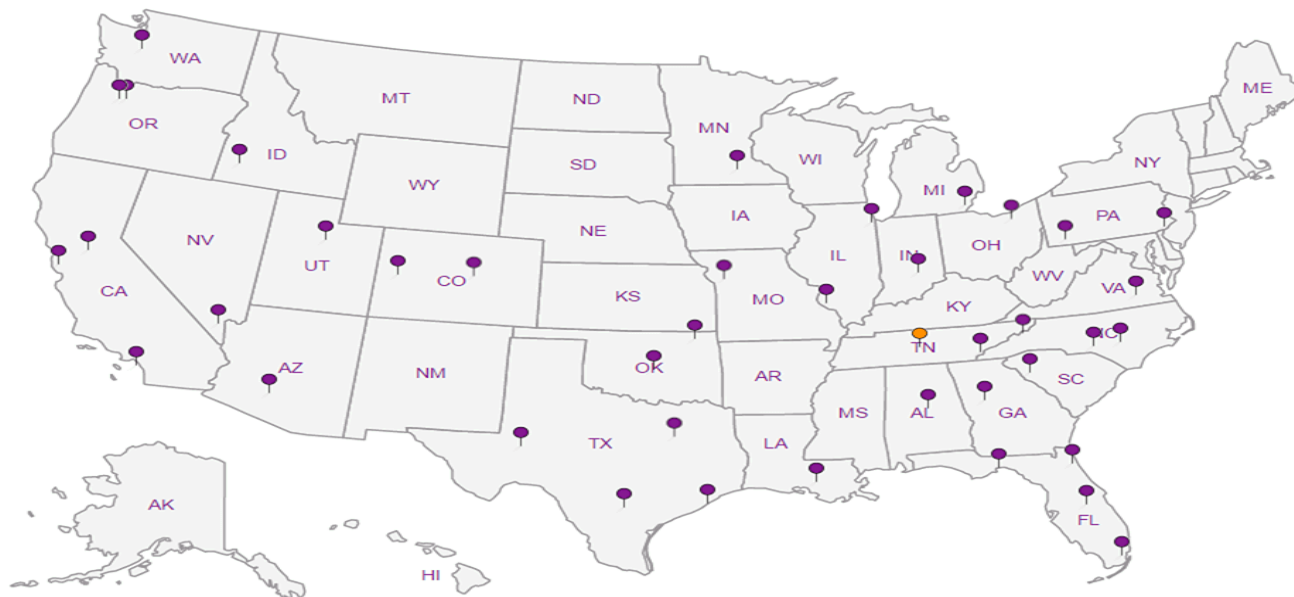
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Third Party & Federal Accreditations

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

ES&C Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ES&C Lab Sciences performs all testing at our central laboratory.**



Company Name/Address:

Withers & Ravenel Eng.115 MacKenan Drive
Cary, NC 27511

Billing Information:

WITHRAVS - Regular
WITHRAVS - Trust FundWITHRAVS - 6200FULL
WITHRAVS - STATE LEAD

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 911729

D118

Acctnum: WITHRAVS

Template:

Prelogin:

TSR:

Cooler:

Shipped Via:

Rem./Contaminant Sample # (lab only)

Report to:

Matt James

Email To:

MJames @withersravenel.com

Project:

Description: Circle K 2720925

City/State

Collected:

NC

Phone: (919) 469-3340

Client Project #

Lab Project #

Fax:

02070955

Collected by (print):

M. James

Site/Facility ID #

WSW-2

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Same Day200%
 Next Day100%
 Two Day50%
 Three Day25%

Date Results Needed
48 HR Rush

Email? No Yes

FAX? No Yes

No.
of
Cntrs

Immediately

Packed on Ice: N Y

Sample ID

Comp/Grab

Matrix *

Depth

Date

Time

WSW-2

5/24

0800

2

X

* Matrix: SS - Soil GW - Groundwater WW - Wastewater DW - Drinking Water OT - Other

pH Temp

Flow Other

Hold #

Remarks:

48HR Rush

Relinquished by: (Signature)

Date:

1100

Time:

5/24

Received by: (Signature)

Samples returned via: ☐ UPS☐ FedEx ☐ Courier ☐

Condition: (lab use only)

Relinquished by: (Signature)

Date:

24 MAY 17

Time:

1200

Received by: (Signature)

6436 7134 4040

Temp: °C Bottles Received:

2.0 2

COC Seal Intact: Y N NA

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

for Debra

Date: Time:

5-25-17 0845

pH Checked:

NCF:

ESC LAB SCIENCES Cooler Receipt Form

Client: <u>WITHERAVS</u>	SDG#	<u>911719</u>	
Cooler Received/Opened On: <u>5/ 25 /17</u>	Temperature: <u>2.1</u>		
Received by :Jon Deboard			
Signature: <u>Jon Deboard</u>			
Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	/		
COC Signed / Accurate?		/	
Bottles arrive intact?		/	
Correct bottles used?		/	
Sufficient volume sent?		/	
If Applicable		/	
VOA Zero headspace?			
Preservation Correct / Checked?			

Appendix B

Bioscreen Natural Attenuation Decision Support System

20 Year Model

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Pantry 925

Goldsboro, NC

Run Name

1. HYDROGEOLOGY

Seepage Velocity*	Vs	29.0	(ft/yr)
or			
Hydraulic Conductivity	K	6.0E-03	(cm/sec)
Hydraulic Gradient	i	0.0014	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity*	alpha x	16.7	(ft)
Transverse Dispersivity*	alpha y	1.7	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or			
Estimated Plume Length	Lp	432	(ft)

3. ADSORPTION

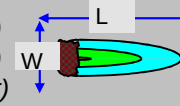
Retardation Factor*	R	1.0	(-)
or			
Soil Bulk Density	rho		(kg/l)
Partition Coefficient	Koc		(L/kg)
Fraction Organic Carbon	foc		(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	3.4E-1	(per yr)
or			
Solute Half-Life	t-half	2.05	(year)
or Instantaneous Reaction Model			
Delta Oxygen*	DO	1.19	(mg/L)
Delta Nitrate*	NO3	0.427	(mg/L)
Observed Ferrous Iron*	Fe2+	0.697	(mg/L)
Delta Sulfate*	SO4	0.0553	(mg/L)
Observed Methane*	CH4	0	(mg/L)

5. GENERAL

Modeled Area Length*	1200	(ft)
Modeled Area Width*	90	(ft)
Simulation Time*	20	(yr)

**6. SOURCE DATA**

Source Thickness in Sat.Zone* 15 (ft)

Source Zones:

Width* (ft)	Conc. (mg/L)*
10	0.1
20	2.4
30	14.68
20	2.4
10	0.1

Source Halflife (see Help):

Infinite	Infinite	(yr)
Inst. React.	1st Order	
Soluble Mass	infinite	(Kg)
In Source NAPL, Soil		

7. FIELD DATA FOR COMPARISON

Concentration (mg/L)	16.1	7.0	.0	.772	.041	.0	.0	.0	.0	.0	.0
Dist. from Source (ft)	0	57	177	297	417	537	657	777	897	1017	1137

8. CHOOSE TYPE OF OUTPUT TO SEE:RUN
CENTERLINE

View Output

RUN ARRAY

View Output

Help

Recalculate This

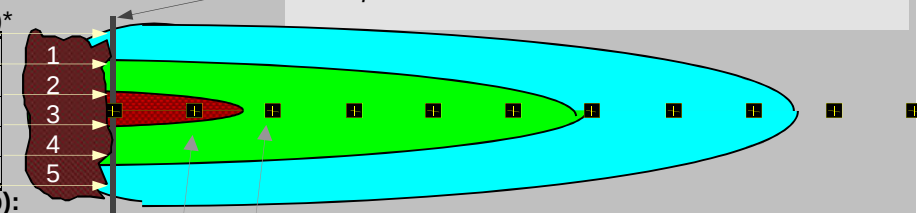
Paste Example Dataset

Restore Formulas for Vs,

Data Input Instructions:

1. Enter value directly....or
 2. Calculate by filling in grey cells below. (To restore formulas, hit button below).
- Variable* → Data used directly in model.
- 20 → Value calculated by model. (Don't enter any data).

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths



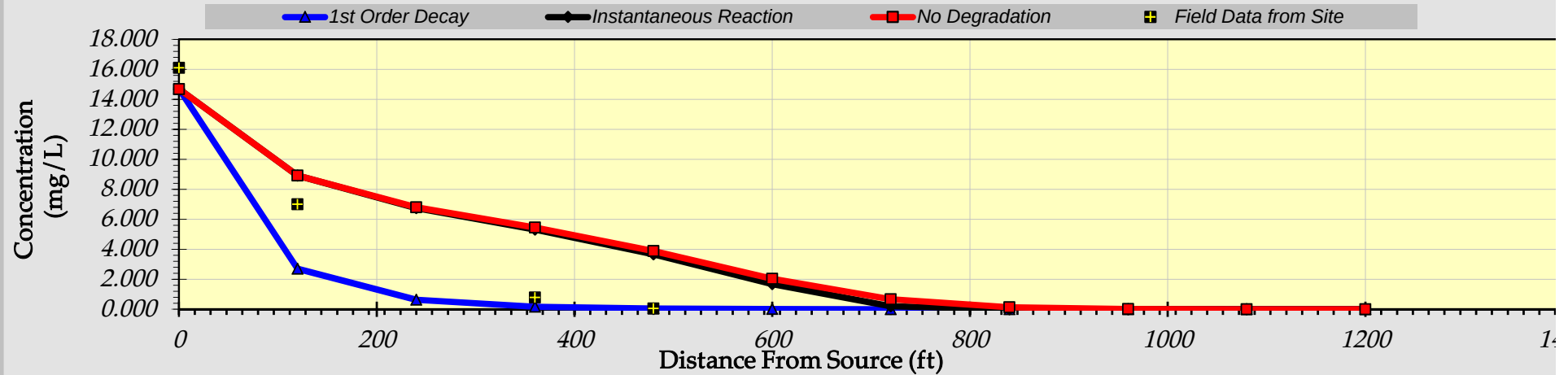
View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter "0"

20 Year Model Results

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft)										
	0	120	240	360	480	600	720	840	960	1080	1200
No Degradation	14.680	8.918	6.800	5.441	3.876	2.026	0.659	0.120	0.011	0.001	0.000
1st Order Decay	14.680	2.687	0.621	0.157	0.041	0.010	0.002	0.000	0.000	0.000	0.000
Inst. Reaction	14.680	8.905	6.740	5.318	3.654	1.670	0.200	0.000	0.000	0.000	0.000
Field Data from Site	16.100	7.000		0.772	0.041						



Calculate Animation

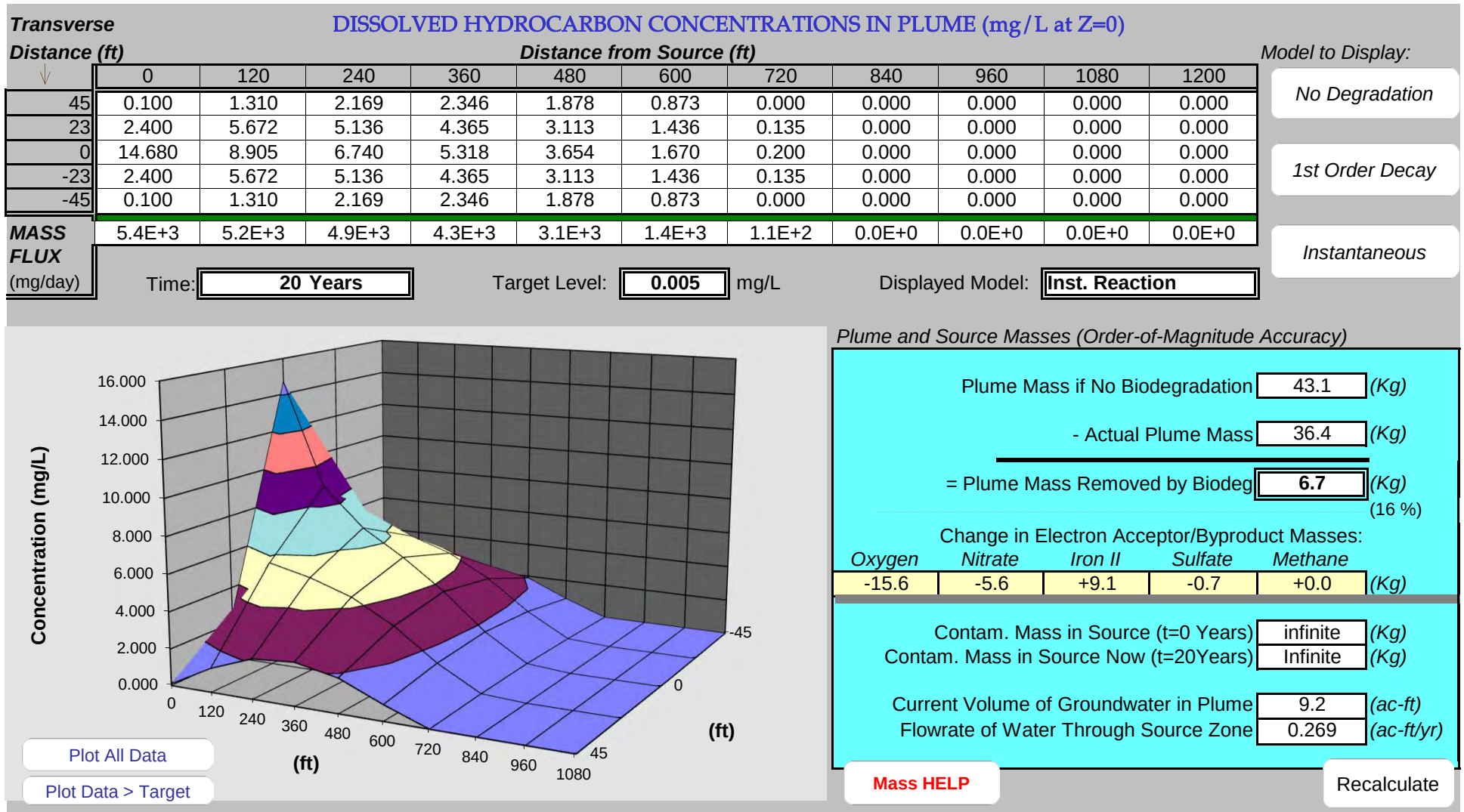
Time:

20 Years

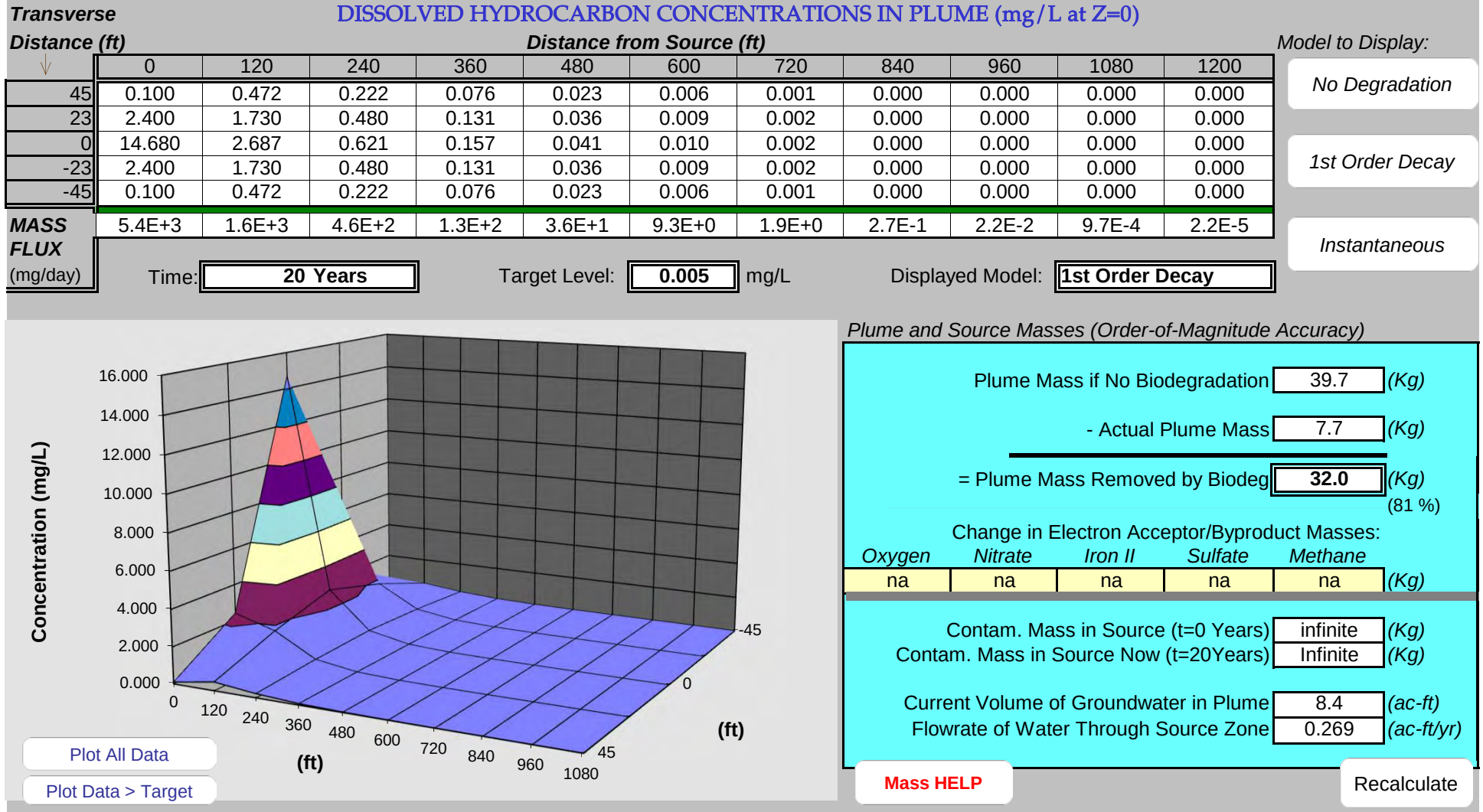
Return to

Recalculate This

20 Year Model Instantaneous Reaction Results



20 Year Model 1st Order Decay Results



34.7 Year Model

34.7 Year Model Input

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence

Version 1.4

Pantry 925

Goldsboro, NC

Run Name

Data Input Instructions:

115
↑ or
0.02

1. Enter value directly....or
2. Calculate by filling in grey cells below. (To restore formulas, hit button below).

Variable* → Data used directly in model.

20

→ Value calculated by model. (Don't enter any data).

1. HYDROGEOLOGY

Seepage Velocity*	Vs	29.0	(ft/yr)
or		↑ or	
Hydraulic Conductivity	K	6.0E-03	(cm/sec)
Hydraulic Gradient	i	0.0014	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity*	alpha x	16.7	(ft)
Transverse Dispersivity*	alpha y	1.7	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		↑ or	
Estimated Plume Length	Lp	432	(ft)

3. ADSORPTION

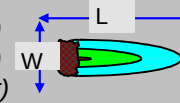
Retardation Factor*	R	1.0	(-)
or		↑ or	
Soil Bulk Density	rho		(kg/l)
Partition Coefficient	Koc		(L/kg)
Fraction Organic Carbon	foc		(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	3.4E-1	(per yr)
or		↑ or	
Solute Half-Life	t-half	2.05	(year)
or Instantaneous Reaction Model			
Delta Oxygen*	DO	1.19	(mg/L)
Delta Nitrate*	NO3	0.427	(mg/L)
Observed Ferrous Iron*	Fe2+	0.697	(mg/L)
Delta Sulfate*	SO4	0.0553	(mg/L)
Observed Methane*	CH4	0	(mg/L)

5. GENERAL

Modeled Area Length*	1200	(ft)
Modeled Area Width*	90	(ft)
Simulation Time*	34.70	(yr)



6. SOURCE DATA

Source Thickness in Sat.Zone* 15 (ft)

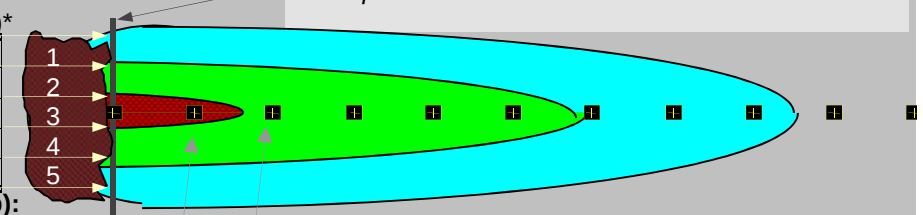
Source Zones:

Width* (ft)	Conc. (mg/L)*
10	0.1
20	2.4
30	14.68
20	2.4
10	0.1

Source Halflife (see Help):

Infinite	Infinite	(yr)
Inst. React.	1st Order	
Soluble Mass	infinite	(Kg)
In Source NAPL, Soil		

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths



View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells
If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Concentration (mg/L)	14.68	7.0	.0	.772	.041	.0	.0	.0	.0	.0	.0
Dist. from Source (ft)	0	57	177	297	417	537	657	777	897	1017	1137

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN
CENTERLINE

RUN ARRAY

Help

Recalculate This

View Output

View Output

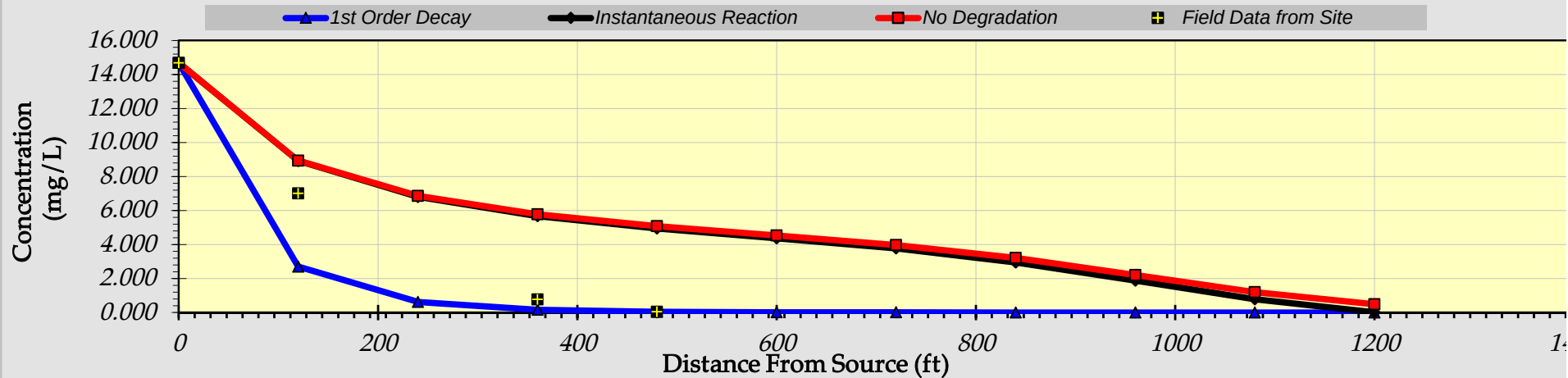
Paste Example Dataset

Restore Formulas for Vs,

34.7 Year Model Results

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft)										
	0	120	240	360	480	600	720	840	960	1080	1200
No Degradation	14.680	8.922	6.850	5.771	5.072	4.531	3.970	3.208	2.205	1.192	0.477
1st Order Decay	14.680	2.687	0.621	0.158	0.042	0.011	0.003	0.001	0.000	0.000	0.000
Inst. Reaction	14.680	8.910	6.793	5.672	4.938	4.366	3.768	2.950	1.870	0.777	0.006
Field Data from Site	14.680	7.000		0.772	0.041						



Calculate
Animation

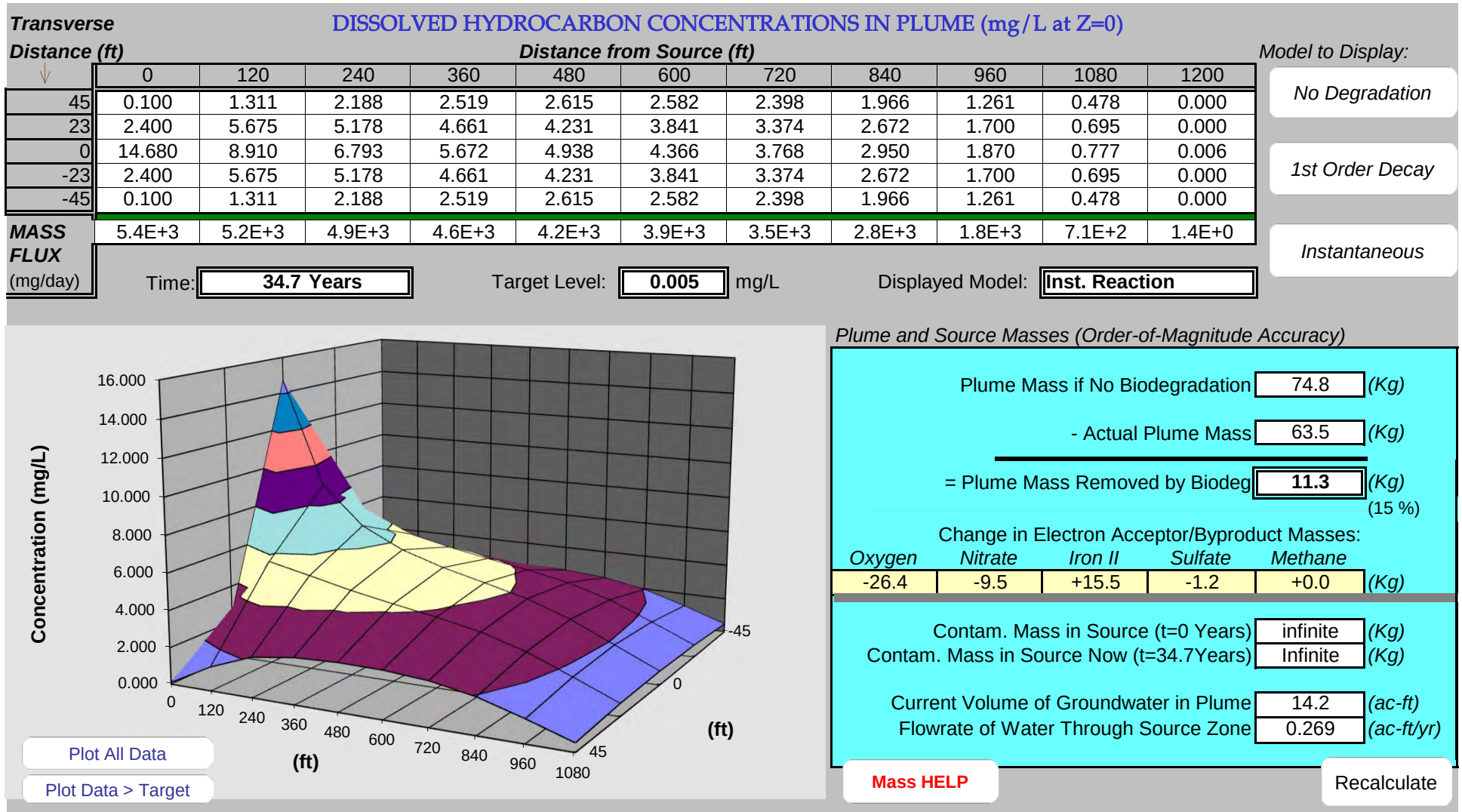
Time:

35 Years

Return to

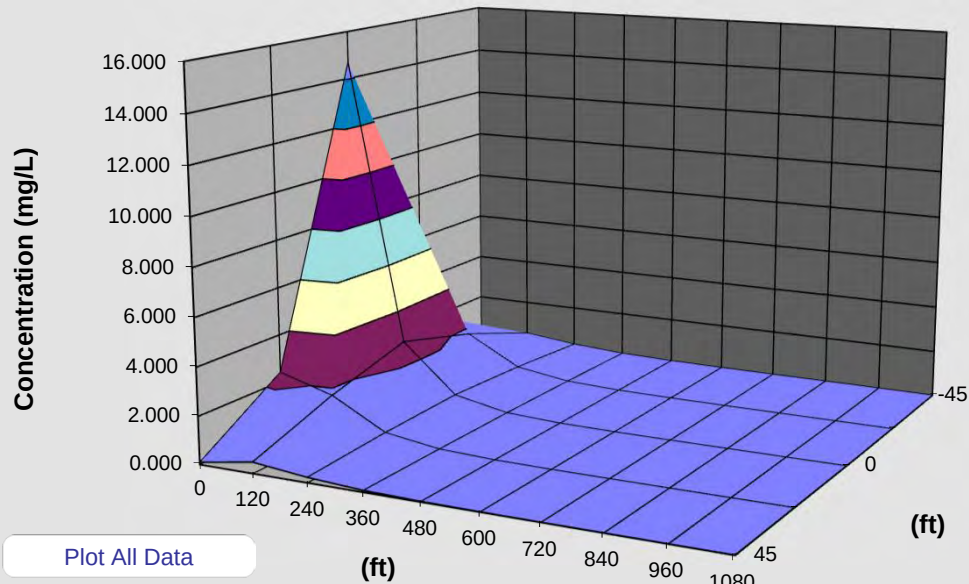
Recalculate This

34.7 Year Model Instantaneous Reaction Results



34.7 Year Model 1st Order Decay Results

DISSOLVED HYDROCARBON CONCENTRATIONS IN PLUME (mg/L at Z=0)												
Transverse Distance (ft)	Distance from Source (ft)											Model to Display:
↓	0	120	240	360	480	600	720	840	960	1080	1200	
45	0.100	0.472	0.222	0.076	0.024	0.007	0.002	0.001	0.000	0.000	0.000	No Degradation
23	2.400	1.730	0.480	0.131	0.036	0.010	0.003	0.001	0.000	0.000	0.000	1st Order Decay
0	14.680	2.687	0.621	0.158	0.042	0.011	0.003	0.001	0.000	0.000	0.000	
-23	2.400	1.730	0.480	0.131	0.036	0.010	0.003	0.001	0.000	0.000	0.000	Instantaneous
-45	0.100	0.472	0.222	0.076	0.024	0.007	0.002	0.001	0.000	0.000	0.000	
MASS FLUX (mg/day)	5.4E+3	1.6E+3	4.6E+2	1.3E+2	3.7E+1	1.0E+1	3.0E+0	8.5E-1	2.4E-1	6.6E-2	1.6E-2	
Time: 34.7 Years Target Level: 0.005 mg/L Displayed Model: 1st Order Decay												



Plot All Data

Plot Data > Target

Plume and Source Masses (Order-of-Magnitude Accuracy)

Plume Mass if No Biodegradation **68.9** (Kg)

- Actual Plume Mass **8.4** (Kg)

= Plume Mass Removed by Biodeg **60.5** (Kg)
(88 %)

Change in Electron Acceptor/Byproduct Masses:

Oxygen	Nitrate	Iron II	Sulfate	Methane	
na	na	na	na	na	(Kg)

Contam. Mass in Source (t=0 Years) **infinite** (Kg)

Contam. Mass in Source Now (t=34.7Years) **Infinite** (Kg)

Current Volume of Groundwater in Plume **8.4** (ac-ft)

Flowrate of Water Through Source Zone **0.269** (ac-ft/yr)

Mass HELP

Recalculate

GEOENVIRONMENTAL PHASE II INVESTIGATION

**MARJORIE SMITH NEWSOME
2305 N. US HWY 13
GOLDSBORO, NORTH CAROLINA**

**TIP NUMBER: U-3609B
WBS NUMBER: 39026.1.2
COUNTY: WAYNE**

**DESCRIPTION: GOLDSBORO - US 13 (BERKELEY BLVD)
FROM SR 1003 (NEW HOPE RD) TO SR 1572 (SAULSTON RD)**

PREPARED FOR:



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

JANUARY 28, 2020

PREPARED BY:

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WILMINGTON, NORTH CAROLINA 28404-0279
(910) 452-5861**

**CATLIN PROJECT NO. 219139
CORPORATE GEOLOGY LICENSE CERTIFICATION NO. C-118
CORPORATE LICENSURE NO. FOR ENGINEERING SERVICES C-0585**

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APPENDIX B	BORING LOGS, WELL CONSTRUCTION AND ABANDONMENT RECORDS
APPENDIX C	LABORATORY REPORTS AND CHAIN OF CUSTODY RECORDS

**GEOENVIRONMENTAL PHASE II INVESTIGATION
MARJORIE SMITH NEWSOME
2305 N. US HWY 13
GOLDSBORO, NORTH CAROLINA**

**TIP NUMBER: U-3609B
WBS NUMBER: 39026.1.2**

JANUARY 28, 2020

1.0 INTRODUCTION

Acquisition of the right-of-way (ROW) and/or easement is necessary for the US 13 improvements (including drainage) in Goldsboro, North Carolina. The North Carolina Department of Transportation (NCDOT) has indicated a site investigation is necessary to determine if underground storage tanks (UST), contaminated groundwater and/or contaminated soils are present.

2.0 PURPOSE OF INVESTIGATION AND DESCRIPTION

CATLIN Engineers and Scientists (CATLIN) was retained by the NCDOT Geotechnical Engineering Unit to provide field investigations concluding with GeoEnvironmental Phase II Investigation reports for nine (9) sites. In response to a request for proposal by Mr. John Pilipchuk, L.G., P.E. dated November 12, 2019 and subsequent work scope discussions with Mr. Craig Haden, CATLIN submitted a proposal for conducting an investigation at 2305 N. US Hwy 13. – Marjorie Smith Newsome, along the NCDOT Project “Goldsboro – US 13 (Berkeley Blvd) from SR 1003 (New Hope Rd) to SR 1572 (Saulston Rd)” in Goldsboro, North Carolina. Figure 1 illustrates the general site location. The NCDOT Conventional Plan Sheet Symbols are provided on Figure 2.

According to NCDOT, ROW and/or easement acquisition is necessary for the roadway construction (TIP Number U-3609B) and specifically at the above referenced address (2305 N. US Hwy 13). A site investigation was requested before parcel acquisition and roadway construction. The work scope as requested includes:

- Notify property owners/occupants of schedule and scope of work.
- Locate all drums and/or USTs, determine approximate size and contents (if any).
- Determine if contaminated soils are present.
- Test soil for contaminants relevant to the site’s past use and/or possible release(s). For petroleum contaminants, Ultra-Violet Fluorescence (UVF) analysis is the preferred method.
- Advance four (4) borings and collect one (1) soil sample from each boring to determine if contaminated soils are present.
- Submit four (4) soil samples for UVF analyses.

- Collect one (1) groundwater sample and submit for volatile and semi-volatile organics analyses per Standard Method 6200B and Environmental Protection Agency (EPA) Method 625.
- Include (as a standard delivery item) the RED Lab, LLC (RED Lab) graphs in reports and send the GeoEnvironmental Section a copy of the RED Lab Excel file(s).
- If soil and groundwater contamination are evident, estimate the quantity of impacted soils and indicate the approximate area of soil and groundwater contamination on report figures.
- Provide a MicroStation file with the location of soil borings, USTs, soil contamination and monitoring wells.
- Prepare a report including field activities, findings, and recommendations and submit one electronic copy to the NCDOT GeoEnvironmental Section.

This report documents our activities and findings for the Majorie Smith Newsome property at 2305 N. US Hwy 13, Goldsboro, North Carolina.

3.0 METHODS

Proposed boring/sample locations were discussed and agreed upon before boring advancement.

CATLIN coordinated geophysical activities with Pyramid Geophysical Services (Pyramid). The geophysical investigation methods and site photographs are detailed in the Pyramid Geophysical Survey provided in Appendix A.

CATLIN proposed utilizing QROS On-Site Rapid Measurement Techniques and Tools (QED™ Analyzer) by RED Lab to evaluate potential for petroleum and Poly Aromatic Hydrocarbon (PAH) impacts to soil in a cost-effective manner. Soil samples collected from above the approximate water table depth with total petroleum hydrocarbon (TPH) concentrations greater than the North Carolina Department of Environmental Quality (NCDEQ) Action Levels [100 milligrams per kilogram (mg/kg) diesel range organics (DRO) or 50 mg/kg gasoline range organics (GRO)] will be considered contaminated for estimated impacted vadose soil volume calculations. Contaminated soil volume is estimated from the surface to the water table and/or the midpoint distance between a “clean” sample location and contaminated sample location or the property line/easement.

Borings advanced during this investigation are identified with “2305DPT” and numbered sequentially 1 through 4. Soil samples for analysis per QROS QED™ Analyzer were identified by boring number and depth [example: 2305DPT-01 (7')]. A groundwater sample for analysis per Standard Method 6200B and EPA Method 625 was identified by boring number [example: 2305DPT-02]. CATLIN’s field activities at the site began and concluded on December 11, 2019.

3.1 FIELD METHODS

All field work was conducted in general accordance with state and federal guidelines and industry standards.

Underground utility locating was coordinated by CATLIN personnel. The North Carolina One Call Center (NC-1-Call) was contacted for underground utility location. The areas around the proposed boring locations were checked and underground utilities were indicated by NC-1-Call personnel. Pyramid also marked private underground utilities and cleared the boring locations.

CATLIN personnel gathered subsurface soil data by Direct Push Technology boring advancement using a GeoProbe 5400 (GeoProbe). When using the GeoProbe, the borings are advanced to depth by static force and a hydraulic percussion hammer. Two and one-quarter inch diameter by four-foot length steel is used as casing. Soil samples are continuously collected in one and one-half inch clear liners. Liners are removed from the casing and then cut in half longitudinally to allow for visual/manual classification utilizing the Unified Soil Classification System (USCS). Boring information was recorded on field logs and transferred to boring logs (see Appendix B). Soils were removed from the liner in two (2) foot intervals and placed in sealable polyethylene bags for organic volatile (headspace) analysis (OVA) utilizing a MiniRAE 3000 Photoionization Detector (PID). The OVA results were documented on field logs and are included on the boring logs in Appendix B. Soil samples were selected and packed in appropriate glassware for analysis. One (1) soil sample was collected from each soil boring location.

New disposable nitrile gloves were worn during sampling activities. Soils selected for QROS QED™ analysis were placed into new glassware provided by QROS. All samples were placed on ice in an insulated cooler for transportation to RED Lab in Wilmington, NC. Sample integrity was maintained by following proper Chain of Custody (COC) procedures. A copy of the COC is provided following the analytical report in Appendix C.

Following boring termination and tooling removal, new one-inch slotted poly vinyl chloride (PVC) well screen and casing was installed in a selected borehole for groundwater sampling. A grab groundwater sample was collected utilizing a peristaltic pump and new polyethylene tubing. Groundwater was pumped directly into laboratory provided glassware. New, disposable nitrile gloves were worn when handling well material and while collecting groundwater samples. The samples were packed on ice in an insulated cooler for transportation to the laboratory. Sample integrity was maintained by following proper COC procedures (see Appendix C).

The PVC materials were subsequently removed from the boring. Boreholes were abandoned to the surface in grassy areas and just below existing asphalt in asphalt areas using three-eighth inch bentonite chips. Bentonite

and water were poured into the borehole simultaneously to facilitate hydration. Boreholes in asphalt were finished with asphalt patch to the surface.

3.2 ANALYTICAL TESTING

The QROS QED™ Analyzer methods have been approved by the NCDEQ for petroleum contamination determination. Complete QROS QED™ procedures are on file with the NCDEQ and are available upon request. The QROS QED™ analysis was conducted by RED Lab personnel at their laboratory in Wilmington, North Carolina. QROS QED™ analysis provides Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX), DRO, GRO, TPH, total Aromatics (C10-C35) and 16 EPA PAH concentrations. A total of four (4) soil samples were submitted to RED Lab. The COC documentation is included in Appendix C.

One (1) groundwater sample was submitted to ENCO Laboratories (ENCO) for analysis per EPA Methods 625 and Standard Method 6200B for the presence of semi-volatile and volatile organics (including potential petroleum and chlorinated solvent parameters). The COC documentation is included in Appendix C.

4.0 FIELD ACTIVITIES

4.1 CURRENT SITE CONDITIONS AND FIELD OBSERVATIONS

The site currently operates as a retail gun and ammunition shop with a gravel parking lot. The building is outside of the proposed ROW and/or easement. The geophysical survey recorded evidence of one (1) probable UST at the site.

Photographs taken during the geophysical investigation are included in the geophysical survey provided in Appendix A.

Figure 3 illustrates the subject site including probable UST location, soil borings, and sample locations.

4.2 SOIL SAMPLING

Four (4) borings were advanced as part of this investigation. The four (4) soil samples collected (one from each boring) were submitted for analysis. Boring/sample locations are illustrated on Figure 3. Boring logs are included in Appendix B.

Soil borings were advanced to eight (8) or 12 feet below land surface (BLS) and terminated in moist to saturated clay and silty clay to clay except boring 2305DPT-02, which was terminated in silty and clayey fine and coarse sand. Soils were collected continuously to boring termination. After retrieving the

drive, soil was visually/manually classified for USCS and screened for organic vapor head space. Soil samples collected from each boring for analysis were packed in the appropriate glassware, labeled, and placed in a cooler on ice. The four (4) soil samples were submitted to RED Lab for QED™ analyses. The COC documentation is included in Appendix C.

4.3 GROUNDWATER SAMPLING

One (1) groundwater samples (2305DPT-02) was collected and submitted for analysis per Standard Method 6200B and EPA Method 625 under proper COC protocol (see Appendix C).

4.4 SURVEYING

Boring/sample locations were recorded utilizing a Trimble® global positioning survey instrument and data collector. Boring coordinates are on the boring logs provided in Appendix B and Table 2. Boring locations are indicated on plan sheets provided by NCDOT and illustrated on Figure 3.

5.0 RESULTS

Historical review

Review of the NCDEQ Division of Waste Management Site Locator Tool indicated no registered USTs, ASTs, or incidents at the subject site.

Geophysical Investigation

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of six (6) EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. The EM and GPR recorded evidence of one (1) probable UST southeast of the building. The probable UST location is outside the easement. The complete geophysical survey report by Pyramid is included in Appendix A.

Soil

Soil borings 2305DPT-01, -03, and -04 were terminated in clay and silty clay at eight (8) feet BLS. Boring 2305DPT-02 was terminated at 12 feet BLS in silty and clayey fine and coarse sand. Complete boring logs are provided in Appendix B. A soil sample was collected from each boring between four (4) and nine (9) feet BLS and submitted for laboratory analysis. The complete analytical reports and chain of custody documents are provided in Appendix C.

The soil headspace OVA results ranged from 0.0 ppm [2305DPT-04 (0-2')] to 4,572 ppm [2305DPT-03 (2-4')]. The soil headspace screening is summarized in Table 1.

The soil samples collected from borings (2305DPT-01 through –03) revealed TPH DRO and TPH GRO above the State Action Levels (100 ppm DRO, 50 ppm GRO). Summarized TPH results are provided on Table 2 and illustrated on Figure 3. The estimated area of soil contamination illustrated on Figure 3 includes 4,055 square feet (ft²) within the ROW and/or easement. Assuming a depth to groundwater of approximately 10 feet, the contaminated soil volume within the ROW and/or easement is 1,502 yards³. This estimated volume is based on CATLIN's recent soils sample results.

Groundwater

Based on the saturated soils found in the 2305DPT-02 temporary monitoring well boring, depth to groundwater is assumed at approximately 10.0 feet BLS. Standard Method 6200B and EPA Method 625 compounds were detected above the North Carolina Administrative Code (NCAC) T15A:02L Groundwater Quality Standards (2L GWQS) in the groundwater sample. The groundwater sample results revealed Naphthalene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Ethylbenzene, n-Propyl Benzene, Toluene, and Total Xylenes concentrations above the corresponding 2L GWQS. No compounds were detected at concentrations above the corresponding Gross Contaminant Levels. The groundwater sample results are summarized on Table 3. The groundwater sample location and summarized results are illustrated on Figure 4. The complete laboratory analytical report is provided in Appendix C. A monitoring well construction and abandonment record were submitted to NCDEQ. Copies of the records are provided in Appendix B.

6.0 SUMMARY AND CONCLUSIONS

The Marjorie Smith Newsome property at 2305 N. US Hwy 13 currently operates as a retail gun and ammunition shop with a gravel parking lot. The building is outside of the proposed ROW and/or easement. The geophysical survey recorded evidence of one (1) probable UST at the site but outside the easement. Review of the NCDEQ Division of Waste Management Site Locator Tool indicated no registered USTs, ASTs, or incidents at the site.

Soil and groundwater samples (4 soil, 1 groundwater) revealed TPH (DRO and GRO) and semi-volatile/volatile organic impacts, respectively. The proposed construction at the site is suspected to encounter contaminated soil and/or groundwater within the ROW and/or easement. The estimated impacted soil volume is 1,502 yards³.

7.0 LIMITATIONS

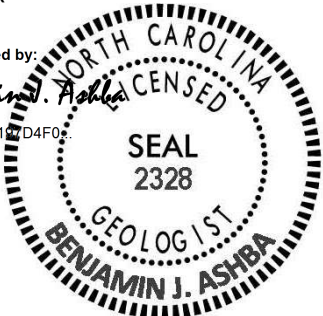
This report is based on the agreed work scope and a review of available data from limited sampling. It is possible that this investigation may have failed to reveal the presence of contamination in the project area where such contamination may exist. Although CATLIN has used accepted methods appropriate for soil and groundwater sampling, CATLIN cannot guarantee that additional soil and/or groundwater contamination does not exist.

8.0 SIGNATURES

(Document Not Considered Final Unless All Signatures Are Completed)

DocuSigned by:
Benjamin J. Ashba
DAC044141...D4F0...

2/6/2020



Benjamin J. Ashba, P.G.
Project Manager

DocuSigned by:
Corey D. Futral
10FF8E52EF63477...

Corey D. Futral
Project Geologist

TABLES

TABLE 1
SUMMARY OF SOIL HEADSPACE SCREENING

Marjorie Smith Newsome
2305 N. US Hwy 13, Goldsboro, North Carolina

BORING I.D.	Sample Depth (ft.)	OVA READING (ppm)	Sample Selected for Laboratory Analysis
2305DPT-01	0 - 2	0.5	
2305DPT-01	2 - 4	0.7	
2305DPT-01	4 - 6	82.1	
2305DPT-01	6 - 8	3372	2305 DPT-01 (7')
2305DPT-02	0 - 2	16.2	
2305DPT-02	2 - 4	15.6	
2305DPT-02	4 - 6	803.6	
2305DPT-02	6 - 8	2715	
2305DPT-02	8 - 10	3650	Soil 2305 DPT-02 (9')
2305DPT-02	10 - 12	1170	Water 2305 DPT-02
2305DPT-03	0 - 2	431.2	
2305DPT-03	2 - 4	4572	2305 DPT-03 (4')
2305DPT-03	4 - 6	1472	
2305DPT-03	6 - 8	3574	
2305DPT-04	0 - 2	0.0	
2305DPT-04	2 - 4	0.0	
2305DPT-04	4 - 6	1.0	
2305DPT-04	6 - 8	1.3	2305 DPT-04 (6')

TABLE 2
SUMMARY OF SOIL LABORATORY RESULTS
ULTRA VIOLET FLUORESCENCE BY REDLAB QED™ ANALYZER

Marjorie Smith Newsome
2305 N. US Hwy 13, Goldsboro, North Carolina

Sample ID	Northing	Easting	Contaminant of Concern	TPH GRO	TPH DRO
			Date Collected		
2305DPT-01 (7')	602,063	2,322,015	12/11/2019	688.8	473.2
2305DPT-02 (9')	602,057	2,322,016	12/11/2019	468.5	268.4
2305DPT-03 (4')	602,075	2,326,541	12/11/2019	231.8	110.6
2305DPT-04 (6')	602,095	2,326,597	12/11/2019	<0.57	<0.57
STATE ACTION LEVELS				50	100

Sample depth provided in parantheses as part of the Sample ID.

All results in milligrams per kilogram (mg/Kg).

< = Less than method detection limit

Bold Sample IDs and results indicate concentrations above State Action Levels.

TABLE 3
SUMMARY OF GROUNDWATER LABORATORY RESULTS
EPA Method 625 and Standard Method 6200B

Marjorie Smith Newsome
2305 N. US Hwy 13, Goldsboro, North Carolina

Method →		EPA Method 625		Standard Method 6200B							
Contaminant of Concern →		Naphthalene	All Other 625 Parameters	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Ethylbenzene	Naphthalene	n- Propyl Benzene	Toluene	Total Xylenes	All Other 6200B Parameters
Sample ID	Date Collected										
2305DPT-02	12/11/2019	540	BMDL	4,800	1,200	2,900	620	620	60,000	12,000	BMDL
GCL (µg/L)		6,000	Varies	28,500	25,000	84,500	6,000	30,000	260,000	85,500	Varies
2L GWQS (µg/L)		6	Varies	400	400	600	6	70	600	500	Varies

All results in micrograms per liter (µg/L).

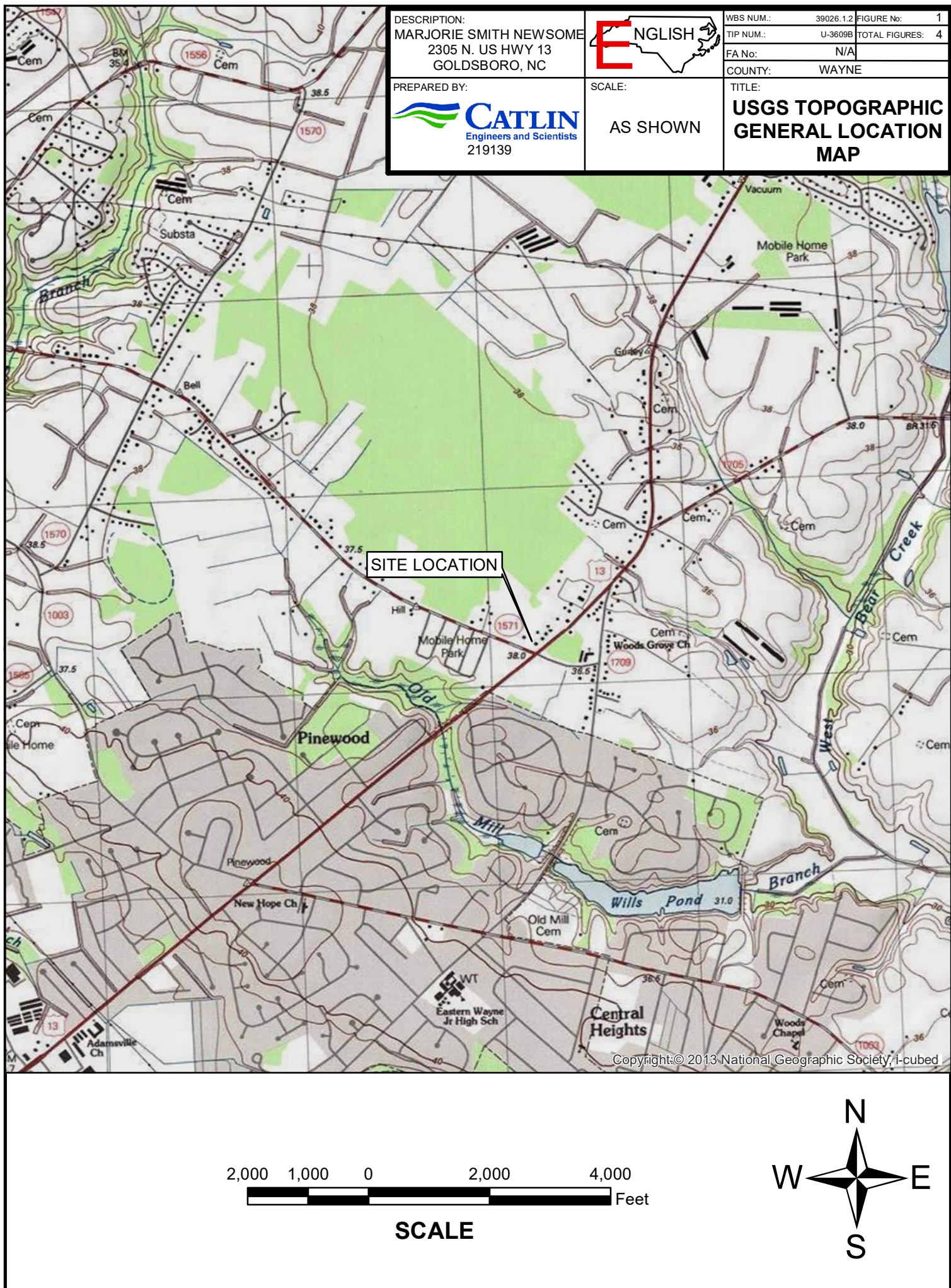
BMDL = Below Method Detection Limit. Refer to analytical report for a complete list of parameters and reporting limits.

GCL = Gross Contaminant Level

2L GWQS = NCAC T15A:02L Groundwater Quality Standards

Bold Sample IDs and results indicate concentrations above 2L GWQS Standard.

FIGURES



STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point	
Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Exist Permanent Easment Pin and Cap	
New Permanent Easement Pin and Cap	
Vertical Benchmark	
Existing Right of Way Marker	
Existing Right of Way Line	
New Right of Way Line	
New Right of Way Line with Pin and Cap	
New Right of Way Line with Concrete or Granite RW Marker	
New Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
New Control of Access	
Existing Easement Line	
New Temporary Construction Easement	
New Temporary Drainage Easement	
New Permanent Drainage Easement	
New Permanent Drainage /Utility Easement	
New Permanent Utility Easement	
New Temporary Utility Easement	
New Aerial Utility Easement	

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	
Single Shrub	

*S.U.E. = Subsurface Utility Engineering

Hedge	
Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

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

UTILITIES:

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

TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Cable LOS B (S.U.E.*)	
U/G Telephone Cable LOS C (S.U.E.*)	
U/G Telephone Cable LOS D (S.U.E.*)	
U/G Telephone Conduit LOS B (S.U.E.*)	
U/G Telephone Conduit LOS C (S.U.E.*)	
U/G Telephone Conduit LOS D (S.U.E.*)	
U/G Fiber Optics Cable LOS B (S.U.E.*)	
U/G Fiber Optics Cable LOS C (S.U.E.*)	
U/G Fiber Optics Cable LOS D (S.U.E.*)	

WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line LOS B (S.U.E.*)	
U/G Water Line LOS C (S.U.E.*)	
U/G Water Line LOS D (S.U.E.*)	
Above Ground Water Line	

TV:

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Cable LOS B (S.U.E.*)	
U/G TV Cable LOS C (S.U.E.*)	
U/G TV Cable LOS D (S.U.E.*)	
U/G Fiber Optic Cable LOS B (S.U.E.*)	
U/G Fiber Optic Cable LOS C (S.U.E.*)	
U/G Fiber Optic Cable LOS D (S.U.E.*)	

GAS:

Gas Valve	
Gas Meter	
U/G Gas Line LOS B (S.U.E.*)	
U/G Gas Line LOS C (S.U.E.*)	
U/G Gas Line LOS D (S.U.E.*)	
Above Ground Gas Line	

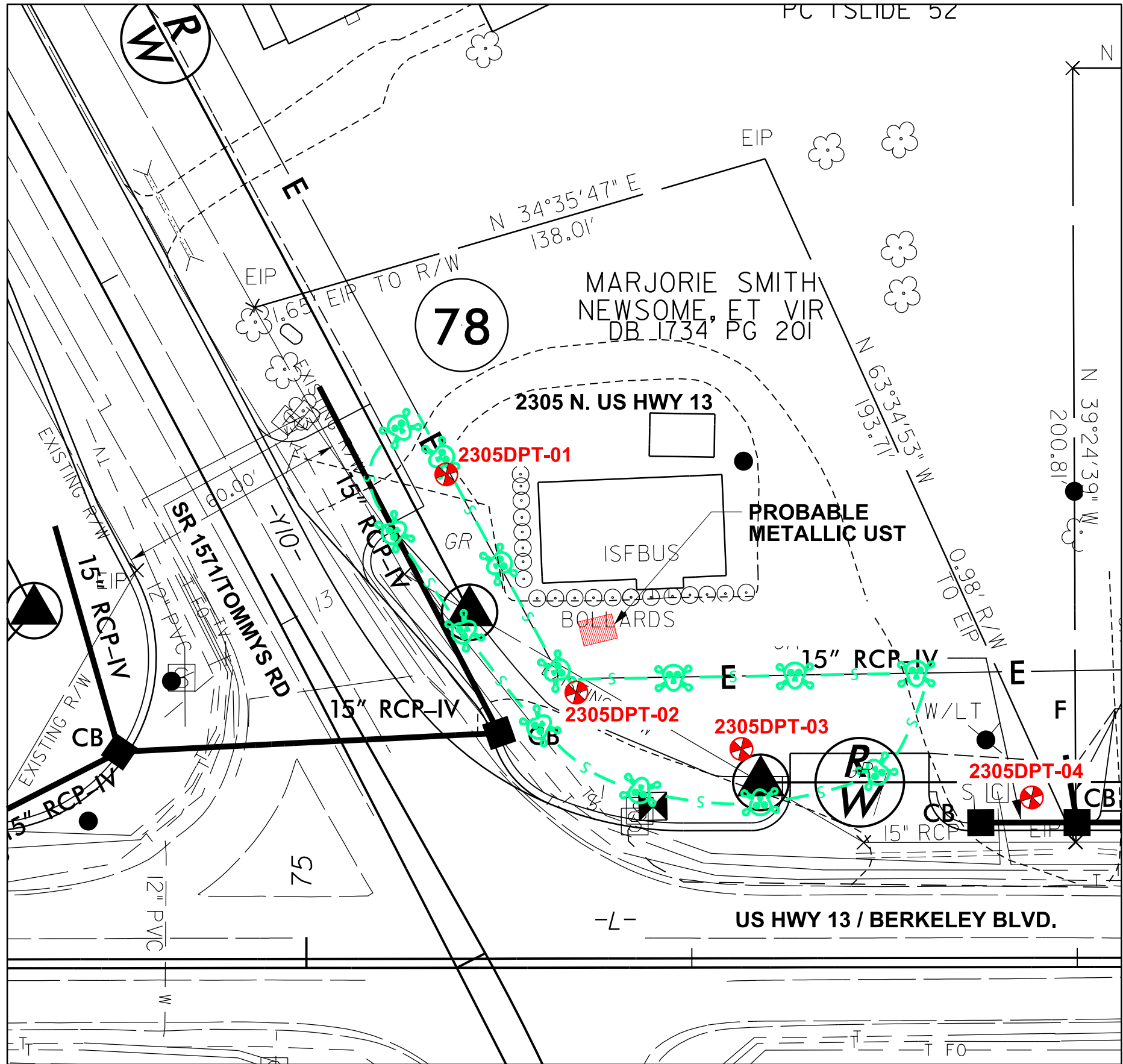
SANITARY SEWER:

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Forced Main Line LOS B (S.U.E.*)	
SS Forced Main Line LOS C (S.U.E.*)	
SS Forced Main Line LOS D (S.U.E.*)	

MISCELLANEOUS:

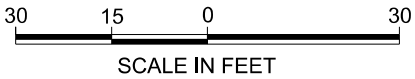
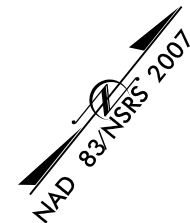
Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line LOS B (S.U.E.*)	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
U/G Test Hole LOS A (S.U.E.*)	
Abandoned According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

S:\wpm\kg\PROJECT\219139\NCDOT Goldsboro PSAs\Figures\Approved 25 Percent to Hydro\Roadway\Proj\Site Plans



NOTE:
1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.

DESCRIPTION: MARJORIE SMITH NEWSOME 2305 N. US HWY 13 GOLDSBORO, NC		WBS NO.: 39026.1.2	FIGURE NO.: 3
		TIP NO.: U-3609B	TOTAL FIGURES: 4
		F.A. NO.: N/A	
PREPARED BY:  PROJ #: 219139	SCALE: 1" = 30'	COUNTY: WAYNE	TITLE: BORING LOCATIONS AND SUMMARIZED SOIL SAMPLE RESULTS

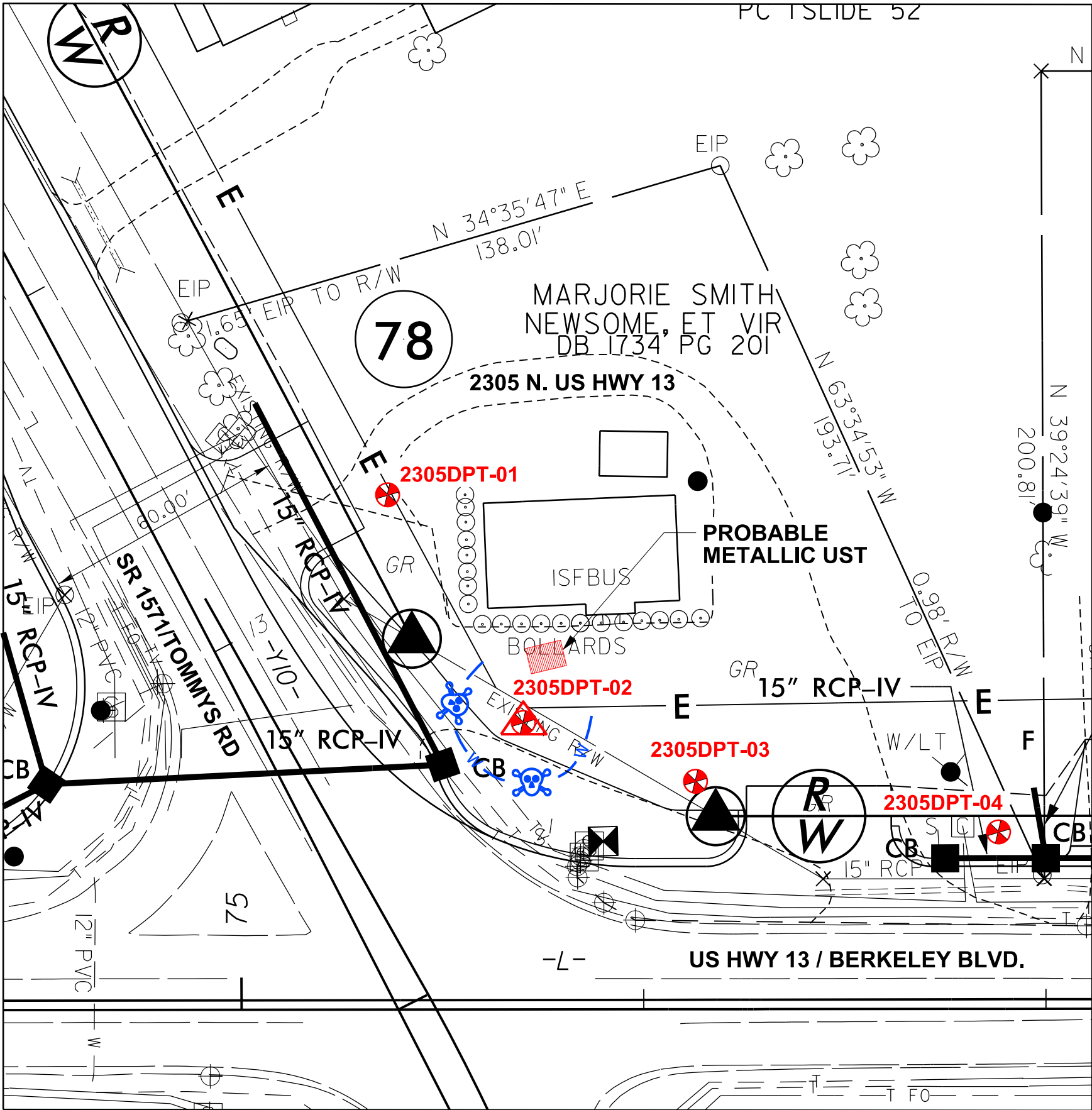


ULTRA VIOLET FLUORESCENCE BY REDLAB QED™ ANALYZER

Sample ID	Contaminant of Concern →	TPH GRO	TPH DRO
	Date Collected		
2305DPT-01 (7')	12/11/2019	688.8	473.2
2305DPT-02 (9')	12/11/2019	468.5	268.4
2305DPT-03 (4')	12/11/2019	231.8	110.6
2305DPT-04 (6')	12/11/2019	<0.57	<0.57
STATE ACTION LEVELS		50	100

Sample depth provided in parantheses as part of the Sample ID.
All results in milligrams per kilogram (mg/Kg).
< = Less than method detection limit
Bold Sample IDs and results indicate concentrations above State Action Levels.

S:\wpm\kg\PROJECT\219139\NCDOT Goldsboro PSAs\Figures\Approved 25 Percent to Hydro\Roadway\Proj\Site Plans



NOTE:
1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.

DESCRIPTION:
MARJORIE SMITH NEWSOME
2305 N. US HWY 13
GOLDSBORO, NC

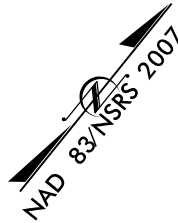
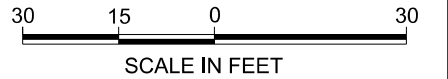
PREPARED BY:
CATLIN
Engineers and Scientists
Wilmington, North Carolina
PROJ #: 219139



SCALE:
1" = 30'

WBS NO.: 39026.1.2
TIP NO.: U-3609B
F.A. NO.: N/A

COUNTY: WAYNE
TITLE:
BORING LOCATIONS AND
SUMMARIZED GROUNDWATER
SAMPLE RESULTS



LEGEND



GROUNDWATER SAMPLE

SUMMARY OF GROUNDWATER LABORATORY RESULTS

Method →		EPA Method 625		Standard Method 6200B							
Contaminant of Concern →		Naphthalene	All Other 625 Parameters	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Ethylbenzene	Naphthalene	n- Propyl Benzene	Toluene	Total Xylenes	All Other 6200B Parameters
Sample ID	Date Collected										
2305DPT-02	12/11/2019	540	BMDL	4,800	1,200	2,900	620	620	60,000	12,000	BMDL
GCL (µg/L)		6,000	Varies	28,500	25,000	84,500	6,000	30,000	260,000	85,500	Varies
2L GWQS (µg/L)		6	Varies	400	400	600	6	70	600	500	Varies

All results in micrograms per liter (µg/L).
BMDL = Below Method Detection Limit. Refer to analytical report for a complete list of parameters and reporting limits.
GCL = Gross Contaminant Level
2L GWQS = NCAC T15A.02L Groundwater Quality Standards
Bold Sample IDs and results indicate concentrations above 2L GWQS Standard.

APPENDICES

APPENDIX A
PYRAMID GEOPHYSICAL SURVEY



PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2019-359)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION: 2305 N. U.S. HIGHWAY 13 NCDOT PROJECT U-3609B (39026.1.2)

2305 N. U.S. HIGHWAY 13, GOLDSBORO, NC

December 20, 2019

Report prepared for: Benjamin Ashba, P.G.
Catlin Engineers & Scientists
220 Old Dairy Road
Wilmington, NC 28405

Prepared by: _____

A handwritten signature in black ink, appearing to read "E. Cross".

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

Reviewed by: _____

A handwritten signature in black ink, appearing to read "Doug Canavella".

Douglas A. Canavella, P.G.
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406

P: 336.335.3174 F: 336.691.0648

C257: GEOLOGY

C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
2305 N. U.S. Highway 13
Goldsboro, Wayne County, North Carolina

Table of Contents

Executive Summary	1
Introduction.....	2
Field Methodology.....	2
Discussion of Results.....	3
<i>Discussion of EM Results</i>	3
<i>Discussion of GPR Results</i>	4
Summary & Conclusions	5
Limitations	5

Figures

- Figure 1 – 2305 N. U.S. Highway 13 – Geophysical Survey Boundaries and Site Photographs
- Figure 2 – 2305 N. U.S. Highway 13 – EM61 Results Contour Map
- Figure 3 – 2305 N. U.S. Highway 13 – GPR Transect Locations and Images
- Figure 4 – 2305 N. U.S. Highway 13 – Location and Size of One Probable UST
- Figure 5 – Overlay of Metal Detection Results and One Probable UST on NCDOT Engineering Plans

LIST OF ACRONYMS

CADD	Computer Assisted Drafting and Design
DF	Dual Frequency
EM.....	Electromagnetic
GPR.....	Ground Penetrating Radar
GPS	Global Positioning System
NCDOT.....	North Carolina Department of Transportation
ROW	Right-of-Way
UST	Underground Storage Tank

EXECUTIVE SUMMARY

Project Description:

Pyramid Environmental conducted a geophysical investigation for Catlin Engineers & Scientists at 2305 N. U.S. Highway 13 in Goldsboro, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-3609B). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from December 4-5, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results:

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of six EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface.

EM and GPR recorded evidence of a probable UST just southeast of the building. Probable UST #1 is approximately 9 feet long and 6.5 feet wide. Collectively, the geophysical data recorded evidence of one probable metallic UST at the parcel.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Catlin Engineers & Scientists at 2305 N. U.S. Highway 13 in Goldsboro, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project U-3609B). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from December 4-5, 2019, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included a retail building surrounded by gravel and grass surfaces. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61-MK2 (EM61) metal detector integrated with a Geode External GPS/GLONASS receiver. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8-foot intervals along north-south trending or east-west trending, generally parallel survey lines, spaced five feet apart. The data were downloaded to a

computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 15.0 software programs.

GPR data were acquired across select EM anomalies on December 5, 2019, using a Geophysical Survey Systems, Inc. (GSSI) SIR 4000 controller coupled to a 350 MHz HS antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

Pyramid's classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks on NCDOT Projects			
High Confidence	Intermediate Confidence	Low Confidence	No Confidence
Known UST Active tank - spatial location, orientation, and approximate depth determined by geophysics.	Probable UST Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	Possible UST Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist's discretion.

DISCUSSION OF RESULTS

Discussion of EM Results

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The following table presents the list of EM anomalies and the cause of the metallic response, if known:

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Utilities	
2	Vehicle/ One Probable UST	✓
3	Interference from Overhead Powerlines	
4	Signs/Utilities	✓
5	Reinforced Concrete Pipe	
6	Signs/Utilities	✓

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including utilities, a vehicle, reinforced concrete pipe, and signs. There was also interference from overhead powerlines at the site. GPR was performed across EM Anomaly 2 to confirm that the metallic interference resulting from the vehicle in this location during the time of the EM survey did not obscure any significant structures such as USTs. GPR was also performed across EM Anomalies 4 and 6 to confirm that the metallic interference resulting from the signs and utilities did not obscure any significant structures such as USTs.

Discussion of GPR Results

Figure 3 presents the locations of the formal GPR transects performed at the property as well as the transect images. A total of six formal GPR transects were performed at the site.

GPR Transects 1-2 and 5-6 were performed across EM Anomaly 2. GPR Transects 1-2 showed discreet hyperbolic reflectors consistent with utilities or metallic debris. GPR Transects 5-6 showed large, high-amplitude hyperbolic and lateral reflectors typical of a probable UST. Probable UST #1 is located just southeast of the building and is approximately 9 feet long and 6.5 feet wide. **Figure 4** presents the location and size of the one probable UST as well as ground-level photographs. It should be noted that, due to GPS interference from an unknown source, the location of the UST is approximate.

GPR Transects 3 and 4 were performed across EM Anomalies 4 and 6. GPR Transect 3 showed smaller, discrete hyperbolic reflectors consistent with possible utilities or buried debris. No significant structures were observed in GPR Transect 4.

Collectively, the geophysical data recorded evidence of one probable metallic UST at the parcel. **Figure 5** provides an overlay of the metal detection results and one probable UST on the NCDOT engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at 2305 N. U.S. Highway 13 in Goldsboro, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface.
- EM and GPR recorded evidence of a probable UST just southeast of the building. Probable UST #1 is approximately 9 feet long and 6.5 feet wide.
- Collectively, the geophysical data recorded evidence of one probable metallic UST at the parcel.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for Catlin Engineers & Scientists in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR surveys are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined the definitive presence or absence of metallic USTs, but the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing

extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA



View of Survey Area
(Facing Approximately West)



View of Survey Area
(Facing Approximately East)



503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT
2305 N. U.S. HIGHWAY 13
GOLDSBORO, NORTH CAROLINA
NCDOT PROJECT U-3609B

TITLE
2305 N. U.S. HIGHWAY 13 -
GEOPHYSICAL SURVEY BOUNDARIES
AND SITE PHOTOGRAPHS

DATE
12/4/2019
PYRAMID
PROJECT #:
2019-359

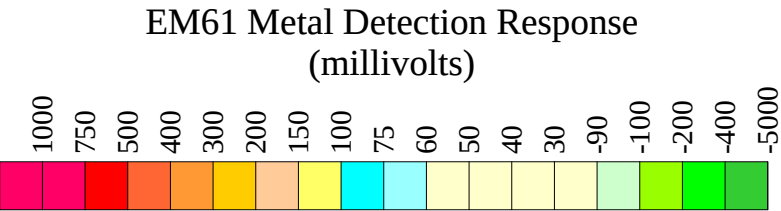
CLIENT
Catlin Engineers &
Scientists
FIGURE 1

EM61 METAL DETECTION RESULTS



EVIDENCE OF ONE PROBABLE METALLIC UST WAS OBSERVED.

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM data were collected on December 4, 2019, using a Geonics EM61-MK2 instrument. Verification GPR data were collected using a GSSI SIR 4000 instrument with a 350 MHz HS antenna on December 5, 2019.



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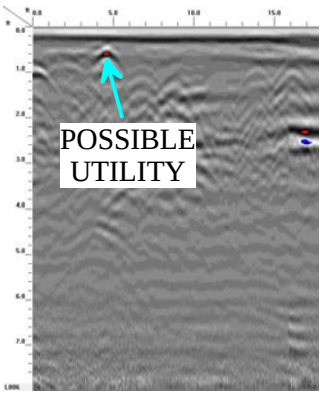
PROJECT
2305 N. U.S. HIGHWAY 13
GOLDSBORO, NORTH CAROLINA
NCDOT PROJECT U-3609B

TITLE
2305 N. U.S. HIGHWAY 13 -
EM61 METAL DETECTION CONTOUR MAP

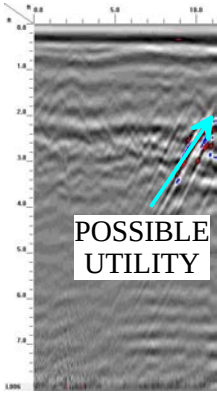
DATE
12/4/2019
PYRAMID PROJECT #:
2019-359

CLIENT
Catlin Engineers & Scientists
FIGURE 2

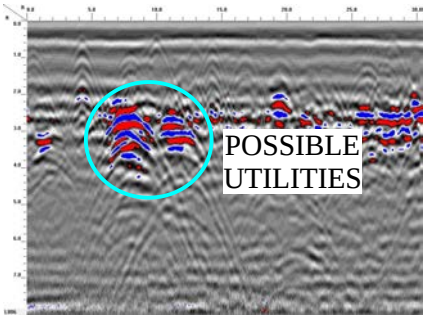
GPR TRANSECT LOCATIONS



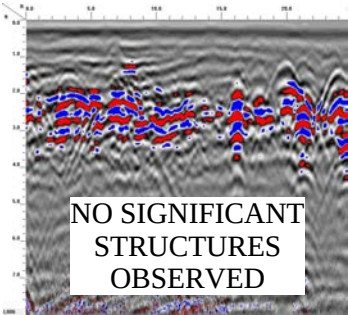
GPR TRANSECT 1 (T1)



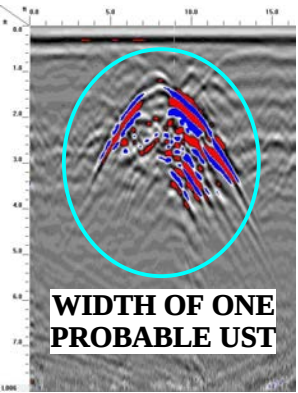
GPR TRANSECT 2 (T2)



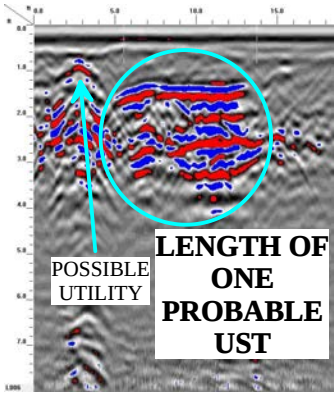
GPR TRANSECT 3 (T3)



GPR TRANSECT 4 (T4)



GPR TRANSECT 5 (T5)



GPR TRANSECT 6 (T6)



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PROJECT
2305 N. U.S. HIGHWAY 13
GOLDSBORO, NORTH CAROLINA
NCDOT PROJECT U-3609B

TITLE
2305 N. U.S. HIGHWAY 13 -
GPR TRANSECT LOCATIONS AND IMAGES

DATE
12/5/2019
PYRAMID
PROJECT #:
2019-359

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Scientists
FIGURE 3

LOCATION OF ONE PROBABLE UST



View of Probable UST #1
Facing Approximately West



View of Probable UST #1
Facing Approximately South



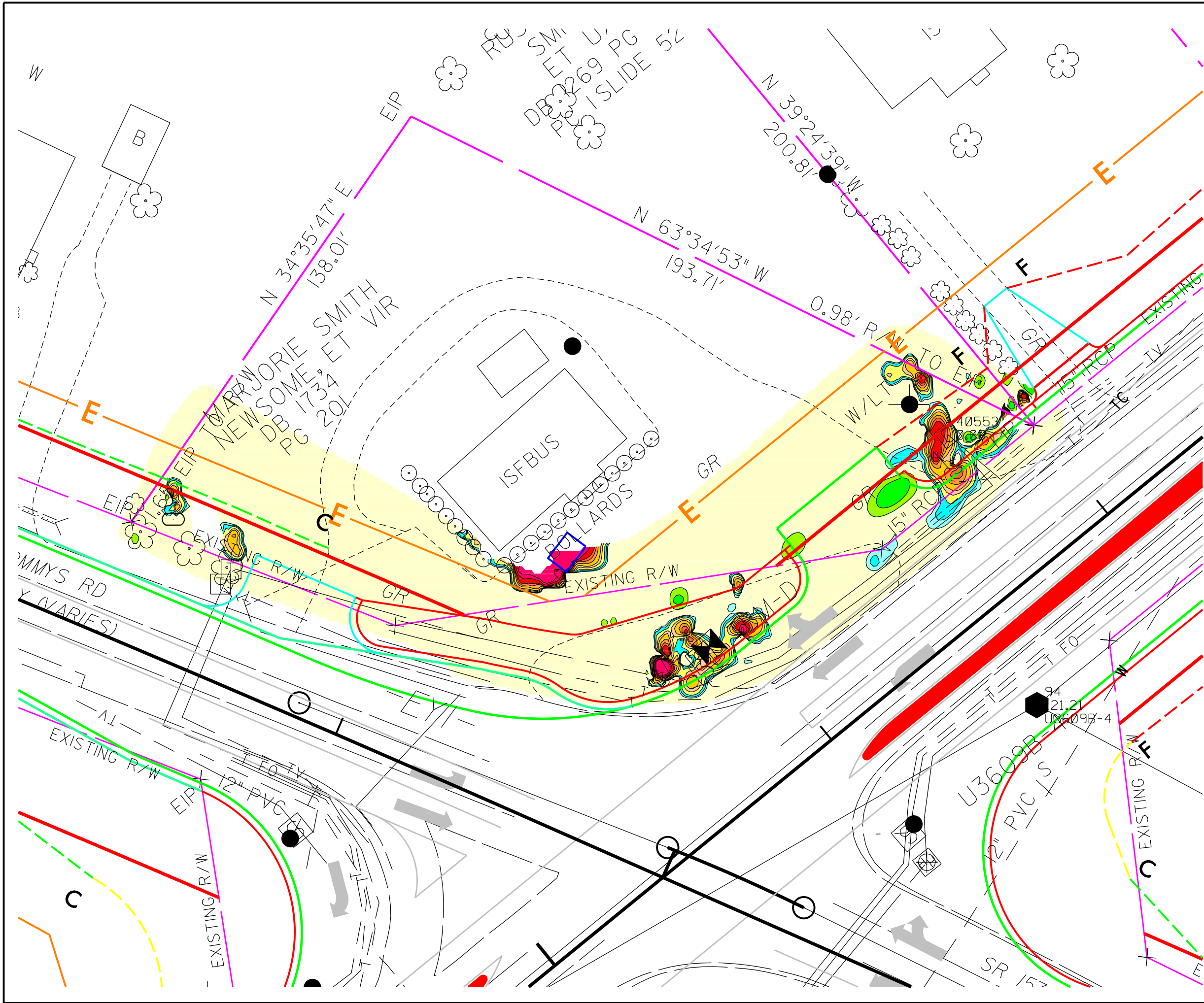
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT
2305 N. U.S. HIGHWAY 13
GOLDSBORO, NORTH CAROLINA
NCDOT PROJECT U-3609B

TITLE
2305 N. U.S. HIGHWAY 13 -
LOCATION AND SIZE OF ONE PROBABLE UST

DATE
12/5/2019
PYRAMID
PROJECT #:
2019-359

CLIENT
Catlin Engineers &
Scientists
FIGURE 4



LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- PROPOSED CONSTRUCTION EASEMENT
- PROPOSED DRAINAGE EASEMENT
- PROPOSED SS FILL LINE
- PROPOSED SS CUT LINE
- PROBABLE METALLIC UST

0 15 30
FEET

North Arrow

TITLE OVERLAY OF METAL DETECTION RESULTS AND ONE PROBABLE UST ON NCDOT ENGINEERING PLANS	
PROJECT 2305 N. US HWY 13 GOLDSBORO, NORTH CAROLINA NCDOT PROJECT U-3609B	
 503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 336.335.3174 (p) 336.691.0648 (f) License # C1251 Eng. / #C257 Geology	
DATE: 12-16-19	REVISION NO. 0
PYRAMID PROJECT NO. 2019-359	FIGURE NO. 5

APPENDIX B

BORING LOGS, WELL CONSTRUCTION AND ABANDONMENT RECORDS

BORING LOG


 WBS #: 39026.1.2
 TIP #: U-3609B

219139

PROJECT NO.:	219139	STATE:	N.C.	COUNTY:	WAYNE	LOCATION:	GOLDSBORO
PROJECT NAME:	GOLDSBORO-US13 (BERKELEY BLVD) FROM SR 1003 (NEW HOPE RD) TO SR 1572 (SAULSTON RD)				LOGGED BY:	Corey Futral	BORING ID:
					DRILLER:	E. Swain	2305DPT-01
NORTHING:	602,063	EASTING:	2,322,015	CREW:	CATLIN		
SYSTEM:	NCSP NAD 83 (ft)	BORING LOCATION:	2305 N. US HWY 13				LAND ELEV.: NM
DRILL MACHINE:	GeoProbe	METHOD:	DPT	0 HOUR DTW:	N/A	BORING DEPTH:	8.0
START DATE:	12/11/19	FINISH DATE:	12/11/19	24 HOUR DTW:	N/A	WATER DEPTH:	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	SCREENING RESULTS (ppm)	LAB. ID.	USCS	LOG	SOIL AND ROCK DESCRIPTION	ELEVATION
0.0			0 250 500 750 1,000				0.0 LAND SURFACE	
2.0	Direct Push	M	▲0.5		SM		Brown to tan, Silty F. SAND. Mod. HCO at 2.0' BLS	
4.0	Direct Push	M	▲0.7		CL		Brown with orange mottling, Silty mod plastic CLAY. Slight HCO	
6.0	Direct Push	W	▲82.1		CH		Tan with orange and red mottling grading to lt. gray, Silty highly plastic CLAY. Strong HCO	
8.0	Direct Push	M	3372▲	2305 DPT-01 (7')			BORING TERMINATED AT DEPTH 8.0 ft in Silty highly plastic CLAY	

= 0hr. DTW

= 24hr. DTW

BORING LOG



219139

WBS #: 39026.1.2
TIP #: U-3609B

PROJECT NO.:	219139	STATE:	N.C.	COUNTY:	WAYNE	LOCATION:	GOLDSBORO
PROJECT NAME:	GOLDSBORO-US13 (BERKELEY BLVD) FROM SR 1003 (NEW HOPE RD) TO SR 1572 (SAULSTON RD)				LOGGED BY:	Corey Futral	BORING ID:
					DRILLER:	E. Swain	2305DPT-02
NORTHING:	602,057	EASTING:	2,322,016	CREW:	CATLIN		
SYSTEM:	NCSP NAD 83 (ft)	BORING LOCATION:	2305 N. US HWY 13			LAND ELEV.:	NM
DRILL MACHINE:	GeoProbe	METHOD:	DPT	0 HOUR DTW:	N/A	BORING DEPTH:	12.0
START DATE:	12/11/19	FINISH DATE:	12/11/19	24 HOUR DTW:	N/A	WATER DEPTH:	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	SCREENING RESULTS (ppm)	LAB. ID.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	ELEVATION
0.0			0 250 500 750 1,000				0.0	LAND SURFACE
2.0	Direct Push	M	▲16.2		CL		Brown to gray and tan, Silty mod. plastic CLAY. Slight HCO	
4.0	Direct Push	M	▲15.6				4.0	
6.0	Direct Push	M	803.6▲		CH		Lt. gray with orange and red mottling, Sandy and Silty highly plastic CLAY, increase in sand at 7.0' BLS. Mod. to high HCO	
8.0	Direct Push	M	2715▲				7.0	
10.0	Direct Push	M	3650▲	Soil 2305 DPT-02 (9')	SC-SM		Lt. gray with tr. orange mottling, Silty and Clayey F. and CSE. SAND. Strong HCO	
12.0	Direct Push	Sat.	1170▲	Water 2305 DPT-02			12.0	
							BORING TERMINATED AT DEPTH 12.0 ft in Silty and Clayey F. and CSE. SAND	
							1" PVC well set to 12.0' BLS Sampled and Abandoned	

= 0hr. DTW

= 24hr. DTW

CATLIN\ENVIRO.LOG_219139_NCDOT_GOLDSBORO_PSAS.GPJ CATLIN.GDT_12/18/19

BORING LOG



219139

WBS #: 39026.1.2

TIP #: U-3609B

PROJECT NO.:	219139	STATE:	N.C.	COUNTY:	WAYNE	LOCATION:	GOLDSBORO
PROJECT NAME:	GOLDSBORO-US13 (BERKELEY BLVD) FROM SR 1003 (NEW HOPE RD) TO SR 1572 (SAULSTON RD)				LOGGED BY:	Corey Futral	BORING ID:
					DRILLER:	E. Swain	2305DPT-03
NORTHING:	602,075	EASTING:	2,326,541	CREW:	CATLIN		
SYSTEM:	NCSP NAD 83 (ft)	BORING LOCATION:	2305 N. US HWY 13			LAND ELEV.:	NM
DRILL MACHINE:	GeoProbe	METHOD:	DPT	0 HOUR DTW:	N/A	BORING DEPTH:	8.0
START DATE:	12/11/19	FINISH DATE:	12/11/19	24 HOUR DTW:	N/A	WATER DEPTH:	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	SCREENING RESULTS (ppm)	LAB. ID.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	ELEVATION
0.0			0 250 500 750 1,000				0.0	LAND SURFACE
2.0	Direct Push	M	431.2		ML		Brown grading to black, Sandy SILT. Strong HCO	
4.0	Direct Push	M	4572	2305 DPT-03 (4')	CH			3.0
6.0	Direct Push	M	1472				Gray with orange mottling, highly plastic CLAY. Strong HCO	
8.0	Direct Push	M	3574					8.0
							BORING TERMINATED AT DEPTH 8.0 ft in highly plastic CLAY	

= 0hr. DTW

= 24hr. DTW

BORING LOG



219139

WBS #: 39026.1.2
TIP #: U-3609B

PROJECT NO.:	219139	STATE:	N.C.	COUNTY:	WAYNE	LOCATION:	GOLDSBORO
PROJECT NAME:	GOLDSBORO-US13 (BERKELEY BLVD) FROM SR 1003 (NEW HOPE RD) TO SR 1572 (SAULSTON RD)				LOGGED BY:	Corey Futral	BORING ID:
					DRILLER:	E. Swain	2305DPT-04
NORTHING:	602,095	EASTING:	2,326,597	CREW:	CATLIN		
SYSTEM:	NCSP NAD 83 (ft)	BORING LOCATION:	2305 N. US HWY 13			LAND ELEV.:	NM
DRILL MACHINE:	GeoProbe	METHOD:	DPT	0 HOUR DTW:	N/A	BORING DEPTH:	8.0
START DATE:	12/11/19	FINISH DATE:	12/11/19	24 HOUR DTW:	N/A	WATER DEPTH:	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	SCREENING RESULTS (ppm)	LAB. ID.	USCS	LOG	SOIL AND ROCK DESCRIPTION	ELEVATION
0.0			0 250 500 750 1,000				DEPTH	0.0
0.0	Direct Push	M	▲0.0				LAND SURFACE	
2.0	Direct Push	M	▲0.0					
4.0	Direct Push	M	▲1.0		CH		Gray with orange mottling grading to gray at 6.0' BLS, highly plastic CLAY	
6.0	Direct Push	M	▲1.3	2305 DPT-04 (6')				
8.0							BORING TERMINATED AT DEPTH 8.0 ft in highly plastic CLAY	

= 0hr. DTW

= 24hr. DTW

CATLIN\ENVIRO\LOG_219139_NCDOT_GOLDSBORO_PSAS.GPJ CATLIN.GDT 12/18/19

WELL CONSTRUCTION RECORD (GW-1)**1. Well Contractor Information:****Corey Futral**

Well Contractor Name

4330-B

NC Well Contractor Certification Number

Catlin Engineers and Scientists

Company Name

2. Well Construction Permit #: _____

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

3. Well Use (check well use):**Water Supply Well:**

- ☐ Agricultural
 ☐ Municipal/Public
☐ Geothermal (Heating/Cooling Supply)
 ☐ Residential Water Supply (single)
☐ Industrial/Commercial
 ☐ Residential Water Supply (shared)
☐ Irrigation

Non-Water Supply Well:

- ☒ Monitoring
 ☐ Recovery

Injection Well:

- ☐ Aquifer Recharge
 ☐ Groundwater Remediation
☐ Aquifer Storage and Recovery
 ☐ Salinity Barrier
☐ Aquifer Test
 ☐ Stormwater Drainage
☐ Experimental Technology
 ☐ Subsidence Control
☐ Geothermal (Closed Loop)
 ☐ Tracer
☐ Geothermal (Heating/Cooling Return)
 ☐ Other (explain under #21 Remarks)

4. Date Well(s) Completed: 12/11/19 **Well ID#** 2305DPT-02
5a. Well Location:**NCDOT**

Facility/Owner Name

Facility ID# (if applicable)

2305 N. US Hwy 13, Goldsboro, NC 27534

Physical Address, City, and Zip

Wayne

County

Parcel Identification No. (PIN)

5b. Latitude and longitude in degrees/minutes/seconds or decimal degrees:
(if well field, one lat/long is sufficient)
35.399217 N **-77.904413** W

6. Is(are) the well(s): ☐ Permanent or ☒ Temporary

7. Is this a repair to an existing well: ☐ Yes or ☒ No

If this is a repair, fill out known well construction information and explain the nature of the repair under #21 remarks section or on the back of this form.

8. For Geoprobe/DPT or Closed-Loop Geothermal Wells having the same construction, only 1 GW-1 is needed. Indicate TOTAL NUMBER of wells drilled: 1
9. Total well depth below land surface: 12.0 (ft.)
 For multiple wells list all depths if different (example- 3@200' and 2@100')

10. Static water level below top of casing: ~10.0 (ft.)
 If water level is above casing, use "+"

11. Borehole diameter: 2 (in.)

12. Well construction method: Direct Push
 (i.e. auger, rotary, cable, direct push, etc.)
FOR WATER SUPPLY WELLS ONLY:
13a. Yield (gpm) _____ **Method of test:** _____

13b. Disinfection type: _____ **Amount:** _____

For Internal Use Only:

14. WATER ZONES

FROM	TO	DESCRIPTION
ft.	ft.	
ft.	ft.	

15. OUTER CASING (for multi-cased wells) OR LINER (if applicable)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		

16. INNER CASING OR TUBING (geothermal closed-loop)

FROM	TO	DIAMETER	THICKNESS	MATERIAL
ft.	ft.	in.		
ft.	ft.	in.		

17. SCREEN

FROM	TO	DIAMETER	SLOT SIZE	THICKNESS	MATERIAL
0 ft.	ft.	in.			
ft.	ft.	in.			

18. GROUT

FROM	TO	MATERIAL	EMPLACEMENT METHOD & AMOUNT
ft.	ft.		
ft.	ft.		
ft.	ft.		

19. SAND/GRAVEL PACK (if applicable)

FROM	TO	MATERIAL	EMPLACEMENT METHOD
0 ft.	12 ft.	Natural Backfill	
ft.	ft.		

20. DRILLING LOG (attach additional sheets if necessary)

FROM	TO	DESCRIPTION (color, hardness, soil/rock type, grain size, etc.)
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	
ft.	ft.	

21. REMARKS

22. Certification:

Signature of Certified Well Contractor Craig D. Futral Date 1/24/20

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

23. Site diagram or additional well details:

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

SUBMITTAL INSTRUCTIONS
24a. For All Wells: Submit this form within 30 days of completion of well construction to the following:

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

24b. For Injection Wells: In addition to sending the form to the address in 24a above, also submit one copy of this form within 30 days of completion of well construction to the following:

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

24c. 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 construction to the county health department of the county where constructed.

WELL ABANDONMENT RECORD

1. Well Contractor Information:

Corey Futral

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

4330-B

NC Well Contractor Certification Number

CATLIN Engineers and Scientists

Company Name

2. Well Construction Permit #:

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

3. Well use (check well use):

Water Supply Well:

- | | |
|--|--|
| ☐ Agricultural | ☐ Municipal/Public |
| ☐ Geothermal (Heating/Cooling Supply) | ☐ Residential Water Supply (single) |
| ☐ Industrial/Commercial | ☐ Residential Water Supply (shared) |
| ☐ Irrigation | |

Non-Water Supply Well:

- | | |
|--|-----------------------------------|
| ☒ Monitoring | ☐ Recovery |
|--|-----------------------------------|

Injection Well:

- | | |
|--|---|
| ☐ Aquifer Recharge | ☐ Groundwater Remediation |
| ☐ Aquifer Storage and Recovery | ☐ Salinity Barrier |
| ☐ Aquifer Test | ☐ Stormwater Drainage |
| ☐ Experimental Technology | ☐ Subsidence Control |
| ☐ Geothermal (Closed Loop) | ☐ Tracer |
| ☐ Geothermal (Heating/Cooling Return) | ☐ Other (explain under 7g) |

4. Date well(s) abandoned: 12/11/19

5a. Well location:

NCDOT

Facility/Owner Name

Facility ID# (if applicable)

2305 N. US Hwy, Goldsboro, NC 27534

Physical Address, City, and Zip

Wayne

County

Parcel Identification No. (PIN)

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

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

35.399217 N -77.904413 W

CONSTRUCTION DETAILS OF WELL(S) 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#: 2305DPT-02

6b. Total well depth: 12.0 (ft.)

6c. Borehole diameter: 2 (in.)

6d. Water level below ground surface: ~10. (ft.)

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

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

6g. Screen length (if known): 12.0 (ft.)

For Internal Use ONLY:

WELL ABANDONMENT DETAILS

7a. For Geoprobe/DPT or Closed-Loop Geothermal Wells having the same well construction/depth, only 1 GW-30 is needed. Indicate TOTAL NUMBER of wells abandoned: 1

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):

- | | |
|--|--|
| ☐ Neat Cement Grout | ☒ Bentonite Chips or Pellets |
| ☐ Sand Cement Grout | ☐ Dry Clay |
| ☐ Concrete Grout | ☐ Drill Cuttings |
| ☐ Specialty Grout | ☐ Gravel |
| ☐ Bentonite Slurry | ☐ Other (explain under 7g) |

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

Bentonite Pellets ~19 lbs.

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

All well material pulled, surfaced poured bentonite pellet and hydrated.

8. Certification:

Signature of Certified Well Contractor or Well Owner

1/24/20

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 Resources, 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 Resources, 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.

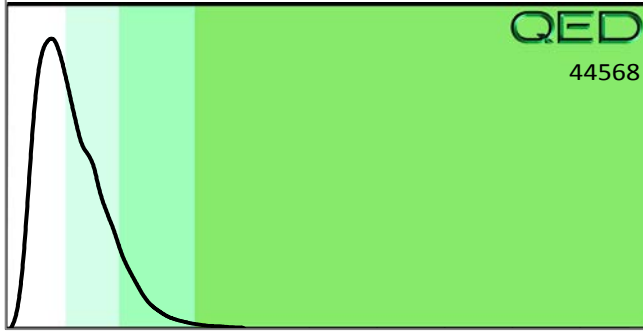
APPENDIX C

LABORATORY REPORTS AND CHAIN OF CUSTODY RECORDS

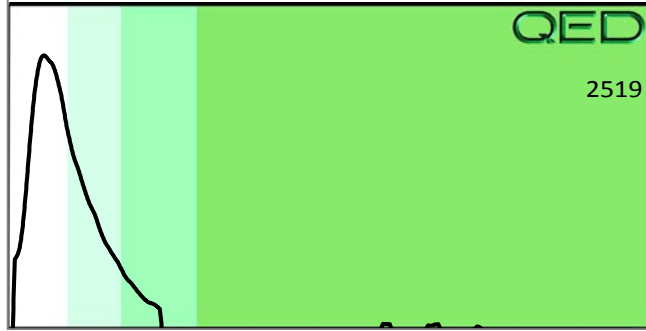


Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

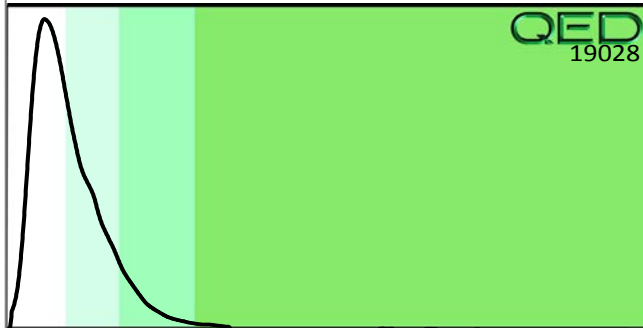
2305DPT-01(7') : Deg Gas 90.6%,(FCM),(OCR)



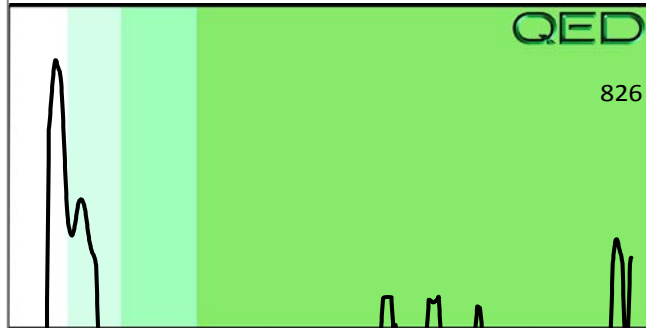
2305DPT-02(9') : Deg Gas 89.9%,(FCM),(OCR)



2305DPT-03(4') : Deg Gas 82.2%,(FCM)



2305DPT-04(6') : PHC not detected



RED Lab, LLC 5598 Marvin K Moss Lane MARBIONC Bldg, Suite 2003 Wilmington, NC 28409	Each UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and Bap. Standard GC Analyses are for BTEX and Chlorinated
--	--

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

[illegible]

COMMENTS/REQUESTS:	TARGET GC/UVF ANALYTES:

RED Lab USE ONLY			
Relinquished by	Accepted by	Date/Time	
Relinquished by	Accepted by	Date/Time	



ENCO Laboratories

Accurate. Timely. Responsive. Innovative.

102-A Woodwinds Industrial Court

Cary NC, 27511

Phone: 919.467.3090 FAX: 919.467.3515

Monday, January 6, 2020

Catlin Engineers & Scientists (CA038)

Attn: Ben Ashba

220 Old Dairy Road

Wilmington, NC 28405

RE: Laboratory Results for

Project Number: [none], Project Name/Desc: NCDOT Goldsboro

ENCO Workorder(s): CC20427

Dear Ben Ashba,

Enclosed is a copy of your laboratory report for test samples received by our laboratory on Tuesday, December 17, 2019.

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. Results for these procedures apply only to the samples as submitted.

The analytical results contained in this report are in compliance with NELAC standards, except as noted in the project narrative if applicable. This report shall not be reproduced except in full, without the written approval of the Laboratory.

This report contains only those analyses performed by Environmental Conservation Laboratories. Unless otherwise noted, all analyses were performed at ENCO Cary. Data from outside organizations will be reported under separate cover.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Chuck Smith

Project Manager

Enclosure(s)

SAMPLE SUMMARY/LABORATORY CHRONICLE

Client ID: 2305DPT-02	Lab ID: CC20427-05RE1	Sampled: 12/11/19 09:45	Received: 12/17/19 11:00
------------------------------	------------------------------	--------------------------------	---------------------------------

<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
EPA 625.1	EPA 3510C_MS	12/18/19 01/27/20	12/18/19 09:37	12/26/19 14:03

Client ID: 2305DPT-02	Lab ID: CC20427-05RE2	Sampled: 12/11/19 09:45	Received: 12/17/19 11:00
------------------------------	------------------------------	--------------------------------	---------------------------------

<u>Parameter</u>	<u>Preparation</u>	<u>Hold Date/Time(s)</u>	<u>Prep Date/Time(s)</u>	<u>Analysis Date/Time(s)</u>
SM 6200B-2011	Same	12/25/19	12/23/19 11:41	12/23/19 16:37

SAMPLE DETECTION SUMMARY

Client ID: 2305DPT-02	Lab ID: CC20427-05RE1
------------------------------	------------------------------

<u>Analyte</u>	<u>Results</u>	<u>Flag</u>	<u>MDL</u>	<u>PQL</u>	<u>Units</u>	<u>Method</u>	<u>Notes</u>
Naphthalene	540	D	36	100	ug/L	EPA 625.1	R-05

Client ID: 2305DPT-02	Lab ID: CC20427-05RE2
------------------------------	------------------------------

<u>Analyte</u>	<u>Results</u>	<u>Flag</u>	<u>MDL</u>	<u>PQL</u>	<u>Units</u>	<u>Method</u>	<u>Notes</u>
1,2,4-Trimethylbenzene	4800	D	34	500	ug/L	SM 6200B-2011	
1,3,5-Trimethylbenzene	1200	D	50	500	ug/L	SM 6200B-2011	
Ethylbenzene	2900	D	50	500	ug/L	SM 6200B-2011	
m,p-Xylenes	8000	D	90	1000	ug/L	SM 6200B-2011	
Naphthalene	620	D	43	500	ug/L	SM 6200B-2011	
n-Propyl Benzene	620	D	36	500	ug/L	SM 6200B-2011	
o-Xylene	4200	D	44	500	ug/L	SM 6200B-2011	
Toluene	60000	D	26	500	ug/L	SM 6200B-2011	
Xylenes (Total)	12000	D	110	500	ug/L	SM 6200B-2011	

ANALYTICAL RESULTS

Description: 2305DPT-02

Lab Sample ID: CC20427-05

Received: 12/17/19 11:00

Matrix: Ground Water

Sampled: 12/11/19 09:45

Work Order: CC20427

Project: NCDOT Goldsboro

Sampled By: Corey Futral

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
1,1,1,2-Tetrachloroethane [630-20-6]^	46	UD	ug/L	500	46	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,1,1-Trichloroethane [71-55-6]^	75	UD	ug/L	500	75	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,1,2,2-Tetrachloroethane [79-34-5]^	42	UD	ug/L	500	42	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,1,2-Trichloroethane [79-00-5]^	34	UD	ug/L	500	34	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,1-Dichloroethane [75-34-3]^	25	UD	ug/L	500	25	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,1-Dichloroethene [75-35-4]^	75	UD	ug/L	500	75	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,1-Dichloropropene [563-58-6]^	32	UD	ug/L	500	32	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,2,3-Trichlorobenzene [87-61-6]^	120	UD	ug/L	500	120	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,2,3-Trichloropropane [96-18-4]^	75	UD	ug/L	500	75	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,2,4-Trichlorobenzene [120-82-1]^	48	UD	ug/L	500	48	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,2,4-Trimethylbenzene [95-63-6]^	4800	D	ug/L	500	34	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,2-Dibromo-3-chloropropane [96-12-8]^	240	UD	ug/L	500	240	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,2-Dibromoethane [106-93-4]^	210	UD	ug/L	500	210	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,2-Dichlorobenzene [95-50-1]^	26	UD	ug/L	500	26	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,2-Dichloroethane [107-06-2]^	41	UD	ug/L	500	41	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,2-Dichloropropane [78-87-5]^	49	UD	ug/L	500	49	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,3,5-Trimethylbenzene [108-67-8]^	1200	D	ug/L	500	50	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,3-Dichlorobenzene [541-73-1]^	46	UD	ug/L	500	46	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,3-Dichloropropane [142-28-9]^	75	UD	ug/L	500	75	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
1,4-Dichlorobenzene [106-46-7]^	50	UD	ug/L	500	50	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
2,2-Dichloropropane [594-20-7]^	60	UD	ug/L	500	60	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
2-Chlorotoluene [95-49-8]^	50	UD	ug/L	500	50	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
4-Chlorotoluene [106-43-4]^	50	UD	ug/L	500	50	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
4-Isopropyltoluene [99-87-6]^	33	UD	ug/L	500	33	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Benzene [71-43-2]^	25	UD	ug/L	500	25	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Bromobenzene [108-86-1]^	65	UD	ug/L	500	65	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Bromochloromethane [74-97-5]^	55	UD	ug/L	500	55	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Bromodichloromethane [75-27-4]^	50	UD	ug/L	500	50	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	QV-01
Bromoform [75-25-2]^	100	UD	ug/L	500	100	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Bromomethane [74-83-9]^	140	UD	ug/L	500	140	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Carbon Tetrachloride [56-23-5]^	41	UD	ug/L	500	41	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	QV-01
Chlorobenzene [108-90-7]^	34	UD	ug/L	500	34	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Chloroethane [75-00-3]^	90	UD	ug/L	500	90	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Chloroform [67-66-3]^	42	UD	ug/L	500	42	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Chloromethane [74-87-3]^	25	UD	ug/L	500	25	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
cis-1,2-Dichloroethene [156-59-2]^	38	UD	ug/L	500	38	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
cis-1,3-Dichloropropene [10061-01-5]^	36	UD	ug/L	500	36	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Dibromochloromethane [124-48-1]^	34	UD	ug/L	500	34	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Dibromomethane [74-95-3]^	65	UD	ug/L	500	65	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Dichlorodifluoromethane [75-71-8]^	46	UD	ug/L	500	46	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	QL-02
Ethylbenzene [100-41-4]^	2900	D	ug/L	500	50	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Freon 113 [76-13-1]^	180	UD	ug/L	500	180	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Hexachlorobutadiene [87-68-3]^	75	UD	ug/L	500	75	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Isopropyl Ether [108-20-3]^	100	UD	ug/L	500	100	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Isopropylbenzene [98-82-8]^	65	UD	ug/L	500	65	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
m,p-Xylenes [108-38-3/106-42-3]^	8000	D	ug/L	500	90	1000	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Methylene Chloride [75-09-2]^	35	UD	ug/L	500	35	1000	9L23023	SM 6200B-2011	12/23/19 16:37	REF	

ANALYTICAL RESULTS

Description: 2305DPT-02

Lab Sample ID: CC20427-05

Received: 12/17/19 11:00

Matrix: Ground Water

Sampled: 12/11/19 09:45

Work Order: CC20427

Project: NCDOT Goldsboro

Sampled By: Corey Futral

Volatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Methyl-tert-Butyl Ether [1634-04-4]^	60	UD	ug/L	500	60	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Naphthalene [91-20-3]^	620	D	ug/L	500	43	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
n-Butyl Benzene [104-51-8]^	37	UD	ug/L	500	37	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
n-Propyl Benzene [103-65-1]^	620	D	ug/L	500	36	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
o-Xylene [95-47-6]^	4200	D	ug/L	500	44	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
sec-Butylbenzene [135-98-8]^	26	UD	ug/L	500	26	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Styrene [100-42-5]^	41	UD	ug/L	500	41	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
tert-Butylbenzene [98-06-6]^	47	UD	ug/L	500	47	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Tetrachloroethene [127-18-4]^	50	UD	ug/L	500	50	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Toluene [108-88-3]^	60000	D	ug/L	500	26	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
trans-1,2-Dichloroethene [156-60-5]^	55	UD	ug/L	500	55	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
trans-1,3-Dichloropropene [10061-02-6]^	40	UD	ug/L	500	40	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Trichloroethene [79-01-6]^	65	UD	ug/L	500	65	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Trichlorofluoromethane [75-69-4]^	75	UD	ug/L	500	75	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Vinyl chloride [75-01-4]^	42	UD	ug/L	500	42	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Xylenes (Total) [1330-20-7]^	12000	D	ug/L	500	110	500	9L23023	SM 6200B-2011	12/23/19 16:37	REF	

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
4-Bromofluorobenzene	49	1	50.0	99 %	70-130	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Dibromofluoromethane	40	1	50.0	80 %	70-130	9L23023	SM 6200B-2011	12/23/19 16:37	REF	
Toluene-d8	47	1	50.0	95 %	70-130	9L23023	SM 6200B-2011	12/23/19 16:37	REF	

Semivolatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
1,2,4-Trichlorobenzene [120-82-1]^	33	UD	ug/L	10	33	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
1,2-Dichlorobenzene [95-50-1]	32	UD	ug/L	10	32	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
1,3-Dichlorobenzene [541-73-1]	34	UD	ug/L	10	34	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
1,4-Dichlorobenzene [106-46-7]	32	UD	ug/L	10	32	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2,4,6-Trichlorophenol [88-06-2]^	64	UD	ug/L	10	64	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2,4-Dichlorophenol [120-83-2]^	65	UD	ug/L	10	65	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2,4-Dimethylphenol [105-67-9]^	64	UD	ug/L	10	64	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2,4-Dinitrophenol [51-28-5]^	77	UD	ug/L	10	77	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2,4-Dinitrotoluene [121-14-2]^	32	UD	ug/L	10	32	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2,6-Dinitrotoluene [606-20-2]^	29	UD	ug/L	10	29	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2-Chloronaphthalene [91-58-7]^	32	UD	ug/L	10	32	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2-Chlorophenol [95-57-8]^	74	UD	ug/L	10	74	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2-Methyl-4,6-dinitrophenol [534-52-1]^	60	UD	ug/L	10	60	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2-Nitrophenol [88-75-5]^	52	UD	ug/L	10	52	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
3,3'-Dichlorobenzidine [91-94-1]^	33	UD	ug/L	10	33	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
4-Bromophenyl-phenylether [101-55-3]^	33	UD	ug/L	10	33	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
4-Chloro-3-methylphenol [59-50-7]^	73	UD	ug/L	10	73	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
4-Chlorophenyl-phenylether [7005-72-3]^	32	UD	ug/L	10	32	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
4-Nitrophenol [100-02-7]^	79	UD	ug/L	10	79	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Acenaphthene [83-32-9]^	30	UD	ug/L	10	30	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Acenaphthylene [208-96-8]^	96	UD	ug/L	10	96	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Anthracene [120-12-7]^	30	UD	ug/L	10	30	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05

ANALYTICAL RESULTS

Description: 2305DPT-02

Lab Sample ID: CC20427-05

Received: 12/17/19 11:00

Matrix: Ground Water

Sampled: 12/11/19 09:45

Work Order: CC20427

Project: NCDOT Goldsboro

Sampled By: Corey Futral

Semivolatile Organic Compounds by GCMS

^ - ENCO Cary certified analyte [NC 591]

Analyte [CAS Number]	Results	Flag	Units	DF	MDL	PQL	Batch	Method	Analyzed	By	Notes
Benzidine [92-87-5]^	71	UD	ug/L	10	71	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	QV-01, R-05
Benzo(a)anthracene [56-55-3]^	32	UD	ug/L	10	32	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Benzo(a)pyrene [50-32-8]^	32	UD	ug/L	10	32	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Benzo(b)fluoranthene [205-99-2]^	34	UD	ug/L	10	34	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Benzo(g,h,i)perylene [191-24-2]^	37	UD	ug/L	10	37	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Benzo(k)fluoranthene [207-08-9]^	38	UD	ug/L	10	38	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Bis(2-chloroethoxy)methane [111-91-1]^	33	UD	ug/L	10	33	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Bis(2-chloroethyl)ether [111-44-4]^	38	UD	ug/L	10	38	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Bis(2-chloroisopropyl)ether [108-60-1]^	35	UD	ug/L	10	35	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Bis(2-ethylhexyl)phthalate [117-81-7]^	35	UD	ug/L	10	35	50	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Butylbenzylphthalate [85-68-7]^	51	UD	ug/L	10	51	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	QV-01, R-05
Chrysene [218-01-9]^	30	UD	ug/L	10	30	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Dibenzo(a,h)anthracene [53-70-3]^	38	UD	ug/L	10	38	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Diethylphthalate [84-66-2]^	30	UD	ug/L	10	30	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Dimethylphthalate [131-11-3]^	30	UD	ug/L	10	30	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Di-n-butylphthalate [84-74-2]^	32	UD	ug/L	10	32	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Di-n-octylphthalate [117-84-0]^	47	UD	ug/L	10	47	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Fluoranthene [206-44-0]^	40	UD	ug/L	10	40	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Fluorene [86-73-7]^	29	UD	ug/L	10	29	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Hexachlorobenzene [118-74-1]^	30	UD	ug/L	10	30	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Hexachlorobutadiene [87-68-3]^	41	UD	ug/L	10	41	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Hexachlorocyclopentadiene [77-47-4]^	38	UD	ug/L	10	38	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Hexachloroethane [67-72-1]^	30	UD	ug/L	10	30	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Indeno(1,2,3-cd)pyrene [193-39-5]^	41	UD	ug/L	10	41	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Isophorone [78-59-1]^	45	UD	ug/L	10	45	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Naphthalene [91-20-3]^	540	D	ug/L	10	36	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Nitrobenzene [98-95-3]^	32	UD	ug/L	10	32	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
N-Nitrosodimethylamine [62-75-9]^	38	UD	ug/L	10	38	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
N-Nitroso-di-n-propylamine [621-64-7]^	45	UD	ug/L	10	45	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
N-nitrosodiphenylamine/Diphenylamine [86-30-6/122-39-4]^	54	UD	ug/L	10	54	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Pentachlorophenol [87-86-5]^	82	UD	ug/L	10	82	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Phenanthrene [85-01-8]^	28	UD	ug/L	10	28	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Phenol [108-95-2]^	56	UD	ug/L	10	56	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Pyrene [129-00-0]^	41	UD	ug/L	10	41	100	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05

Surrogates	Results	DF	Spike Lvl	% Rec	% Rec Limits	Batch	Method	Analyzed	By	Notes
2,4,6-Tribromophenol	52	10	100	52 %	47-128	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2-Fluorobiphenyl	37	10	50.0	74 %	44-102	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
2-Fluorophenol	43	10	100	43 %	25-79	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Nitrobenzene-d5	32	10	50.0	64 %	43-112	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Phenol-d5	36	10	100	36 %	14-54	9L18002	EPA 625.1	12/26/19 14:03	DFM	R-05
Terphenyl-d14	ND	10	50.0	%	65-122	9L18002	EPA 625.1	12/26/19 14:03	DFM	QS-03, R-05

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L23023 - EPA 5030B_MS

Blank (9L23023-BLK1)

Prepared: 12/23/2019 11:49 Analyzed: 12/23/2019 16:05

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	0.091	U	1.0	ug/L							
1,1,1-Trichloroethane	0.15	U	1.0	ug/L							
1,1,2,2-Tetrachloroethane	0.085	U	1.0	ug/L							
1,1,2-Trichloroethane	0.068	U	1.0	ug/L							
1,1-Dichloroethane	0.050	U	1.0	ug/L							
1,1-Dichloroethene	0.15	U	1.0	ug/L							
1,1-Dichloropropene	0.063	U	1.0	ug/L							
1,2,3-Trichlorobenzene	0.25	U	1.0	ug/L							
1,2,3-Trichloropropane	0.15	U	1.0	ug/L							
1,2,4-Trichlorobenzene	0.097	U	1.0	ug/L							
1,2,4-Trimethylbenzene	0.067	U	1.0	ug/L							
1,2-Dibromo-3-chloropropane	0.48	U	1.0	ug/L							
1,2-Dibromoethane	0.42	U	1.0	ug/L							
1,2-Dichlorobenzene	0.052	U	1.0	ug/L							
1,2-Dichloroethane	0.082	U	1.0	ug/L							
1,2-Dichloropropane	0.098	U	1.0	ug/L							
1,3,5-Trimethylbenzene	0.10	U	1.0	ug/L							
1,3-Dichlorobenzene	0.092	U	1.0	ug/L							
1,3-Dichloropropane	0.15	U	1.0	ug/L							
1,4-Dichlorobenzene	0.10	U	1.0	ug/L							
2,2-Dichloropropane	0.12	U	1.0	ug/L							
2-Chlorotoluene	0.10	U	1.0	ug/L							
4-Chlorotoluene	0.10	U	1.0	ug/L							
4-Isopropyltoluene	0.066	U	1.0	ug/L							
Benzene	0.050	U	1.0	ug/L							
Bromobenzene	0.13	U	1.0	ug/L							
Bromochloromethane	0.11	U	1.0	ug/L							
Bromodichloromethane	0.10	U	1.0	ug/L							
Bromoform	0.20	U	1.0	ug/L							
Bromomethane	0.28	U	1.0	ug/L							
Carbon Tetrachloride	0.082	U	1.0	ug/L							
Chlorobenzene	0.069	U	1.0	ug/L							
Chloroethane	0.18	U	1.0	ug/L							
Chloroform	0.083	U	1.0	ug/L							
Chloromethane	0.050	U	1.0	ug/L							
cis-1,2-Dichloroethene	0.075	U	1.0	ug/L							
cis-1,3-Dichloropropene	0.073	U	1.0	ug/L							
Dibromochloromethane	0.067	U	1.0	ug/L							
Dibromomethane	0.13	U	1.0	ug/L							
Dichlorodifluoromethane	0.091	U	1.0	ug/L							
Ethylbenzene	0.10	U	1.0	ug/L							
Freon 113	0.35	U	1.0	ug/L							
Hexachlorobutadiene	0.15	U	1.0	ug/L							
Isopropyl Ether	0.21	U	1.0	ug/L							
Isopropylbenzene	0.13	U	1.0	ug/L							
m,p-Xylenes	0.18	U	2.0	ug/L							
Methylene Chloride	0.070	U	2.0	ug/L							
Methyl-tert-Butyl Ether	0.12	U	1.0	ug/L							
Naphthalene	0.086	U	1.0	ug/L							

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L23023 - EPA 5030B_MS - Continued

Blank (9L23023-BLK1) Continued

Prepared: 12/23/2019 11:49 Analyzed: 12/23/2019 16:05

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
n-Butyl Benzene	0.074	U	1.0	ug/L							
n-Propyl Benzene	0.073	U	1.0	ug/L							
o-Xylene	0.088	U	1.0	ug/L							
sec-Butylbenzene	0.053	U	1.0	ug/L							
Styrene	0.082	U	1.0	ug/L							
tert-Butylbenzene	0.094	U	1.0	ug/L							
Tetrachloroethene	0.099	U	1.0	ug/L							
Toluene	0.053	U	1.0	ug/L							
trans-1,2-Dichloroethene	0.11	U	1.0	ug/L							
trans-1,3-Dichloropropene	0.080	U	1.0	ug/L							
Trichloroethene	0.13	U	1.0	ug/L							
Trichlorofluoromethane	0.15	U	1.0	ug/L							
Vinyl chloride	0.083	U	1.0	ug/L							
Xylenes (Total)	0.22	U	1.0	ug/L							
4-Bromofluorobenzene	48			ug/L	50.0		96	70-130			
Dibromofluoromethane	39			ug/L	50.0		78	70-130			
Toluene-d8	44			ug/L	50.0		88	70-130			

LCS (9L23023-BS1)

Prepared: 12/23/2019 11:49 Analyzed: 12/23/2019 13:55

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	18		1.0	ug/L	20.0		89	70-130			
1,1,1-Trichloroethane	18		1.0	ug/L	20.0		91	70-130			
1,1,2,2-Tetrachloroethane	18		1.0	ug/L	20.0		90	70-130			
1,1,2-Trichloroethane	18		1.0	ug/L	20.0		91	70-130			
1,1-Dichloroethane	17		1.0	ug/L	20.0		86	70-130			
1,1-Dichloroethene	18		1.0	ug/L	20.0		88	70-130			
1,1-Dichloropropene	16		1.0	ug/L	20.0		78	70-130			
1,2,3-Trichlorobenzene	18		1.0	ug/L	20.0		91	70-130			
1,2,3-Trichloropropane	17		1.0	ug/L	20.0		84	70-130			
1,2,4-Trichlorobenzene	19		1.0	ug/L	20.0		93	70-130			
1,2,4-Trimethylbenzene	15		1.0	ug/L	20.0		77	70-130			
1,2-Dibromo-3-chloropropane	16		1.0	ug/L	20.0		79	70-130			
1,2-Dibromoethane	16		1.0	ug/L	20.0		82	70-130			
1,2-Dichlorobenzene	16		1.0	ug/L	20.0		81	70-130			
1,2-Dichloroethane	16		1.0	ug/L	20.0		81	70-130			
1,2-Dichloropropane	16		1.0	ug/L	20.0		82	70-130			
1,3,5-Trimethylbenzene	15		1.0	ug/L	20.0		76	70-130			
1,3-Dichlorobenzene	16		1.0	ug/L	20.0		81	70-130			
1,3-Dichloropropane	17		1.0	ug/L	20.0		86	70-130			
1,4-Dichlorobenzene	16		1.0	ug/L	20.0		79	70-130			
2,2-Dichloropropane	21		1.0	ug/L	20.0		106	70-130			
2-Chlorotoluene	15		1.0	ug/L	20.0		74	70-130			
4-Chlorotoluene	15		1.0	ug/L	20.0		75	70-130			
4-Isopropyltoluene	16		1.0	ug/L	20.0		78	70-130			
Benzene	17		1.0	ug/L	20.0		83	70-130			
Bromobenzene	19		1.0	ug/L	20.0		93	70-130			
Bromochloromethane	20		1.0	ug/L	20.0		100	70-130			
Bromodichloromethane	18		1.0	ug/L	20.0		89	70-130			

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L23023 - EPA 5030B_MS - Continued

LCS (9L23023-BS1) Continued

Prepared: 12/23/2019 11:49 Analyzed: 12/23/2019 13:55

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Bromoform	18		1.0	ug/L	20.0		90	70-130			
Bromomethane	18		1.0	ug/L	20.0		91	60-140			
Carbon Tetrachloride	17		1.0	ug/L	20.0		85	70-130			
Chlorobenzene	17		1.0	ug/L	20.0		84	70-130			
Chloroethane	20		1.0	ug/L	20.0		101	60-140			
Chloroform	17		1.0	ug/L	20.0		87	70-130			
Chloromethane	20		1.0	ug/L	20.0		102	60-140			
cis-1,2-Dichloroethene	20		1.0	ug/L	20.0		98	70-130			
cis-1,3-Dichloropropene	19		1.0	ug/L	20.0		96	70-130			
Dibromochloromethane	17		1.0	ug/L	20.0		84	70-130			
Dibromomethane	18		1.0	ug/L	20.0		90	70-130			
Dichlorodifluoromethane	28		1.0	ug/L	20.0		141	60-140			QL-02
Ethylbenzene	17		1.0	ug/L	20.0		83	70-130			
Freon 113	48		1.0	ug/L	40.0		119	70-130			
Hexachlorobutadiene	19		1.0	ug/L	20.0		94	70-130			
Isopropyl Ether	15		1.0	ug/L	20.0		73	70-130			
Isopropylbenzene	17		1.0	ug/L	20.0		87	70-130			
m,p-Xylenes	32		2.0	ug/L	40.0		79	70-130			
Methylene Chloride	15		2.0	ug/L	20.0		75	70-130			
Methyl-tert-Butyl Ether	17		1.0	ug/L	20.0		87	70-130			
Naphthalene	17		1.0	ug/L	20.0		86	70-130			
n-Butyl Benzene	15		1.0	ug/L	20.0		76	70-130			
n-Propyl Benzene	17		1.0	ug/L	20.0		85	70-130			
o-Xylene	16		1.0	ug/L	20.0		82	70-130			
sec-Butylbenzene	15		1.0	ug/L	20.0		77	70-130			
Styrene	18		1.0	ug/L	20.0		88	70-130			
tert-Butylbenzene	14		1.0	ug/L	20.0		72	70-130			
Tetrachloroethene	18		1.0	ug/L	20.0		89	70-130			
Toluene	18		1.0	ug/L	20.0		92	70-130			
trans-1,2-Dichloroethene	18		1.0	ug/L	20.0		88	70-130			
trans-1,3-Dichloropropene	17		1.0	ug/L	20.0		87	70-130			
Trichloroethene	19		1.0	ug/L	20.0		95	70-130			
Trichlorofluoromethane	20		1.0	ug/L	20.0		100	60-140			
Vinyl chloride	21		1.0	ug/L	20.0		103	60-140			
Xylenes (Total)	48		1.0	ug/L	60.0		80	70-130			
4-Bromofluorobenzene	49			ug/L	50.0		99	70-130			
Dibromofluoromethane	40			ug/L	50.0		80	70-130			
Toluene-d8	45			ug/L	50.0		90	70-130			

Matrix Spike (9L23023-MS1)

Prepared: 12/23/2019 11:49 Analyzed: 12/23/2019 14:28

Source: CC21886-01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	19		1.0	ug/L	20.0	0.091 U	94	71-117			
1,1,1-Trichloroethane	19		1.0	ug/L	20.0	0.15 U	96	72-143			
1,1,2,2-Tetrachloroethane	17		1.0	ug/L	20.0	0.085 U	87	59-133			
1,1,2-Trichloroethane	18		1.0	ug/L	20.0	0.068 U	88	67-118			
1,1-Dichloroethane	21		1.0	ug/L	20.0	0.050 U	103	79-141			
1,1-Dichloroethene	20		1.0	ug/L	20.0	0.15 U	98	75-133			
1,1-Dichloropropene	18		1.0	ug/L	20.0	0.063 U	88	70-129			

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L23023 - EPA 5030B_MS - Continued

Matrix Spike (9L23023-MS1) Continued

Prepared: 12/23/2019 11:49 Analyzed: 12/23/2019 14:28

Source: CC21886-01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,2,3-Trichlorobenzene	19		1.0	ug/L	20.0	0.45	95	62-117			
1,2,3-Trichloropropane	17		1.0	ug/L	20.0	0.15 U	85	58-140			
1,2,4-Trichlorobenzene	19		1.0	ug/L	20.0	0.097 U	97	59-122			
1,2,4-Trimethylbenzene	16		1.0	ug/L	20.0	0.067 U	79	74-123			
1,2-Dibromo-3-chloropropane	14		1.0	ug/L	20.0	0.48 U	71	37-157			
1,2-Dibromoethane	17		1.0	ug/L	20.0	0.42 U	83	66-123			
1,2-Dichlorobenzene	18		1.0	ug/L	20.0	0.052 U	88	76-116			
1,2-Dichloroethane	16		1.0	ug/L	20.0	0.082 U	78	72-151			
1,2-Dichloropropane	18		1.0	ug/L	20.0	0.098 U	90	78-125			
1,3,5-Trimethylbenzene	17		1.0	ug/L	20.0	0.10 U	83	77-129			
1,3-Dichlorobenzene	17		1.0	ug/L	20.0	0.092 U	86	76-119			
1,3-Dichloropropane	16		1.0	ug/L	20.0	0.15 U	82	60-129			
1,4-Dichlorobenzene	17		1.0	ug/L	20.0	0.10 U	86	76-122			
2,2-Dichloropropane	24		1.0	ug/L	20.0	0.12 U	120	21-167			
2-Chlorotoluene	16		1.0	ug/L	20.0	0.10 U	82	73-135			
4-Chlorotoluene	16		1.0	ug/L	20.0	0.10 U	80	76-134			
4-Isopropyltoluene	17		1.0	ug/L	20.0	0.066 U	86	75-127			
Benzene	18		1.0	ug/L	20.0	0.050 U	89	81-134			
Bromobenzene	18		1.0	ug/L	20.0	0.13 U	88	72-115			
Bromochloromethane	23		1.0	ug/L	20.0	0.11 U	117	74-128			
Bromodichloromethane	20		1.0	ug/L	20.0	0.10 U	98	72-129			
Bromoform	18		1.0	ug/L	20.0	0.20 U	89	73-119			
Bromomethane	20		1.0	ug/L	20.0	0.28 U	101	38-189			
Carbon Tetrachloride	20		1.0	ug/L	20.0	0.082 U	102	68-142			
Chlorobenzene	17		1.0	ug/L	20.0	0.069 U	87	83-117			
Chloroethane	21		1.0	ug/L	20.0	0.18 U	105	45-213			
Chloroform	19		1.0	ug/L	20.0	0.083 U	94	78-138			
Chloromethane	24		1.0	ug/L	20.0	0.050 U	121	56-171			
cis-1,2-Dichloroethene	22		1.0	ug/L	20.0	0.075 U	108	69-120			
cis-1,3-Dichloropropene	22		1.0	ug/L	20.0	0.073 U	109	63-125			
Dibromochloromethane	17		1.0	ug/L	20.0	0.067 U	83	73-117			
Dibromomethane	18		1.0	ug/L	20.0	0.13 U	92	76-124			
Dichlorodifluoromethane	34		1.0	ug/L	20.0	0.091 U	168	25-161			QM-07
Ethylbenzene	17		1.0	ug/L	20.0	0.10 U	84	68-124			
Freon 113	56		1.0	ug/L	40.0	0.35 U	139	0-200			
Hexachlorobutadiene	23		1.0	ug/L	20.0	0.15 U	114	63-114			
Isopropyl Ether	15		1.0	ug/L	20.0	0.21 U	75	70-130			
Isopropylbenzene	17		1.0	ug/L	20.0	0.13 U	87	81-136			
m,p-Xylenes	33		2.0	ug/L	40.0	0.18 U	82	79-121			
Methylene Chloride	16		2.0	ug/L	20.0	0.070 U	80	68-128			
Methyl-tert-Butyl Ether	19		1.0	ug/L	20.0	0.12 U	97	10-127			
Naphthalene	17		1.0	ug/L	20.0	0.086 U	86	50-127			
n-Butyl Benzene	17		1.0	ug/L	20.0	0.074 U	85	68-126			
n-Propyl Benzene	17		1.0	ug/L	20.0	0.073 U	84	76-125			
o-Xylene	17		1.0	ug/L	20.0	0.088 U	85	71-125			
sec-Butylbenzene	16		1.0	ug/L	20.0	0.053 U	81	75-122			
Styrene	17		1.0	ug/L	20.0	0.082 U	86	73-120			
tert-Butylbenzene	16		1.0	ug/L	20.0	0.094 U	80	70-137			
Tetrachloroethene	19		1.0	ug/L	20.0	0.099 U	95	40-181			

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L23023 - EPA 5030B_MS - Continued

Matrix Spike (9L23023-MS1) Continued

Prepared: 12/23/2019 11:49 Analyzed: 12/23/2019 14:28

Source: CC21886-01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Toluene	19		1.0	ug/L	20.0	0.053 U	93	71-118			
trans-1,2-Dichloroethene	18		1.0	ug/L	20.0	0.11 U	88	75-139			
trans-1,3-Dichloropropene	17		1.0	ug/L	20.0	0.080 U	86	62-152			
Trichloroethene	21		1.0	ug/L	20.0	0.13 U	103	75-115			
Trichlorofluoromethane	23		1.0	ug/L	20.0	0.15 U	113	68-183			
Vinyl chloride	23		1.0	ug/L	20.0	0.083 U	113	49-150			
Xylenes (Total)	50		1.0	ug/L	60.0	0.22 U	83	77-121			
4-Bromofluorobenzene	50			ug/L	50.0		99	70-130			
Dibromofluoromethane	41			ug/L	50.0		82	70-130			
Toluene-d8	50			ug/L	50.0		99	70-130			

Matrix Spike Dup (9L23023-MSD1)

Prepared: 12/23/2019 11:49 Analyzed: 12/23/2019 15:00

Source: CC21886-01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,1,1,2-Tetrachloroethane	17		1.0	ug/L	20.0	0.091 U	84	71-117	11	16	
1,1,1-Trichloroethane	20		1.0	ug/L	20.0	0.15 U	98	72-143	2	18	
1,1,2,2-Tetrachloroethane	17		1.0	ug/L	20.0	0.085 U	84	59-133	4	16	
1,1,2-Trichloroethane	17		1.0	ug/L	20.0	0.068 U	84	67-118	5	18	
1,1-Dichloroethane	20		1.0	ug/L	20.0	0.050 U	102	79-141	1	19	
1,1-Dichloroethene	20		1.0	ug/L	20.0	0.15 U	101	75-133	2	20	
1,1-Dichloropropene	14		1.0	ug/L	20.0	0.063 U	68	70-129	26	17	QM-07, QM-11
1,2,3-Trichlorobenzene	17		1.0	ug/L	20.0	0.45	82	62-117	14	17	
1,2,3-Trichloropropane	16		1.0	ug/L	20.0	0.15 U	79	58-140	8	17	
1,2,4-Trichlorobenzene	18		1.0	ug/L	20.0	0.097 U	90	59-122	8	17	
1,2,4-Trimethylbenzene	15		1.0	ug/L	20.0	0.067 U	75	74-123	6	18	
1,2-Dibromo-3-chloropropane	15		1.0	ug/L	20.0	0.48 U	74	37-157	4	18	
1,2-Dibromoethane	18		1.0	ug/L	20.0	0.42 U	89	66-123	7	15	
1,2-Dichlorobenzene	16		1.0	ug/L	20.0	0.052 U	81	76-116	8	16	
1,2-Dichloroethane	18		1.0	ug/L	20.0	0.082 U	91	72-151	16	16	
1,2-Dichloropropane	19		1.0	ug/L	20.0	0.098 U	94	78-125	5	19	
1,3,5-Trimethylbenzene	15		1.0	ug/L	20.0	0.10 U	75	77-129	10	16	QM-07
1,3-Dichlorobenzene	16		1.0	ug/L	20.0	0.092 U	82	76-119	5	17	
1,3-Dichloropropane	16		1.0	ug/L	20.0	0.15 U	81	60-129	1	16	
1,4-Dichlorobenzene	16		1.0	ug/L	20.0	0.10 U	80	76-122	7	16	
2,2-Dichloropropane	23		1.0	ug/L	20.0	0.12 U	114	21-167	5	20	
2-Chlorotoluene	15		1.0	ug/L	20.0	0.10 U	74	73-135	10	16	
4-Chlorotoluene	14		1.0	ug/L	20.0	0.10 U	72	76-134	10	16	QM-07
4-Isopropyltoluene	16		1.0	ug/L	20.0	0.066 U	78	75-127	10	17	
Benzene	15		1.0	ug/L	20.0	0.050 U	75	81-134	17	17	QM-07
Bromobenzene	18		1.0	ug/L	20.0	0.13 U	90	72-115	2	17	
Bromochloromethane	22		1.0	ug/L	20.0	0.11 U	109	74-128	7	18	
Bromodichloromethane	21		1.0	ug/L	20.0	0.10 U	107	72-129	9	16	
Bromoform	16		1.0	ug/L	20.0	0.20 U	80	73-119	11	44	
Bromomethane	17		1.0	ug/L	20.0	0.28 U	86	38-189	16	27	
Carbon Tetrachloride	19		1.0	ug/L	20.0	0.082 U	97	68-142	5	17	
Chlorobenzene	16		1.0	ug/L	20.0	0.069 U	82	83-117	7	16	QM-07
Chloroethane	19		1.0	ug/L	20.0	0.18 U	95	45-213	10	26	
Chloroform	18		1.0	ug/L	20.0	0.083 U	88	78-138	7	17	

QUALITY CONTROL DATA

Volatile Organic Compounds by GCMS - Quality Control

Batch 9L23023 - EPA 5030B_MS - Continued

Matrix Spike Dup (9L23023-MSD1) Continued

Prepared: 12/23/2019 11:49 Analyzed: 12/23/2019 15:00

Source: CC21886-01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloromethane	23		1.0	ug/L	20.0	0.050 U	116	56-171	5	28	
cis-1,2-Dichloroethene	22		1.0	ug/L	20.0	0.075 U	109	69-120	1	18	
cis-1,3-Dichloropropene	25		1.0	ug/L	20.0	0.073 U	123	63-125	13	17	
Dibromochloromethane	17		1.0	ug/L	20.0	0.067 U	84	73-117	2	16	
Dibromomethane	21		1.0	ug/L	20.0	0.13 U	104	76-124	12	15	
Dichlorodifluoromethane	35		1.0	ug/L	20.0	0.091 U	173	25-161	3	48	QM-07
Ethylbenzene	15		1.0	ug/L	20.0	0.10 U	77	68-124	8	16	
Freon 113	55		1.0	ug/L	40.0	0.35 U	138	0-200	1	25	
Hexachlorobutadiene	19		1.0	ug/L	20.0	0.15 U	94	63-114	19	19	
Isopropyl Ether	13		1.0	ug/L	20.0	0.21 U	67	70-130	11	30	QM-07
Isopropylbenzene	17		1.0	ug/L	20.0	0.13 U	84	81-136	3	16	
m,p-Xylenes	30		2.0	ug/L	40.0	0.18 U	75	79-121	8	16	QM-07
Methylene Chloride	14		2.0	ug/L	20.0	0.070 U	72	68-128	9	17	
Methyl-tert-Butyl Ether	19		1.0	ug/L	20.0	0.12 U	93	10-127	4	21	
Naphthalene	16		1.0	ug/L	20.0	0.086 U	80	50-127	7	19	
n-Butyl Benzene	15		1.0	ug/L	20.0	0.074 U	75	68-126	13	15	
n-Propyl Benzene	17		1.0	ug/L	20.0	0.073 U	83	76-125	2	16	
o-Xylene	16		1.0	ug/L	20.0	0.088 U	81	71-125	5	15	
sec-Butylbenzene	15		1.0	ug/L	20.0	0.053 U	77	75-122	5	17	
Styrene	17		1.0	ug/L	20.0	0.082 U	84	73-120	3	23	
tert-Butylbenzene	15		1.0	ug/L	20.0	0.094 U	77	70-137	4	22	
Tetrachloroethene	17		1.0	ug/L	20.0	0.099 U	83	40-181	14	26	
Toluene	17		1.0	ug/L	20.0	0.053 U	87	71-118	7	17	
trans-1,2-Dichloroethene	17		1.0	ug/L	20.0	0.11 U	84	75-139	5	19	
trans-1,3-Dichloropropene	16		1.0	ug/L	20.0	0.080 U	81	62-152	7	16	
Trichloroethene	19		1.0	ug/L	20.0	0.13 U	95	75-115	7	18	
Trichlorofluoromethane	23		1.0	ug/L	20.0	0.15 U	117	68-183	4	22	
Vinyl chloride	22		1.0	ug/L	20.0	0.083 U	108	49-150	4	27	
Xylenes (Total)	46		1.0	ug/L	60.0	0.22 U	77	77-121	7	16	
4-Bromofluorobenzene	50			ug/L	50.0		99	70-130			
Dibromofluoromethane	39			ug/L	50.0		78	70-130			
Toluene-d8	59			ug/L	50.0		118	70-130			

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L18002 - EPA 3510C_MS

Blank (9L18002-BLK1)

Prepared: 12/18/2019 09:37 Analyzed: 12/24/2019 13:01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,2,4-Trichlorobenzene	3.3	U	10	ug/L							
1,2-Dichlorobenzene	3.2	U	10	ug/L							
1,3-Dichlorobenzene	3.4	U	10	ug/L							
1,4-Dichlorobenzene	3.2	U	10	ug/L							
2,4,6-Trichlorophenol	6.4	U	10	ug/L							
2,4-Dichlorophenol	6.5	U	10	ug/L							
2,4-Dimethylphenol	6.4	U	10	ug/L							
2,4-Dinitrophenol	7.7	U	10	ug/L							
2,4-Dinitrotoluene	3.2	U	10	ug/L							

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L18002 - EPA 3510C_MS - Continued

Blank (9L18002-BLK1) Continued

Prepared: 12/18/2019 09:37 Analyzed: 12/24/2019 13:01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
2,6-Dinitrotoluene	2.9	U	10	ug/L							
2-Chloronaphthalene	3.2	U	10	ug/L							
2-Chlorophenol	7.4	U	10	ug/L							
2-Methyl-4,6-dinitrophenol	6.0	U	10	ug/L							
2-Nitrophenol	5.2	U	10	ug/L							
3,3'-Dichlorobenzidine	3.3	U	10	ug/L							
4-Bromophenyl-phenylether	3.3	U	10	ug/L							
4-Chloro-3-methylphenol	7.3	U	10	ug/L							
4-Chlorophenyl-phenylether	3.2	U	10	ug/L							
4-Nitrophenol	7.9	U	10	ug/L							
Acenaphthene	3.0	U	10	ug/L							
Acenaphthylene	9.6	U	10	ug/L							
Anthracene	3.0	U	10	ug/L							
Benidine	7.1	U	10	ug/L							
Benzo(a)anthracene	3.2	U	10	ug/L							
Benzo(a)pyrene	3.2	U	10	ug/L							
Benzo(b)fluoranthene	3.4	U	10	ug/L							
Benzo(g,h,i)perylene	3.7	U	10	ug/L							
Benzo(k)fluoranthene	3.8	U	10	ug/L							
Bis(2-chloroethoxy)methane	3.3	U	10	ug/L							
Bis(2-chloroethyl)ether	3.8	U	10	ug/L							
Bis(2-chloroisopropyl)ether	3.5	U	10	ug/L							
Bis(2-ethylhexyl)phthalate	3.5	U	5.0	ug/L							
Butylbenzylphthalate	5.1	U	10	ug/L							
Chrysene	3.0	U	10	ug/L							
Dibenzo(a,h)anthracene	3.8	U	10	ug/L							
Diethylphthalate	3.0	U	10	ug/L							
Dimethylphthalate	3.0	U	10	ug/L							
Di-n-butylphthalate	3.2	U	10	ug/L							
Di-n-octylphthalate	4.7	U	10	ug/L							
Fluoranthene	4.0	U	10	ug/L							
Fluorene	2.9	U	10	ug/L							
Hexachlorobenzene	3.0	U	10	ug/L							
Hexachlorobutadiene	4.1	U	10	ug/L							
Hexachlorocyclopentadiene	3.8	U	10	ug/L							
Hexachloroethane	3.0	U	10	ug/L							
Indeno(1,2,3-cd)pyrene	4.1	U	10	ug/L							
Isophorone	4.5	U	10	ug/L							
Naphthalene	3.6	U	10	ug/L							
Nitrobenzene	3.2	U	10	ug/L							
N-Nitrosodimethylamine	3.8	U	10	ug/L							
N-Nitroso-di-n-propylamine	4.5	U	10	ug/L							
N-nitrosodiphenylamine/Diphenylamine	5.4	U	10	ug/L							
Pentachlorophenol	8.2	U	10	ug/L							
Phenanthrene	2.8	U	10	ug/L							
Phenol	5.6	U	10	ug/L							
Pyrene	4.1	U	10	ug/L							
2,4,6-Tribromophenol	62			ug/L	100		62	47-128			
2-Fluorobiphenyl	46			ug/L	50.0		91	44-102			

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L18002 - EPA 3510C_MS - Continued

Blank (9L18002-BLK1) Continued

Prepared: 12/18/2019 09:37 Analyzed: 12/24/2019 13:01

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
2-Fluorophenol	73			ug/L	100		73	25-79			
Nitrobenzene-d5	40			ug/L	50.0		79	43-112			
Phenol-d5	64			ug/L	100		64	14-54			
Terphenyl-d14	46			ug/L	50.0		93	65-122			

LCS (9L18002-BS1)

Prepared: 12/18/2019 09:37 Analyzed: 12/24/2019 13:30

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,2,4-Trichlorobenzene	39		10	ug/L	50.0		79	57-130			
1,2-Dichlorobenzene	37		10	ug/L	50.0		74	32-129			
1,3-Dichlorobenzene	36		10	ug/L	50.0		72	10-172			
1,4-Dichlorobenzene	37		10	ug/L	50.0		74	20-124			
2,4,6-Trichlorophenol	48		10	ug/L	50.0		96	52-129			
2,4-Dichlorophenol	46		10	ug/L	50.0		91	53-122			
2,4-Dimethylphenol	49		10	ug/L	50.0		97	42-120			
2,4-Dinitrophenol	52		10	ug/L	50.0		105	5-173			
2,4-Dinitrotoluene	51		10	ug/L	50.0		102	48-127			
2,6-Dinitrotoluene	52		10	ug/L	50.0		104	68-137			
2-Chloronaphthalene	46		10	ug/L	50.0		91	65-120			
2-Chlorophenol	42		10	ug/L	50.0		85	36-120			
2-Methyl-4,6-dinitrophenol	52		10	ug/L	50.0		104	53-130			
2-Nitrophenol	44		10	ug/L	50.0		87	45-167			
3,3'-Dichlorobenzidine	48		10	ug/L	50.0		96	8-213			
4-Bromophenyl-phenylether	46		10	ug/L	50.0		93	65-120			
4-Chloro-3-methylphenol	47		10	ug/L	50.0		93	41-128			
4-Chlorophenyl-phenylether	51		10	ug/L	50.0		102	38-145			
4-Nitrophenol	34		10	ug/L	50.0		68	13-129			
Acenaphthene	48		10	ug/L	50.0		97	60-132			
Acenaphthylene	47		10	ug/L	50.0		95	54-126			
Anthracene	49		10	ug/L	50.0		98	43-120			
Benzidine	20		10	ug/L	50.0		40	10-136			
Benzo(a)anthracene	47		10	ug/L	50.0		95	42-133			
Benzo(a)pyrene	52		10	ug/L	50.0		105	32-148			
Benzo(b)fluoranthene	63		10	ug/L	50.0		127	42-140			J-04
Benzo(g,h,i)perylene	46		10	ug/L	50.0		92	5-195			
Benzo(k)fluoranthene	55		10	ug/L	50.0		110	25-146			
Bis(2-chloroethoxy)methane	46		10	ug/L	50.0		93	49-165			
Bis(2-chloroethyl)ether	47		10	ug/L	50.0		93	43-126			
Bis(2-chloroisopropyl)ether	41		10	ug/L	50.0		82	63-139			
Bis(2-ethylhexyl)phthalate	50		5.0	ug/L	50.0		101	29-137			
Butylbenzylphthalate	64		10	ug/L	50.0		128	5-140			
Chrysene	48		10	ug/L	50.0		95	44-140			
Dibenzo(a,h)anthracene	45		10	ug/L	50.0		91	5-200			
Diethylphthalate	52		10	ug/L	50.0		103	5-120			
Dimethylphthalate	52		10	ug/L	50.0		105	10-120			
Di-n-butylphthalate	54		10	ug/L	50.0		108	8-120			
Di-n-octylphthalate	50		10	ug/L	50.0		99	19-132			
Fluoranthene	55		10	ug/L	50.0		109	43-121			
Fluorene	48		10	ug/L	50.0		97	70-120			

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L18002 - EPA 3510C_MS - Continued

LCS (9L18002-BS1) Continued

Prepared: 12/18/2019 09:37 Analyzed: 12/24/2019 13:30

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Hexachlorobenzene	49		10	ug/L	50.0		97	8-142			
Hexachlorobutadiene	38		10	ug/L	50.0		76	24-120			
Hexachlorocyclopentadiene	37		10	ug/L	50.0		73	38-120			
Hexachloroethane	34		10	ug/L	50.0		68	55-120			
Indeno(1,2,3-cd)pyrene	46		10	ug/L	50.0		93	5-151			
Isophorone	46		10	ug/L	50.0		93	47-180			
Naphthalene	41		10	ug/L	50.0		82	36-120			
Nitrobenzene	44		10	ug/L	50.0		88	54-158			
N-Nitrosodimethylamine	40		10	ug/L	50.0		80	24-94			
N-Nitroso-di-n-propylamine	45		10	ug/L	50.0		89	14-198			
Pentachlorophenol	49		10	ug/L	50.0		99	38-152			
Phenanthrene	50		10	ug/L	50.0		101	65-120			
Phenol	30		10	ug/L	50.0		61	17-120			
Pyrene	54		10	ug/L	50.0		107	70-120			
2,4,6-Tribromophenol	91			ug/L	100		91	47-128			
2-Fluorobiphenyl	44			ug/L	50.0		89	44-102			
2-Fluorophenol	70			ug/L	100		70	25-79			
Nitrobenzene-d5	43			ug/L	50.0		86	43-112			
Phenol-d5	57			ug/L	100		57	14-54			
Terphenyl-d14	55			ug/L	50.0		109	65-122			

Matrix Spike (9L18002-MS1)

Prepared: 12/18/2019 09:37 Analyzed: 12/24/2019 13:59

Source: CC20429-06

Analyte	Result	Flaq	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,2,4-Trichlorobenzene	38		10	ug/L	50.0	3.3 U	77	44-142			
1,2-Dichlorobenzene	36		10	ug/L	50.0	3.2 U	72	32-129			
1,3-Dichlorobenzene	35		10	ug/L	50.0	3.4 U	71	10-172			
1,4-Dichlorobenzene	36		10	ug/L	50.0	3.2 U	72	20-124			
2,4,6-Trichlorophenol	44		10	ug/L	50.0	6.4 U	89	37-144			
2,4-Dichlorophenol	41		10	ug/L	50.0	6.5 U	81	39-135			
2,4-Dimethylphenol	43		10	ug/L	50.0	6.4 U	86	32-120			
2,4-Dinitrophenol	44		10	ug/L	50.0	7.7 U	88	5-191			
2,4-Dinitrotoluene	42		10	ug/L	50.0	3.2 U	84	53-130			
2,6-Dinitrotoluene	45		10	ug/L	50.0	2.9 U	91	50-158			
2-Chloronaphthalene	44		10	ug/L	50.0	3.2 U	88	60-120			
2-Chlorophenol	38		10	ug/L	50.0	7.4 U	76	23-134			
2-Methyl-4,6-dinitrophenol	40		10	ug/L	50.0	6.0 U	81	5-181			
2-Nitrophenol	40		10	ug/L	50.0	5.2 U	80	29-182			
3,3'-Dichlorobenzidine	44		10	ug/L	50.0	3.3 U	89	5-262			
4-Bromophenyl-phenylether	45		10	ug/L	50.0	3.3 U	89	53-127			
4-Chloro-3-methylphenol	41		10	ug/L	50.0	7.3 U	82	22-147			
4-Chlorophenyl-phenylether	46		10	ug/L	50.0	3.2 U	92	25-158			
4-Nitrophenol	28		10	ug/L	50.0	7.9 U	56	5-132			
Acenaphthene	45		10	ug/L	50.0	3.0 U	90	47-145			
Acenaphthylene	45		10	ug/L	50.0	9.6 U	89	33-145			
Anthracene	48		10	ug/L	50.0	3.0 U	95	27-133			
Benzidine	9.9	J	10	ug/L	50.0	7.1 U	20	10-136			
Benzo(a)anthracene	43		10	ug/L	50.0	3.2 U	86	33-143			
Benzo(a)pyrene	48		10	ug/L	50.0	3.2 U	95	17-163			

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L18002 - EPA 3510C_MS - Continued

Matrix Spike (9L18002-MS1) Continued

Prepared: 12/18/2019 09:37 Analyzed: 12/24/2019 13:59

Source: CC20429-06

Analyte	Result	Flag	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Benzo(b)fluoranthene	58		10	ug/L	50.0	3.4 U	117	24-159			J-04
Benzo(g,h,i)perylene	48		10	ug/L	50.0	3.7 U	96	5-219			
Benzo(k)fluoranthene	45		10	ug/L	50.0	3.8 U	90	11-162			
Bis(2-chloroethoxy)methane	41		10	ug/L	50.0	3.3 U	82	33-184			
Bis(2-chloroethyl)ether	41		10	ug/L	50.0	3.8 U	83	12-158			
Bis(2-chloroisopropyl)ether	39		10	ug/L	50.0	3.5 U	77	36-166			
Bis(2-ethylhexyl)phthalate	46		5.0	ug/L	50.0	3.5 U	92	8-158			
Butylbenzylphthalate	55		10	ug/L	50.0	5.1 U	110	5-152			
Chrysene	44		10	ug/L	50.0	3.0 U	87	17-168			
Dibenzo(a,h)anthracene	47		10	ug/L	50.0	3.8 U	93	5-227			
Diethylphthalate	46		10	ug/L	50.0	3.0 U	91	5-120			
Dimethylphthalate	47		10	ug/L	50.0	3.0 U	93	5-120			
Di-n-butylphthalate	50		10	ug/L	50.0	3.2 U	100	1-120			
Di-n-octylphthalate	49		10	ug/L	50.0	4.7 U	98	4-146			
Fluoranthene	46		10	ug/L	50.0	4.0 U	91	26-137			
Fluorene	42		10	ug/L	50.0	2.9 U	85	59-121			
Hexachlorobenzene	46		10	ug/L	50.0	3.0 U	92	5-152			
Hexachlorobutadiene	38		10	ug/L	50.0	4.1 U	77	24-120			
Hexachlorocyclopentadiene	41		10	ug/L	50.0	3.8 U	82	10-99			
Hexachloroethane	34		10	ug/L	50.0	3.0 U	67	40-120			
Indeno(1,2,3-cd)pyrene	48		10	ug/L	50.0	4.1 U	95	5-171			
Isophorone	41		10	ug/L	50.0	4.5 U	83	21-196			
Naphthalene	40		10	ug/L	50.0	3.6 U	79	21-133			
Nitrobenzene	40		10	ug/L	50.0	3.2 U	80	35-180			
N-Nitrosodimethylamine	33		10	ug/L	50.0	3.8 U	65	24-94			
N-Nitroso-di-n-propylamine	38		10	ug/L	50.0	4.5 U	77	5-230			
Pentachlorophenol	44		10	ug/L	50.0	8.2 U	88	14-176			
Phenanthrene	48		10	ug/L	50.0	2.8 U	96	54-120			
Phenol	25		10	ug/L	50.0	5.6 U	50	5-120			
Pyrene	44		10	ug/L	50.0	4.1 U	89	52-120			
2,4,6-Tribromophenol	77			ug/L	100		77	47-128			
2-Fluorobiphenyl	44			ug/L	50.0		87	44-102			
2-Fluorophenol	58			ug/L	100		58	25-79			
Nitrobenzene-d5	39			ug/L	50.0		77	43-112			
Phenol-d5	47			ug/L	100		47	14-54			
Terphenyl-d14	42			ug/L	50.0		84	65-122			

Matrix Spike Dup (9L18002-MSD1)

Prepared: 12/18/2019 09:37 Analyzed: 12/24/2019 14:28

Source: CC20429-06

Analyte	Result	Flag	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
1,2,4-Trichlorobenzene	38		10	ug/L	50.0	3.3 U	75	44-142	2	50	
1,2-Dichlorobenzene	36		10	ug/L	50.0	3.2 U	72	32-129	0.2	25	
1,3-Dichlorobenzene	35		10	ug/L	50.0	3.4 U	70	10-172	1	25	
1,4-Dichlorobenzene	36		10	ug/L	50.0	3.2 U	71	20-124	1	25	
2,4,6-Trichlorophenol	44		10	ug/L	50.0	6.4 U	88	37-144	0.2	58	
2,4-Dichlorophenol	41		10	ug/L	50.0	6.5 U	83	39-135	2	50	
2,4-Dimethylphenol	41		10	ug/L	50.0	6.4 U	82	32-120	5	58	
2,4-Dinitrophenol	46		10	ug/L	50.0	7.7 U	93	5-191	6	132	
2,4-Dinitrotoluene	45		10	ug/L	50.0	3.2 U	90	53-130	8	42	

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L18002 - EPA 3510C_MS - Continued

Matrix Spike Dup (9L18002-MSD1) Continued

Prepared: 12/18/2019 09:37 Analyzed: 12/24/2019 14:28

Source: CC20429-06

Analyte	Result	Flag	POL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
2,6-Dinitrotoluene	47		10	ug/L	50.0	2.9 U	94	50-158	3	48	
2-Chloronaphthalene	43		10	ug/L	50.0	3.2 U	87	60-120	2	24	
2-Chlorophenol	39		10	ug/L	50.0	7.4 U	79	23-134	3	61	
2-Methyl-4,6-dinitrophenol	45		10	ug/L	50.0	6.0 U	89	5-181	9	203	
2-Nitrophenol	39		10	ug/L	50.0	5.2 U	79	29-182	2	55	
3,3'-Dichlorobenzidine	46		10	ug/L	50.0	3.3 U	91	5-262	3	108	
4-Bromophenyl-phenylether	44		10	ug/L	50.0	3.3 U	89	53-127	0.7	43	
4-Chloro-3-methylphenol	42		10	ug/L	50.0	7.3 U	85	22-147	3	73	
4-Chlorophenyl-phenylether	47		10	ug/L	50.0	3.2 U	93	25-158	0.6	61	
4-Nitrophenol	30		10	ug/L	50.0	7.9 U	60	5-132	7	131	
Acenaphthene	45		10	ug/L	50.0	3.0 U	90	47-145	0.3	48	
Acenaphthylene	44		10	ug/L	50.0	9.6 U	89	33-145	0.5	74	
Anthracene	47		10	ug/L	50.0	3.0 U	94	27-133	1	66	
Benzidine	13		10	ug/L	50.0	7.1 U	26	10-136	27	25	
Benzo(a)anthracene	44		10	ug/L	50.0	3.2 U	89	33-143	3	53	
Benzo(a)pyrene	47		10	ug/L	50.0	3.2 U	95	17-163	0.4	72	
Benzo(b)fluoranthene	53		10	ug/L	50.0	3.4 U	106	24-159	9	71	J-04
Benzo(g,h,i)perylene	44		10	ug/L	50.0	3.7 U	88	5-219	9	97	
Benzo(k)fluoranthene	49		10	ug/L	50.0	3.8 U	98	11-162	8	63	
Bis(2-chloroethoxy)methane	42		10	ug/L	50.0	3.3 U	84	33-184	2	54	
Bis(2-chloroethyl)ether	42		10	ug/L	50.0	3.8 U	85	12-158	3	108	
Bis(2-chloroisopropyl)ether	39		10	ug/L	50.0	3.5 U	79	36-166	2	76	
Bis(2-ethylhexyl)phthalate	45		5.0	ug/L	50.0	3.5 U	91	8-158	1	82	
Butylbenzylphthalate	58		10	ug/L	50.0	5.1 U	117	5-152	7	60	
Chrysene	43		10	ug/L	50.0	3.0 U	87	17-168	0.8	87	
Dibenzo(a,h)anthracene	44		10	ug/L	50.0	3.8 U	87	5-227	6	126	
Diethylphthalate	47		10	ug/L	50.0	3.0 U	93	5-120	2	100	
Dimethylphthalate	48		10	ug/L	50.0	3.0 U	95	5-120	2	183	
Di-n-butylphthalate	50		10	ug/L	50.0	3.2 U	100	1-120	0.6	47	
Di-n-octylphthalate	48		10	ug/L	50.0	4.7 U	95	4-146	3	69	
Fluoranthene	49		10	ug/L	50.0	4.0 U	98	26-137	7	66	
Fluorene	44		10	ug/L	50.0	2.9 U	88	59-121	3	38	
Hexachlorobenzene	46		10	ug/L	50.0	3.0 U	93	5-152	1	55	
Hexachlorobutadiene	37		10	ug/L	50.0	4.1 U	75	24-120	3	62	
Hexachlorocyclopentadiene	37		10	ug/L	50.0	3.8 U	75	10-99	10	25	
Hexachloroethane	33		10	ug/L	50.0	3.0 U	66	40-120	2	52	
Indeno(1,2,3-cd)pyrene	44		10	ug/L	50.0	4.1 U	89	5-171	7	99	
Isophorone	41		10	ug/L	50.0	4.5 U	83	21-196	0.3	93	
Naphthalene	39		10	ug/L	50.0	3.6 U	77	21-133	3	65	
Nitrobenzene	40		10	ug/L	50.0	3.2 U	81	35-180	1	62	
N-Nitrosodimethylamine	31		10	ug/L	50.0	3.8 U	63	24-94	4	25	
N-Nitroso-di-n-propylamine	41		10	ug/L	50.0	4.5 U	82	5-230	6	87	
Pentachlorophenol	46		10	ug/L	50.0	8.2 U	91	14-176	4	86	
Phenanthrene	47		10	ug/L	50.0	2.8 U	95	54-120	0.7	39	
Phenol	27		10	ug/L	50.0	5.6 U	55	5-120	8	64	
Pyrene	49		10	ug/L	50.0	4.1 U	97	52-120	9	49	
2,4,6-Tribromophenol	80			ug/L	100		80	47-128			
2-Fluorobiphenyl	43			ug/L	50.0		86	44-102			
2-Fluorophenol	60			ug/L	100		60	25-79			

QUALITY CONTROL DATA

Semivolatile Organic Compounds by GCMS - Quality Control

Batch 9L18002 - EPA 3510C_MS - Continued

Matrix Spike Dup (9L18002-MSD1) Continued

Prepared: 12/18/2019 09:37 Analyzed: 12/24/2019 14:28

Source: CC20429-06

<u>Analyte</u>	<u>Result</u>	<u>Flag</u>	<u>POL</u>	<u>Units</u>	<u>Spike Level</u>	<u>Source Result</u>	<u>%REC</u>	<u>%REC Limits</u>	<u>RPD</u>	<u>RPD Limit</u>	<u>Notes</u>
Nitrobenzene-d5	39			ug/L	50.0		77	43-112			
Phenol-d5	51			ug/L	100		51	14-54			
Terphenyl-d14	44			ug/L	50.0		88	65-122			

FLAGS/NOTES AND DEFINITIONS

- B** The analyte was detected in the associated method blank.
- D** The sample was analyzed at dilution.
- J** The reported value is between the laboratory method detection limit (MDL) and the laboratory method reporting limit (MRL), adjusted for actual sample preparation data and moisture content, where applicable.
- U** The analyte was analyzed for but not detected to the level shown, adjusted for actual sample preparation data and moisture content, where applicable.
- E** The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
- MRL** Method Reporting Limit. The MRL is roughly equivalent to the practical quantitation limit (PQL) and is based on the low point of the calibration curve, when applicable, sample preparation factor, dilution factor, and, in the case of soil samples, moisture content.
- PQL** PQL: Practical Quantitation Limit. The PQL presented is the laboratory MRL.
- N** The analysis indicates the presence of an analyte for which there is presumptive evidence (85% or greater confidence) to make a "tentative identification".
- P** Greater than 25% concentration difference was observed between the primary and secondary GC column. The lower concentration is reported.
- [CALC]** Calculated analyte - MDL/MRL reported to the highest reporting limit of the component analyses.
- J-04** Result may be biased high. Associated calibration verification standard exceeded the upper control limit.
- QL-02** The associated laboratory control sample exhibited high bias; since the result is ND, there is no impact.
- QM-07** The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- QM-11** Precision between duplicate matrix spikes of the same sample was outside acceptance limits.
- QS-03** Surrogate recovery outside acceptance limits
- QV-01** The associated continuing calibration verification standard exhibited high bias; since the result is ND, there is no impact.
- QV-02** The associated continuing calibration verification standard exhibited low bias; the reported result should be considered to be a minimum estimate.
- R-05** The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.



ENVIRONMENTAL CONSERVATION LABORATORIES CHAIN-OF-CUSTODY RECORD

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Orlando, FL 32824
(407) 826-5314 Fax (407) 850-6945

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(904) 296-3007 Fax (904) 296-8210

102-A Woodwinds Industrial Ct.
Cary, NC 27511
(919) 467-3090 Fax (919) 467-3515

Client Name Catlin Engineers & Scientists (CA038)	Project Number [none]	Requested Analyses	Requested Turnaround Times Note: Rush requests subject to acceptance by the facility ☒ Standard ☐ Expedited Due ____/____/____ Lab Workorder CC20427
Address 220 Old Dairy Road	Project Name/Desc NC DOT Goldsboro		
City/ST/Zip Wilmington, NC 28405	PO # / Billing Info 190724-3 191216-04		
Tel (910) 452-5861	Reporting Contact Ben Ashba		
Fax	Billing Contact AP		
Sampler(s) Name, Affiliation (Print) COREY FURTEL	Site Location / Time Zone 6200B		
Sampler(s) Signature <i>Corey D. Furtel</i>		625.1	

Item #	Sample ID (Field Identification)	Collection Date	Collection Time	Comp / Grab	Matrix (see codes)	Total # of Containers	Preservation (See Codes) (Combine as necessary)										Sample Comments
	1816 DPT-04	12/19/19	1615	G	GW	4	X	X									* PLEASE REPORT EACH SAMPLE ON SEPARATE REPORT, TOTAL OF NINE (9).
	1813 DPT-03	12/10/19	1230	G	GW	4	X	X									
	204 DPT-02	12/10/19	1200	G	GW	4	X	X									
	1703 DPT-02	12/10/19	1530	G	GW	4	X	X									
	2305 DPT-02	12/11/19	0945	G	GW	4	X	X									
	2394 DPT-06	12/12/19	1645	G	GW	4	X	X									
	2436 DPT-04	12/11/19	1345	G	GW	4	X	X									
	2495 DPT-05	12/12/19	1145	G	GW	4	X	X									
	2502 DPT-05	12/13/19	0945	G	GW	4	X	X									

Sample Kit Prepared By <i>[Signature]</i>	Date/Time 12/13/19	Relinquished By <i>Corey D. Furtel</i>	Date/Time 12/16/19 1145	Received By <i>[Signature]</i>	Date/Time 12/17/19 1100
Comments/Special Reporting Requirements		Relinquished By	Date/Time	Received By	Date/Time
		Relinquished By	Date/Time	Received By	Date/Time
Matrix: GW-Groundwater SO-Soil DW-Drinking Water SE-Sediment SW-Surface Water WW-Wastewater A-Air O-Other (detail in comments)		Cooler #s & Temps on Receipt C-1000 1C-3048		Condition upon Receipt 2.81	Acceptable Unacceptable

Note: All samples submitted to ENCO Labs are in accordance with the terms and conditions listed on the reverse of this form, unless prior written agreements exist.